

Results of granulometric analysis of sand from restoration sites

Strengthen Resilience from Extreme Weather through Ecological Restoration of Sand Dunes (PR)

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Introduction

Surface sediment samples were collected at the fore-dune, mid-dune, back-dune, berm/upper beach (high tide), and swash zone (low tide) from every one of the restoration sites for granulometric analysis.

Methods

Sediment samples were collected by surface scooping with a small garden shovel from every one of the restoration sites. The samples were marked and stored in plastic bags before being analyzed. Sand samples were dried in a laboratory oven at 40° C for 24 hours and then weighed in a 250 ml glass laboratory beaker then a representative weighed sample was poured into the top sieve of a geologist sieve set. The geologist sieve set had five sieves (#1 = 4.750-1.829 mm; #2 = 1.828 - 1.016 mm, OPN = 72, US Std. Sieve No. = 10; #3 = 1.015 – 0.508 mm, OPN = 40, US Std. Sieve No. = 18; #4 = 0.507-0.117 mm, OPN = 20, US Std. Sieve No. = 35; #5 = 0.116-0.053 mm, OPN = 0.46, US Std. Sieve No. = 120 (see table 1).

Once the sieves were loaded, they were shaken by hand for 5 minutes and then each fraction on each sieve was weighed in an electronic balance. The mass on each sieve was then analyzed to get a cut-off point or specific size range, which is then captured on a screen.

To calculate the percent of aggregate passing through each sieve we first calculated the percent retained in each sieve (W_{sieve} = mass of aggregate in the sieve and W_{total} = mass of the aggregate).

$$\% \text{Retained} = \frac{W_{Sieve}}{W_{Total}} \times 100\%$$

The cumulative percent of aggregate retained in each sieve was calculated by adding the total amount of aggregate retained in each sieve. We added the total amount of aggregate that is retained in each sieve and the amount in the previous sieves. The cumulative percent passing of the aggregate is found by subtracting the percent retained from 100%.

$$\% \text{Cumulative Passing} = 100\% - \% \text{Cumulative Retained.}$$

Fraction	Grain size (mm)	Filter size (OPN)	US Std. Sieve No.
#1	4.750 - 1.829	N/A	N/A
#2	1.828 - 1.016	72	10
#3	1.015 - 0.508	40	18
#4	0.507 - 0.117	20	35
#5	0.116 - 0.053	0.46	120

WS = Well Sorted, **MS** = Medium Sorted, **VWS** = Very Well Sorted

Table 1. Mesh sizes of the geologist set and codes used in the granulometry study.

Isabela

Beach Name:	Middles East														
Date:	21/01/2020														
Coordinates:	8.512610, -67.038509														
Municipality:	Isabela														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
104.97	0	0.00%	N/A	0	0.00%	N/A	6.52	6.21%	VWS	98.01	93.37%	VWS	0	0.00%	N/A
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
105.14	0	0.00%	N/A	0.1	0.10%	WS	43.52	41.39%	VWS	60.86	57.88%	VWS	0.26	0.25%	VWS
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
110.59	0	0.00%	N/A	0.5	0.45%	WS	37.52	33.93%	VWS	72.39	65.46%	VWS	0	0.00%	N/A
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
96.43	0.21	0.22%	WS	3.4	3.53%	WS	55.7	57.76%	VWS	37.34	38.72%	VWS	0	0.00%	N/A
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
417.13	0	0.00%		0.6	0.14%		87.56	20.99%		231.26	55.44%		0.26	0.06%	

Beach Name:	Middles West														
Date:	1/23/20														
Coordinates:	512450, -67.040313														
Municipality:	Isabela														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
116.92	0.13	0.11%	VPS	2.15	1.84%	WS	70.91	60.65%	VWS	43.53	37.23%	VWS	0.11	0.09%	VWS
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
91.83	0	0.00%	N/A	0.1	0.11%	WS	54.3	59.13%	VWS	37.35	40.67%	VWS	0	0.00%	N/A
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
97.46	0.12	0.12%	MS	2	2.05%	WS	41.92	43.01%	VWS	55.12	56.56%	VWS	0	0.00%	N/A
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
79.51	1.35	1.70%	MS	10.04	12.63%	WS	39.65	49.87%	VWS	28.31	35.61%	VWS	0	0.00%	N/A
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
385.72	1.35	0.35%		10.04	2.60%		39.65	10.28%		28.31	7.34%		0	0.00%	

Beach Name:	Middles Center															
Date:	1/23/20															
Coordinates:	18.512421, -67.039335															
Municipality:	Isabela															
Back of Dune																
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:	
98.11	0.18	0.18%	MS	5.46	5.57%	WS	4445	4530.63%	VWS	47.94	48.86%	VWS	0	0.00%	N/a	
Top of Dune																
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:	
104.29	0	0.00%	N/A	0.52	0.50%	WS	35.6	34.14%	VWS	67.95	65.15%	VWS	0	0.00%	N/A	
Front of Dune																
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:	
100.95	0	0.00%	N/A	0.88	0.87%	WS	224.88	222.76%	VWS	74.44	73.74%	VWS	0.18	0.18%	VWS	
Dune and High Water Mark																
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:	
91.56	3.52	3.84%	MS	16.16	17.65%	WS	37	40.41%	VWS	34.48	37.66%	VWS	0	0.00%	N/A	
Average																
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:	
394.91	3.52	0.89%		16.16	4.09%		37	9.37%		34.48	8.73%		0	0.00%		

Beach Name:	Sonia Rican															
Date:	1/30/20															
Coordinates:	18.515131, -67.087748															
Municipality:	Isabela															
Back of Dune																
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:	
114.21	0	0.00%	N/A	0	0.00%	N/A	1.4	1.23%	VWS	112.9	98.85%	VWS	0	0.00%	N/A	
Top of Dune																
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:	
176.48	0	%	N/A	0	0.00%	N/A	3.01	1.71%	VWS	102.41	58.03%	VWS	0	0.00%	N/A	
Front of Dune																
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:	
116.17	0	0.00%	N/A	0.47	0.40%	MS	39.3	33.83%	VWS	76.33	65.71%	VWS	0	0.00%	N/A	
Dune and High Water Mark																
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:	
102.16	0	0.00%	N/A	0	0.00%	N/A	15.43	#REF!	WS	86.35	84.52%	VWS	0	0.00%	N/A	
Average																
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Material Composition:	Fraction #2 (g):	% Fraction #2:	Material Composition:	Fraction #3 (g):	% Fraction #3:	Material Composition:	Fraction #4 (g):	% Fraction #4:	Material Composition:	Fraction #5 (g):	% Fraction #5:	Material Composition:	
509.02	0	0.00%		0	0.00%		15.43	3.03%		86.35	16.96%		0	0.00%		

Beach Name:	Pozo Brujo														
Date:	24/01/2020														
Coordinates:	18.5082583 , -67. 0130097														
Municipality:	Isabela														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
101.36	0	0.00%	N/A	0	0.00%	N/A	62.38	61.54%	VWS	38.58	38.06%	VWS	0	0.00%	N/A
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
101.91	0	0.00%	N/A	0.43	0.42%	WS	73.76	72.38%	VWS	27.39	26.88%	VWS	0	0.00%	N/A
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
106.24	0	0.00%	N/A	1.48	1.39%	WS	44.6	41.98%	VWS	59.55	56.05%	VWS	0	0.00%	N/A
Between Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
111.27	0.15	0.13%	PS	4.36	3.92%	WS	58.32	52.41%	VWS	47.85	43.00%	VWS	0	0.00%	N/A
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
420.78	0	0.00%		1.91	0.45%		180.74	42.95%		125.52	29.83%		0	0.00%	

Beach Name:	Pozo Brujo Center														
Date:	30/01/20														
Coordinates:	18.505840 , -67.008026														
Municipality:	Isabela														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
101.64	0.09	0.09%	VPS	0.5	0.49%	WS	31.68	31.17%	VWS	69.03	67.92%	VWS	0	0.00%	N/A
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
103.12	0	0.00%	N/A	0.32	0.31%	WS	18.63	18.07%	VWS	83.76	81.23%	VWS	0	0.00%	N/A
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
104.22	0.14	0.13%	MS	1.77	1.70%	WS	25.68	24.64%	VWS	76.45	73.35%	VWS	0	0.00%	N/A
Between Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
99.91	0.29	0.29%	MS	1.94	1.94%	WS	22.82	22.84%	VWS	74.36	74.43%	VWS	0	0.00%	N/A
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
408.89	0.29	0.07%		1.94	0.47%		22.82	5.58%		74.36	18.19%		0	0.00%	

Beach Name:	Shore Island														
Date:	21/01/2020														
Coordinates:	18.508824 , -67.028645														
Municipality:	Isabela														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
96.86	0.53	0.55%	VPS	0.29	0.30%	MS	5.73	5.92%	WS	98.85	102.05%	VWS	0.16	0.17%	VWS
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
103.28	0	0.00%	N/A	0	0.00%	N/A	10.1	9.78%	VWS	101.74	98.51%	VWS	0	0.00%	N/A
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
106.49	0	0.00%	N/A	0.15	0.14%	WS	59.4	55.78%	VWS	47.22	44.34%	VWS	0	0.00%	N/A
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
102.32	0	0.00%	N/A	0.17	0.17%	WS	44.32	43.32%	VWS	57.17	55.87%	VWS	0	0.00%	N/A
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
408.95	0.53	0.13%		0.44	0.11%		75.23	18.40%		247.81	60.60%		0.16	0.04%	

Beach Name:	Albizu Campos														
Date:	30/01/20														
Coordinates:	18.515512, -67.092721														
Municipality:	Isabela														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
101.64	0	0.00%	N/A	1.2	1.18%	WS	31.88	31.37%	VWS	68.39	67.29%	VWS	0	0.00%	N/A
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
104.51	0	0.00%	N/A	0.6	0.57%	WS	30.6	29.28%	VWS	72.93	69.78%	VWS	0.09	0.09%	VWS
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
105.66	0.13	0.12%	MS	0.54	0.51%	WS	16.92	16.01%	VWS	87.93	83.22%	VWS	0	0.00%	N/A
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
98.87	0	0.00%	N/A	0.39	0.39%	WS	17.11	17.31%	VWS	81.2	82.13%	VWS	0	0.00%	N/A
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
410.68	0	0.00%		0.39	0.09%		17.11	4.17%		81.2	19.77%		0	0.00%	

Loiza

Beach Name:	Vacia Talega																		
Date:	12/09/2019																		
Coordinates:	18.449313 , -65.904928																		
Municipality:	Loiza																		
Back of Dune																			
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:				
113.73	0.33	0.29%	WS	0.58	0.51%	WS	63.15	55.53%	VWS	48.05	42.25%	VWS	0.86	0.76%	VWS				
Top of Dune																			
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:				
116.19	0.18	0.15%	WS	0.58	0.50%	WS	6.05	5.21%	VWS	107.12	92.20%	VWS	1.84	1.58%	VWS				
Front of Dune																			
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:				
75.55	0.1	0.13%	WS	5.28	6.99%	WS	32.36	42.83%	VWS	36.34	48.10%	VWS	1.32	1.75%	VWS				
Dune and High Water Mark																			
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:				
82.95	0	0.00%		0.4	0.48%	WS	10.17	12.26%	VWS	67.24	81.06%	VWS	4.77	5.75%	VWS				
Average																			
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Material Composition:	Fraction #2 (g):	% Fraction #2:	Material Composition:	Fraction #3 (g):	% Fraction #3:	Material Composition:	Fraction #4 (g):	% Fraction #4:	Material Composition:	Fraction #5 (g):	% Fraction #5:	Material Composition:				
388.42	0.61	0.16%	WS	6.44	1.66%	WS	101.56	26.15%	VWS	191.51	49.30%	VWS	4.02	1.03%	VWS				

Beach Name:	Loiza 1																		
Date:	09/12/2019																		
Coordinates:	18.451899 , -65.961658																		
Municipality:	loiza																		
Back of Dune																			
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:				
108.6	0.66	0.61%	VPS	2.48	2.28%	MS	57.85	53.27%	WS	47.22	43.48%	VWS	0.11	0.10%	VWS				
Top of Dune																			
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:				
102.47	0	0.00%	N/A	0.24	0.23%	WS	35.81	34.95%	VWS	65.99	64.40%	VWS	0	0.00%	N/A				
Front of Dune																			
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:				
105.46	0	0.00%	N/A	0.35	0.33%	MS	49.23	46.68%	VWS	55.53	52.66%	VWS	0	0.00%	N/A				
Dune and High Water Mark																			
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:				
93.16	0.39	0.42%	PS	19.7	21.15%	MS	60.7	65.16%	WS	11.98	12.86%	VWS	0	0.00%	N/A				
Average																			
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:				
409.69	0.66	0.16%		3.07	0.75%		142.89	34.88%		168.74	41.19%		0.11	0.03%					

Beach Name:	Loiza 2														
Date:	09/12/2019														
Coordinates:	18.450612 , -65.956536														
Municipality:	loiza														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
97.72	3.3	3.38%	PS	14.58	14.92%	MS	49.8	50.96%	WS	29.69	30.38%	VWS	0	0.00%	N/A
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
95.96	1.31	1.37%	VPS	7.3	7.61%	WS	56.94	59.34%	WS	29.72	30.97%	VWS	0	0.00%	N/A
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
90.61	0.67	0.74%	MS	3.75	4.14%	WS	43	47.46%	VWS	42.98	47.43%	VWS	0	0.00%	N/A
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
99.58	0.41	0.41%	PS	4.85	4.87%	MS	78.27	78.60%	WS	15.64	15.71%	VWS	0	0.00%	N/A
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
383.87	0.41	0.11%		4.85	1.26%		78.27	20.39%		15.64	4.07%		0	0.00%	

Hatillo

Beach Name:	Mar Azul														
Date:	12/12/2019														
Coordinates:	.4905955 , -86.813229														
Municipality:	Hatillo														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
100.77	4.72	4.68%	MS	10.64	10.56%	WS	52.6	52.20%	VWS	32.65	32.40%	VWS	0	0.00%	N/A
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
93.43	2.74	2.93%	WS	2.85	3.05%	MS	53.22	56.96%	VWS	34.38	36.80%	VWS	0	0.00%	N/A
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
108.89	1.53	1.41%	MS	2.35	2.16%	WS	75.36	69.21%	VWS	29.46	27.05%	VWS	0	0.00%	N/A
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
104.66	39.1	37.36%	VPS	23.46	22.42%	WS	30.49	29.13%	WS	4.41	4.21%	VWS		0.00%	
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
407.75	8.99	2.20%		15.84	3.88%		181.18	44.43%		96.49	23.66%		0	0.00%	N/A

Manatí

Beach Name:	La Esperanza														
Date:	1/22/2020														
Coordinates:	18.477465, -66.513184														
Municipality:	Manatí														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
108.81	0.45	0.41%	MS	0.93	0.85%	WS	81.71	75.09%	VWS	25.4	23.34%	VWS	0	0.00%	N/A
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
111.28	0	0.00%	N/A	0.36	0.32%	WS	67.76	60.89%	VWS	42.83	38.49%	VWS		0.00%	N/A
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
100.72	0.43	0.43%	VPS	0.73	0.72%	MS	38.7	38.42%	WS	60.56	60.13%	VWS	0	0.00%	N/A
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
82.76	2.86	3.46%	VPS	12.55	15.16%	WS	54.17	65.45%	VWS	13.11	15.84%	VWS	0	0.00%	N/A
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
403.57	0.88	0.22%		2.02	0.50%		188.17	46.63%		128.79	31.91%		0	0.00%	

Beach Name:	Mar Chiquita														
Date:	12/10/2019														
Coordinates:	18.472768, -66.483837														
Municipality:	Manatí														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
101.32	0.84	0.83%	VPS	1.03	1.02%	WS	86.17	85.05%	VVWS	12.69	12.52%	VWS	0.47	0.46%	VWS
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
103.93	0	0.00%	N/A	1.05	1.01%	WS	58.96	56.73%	VWS	43.48	41.84%	VWS	0.1	0.10%	VWS
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
101.06	0	0.00%	N/A	0.31	0.31%	WS	52.69	52.14%	VWS	47.91	47.41%	VWS	0	0.00%	N/A
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
102.13	0	0.00%	PS	1.05	1.03%	WS	64.34	63.00%	VWS	36.47	35.71%	VWS	0	0.00%	N/A
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
408.44	0.84	0.21%		2.39	0.59%		197.82	48.43%		104.08	25.48%		0.57	0.14%	

Beach Name:	Poza de las Mujeres														
Date:	12/10/2019														
Coordinates:	18.475819 , -66.505786														
Municipality:	Manati														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
109.05	0.11	0.10%	PS	0.8	0.73%	MS	29.59	27.13%	VWS	78.35	71.85%	VWS	0.1	0.09%	VWS
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
109.81	0	0.00%	N/A	0.18	0.16%	MS	19.8	18.03%	VWS	90.25	82.19%	VWS	0.08	0.07%	VWS
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
107.56	0	0.00%	N/A	0.24	0.22%	MS	21.64	20.12%	VWS	85.25	79.26%	VWS	0	0.00%	N/A
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
111.47	0.65	0.58%	VPS	0.66	0.59%	MS	40.51	36.34%	VWS	69.48	62.33%	VWS	0	0.00%	N/A
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
437.89	0.76	0.17%		1.88	0.43%		111.54	25.47%		323.33	73.84%		0.18	0.04%	

Arecibo

Beach Name:	Maranto														
Date:	12/12/2019														
Coordinates:	18.497634, -66.6194499														
Municipality:	Arecibo														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
104.53	0	0.00%	N/A	0.87	0.83%	WS	53.36	51.05%	VWS	50.07	47.90%	VWS	0	0.00%	N/A
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
107.83	0	0.00%	N/A	0	0.00%	N/A	49.52	45.92%	VWS	58.09	53.87%	VWS	0	0.00%	N/A
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
90.81	0	0.00%	N/A	0.16	0.18%	WS	46.68	51.40%	VWS	43.78	48.21%	VWS	0	0.00%	N/A
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
107.11	0.8	0.75%	VPS	0.8	0.75%	WS	35.76	33.39%	VWS	69.62	65.00%	VWS	0	0.00%	N/A
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
410.28	0.8	0.19%		0.8	0.19%		35.76	8.72%		69.62	16.97%		0	0.00%	

Beach Name:	Jarealito														
Date:	12/12/2019														
Coordinates:	809010, -67.6935144														
Municipality:	Arecibo														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
107.14	0	0.00%	N/A	0.18	0.17%	WS	22.01	20.54%	VWS	84.7	79.06%	VWS	0	0.00%	N/A
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
105.21	0	0.00%	N/A	0	0.00%	N/A	10.83	10.29%	VWS	94.13	89.47%	VWS	0	0.00%	N/A
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
119.85	0	0.00%	N/A	0.58	0.48%	WS	63.94	53.35%	VWS	54.27	45.28%	VWS	0	0.00%	N/A
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
111.08	0.27	0.24%	PS	1.1	0.99%	WS	60.44	54.41%	VWS	48.55	43.71%	VWS	0	0.00%	N/A
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
443.28	0.27	0.06%		0.76	0.17%		96.78	21.83%		233.1	52.59%		0	0.00%	

Camuy

Beach Name:	Villa Pesquera de Camuy														
Date:	12/12/2019														
Coordinates:	18.4908085 , -66.8653950														
Municipality:	Camuy														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
87.4	1.35	1.54%	WS	32.7	37.41%	WS	47.91	54.82%	VWS	5.39	6.17%	VWS	0	0.00%	N/A
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
91.58	1.24	1.35%	MS	28.06	30.64%	WS	57.83	63.15%	VWS	4.23	4.62%	VWS	0	0.00%	N/A
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
83.87	31.81	37.93%	MS	31.01	36.97%	WS	21.02	25.06%	VWS	0.24	0.29%	VWS	0	0.00%	N/A
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
87.4	8.41	9.62%	MS	58.19	66.58%	WS	20.63	23.60%	VWS	0.12	0.14%	VWS	0	0.00%	N/A
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
350.25	34.4	9.82%		91.77	26.20%		126.76	36.19%		9.86	2.82%		0	0.00%	

Beach Name:	Finca Nolla														
Date:	12/12/2019														
Coordinates:	18.488777 , -66.845308														
Municipality:	Camuy														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
87.28	0	0.00%	N/A	0	0.00%	N/A	18.47	21.16%	VWS	68.28	78.23%	VWS	0.36	0.41%	VWS
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
106.77	0	0.00%	N/A	0	0.00%	N/A	0.24	0.22%	WS	106.29	99.55%	VWS	0.12	0.11%	VWS
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
107.21	0	0.00%	N/A	0.47	0.44%	WS	2.42	2.26%	VWS	103.53	96.57%	VWS	0.54	0.50%	VWS
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
98.41	0	0.00%	N/A	0.14	0.14%	MS	6.07	6.17%	VWS	91.41	92.89%	VWS	0.11	0.11%	VWS
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
399.67	0	0.00%		0.61	0.15%		21.13	5.29%		278.1	69.58%		1.02	0.26%	

Dorado

Beach Name:	Caracol														
Date:	12/10/2019														
Coordinates:	18.470546 , -66.247021														
Municipality:	Dorado														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
101.23	0	0.00%	N/A	0	0.00%	N/A	0.3	0.30%	WS	100.41	99.19%	VWS	0.29	0.29%	VWS
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
104.07	0	0.00%	N/A	0.19	0.18%	WS	5.55	5.33%	VWS	97.1	93.30%	VWS	0.44	0.42%	VWS
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
117.43	0.12	0.10%	VPS	0	0.00%	N/A	9.86	8.40%	VWS	106.61	90.79%	VWS	0.9	0.77%	VWS
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
109.74	0	0.00%	N/A	0	0.00%	N/A	5.41	4.93%	VWS	103.51	94.32%	VWS	0	0.00%	N/A
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
432.47	0.12	0.03%		0.19	0.04%		21.12	4.88%		407.63	94.26%		1.63	0.38%	

Beach Name:	Jarialito														
Date:	12/12/2019														
Coordinates:	809010 , -67.6935144														
Municipality:	Arecibo														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
107.14	0	0.00%	N/A	0.18	0.17%	WS	22.01	20.54%	VWS	84.7	79.06%	VWS	0	0.00%	N/A
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
105.21	0	0.00%	N/A	0	0.00%	N/A	10.83	10.29%	VWS	94.13	89.47%	VWS	0	0.00%	N/A
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
119.85	0	0.00%	N/A	0.58	0.48%	WS	63.94	53.35%	VWS	54.27	45.28%	VWS	0	0.00%	N/A
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
111.08	0.27	0.24%	PS	1.1	0.99%	WS	60.44	54.41%	VWS	48.55	43.71%	VWS	0	0.00%	N/A
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
443.28	0.27	0.06%		0.76	0.17%		96.78	21.83%		233.1	52.59%		0	0.00%	

San Juan

Beach Name:	El Ultimo Trolley														
Date:	12/09/2019														
Coordinates:	18.452779 , -66.049467														
Municipality:	San Juan														
Back of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
100.12	0	0.00%	N/A	0.24	0.24%	MS	10.48	10.47%	VWS	89	88.89%	VWS	0.29	0.29%	VWS
Top of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
112.51	0	0.00%	N/A	0.16	0.14%	MS	69.32	61.61%	VWS	41.99	37.32%	VWS	0.37	0.33%	VWS
Front of Dune															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
104.32	0	0.00%	N/A	0.12	0.12%	MS	50.46	48.37%	VWS	53.3	51.09%	VWS	0.16	0.15%	VWS
Dune and High Water Mark															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
102.84	0.11	0.11%	PS	2.12	2.06%	MS	43.89	42.68%	VWS	55.82	54.28%	VWS	0.56	0.54%	VWS
Average															
Total weight (g):	Fraction #1 (g):	% Fraction #1:	Composition:	Fraction #2 (g):	% Fraction #2:	Composition:	Fraction #3 (g):	% Fraction #3:	Composition:	Fraction #4 (g):	% Fraction #4:	Composition:	Fraction #5 (g):	% Fraction #5:	Composition:
419.79	0.11	0.03%		2.64	0.63%		174.15	41.49%		0	0.00%		1.38	0.33%	