

### SUPPLEMENTARY FILES-3

#### Supplementary Files for Article Entitled: “Impact of Sedimentation on Water Seepage Capacity in Lake Nakuru”

### 3.1. Sieve Analysis of Sediment Sub-Sample Along the Core Depth

#### 3.1.1. Sieve Analysis of Sediment Sub-Sample Along the Core Depth (0 - 10)

LABORATORY TEST DATA SHEET						
PARTICLE SIZE DISTRIBUTION (Sieve Analysis)						
Sample Location: P2 (00°20'31” S, 36°05'10” E)				Sub-Sample No.:1 (0 - 10)		
Description of soil: Sediment (L. Nakuru)				Date: 29/07/2019		
Dry Sieving				Wet Sieving through 74µm		
Weight of Dry Soil + Tray (g)	345.60			Weight of Dry Soil + Tray (g)	304.68	
Weight of Tray (g)	259.84			Weight of Tray (g)	259.84	
Wt of Dry Soil Screened (g)	85.76			Dry Soil retained on 75µm (g)	44.84	
Wet Sieving through 2mm				Check On Original Specimen:		
Weight of Dry Soil +Tray (g)	265.96			1) Percent passing 2.0mm	92.86	
Weight of Tray (g)	259.84			2) Soil washed thro 0.074mm sieve	47.71	
Weight of Dry Soil retained on 2mm (g)	6.12			3) Soil Lost upon grading (%)	1.10	
Sieve Size (mm)	Wt of Sieve and Soil (g)	Wt of Sieve only (g)	Wt of Soil Retained (g)	Cumulative Wt Retained (g)	Soil Retained on Sieve (%)	Soil Passing Sieve (%)
19.1	586.2	586.2	0.0	0.0	0.000	100.00
9.52	518.82	518.30	0.5	0.5	0.606	99.39
4.76	474.02	472.80	1	1.7	2.029	97.97
2.00	465.06	460.68	4.4	6.1	7.136	92.86
0.84	420.64	412.28	8.4	14.5	16.884	83.12
0.42	410.98	404.40	6.6	21.1	24.557	75.44
0.25	387.54	381.98	5.6	26.6	31.040	68.96
0.105	369.84	358.16	11.7	38.3	44.660	55.34
0.074	351.76	346.94	4.8	43.1	50.280	49.72
Pan	354.08	353.30	0.8	43.9	51.189	48.81

### 3.1.2. Sieve Analysis of Sediment Sub-Sample Along the Core Depth (10 - 20)

<b>LABORATORY TEST DATA SHEET</b> <b>PARTICLE SIZE DISTRIBUTION (Sieve Analysis)</b> <b>Sample Location: P2 (00°20'31" S, 36°05'10" E)</b> <b>Description of soil: Sediment (L. Nakuru)</b>						
<i>Dry Sieving</i>				<i>Wet Sieving through 74µm</i>		
Weight of Dry Soil + Tray (g)		341.06		Weight of Dry Soil + Tray (g)		329.74
Weight of Tray (g)		253.73		Weight of Tray (g)		253.73
Wt of Dry Soil Screened (g)		87.33		Dry Soil retained on 75µm (g)		76.01
<i>Wet Sieving through 2mm</i>				<i>Check On Original Specimen</i>		
Weight of Dry Soil + Tray (g)		269.47		1) Percent passing 2.0mm		81.98
Weight of Tray (g)		253.73		2) Soil washed thro 0.074mm sieve		12.96
Weight of Dry Soil retained on 2mm (g)		15.74		3) Soil Lost upon grading (%)		0.54
Sieve Size (mm)	Wt of Sieve and Soil (g)	Wt of Sieve only (g)	Wt of Soil Retained (g)	Cumulative Wt Retained (g)	Soil Retained on Sieve (%)	Soil Passing Sieve (%)
19.1	586.2	586.2	0.0	0.0	0.000	100.00
9.52	518.72	518.30	0.4	0.4	0.481	99.52
4.76	477.90	472.80	5	5.5	6.321	93.68
2.00	470.90	460.68	10.2	15.7	18.024	81.98
0.84	426.70	412.28	14.4	30.2	34.536	65.46
0.42	418.70	404.40	14.3	44.5	50.910	49.09
0.25	393.82	381.98	11.8	56.3	64.468	35.53
0.105	371.36	358.16	13.2	69.5	79.583	20.42
0.074	351.72	346.94	4.8	74.3	85.057	14.94
Pan	354.56	353.30	1.3	75.5	86.499	13.50

### 3.1.3. Sieve Analysis of Sediment Sub-Sample Along the Core Depth (20 - 30)

LABORATORY TEST DATA SHEET						
PARTICLE SIZE DISTRIBUTION (Sieve Analysis)						
Sample Location: P2 (00°20'31” S, 36°05'10” E)				Sub-Sample No.:3 (20-30)		
Description of soil: Sediment (L. Nakuru)				Date: 29/07/2019		
Dry Sieving				Wet Sieving through 74µm		
Weight of Dry Soil + Tray (g)	346.08			Weight of Dry Soil + Tray (g)	334.44	
Weight of Tray (g)	254.14			Weight of Tray (g)	254.14	
Wt of Dry Soil Screened (g)	91.94			Dry Soil retained on 75µm (g)	80.30	
Wet Sieving through 2mm				Check On Original Specimen		
Weight of Dry Soil + Tray (g)	270.74			1) Percent passing 2.0mm	81.94	
Weight of Tray (g)	254.14			2) Soil washed thro 0.074mm sieve	12.66	
Weight of Dry Soil retained on 2mm (g)	16.60			3) Soil Lost upon grading (%)	0.57	
Sieve Size (mm)	Wt of Sieve and Soil (g)	Wt of Sieve only (g)	Wt of Soil Retained (g)	Cumulative Wt Retained (g)	Soil Retained on Sieve (%)	Soil Passing Sieve (%)
19.1	586.2	586.2	0.0	0.0	0.000	100.00
9.52	519.10	518.30	0.8	0.8	0.870	99.13
4.76	477.06	472.80	4	5.1	5.504	94.50
2.00	472.22	460.68	11.5	16.6	18.055	81.94
0.84	429.52	412.28	17.2	33.8	36.807	63.19
0.42	422.54	404.40	18.1	52.0	56.537	43.46
0.25	400.48	381.98	18.5	70.5	76.659	23.34
0.105	365.44	358.16	7.3	77.8	84.577	15.42
0.074	348.02	346.94	1.1	78.8	85.752	14.25
Pan	354.24	353.30	0.9	79.8	86.774	13.23

### 3.1.4. Sieve Analysis of Sediment Sub-Sample Along the Core Depth (30 - 40)

LABORATORY TEST DATA SHEET						
PARTICLE SIZE DISTRIBUTION (Sieve Analysis)						
Sample Location: P2 (00°20'31” S, 36°05'10” E)				Sub-Sample No.:4 (30-40)		
Description of soil: Sediment (L. Nakuru)				Date: 29/07/2019		
Dry Sieving				Wet Sieving through 74µm		
Weight of Dry Soil + Tray (g)	352.83	Weight of Dry Soil + Tray (g)		340.82		
Weight of Tray (g)	261.42	Weight of Tray (g)		261.42		
Wt of Dry Soil Screened (g)	91.41	Dry Soil retained on 75µm (g)		79.40		
Wet Sieving through 2mm			Check On Original Specimen:			
Weight of Dry Soil + Tray (g)	278.36			1) Percent passing 2.0mm	81.47	
Weight of Tray (g)	261.42			2) Soil washed thro 0.074mm sieve	13.14	
Weight of Dry Soil retained on 2mm (g)	16.94			3) Soil Lost upon grading (%)	0.81	
Sieve Size (mm)	Wt of Sieve and Soil (g)	Wt of Sieve only (g)	Wt of Soil Retained (g)	Cumulative Wt Retained (g)	Soil Retained on Sieve (%)	Soil Passing Sieve (%)
19.1	586.2	586.2	0.0	0.0	0.000	100.00
9.52	519.90	518.30	1.6	1.6	1.750	98.25
4.76	477.94	472.80	5	6.7	7.373	92.63
2.00	470.88	460.68	10.2	16.9	18.532	81.47
0.84	429.40	412.28	17.1	34.1	37.261	62.74
0.42	421.30	404.40	16.9	51.0	55.749	44.25
0.25	395.04	381.98	13.1	64.0	70.036	29.96
0.105	370.58	358.16	12.4	76.4	83.623	16.38
0.074	349.06	346.94	2.1	78.6	85.942	14.06
Pan	353.40	353.30	0.1	78.7	86.052	13.95

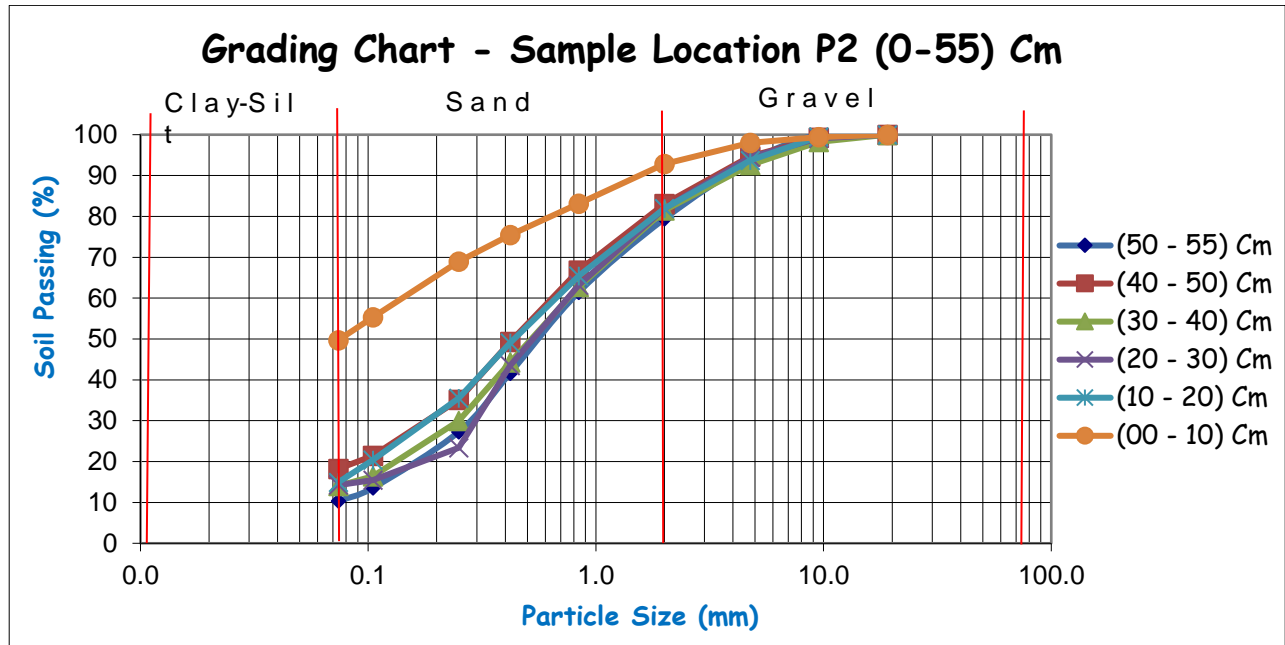
### 3.1.5. Sieve Analysis of Sediment Sub-Sample Along the Core Depth (40 - 50)

LABORATORY TEST DATA SHEET						
PARTICLE SIZE DISTRIBUTION (Sieve Analysis)						
Sample Location: P2 (00°20'31” S, 36°05'10” E)				Sub-Sample No.:5 (40-50)		
Description of soil: Sediment (L. Nakuru)				Date: 29/07/2019		
Dry Sieving				Wet Sieving through 74µm		
Weigt of Dry Soil + Tray (g)		473.43		Weight of Dry Soil + Tray (g)		457.56
Weight of Tray (g)		382.88		Weight of Tray (g)		382.88
Wt of Dry Soil Screened (g)		90.55		Dry Soil retained on 75µm (g)		74.68
Wet Sieving through 2mm				Check On Original Specimen:		
Weight of Dry Soil + Tray (g)		398.20		1) Percent passing 2.0mm		83.08
Weight of Tray (g)		382.88		2) Soil washed thro 0.074mm sieve		17.53
Weight of Dry Soil retained on 2mm (g)		15.32		3) Soil Lost upon grading (%)		0.68
Sieve Size (mm)	Wt of Sieve and Soil (g)	Wt of Sieve only (g)	Wt of Soil Retained (g)	Cumulative Wt Retained (g)	Soil Retained on Sieve (%)	Soil Passing Sieve (%)
19.1	586.2	586.2	0.0	0.0	0.000	100.00
9.52	518.96	518.30	0.7	0.7	0.729	99.27
4.76	476.90	472.80	4	4.8	5.257	94.74
2.00	471.24	460.68	10.6	15.3	16.919	83.08
0.84	427.06	412.28	14.8	30.1	33.241	66.76
0.42	420.20	404.40	15.8	45.9	50.690	49.31
0.25	394.86	381.98	12.9	58.8	64.914	35.09
0.105	370.56	358.16	12.4	71.2	78.609	21.39
0.074	349.80	346.94	2.9	74.0	81.767	18.23
Pan	353.32	353.30	0.0	74.1	81.789	18.21

### 3.1.6. Sieve Analysis of Sediment Sub-Sample Along the Core Depth (50 - 55)

<b>LABORATORY TEST DATA SHEET</b> <b>PARTICLE SIZE DISTRIBUTION (Sieve Analysis)</b> <b>Sample Location: P2 (00°20'31" S, 36°05'10" E)</b> <b>Description of soil: Sediment (L. Nakuru)</b>						
<b>Dry Sieving</b>				<b>Wet Sieving through 74µm</b>		
Weight of Dry Soil + Tray (g)	330.80			Weight of Dry Soil + Tray (g)	322.02	
Weight of Tray (g)	242.46			Weight of Tray (g)	242.46	
Wt of Dry Soil Screened (g)	88.34			Dry Soil retained on 75µm (g)	79.56	
<b>Wet Sieving through 2mm</b>				<b>Check On Original Specimen</b>		
Weight of Dry Soil + Tray (g)	260.64			1) Percent passing 2.0mm	79.42	
Weight of Tray (g)	242.46			2) Soil washed thro 0.074mm sieve	9.94	
Weight of Dry Soil retained on 2mm (g)	18.18			3) Soil Lost upon grading (%)	0.25	
Sieve Size (mm)	Wt of Sieve and Soil (g)	Wt of Sieve only (g)	Wt of Soil Retained (g)	Cumulative Wt Retained (g)	Soil Retained on Sieve (%)	Soil Passing Sieve (%)
19.1	586.2	586.2	0.0	0.0	0.000	100.00
9.52	518.36	518.36	0.0	0.0	0.000	100.00
4.76	478.68	472.82	6	5.9	6.633	93.37
2.00	473.14	460.82	12.3	18.2	20.580	79.42
0.84	428.20	412.32	15.9	34.1	38.556	61.44
0.42	421.60	404.10	17.5	51.6	58.365	41.63
0.25	394.72	382.06	12.7	64.2	72.696	27.30
0.105	370.46	358.32	12.1	76.4	86.439	13.56
0.074	349.72	346.88	2.8	79.2	89.654	10.35
Pan	353.44	353.30	0.1	79.3	89.812	10.19

**3.2. Sieve Analysis Grading Curves for Sub-Samples Along the Core Depth (0 – 55) of the Sediment Sample from Location P2**



**3.3. Sieve Analysis Ratio of the Sediment Soil Types Along with the Core Depth (0 - 55) for the Sediment Sample from Location P2**

Sample P2, Sub-Sample No.1 (Test ID: 0 - 10)			AASHTO M145/T88	
Particles finer than 60%, $D_{60}$ (mm)	0.15		Gravel	7%
Particles finer than 30%, $D_{30}$ (mm)	0.022		Sand	43%
Particles finer than 10%, $D_{10}$ (mm)	0.002		Fine	<50%
Uniformity coefficient, $C_u$	75.00	well graded	Soil Description: Fine Soil	
Curvature coefficient, $C_c$	1.61			

Sample P2, Sub-Sample No.2 (Test ID: 10 - 20)			AASHTO M145/T88	
Particles finer than 60%, $D_{60}$ (mm)	0.65		Gravel	18%
Particles finer than 30%, $D_{30}$ (mm)	0.18		Sand	67%
Particles finer than 10%, $D_{10}$ (mm)	0.05		Fine	<15%
Uniformity coefficient, $C_u$	13.00	well graded	Soil Description: Sand & Fine Soil	
Curvature coefficient, $C_c$	1.00			

Sample P2, Sub-Sample No.3 (Test ID: 20 - 30)			AASHTO M145/T88	
Particles finer than 60%, $D_{60}$ (mm)	0.75		Gravel	18%
Particles finer than 30%, $D_{30}$ (mm)	0.32		Sand	68%
Particles finer than 10%, $D_{10}$ (mm)	0.04		Fine	<14%
Uniformity coefficient, $C_u$	18.75	Poorly graded	Soil Description: Sand & Fine Soil	
Curvature coefficient, $C_c$	3.41			

Sample P2, Ub-Sample No.4 (Test ID: 30 - 40)			AASHTO M145/T88	
Particles finer than 60%, D <sub>60</sub> (mm)	0.75	Well graded	Gravel	19%
Particles finer than 30%, D <sub>30</sub> (mm)	0.25		Sand	67%
Particles finer than 10%, D <sub>10</sub> (mm)	0.04		Fine	<14%
Uniformity coefficient, Cu	18.75	Well graded	Soil Description: Sand & Fine Soil	
Curvature coefficient, Cc	2.08			

Sample P2, Sub-Sample No.5 (Test ID: 40 - 50)			AASHTO M145/T88	
Particles finer than 60%, D <sub>60</sub> (mm)	0.63	Well graded	Gravel	17%
Particles finer than 30%, D <sub>30</sub> (mm)	0.19		Sand	65%
Particles finer than 10%, D <sub>10</sub> (mm)	0.025		Fine	<18%
Uniformity coefficient, Cu	25.20	Well graded	Soil Description: Sand & Fine Soil	
Curvature coefficient, Cc	2.29			

Sample P2, Sub-Sample No.6 (Test ID: 50 - 55)			AASHTO M145/T88	
Particles finer than 60%, D <sub>60</sub> (mm)	0.8	Well graded	Gravel	21%
Particles finer than 30%, D <sub>30</sub> (mm)	0.28		Sand	69%
Particles finer than 10%, D <sub>10</sub> (mm)	0.073		Fine	<10%
Uniformity coefficient, Cu	10.96	Well graded	Soil Description: Sandy Soil	
Curvature coefficient, Cc	1.34			

Sample P2 In Summary (ID: 0 - 55)			AASHTO M145/T88	
Particles finer than 60%, D <sub>60</sub> (mm)	0.8	Well graded	Gravel	16.67%
Particles finer than 30%, D <sub>30</sub> (mm)	0.28		Sand	63.17%
Particles finer than 10%, D <sub>10</sub> (mm)	0.073		Fine	20.17%
Uniformity coefficient, Cu	10.96	Well graded	Soil Description: Sandy Soil	
Curvature coefficient, Cc	1.34			

Sample P2, Soil Ratio Summary Along the Core Depth				
Depth	Gravel (%)	Sand (%)	Fine (%)	Sand + Gravel (%)
10	7%	43%	50%	50%
20	18%	67%	15%	85%
30	18%	68%	14%	86%
40	19%	67%	14%	86%
50	17%	65%	18%	82%
55	21%	69%	10%	90%
<b>Total</b>	16.5%	63.2%	20.2%	



3.4. Graph of Sieve Analysis Ratio of the Sediment Soil Types Along with the Core Depth (0 - 55) for the Sediment Sample from Location P2

