Government of the People's Republic of Bangladesh
Ministry of Water Resources
River Research Institute
http://www.rri.gov.bd

Record Number: 42.03.0000.111.16.001.18.2 Date: 16/01/2024

Subject: Submission of Soil Samples analysis Report No. SED-11 (2023–24)
Reference: CEGIS Memo No.- 42.06.2626.106.17.001.24.00112; Date: 10.01.2024

Please find a copy of report of the specified subject regarding with River Side's Soil Sample Test of Kornotoli River along with a bill of Tk. 6000.00 (Six Thousand Only) in connection with this report.

Please pay the bill in crossed cheque in favour of Director General, River Research Institute, Faridpur.

Enclosure:
Report No. SED-11 (2023-24).
Bill No. SED-11 (2023-24)

16-01-2024
Uma Saha
Director (A.C)
02478802456 (Phone)
umasaharri@gmail.com

River, Delta and Coastal Morphological Division, CEGIS, Dhaka-1212.

Attention (Not in the order of seniority) :

1. Principal Scientific Officer, Sediment, Chemical and Water Pollution Division, Geotechnical Research Directorate, RRI, Report-01 Copy;
2. PS to DG, Director General Office, RRI;
3. Librarian, Library Division, RRI. Report-01 Copy.;
4. Accounts Officer, Accounts and Audit Division, RRI. Bill-01 Copy and
5. Master/office copy.

Attachments:

(1) SED-11(23-24)

River Research Institute

PARTICLE SIZE ANALYSIS REPORT

ON

SOIL SAMPLE COLLECTED FROM THE RIVER SIDE OF KORNOTOLI RIVER

CLIENT: CEGIS, DHAKA-1212.

SEDIMENT, CHEMICAL AND WATER POLLUTION DIVISION

GEOTECHNICAL RESEARCH DIRECTORATE

REPORT NUMBER: SED- 11 (2023-2024)

RIVER RESEARCH INSTITUTE

FARIDPUR

(FOR OFFICIAL USE ONLY)

CONTENTS

REPORT

1. INTRODUCTION

This report presents the particle size analysis of soil sample collected from the river side of Kornotoli River in connection with morphological study of Kornotoli River for fixing the alignment of the 132kV Double Circuit Single Conductor transmission Line for Aminbazar Waste Power Plant to Savar 132kV Substation with China National Cable Engineering Corporation. In this respect one soil sample was received at River Research Institute laboratory on the date 14.01.2024 from Director, River, Delta and Coastal Morphology Division, CEGIS vide office memo no.-42.06.2626.106.17.001.24.00112, date: 10.01.2024.

2. LABORATORY TESTING

2.1 Laser Diffraction Particle Size Analysis

Laser Diffraction Particle Size Analysis of the soil sample has been done using Malvern Mastersizer 3000 instrument with HydroEv dispersion unit in the laboratory. This laser diffraction particle-size analyzer uses Mie theory and is able to effectively measure particles ranging from 0.01 - 3500µm in diameter. Two light sources, a red light with the wavelength of 633 nm and a LED blue light of 470 nm, are used in this instrument. Water was used as a dispersant and has a refractive index 1.33. The particle refractive index and the absorption index were set according to the laboratory trial depending on the visual inspection of the sample satisfying the weighted residual. Dry samples were added slowly to the dispersion unit until obtained the required obscuration range of the individual sample. During the measurement, 3500 rpm stirring speed and 4 minutes 100% ultrasound were used for sufficient dispersion of the soil sample. Three measurements have been performed and the results were averaged for the sample.

2.2 Silt Factor Computation

Silt factor has been computed using the formula; Silt Factor (Lacey's Method) = $1.76\sqrt{d_{50}}$ where d_{50} *is in mm.*

3. TABLE: SUMMARY OF TEST RESULTS

Location	Sample	Parameter	Unit	Computed Value
Kornotoli River Side Aminbazar	Soil	Silt Factor	NA	0.23

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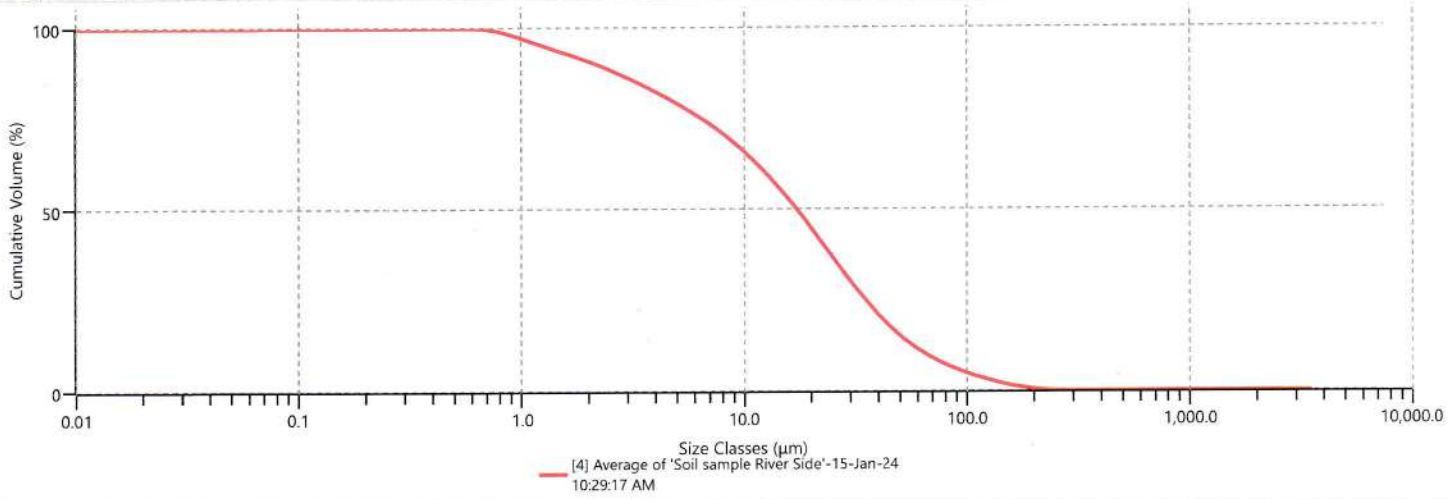
Measurement Details	
Operator Name	Nayan
Sample Name	Average of 'Soil sample River Side'
SOP File Name	HydroEV.cfg

Measurement Details	
Analysis Date Time	15-Jan-24 10:29:17 AM
Measurement Date Time	15-Jan-24 10:29:17 AM
Result Source	Averaged

Analysis	
Particle Name	Soil
Analysis Model	General Purpose
Dispersant Name	Water
Dispersant Refractive Index	1.330
Weighted Residual	1.05 %
Laser Obscuration	13.92 %

Result (D-Values)	
Dv (10)	2.14 µm
Dv (50)	17.1 µm
Dv (60)	22.7 µm
Dv (90)	65.9 µm

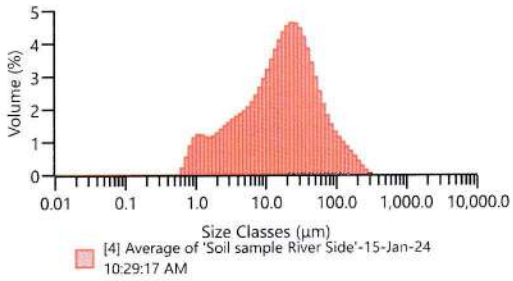
Average - Oversize



Unified Soil Classification System

Particle Type	in %
Clay (<2µm)	9.3
Silt (2 - 74µm)	82.38
Fine sand (74-420µm)	8.32
Medium sand (420-2000µm)	0
Coarse sand (2000-4760µm)	0

Histogram



(Scientific Officer) (Senior Scientific Officer) (Principal Scientific Officer) (Chief Scientific Officer) (Director (A.C.))

4. APPENDIX

A. Bill of this Report no.: SED-11 (2023-2024)

B. List of personnel associated with testing works, preparation and publication of the report.

Compiled by: 16.01.24 **(SO)**

Checked by: 16.01.24 **(SSO**

Recommended by: 16.01.24 **(PSO)**

Approved by: 16.01.2024

(Uma Saha)
Director (Additional Charge)
Geotechnical Research Directorate
River Research Institute
Faridpur

Sediment Analysis Bill

River Research Institute

SEDIMENT, CHEMICAL & WATER POLLUTION DIVISION
Geotechnical Research Directorate
River Research Institute
Faridpur

Client: **Director**
River, Delta and Coastal Morphological Division
Center for Environmental and Geographic Information Services (CEGIS)
Dhaka.

Client Memo: 42.06.2626.106.17.001.24.00112, Date:10/01/2024

Bill No.: SED- 11 (2023-2024)

Date: 16/01/2024

Name of the River: The Particle Size Analysis of Soil Sample Collected From The River Bed of Kornotoli River

Report No.: SED-11 (2023-2024)

Sl . No.	Name of Sediment Tests	Rate Per Sample in Taka	No. of Sample Tested	Cost in Taka	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
1	Sediment Concentration	825.00			
2	Specific Gravity	1725.00			
3	Mechanical Analysis by				
4	a. Sieve	2850.00			
	b. Hydrometer (Excluding Specific Gravity)	2850.00			
	c. Sieve & Hydrometer Combined (Excluding Specific Gravity)	5250.00			
5	Organic Matter Content by Loss on Ignition Test	3375.00			
6	Particle Size Analysis by Mervern Particle Size Analyzer	6000.00	1	6000.00	
7	Carbon+Hydrogen+Nitrogen by CHNS/O Analyzer	5000.00			
8	Carbon+Hydrogen+Nitrogen+Sulfar/Oxygen by CHNS/O Analyzer	8000.00			
Total above				6000.00	
(In words: Taka Six Thousand Only)					

*Charges include 10% Printing and Binding Cost, 10% Testing and Consultancy Fee and 15% VAT.

16.01.24
(Sumiya Ferdhous)
Scientific Officer
Geotechnical Research Directorate
River Research Institute
Faridpur

16.01.24
(Md. Moniruzzaman)
Senior Scientific Officer
Geotechnical Research Directorate
River Research Institute
Faridpur

16.01.24
(Dr. Fatima Rukshana)
Principal Scientific Officer
Geotechnical Research Directorate
River Research Institute
Faridpur

16.01.2024
(Uma Saha)
Director (A.C.)
Geotechnical Research Directorate
River Research Institute
Faridpur

List of associated with testing works, preparation and publication of the report:

Sl. No.	Name	Designation
1.	Uma Saha	Director (Additional Charge)
2.	Dr. Fatima Rukshana	Principal Scientific Officer
3.	Md. Moniruzzaman	Senior Scientific Officer
4.	Sumiya Ferdhous	Scientific Officer
5.	Md. Abdul Mazid Sarker	Lab Technician-C
6.	Md. Jana Alam	Lab Technician-B
7.	Md. Rejaul Karim	Lab Technician-B
8.	Md. Ramjan Ali Molla	Lab Technician-A
9.	Sheikh Md. Rasel	Lab Technician-A
10.	Md. Ikramul Haque	Lab Technician-A
11.	Shamima Begum	Office Assistant

CEGIS
Center for Environmental and Geographic Information Services
Public Trust, Ministry of Water Resources
House # 6, Road # 23/C, Gulshan 1, Dhaka-1212, Bangladesh
Safeguarding Environment for Future

To
Director General
River Research Institute
Dhaka Office
72, Green Road, Dhaka-1215

Our ref: 42.06.2626.106.17.001.24.00112 Date: 10 January, 2024

Subject: Request for testing of soil sample of Kornotoli River.

Dear Sir

I have the pleasure to inform you that CEGIS is carrying out a morphological study of Kornotoli River for fixing the alignment of the 132kV Double Circuit Single Conductor Transmission Line for Aminbazar Waste Power Plant to Savar 132kV Substation with China National Cable Engineering Corporation. Under these projects, 01 (one) sediment samples from the river ~~bed~~ Side of Kornotoli River were collected for the flowing analysis.

River bed Sediment Test list is given bellow:

1. Grain size analysis
2. Silt Factor

Therefore, I would like to request you to take necessary action for the testing of soil sample for the study purpose.

Regards

10/01/2024

For Director, CEGIS
River, Delta and Coastal Morphology Division

Enclosure:

- Name of tests for samples
- 01 sediment sample.