



## Mode of Operation DPHE Faecal Sludge Laboratory (FSL) in Cox's Bazar January 2022

**Background:** The Embassy of Switzerland in Bangladesh, through its humanitarian Direct Action Project in Cox's Bazar, is supporting the Department of Public Health Engineering (DPHE) under the umbrella of a Memorandum of Understanding (MoU) with DPHE. The support focuses on the strengthening of DPHE and the support of the humanitarian WASH Sector. One component of this support is the establishment of a Faecal Sludge Laboratory (FSL) within DPHE, which is starting its operations in January 2022.

**Purpose of FSL:** The FSL provides DPHE with the means to test treated wastewater and treated faecal sludge from all wastewater and faecal sludge treatment plants (FSTPs) in Cox's Bazar district for their adherence to government standards for sewage discharge into the environment. Many of the existing FSTPs in the district have a system in place to monitor the effectiveness of the treatment process and the adherence to effluent standards, but this has so far not been monitored by the government, as there has been no analysis and monitoring capacity. The DPHE FSL is an official government monitoring laboratory that will regularly conduct analyses from all FSTPs to check the compliance with government standards and to ensure that the environment and public health are protected.

### Applicable government standards for discharge of wastewater effluent:

Parameter	Unit	The Environment Conservation Rules, 1997, Ministry of Environment and Forest. <b>Schedule 9 – Standards for Sewage Discharge</b>	Department of Environment Guidelines update 2019, <b>Schedule 7 – Standards for Sewage Discharge</b>
pH	-	-	6-9
BOD	mg/L	40	30
COD	mg/L	-	200
Nitrate	mg/L	250	250
Phosphate	mg/L	35	35
Total Nitrogen	mg/L	-	15
Suspended Solids	mg/L	100	100
Temperature	°C	30	30
Coliform	CFU/100mL	1000	1000
Oil & Grease	mg/L	-	10

The latest government directive (DoE guidelines, 2019, marked in green above) will be applicable for the operation of the DPHE FSL. All parameters (except for "Oil & Grease") will be analysed by the DPHE laboratory and compared against the government standards.



### **FSTPs in Cox's Bazar district:**

There are currently about 164 FSTPs located in the camps, out of which 156 were operational (data from July 2021). Outside the camps, there is at least one operational FSTP (in Teknaf Municipality) in Cox's Bazar district. The FSL is expected to monitor all FSTPs in and outside of the camps within the district.

### **Provision of laboratory results by FSTP Operators:**

Each organization which is operating one or more than one FSTP will be asked by DPHE to provide their existing laboratory results (from their own or from an external laboratory) for effluent quality data on a regular basis (**every three months**). FSTP operators which currently do not have any effluent quality data available are urgently requested by DPHE to start testing the quality of the effluent as soon as possible, and to provide the data to the DPHE FSL. A standard reporting form will be shared with all FSTP operators / WASH partners, which should be completed for each FSTP once every 3 months and sent directly to the DPHE FSL e-mail address ([dphefslcoxsbazar@gmail.com](mailto:dphefslcoxsbazar@gmail.com)).

### **Selection of FSTPs to be sampled:**

The following selection criteria for sampling of FSTPs have been agreed:

1. **Capacity of FSTP** in terms of m<sup>3</sup> of faecal sludge treated per day (priority to larger FSTPs due to their potential negative impact)
2. **Duration since last sampling** (FSTPs which have never been tested by the DPHE FSL or for which more than 6 months have passed should be prioritized)
3. **Distribution across camps and FSTP operators** (the selection of FSTPs should be evenly spread across all 34 camps and should cover all the WASH organizations which are operating FSTPs)
4. **Availability of laboratory results** for effluent (priority to FSTPs which are regularly testing their effluent and which have shown acceptable results)

### **Sampling frequency:**

The objective is to sample each FSTP at least **once every 6 months**. With approximately 160 FSTPs in total, this means that on average at least 6 FSTPs have to be sampled every week in order to achieve the six-monthly sampling frequency.

Note: The DPHE FSL is expected to be able to handle more than 10 samples per week. The actual capacity of the FSL will be determined in the coming months, based on the initial experience of operating the FSL.

### **Sampling procedure:**

The sampling of the FSTPs will be conducted by the DPHE FSL staff (sample collectors) with their own vehicle and equipment. No fees will be charged to the FSTP operators for the sampling or analysis process in the first year of its operation (2022). The selection of FSTPs to be sampled will be done by DPHE, based on the above selection criteria.

### **Communication with FSTP operators for sampling:**

The DPHE FSL team will inform each FSTP operator by phone at least one day before a planned sampling visit to the respective FSTP. The operator is expected to facilitate the sampling of their FSTP by providing information related to its operation, location, accessibility and should provide one staff on site during the sampling day to facilitate the access and the sampling process.



**Government of the People's Republic of Bangladesh**  
**Department of Public Health Engineering**  
**Faecal Sludge Laboratory, Cox's Bazar**



**Feedback to FSTP operators after analysis of samples:**

The DPHE FSL will only contact an FSTP operator if some of the tested parameters are not within the acceptable range for effluent discharge according to the government standards.

The following procedure will be applied by the DPHE FSL, depending on the severity of the non-conformity to the effluent standards:

1. **Direct feedback to FSTP operator by phone**, informing them which parameters are not within the acceptable range, and asking them to review and improve the treatment process of the respective FSTP. A deadline of 1 month to fix the FSTP process will be given to the operator, and a follow-up sampling visit to the FSTP will be organized by the DPHE FSL in the following months.
2. **Written feedback from DPHE (Executive Engineer)** to the FSTP operator, informing them in writing about the testing results of the respective FSTP, asking them to review and improve the treatment process. A deadline of 1 month to fix the FSTP process will be given to the operator, and a follow-up sampling visit to the FSTP will be organized by the DPHE FSL in the following months.
3. **Closure of FSTP:** In case of a very serious non-conformity of an FSTP to the governmental effluent discharge standards, DPHE may decide to officially inform the respective FSTP operator to temporarily stop the operation of the FSTP until the treatment process has been improved and the operator can provide evidence to DPHE that the FSTP is operating effectively.

# **FSTP Analysis Report (Effluent Discharge)**

to be submitted to the DPHE Faecal Sludge Laboratory (FSL)

**Date of report:**

<b>Organization</b>			
<b>Contact person</b>			
<b>Phone number</b>			
<b>Sample Type</b>	Effluent		
<b>FSTP Technology</b>			
<b>Location of FSTP</b>	<b>FSTP's ID</b>		<b>Camp</b>
	<b>Block</b>		<b>Sub Block</b>
<b>Date of sample collection</b>			

S/N	Test Parameters	unit	Results	Remarks
1	pH Value	-		
2	Biochemical Oxygen demand (BOD)	mg/l		
3	Chemical Oxygen Demand (COD)	mg/l		
4	Total Suspended Solid (TSS)	mg/l		
5	Total Nitrogen (TN)	mg/l		
6	Total Nitrate	mg/l		
7	Total Phosphate	mg/l		
8	Temperature (During sample collection)	°C		
9	Total Coliforms	CFU/100 ml		
10	Faecal Coliforms (E. Coli)	CFU/100 ml		

**Comments (If Any):**

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**Tested By**

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**Checked By (In-Charge)**

**Note:** This completed form has to be submitted to the DPHE FSL e-mail address ([dphefslcoxsbar@gmail.com](mailto:dphefslcoxsbar@gmail.com)), on a quarterly basis, for each FSTP which is operational.