



Fourth Primary Education Development Program (PEDP-4)

Semi-Annual Environmental Monitoring Report

DEPARTMENT OF PUBLIC HEALTH ENGINEERING

Jan 2022 – June 2022

[A report on WASH facilities and its environmental impact under PEDP-4]



Primary Education Unit, DPHE, Dhaka

June' 2022

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ABBREVIATIONS & ACRONYMS

ADB	:	Asian Development Bank
AusAID	:	Australian Agency for International Development
CIDA	:	Canadian International Development Agency
DFID	:	Department for International Development (of the United Kingdom)
DP	:	Development Partner
DPEO	:	District Primary Education Officer
DPE	:	Directorate of Primary Education
DPHE	:	Department of Public Health Engineering
DTW	:	Deep Tube Well
EFA	:	Education For All
EMF	:	Environmental Management Framework
EU	:	European Union
GOB	:	Government of Bangladesh
IDA	:	International Development Association
JARM	:	Joint Annual Review Mission
JCM	:	Joint Consultation Meeting
JICA	:	Japan International Cooperation Agency
LGD	:	Local Government Division
MIS	:	Management Information System
MLGRD&C	:	Ministry of Local Government, Rural Development and Cooperatives
MoPME	:	Ministry of Primary and Mass Education
MOU	:	Memorandum of Understanding
PEDP-4	:	Fourth Primary Education Development Program
SDTW	:	Semi Deep Tube Well
SEC	:	Small Ethnic Community
STW	:	Shallow Tube Well
SIDA	:	Swedish International Development Agency
TSP	:	Tube Well with Submersible Pump
UNICEF	:	United Nations International Children's Emergency Fund
WB	:	World Bank



EXECUTIVE SUMMARY

The prime objective of PEDP-4 is to ensure an efficient, inclusive and equitable primary education system through a child friendly physical learning environment. Infrastructural development in terms of construction of class rooms and wash blocks, installation of safe drinking water points plays an important role in achieving the sustainable physical learning environment as well as ensuring holistic development of children. Department of Public Health Engineering (DPHE) is solely responsible to provide the water supply and sanitation facilities in the primary schools of Bangladesh. As per the approved revised DPP (RDPP) of PEDP-4 DPHE will install 20,000 new water points and construct 58,000 Wash Blocks in the primary schools of Bangladesh throughout the program tenure (July/2018 to June/2025) of 7 years. In addition, DPHE will conduct water quality tests of earlier installed 65,000 water points and undertake major maintenance of wash blocks constructed during PEDP-3. From the beginning of the project until June'2022 DPHE installed a total of 7,668 new water points and constructed 11,482 Wash Blocks. Of them 2,500 water sources and 4,064 wash blocks were constructed during the reporting tenure. In addition, DPHE conducted major maintenance of 1,055 wash blocks. DPHE officials tried their best to reach the target by coping up with the new normal due to the covid-19 safety issues within the time frame.

The sole purpose of this study is to identify any concern or issue related to the environmental safeguard due to the construction of wash blocks, installation of water points and major maintenance of wash blocks from January' 22 to June'22. The study is based on the environmental safeguard screening conducted during construction and post implementation stages. The screening format is prepared based on the MoPME approved EMF guidelines for PEDP-4. The screening included different environmental safeguard indicators such as loss of agricultural land, blockage in the drainage system, provision for access to safe drinking water, provision of hand washing and hygiene facilities etc.

The screening was conducted by DPHE officials at the Upazilla level which was duly verified in district level and compiled in DPHE headquarter. It cannot be denied that COVID-19 situation slowed down the overall construction and implementation progress. However, the environmental monitoring screening confirmed no significant instances or issues that may hamper or influence the environmental safety during the reporting tenure. Being an implementing agency, DPHE would like to uphold this status in its ongoing and upcoming works related to infrastructural development.



1. Introduction

Bangladesh, a country with its astonishing economic boom has cherished the golden jubilee of its independence. For a rapidly developing country like Bangladesh, it is utmost important to ensure holistic development of the children which includes both intellectual and emotional development in such a manner that they can uphold the nation from all aspect. This has been eloquently articulated in the Constitution of Bangladesh as well. Fourth Primary Education Development Program (PEDP-4) is the continuation of Government's approach in thriving the excellence of children through the fulfillment of several distinct milestones including construction of need-based infrastructures for sanitation and water supply. The program is supported by significant contributions from Government as well as Development Partners (DPs). Department of Public Health Engineering (DPHE) under Local Government Division (LGD) of Ministry of Local Government, Rural Development and Cooperatives (MLGRD&C) is involved in the capacity of implementation partner to provide the quality water supply and sanitation facilities in the primary schools of Bangladesh. As per MoU signed in between DPE and DPHE and as per revised DPP (RDPP) of PEDP-4, DPHE will perform the following activities in the project tenure with an aim to provide safe drinking water and sanitation services in the primary schools under PEDP-4.

- Install 20,000 new drinking water sources in the primary schools.
- Replace/repair drinking water sources (if necessary).
- Water quality testing of 65,000 water points installed earlier.
- Construction of 58,000 new Wash Blocks in 29,000 primary schools.
- Major maintenance of 10,000 wash blocks constructed in PEDP3.
- Installation of water supply and sanitation facilities in the DD, DPEO, URC, PTI.
- Operation and maintenance (O/M) of water points.

2. Purpose of current report

The basic intent of this report is to identify and resolve any anticipated environmental safeguard issues that may arise during the installation of water sources or construction of Wash Blocks in the primary schools of Bangladesh. This report will encompass and summarize the findings of the environmental screening conducted during the installation of water points and construction of Wash Blocks in the primary schools of Bangladesh from the tenure of January'22 to June'22. During implementation of the project, environmental monitoring screening was conducted based on the Environmental Management Framework (EMF) of PEDP-4. The purpose of this report is listed below.

- To modify some of the tools based on the experiences gained from PEDP-3 to ensure that neither the infrastructure (both in terms of needs and quality at primary schools) nor the environment is compromised through the program intervention.



- To ensure that envisaged purpose of PEDP-4 is achieved and result in desired benefits without adversely affecting the environmental resources.
- To avoid potentially adverse environmental impacts and enhance environmental outcomes so that the program is expected to have limited and minimum adverse environmental impacts.
- To address any grievances originated from the implementation of the project.
- To establish the mechanism to determine and assess future potential environmental impacts of WASH infrastructure that are to be identified and cleared based on a community demand driven process and to set out mitigation, monitoring and institutional measures to be taken during implementation and operation of the WASH infrastructure to eliminate adverse environmental impacts or to reduce them to acceptable limits.

3. Indicators of environmental safeguard as per EMF under PEDP-4

This report covers different distinct environmental monitoring indicators based on the approved EMF of PEDP-4. Principles relevant to the environmental management of WASH (Water Supply, Sanitation and Hygiene) in PEDP-4 are mentioned below.

- Annual water quality monitoring of all the installed tube-wells under PEDP-3 will be carried out to ensure safe drinking water facilities to the students and teachers.
- Provision for adequate sanitation facilities for the teachers and students will be made and the mechanism for regular cleaning, routine and major maintenance will be implemented.
- To solve the drinking water problem in remote hilly and coastal areas, rainwater harvesting and other feasible options will be explored.
- To address the post COVID-19 crisis for adaptation to the new normal.

In general, the following indicators require to be monitored during the planning, construction and post-implementation phases.

- i) Losses of agricultural lands
- ii) Drainage congestion/water logging
- iii) Surface water pollution
- iv) Dust and noise pollution
- v) Safe distance between tube-wells and sanitary latrines
- vi) Occupational health hazards and safety practices
- vii) Maintenance of water supply and sanitation facilities
- viii) Maintenance of air and water quality
- ix) Management of surrounding ecosystem and biodiversity (if any) etc.
- x) Ensure that COVID safety protocols are well adhered.

A thorough screening on the above indicators were carried out during the reporting tenure.



4. Methodology

With an aim to investigate the impact of infrastructural development on environmental safeguard, a through screening was carried out in the respective primary schools by the concerned sub-assistant engineers of DPHE. The screening results were duly verified by the respective assistant engineers and a database was prepared at Upazilla level. Executive engineers at district level compiled the verified database obtained from Upazilla level and sent them to DPHE Head Quarter at the MIS (Management Information System) unit, where the database was finally compiled and report was prepared under the supervision of focal point of PEDP-4.

Data for environmental safeguard screening during the installation of water sources and maintenance of Wash Blocks have been collected from the schools through DPHE official sources using the structured format (copy enclosed in Appendix-1 of this report). Data collected from grass root level have been entered into 'Master Environmental Survey Outcome' Spreadsheet by MIS UNIT and kept structured for database and reporting. A flow diagram of the screening method is depicted in Fig. 1.

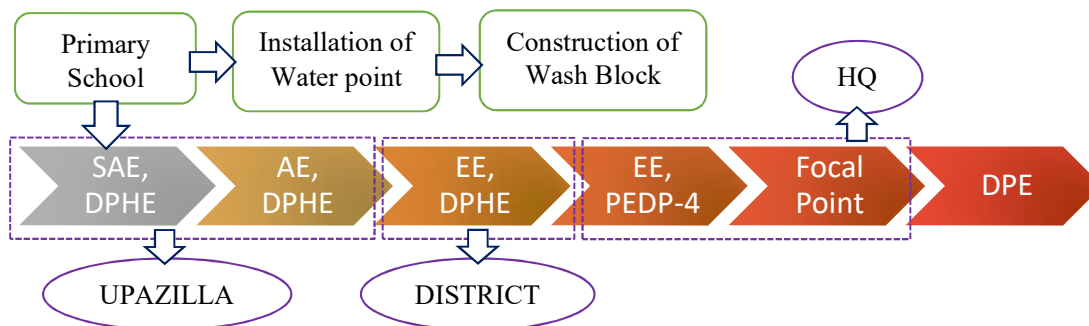


Fig. 1 Method of environmental safeguard screening

5. Role of DPHE in comprehensive monitoring

The subcomponents (sub component 2.3 and 2.4) of PEDP-4 especially the infrastructural implementation is comprehensively monitored by several parties from commencement to operational phase. Fig.2 shows the monitoring scheme in PEDP-4 operated by different agencies. Being an implementing agency, DPHE is involved significantly from construction till post-construction monitoring. Role of DPHE is depicted in Fig.3. It can be noted that the defect liability period for installed water points and constructed wash blocks are 02 and 01 year respectively. This implies that contractor is responsible to rectify any sort of defects within this time frame counting from the date of handover of tube well and wash block. In order to get a clear picture of ongoing and completed works, DPHE district office arranges monthly monitoring meeting with all concerned officers and staffs of that district. Executive Engineers thus address the issues of monitoring to the assistant/ sub assistant engineers monthly. Officers of concerned district used to visit the site frequently in order to monitor



the ongoing and completed works and also focus on the environmental safeguard aspect. Visit from Focal Point's Office and DPHE Head quarter happens frequently.

DPHE district office arranges coordination meeting between DPHE (EE, AE, and SAE) and DPE officials (DPEO, UEO) in every 3 months. A glimpse of the co-ordination meeting is depicted in Fig. 4 which was organized by Executive Engineer, DPHE of Gopalganj district. In this meeting, officers from department of primary education point out the necessity of monitoring of particular school which are immediately addressed by DPHE officials. Besides these, to get better insight and ensure quick action, DPHE has introduced a new system of arranging monthly meeting between DPHE officials and Headmasters of Primary School during this reporting tenure as a part of routine monitoring process. In addition, mechanics of DPHE upazilla headquarters repair the tube wells in an urgent basis when they are called for doing from the concerned school in order to ensure that the running water supply are fully operational.

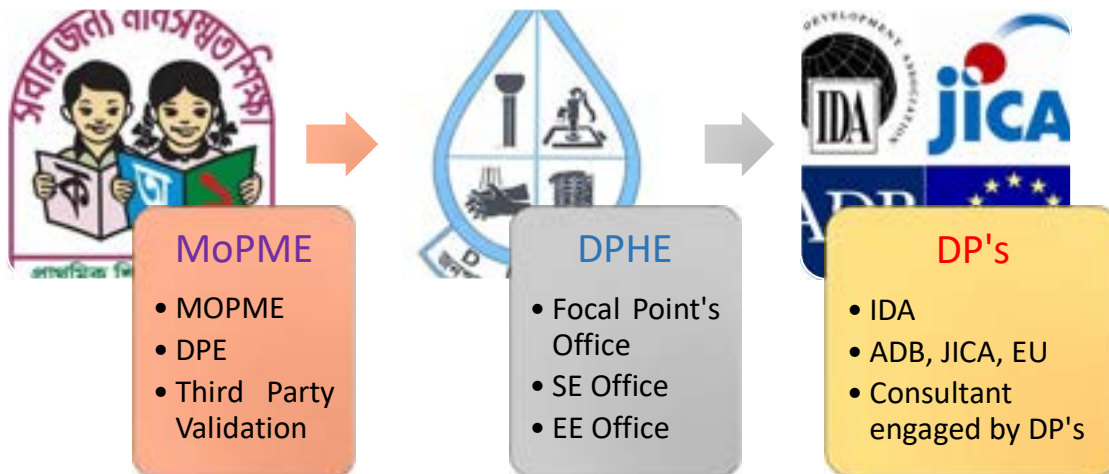


Fig. 2 Monitoring scheme in PEDP-4

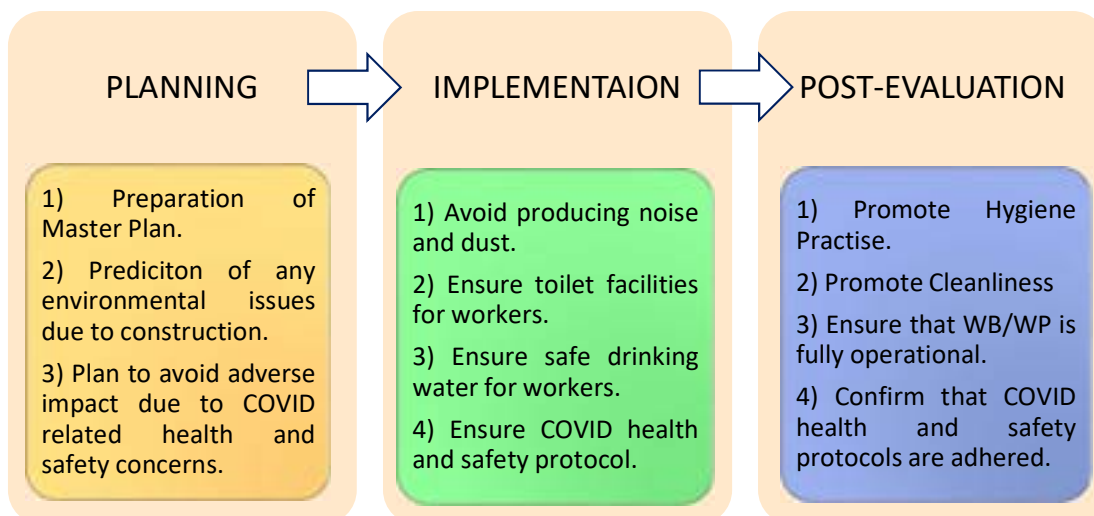


Fig. 3 Role of DPHE in environmental monitoring



Fig. 4 Co-ordination meeting between DPE & DPHE Officials at Gopalganj district

DPHE arranges caretaker training and provides MoPME approved 'Maintenance Manual' to the concerned schools during the handover of water points and wash blocks which covers post construction issues. Contact numbers of DPHE officials (mechanics and assistant/sub-assistant engineers) are provided to the concerned schools so that any relevant issues can be addressed accordingly. Moreover, DPHE looks after the tube wells which have already passed the defect liability period of 02 (two) years. According to the order of Chief Engineer, DPHE (memo no. 1066, dated: 16/09/2013), the packages where the defects liability period is over, DPHE will still repair the tube wells within 72 hours of receiving information provided that the concerned school bears the expense of spare parts from routine maintenance.

6. Capacity building

During the implementation of PEDP-3, a ToT (Training of the Trainers) was conducted by the World Bank among DPE, DPHE and LGED officials. The purpose was to introduce the proposed framework for environmental and social safeguard under PEDP-3 along with the importance of conducting rigorous monitoring. In addition, screening method was agreed and confirmed based on targeted outcomes. DPHE officials (Executive Engineers, Senior Assistant Engineers and Assistant Engineers) who received ToT provided trainings to the sub-assistant engineers and mechanics in the district and upazilla level who eventually filled in the environmental screening forms in the grass root level. In PEDP-4, a revised framework is adopted for both environmental and social safeguard. The basic changes are little but elaborate in comparison to that of PEDP-3. On December 5, 2021 ADB



conducted a short virtual training workshop on Occupational, Community and COVID-19 Health and Safety Management at the Construction works. Officials, consultants and contractors of both DPHE and LGED attended the training workshop. Although the duration of the training was short, it was effective and guided the participants with valuable insights related to construction safety and COVID-19 health and safety management at construction site. A training manual was also circulated, glimpse of which is provided in Fig. 5.

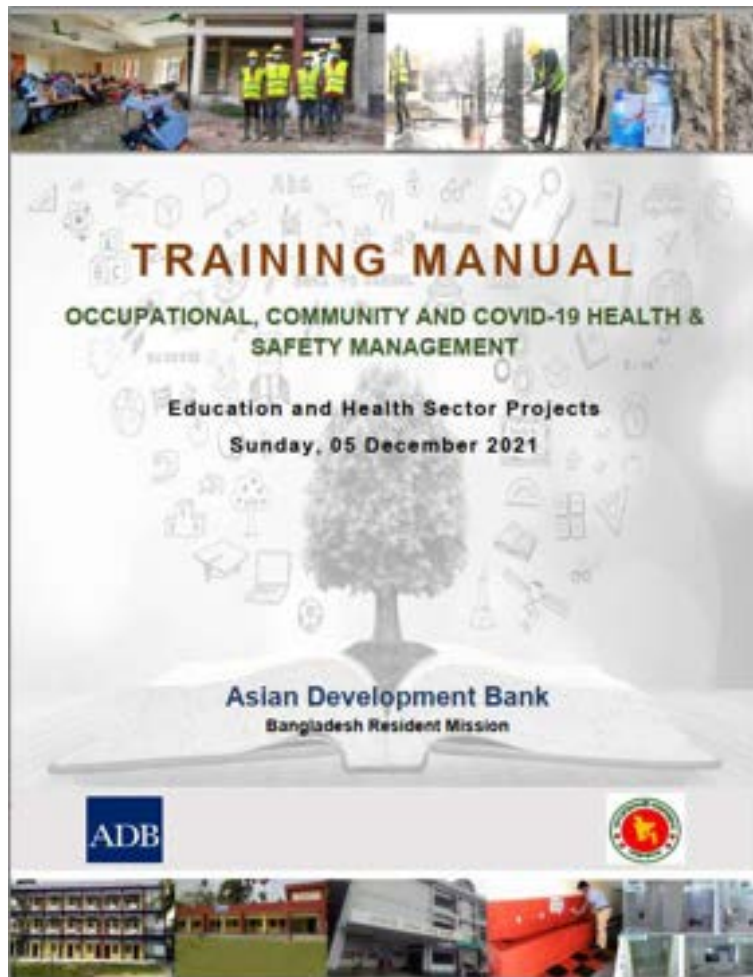


Fig. 5 ADB circulated virtual training manual

During the reporting tenure, DPHE master trainers from Head Quarter and circle Head Quarter (who received ToT during PEDP-3) conducted day long circle level meetings to expedite the works related to the construction of wash blocks and installation of water sources and for the smooth implementation of construction work by adhering the guidelines of both revised EMF and SMF and COVID-19 health and safety protocol. Photo of such circle level meeting from Faridpur is depicted in Fig.6. Thus, the trained engineers try and function as peer educators to educate the site workers and contractors. A summary of training and capacity building activities is tabulated below.



Table 1 Training and capacity building activities during Jan/2022-June/2022

Training Title	Date	Venue	Training Details	No. of Participants	
				Male	Female
Supervision and Construction Quality Control under PEDP4/GPS/NNGPS Project	26/02/2022	DPHE Barishal Auditorium	Training on on-job issues such as Civil / Water Supply / Sanitary / Plumbing related issues in accordance with revised EMF, SMF and COVID-19 New Normal	75	04
	05/03/2022	DPHE Jashore Auditorium		78	7
	12/03/2022	DPHE Rangpur Auditorium		75	04
	28/03/2022	DPHE Sylhet Auditorium		50	-
	31/03/2022	DPHE Central Auditorium, Dhaka		125	10
	02/04/2022	DPHE Rajshahi Auditorium		80	12
	14/05/2022	DPHE Chattogram Auditorium		15	2
	15/05/2022	DPHE Tangail Auditorium		17	1
Total =				515	40
Cumulative Number of Training from the beginning of the project till date =				34	



Fig. 6 CE, DPHE along with Circle SE and other high officials attending co-ordination meeting



Recently (May 31, 2022), a meeting on the revision of the latest EMF and SMF was held virtually. The meeting was arranged by DPE and presided over by ADG (PEDP4), DPE. Members from DP's consortium and government officials attended the meeting. The meeting came up with several modification decisions on the existing EMF and SMF which is expected to be included in the revised EMF and SMF. In order to identify the key differences of revised EMF and SMF to that of original EMF and SMF of PEDP-3, newly designed training should be carried out by the experts (from both GoB and DP's) who had inputs during the preparation of revised EMF and SMF.

7. Environmental safeguard screening by DPHE (Jan'2022 – June'2022)

It cannot be denied that COVID-19 situation slowed down the overall construction and implementation progress. But with restrictions being lessened, DPHE has quickly adapted to the new normal by developing a comprehensive COVID-19 Site Operating Procedure (SOP) alongside several site and task specific risk assessments. DPHE constructed and installed a total of 11,482 wash blocks and 7,668 water points till date from the beginning of this project. Among these, a total of 4,064 wash blocks and 2,500 water points were installed and handed over during the reporting tenure of January'2022 to June'2022. In addition, DPHE finished the monitoring of 15,000 water points (installed in PEDP3) and currently undertaking monitoring of 25,000 water points (*list of schools received from DPE on 03/05/2022*) for arsenic contamination. All these works were monitored based on approved Environmental Monitoring Framework (EMF) for PEDP-4. Table-2 summarizes the list of DPHE implemented works where screening for environmental safeguard was carried out.

Table 2 Progress of work under PEDP-4, DPHE

Scope of Work	FY 19-20	FY 20-21	July'21- Dec'21	Jan'22- June'22	Total
Construction of Wash Block	-	6,760	658	4,064	11,482
Installation of Water Sources	240	4,401	527	2,500	7,668
Maintenance of Wash Block	689	4,010	608	1,055	6,362
Water Quality Monitoring	-	-	15,000	-	15,000

This report focuses on the construction work from the tenure of January'2022 to June'2022. During this period, not only new wash blocks were constructed and water points were installed, major maintenance of 1,055 wash blocks which were constructed during PEDP-3 were carried out. Furthermore, monitoring of 25,000 water points installed during PEDP-3 were undertaken for arsenic contamination. The status of the water points and wash blocks received through the monitoring survey is given in following subsections. A list of random monitoring visit from DPHE Head Quarter is listed in Table below.



Table 3 Monitoring visits from DPHE Head Quarter during the reporting period

Sl. No.	Name of subproject	Location	No. of WB/WS	Date of Inspection
1	Construction of Wash Block (WB)	Jamalpur	36	14/02/2022 - 17/02/2022
2	Construction of Wash Block (WB)	Gopalganj	4	28/02/2022
3	Construction of Wash Block (WB)	Pabna	10	12/03/2022 - 13/03/2022
4	Installation of Water Supply (WS)	Gazipur	10	28/03/2022
5	Construction of Wash Block (WB)	Chattogram	10	04/03/2022 – 06/03/2022
6	Construction of Wash Block (WB)	Panchagarh	20	12/05/2022 – 13/05/2022
7	Construction of Wash Block (WB)	Gopalganj	146	18/05/2022 – 21/05/2022

*** In addition, frequent monitoring visit from respective EE Office and AE/SAE offices happen during the reporting tenure.*

8. Outcomes of environmental safeguard screening

8.1 Influence of type of water point

Planning from the lessons learnt in PEDP-3

It is fact that, DPHE installed water points of different options such as Deep Tube Well (DTW), Shallow Tube Well (STW), Tara Tube well, Ring Well (RW), Pond Sand Filter (PSF), Rain Water Harvesting (RHW) in PEDP-3 based on the variation in geological formation, position of aquifer /water table, saline water intrusion etc. However, all those options have certain advantages as well as multiple drawbacks. The common of which is the ease of availability of water from source and their familiarization and user friendliness to the young users.

Mitigation Measures Suggested (MMS):

In order to mitigate the concerns and to make the water sources more popular and user friendly, DPHE installed Tube well with Submersible Pump (TSP) in the primary schools where deep tube well (depth >200m) is required to be installed under PEDP-4 due to ground geology. This option has special features such as-

- Running water supply with storage facility.
- Multiple users can access at the same time.
- Promote hygiene practice through safe hand washing.

Comment:

Installation of tube well with submersible pump added values to its user especially young user which eventually increases the easy access to safe drinking water result in health benefit as well as diminishes water logging and drainage problem.



8.2 Distribution of water points based on installed depth

DPHE installed tube wells of varying depth in different primary schools of Bangladesh considering the geological formation of respective district. Although the depth of tube well depends on the suitable water layer, all the tube wells installed in the reporting tenure can be broadly categorized into five distinct types based on the depth of tube well. Fig. 7 depicts the classification of tube wells based on depth. As shown in Table 2, a total of 2,500 nos. of water points were installed under PEDP4 during the reporting tenure. It is clear from Fig. 7 that 42% tube wells were installed at a greater depth of 275m or more which is considered as deep tube well. Around 18% tube wells were installed in shallow depth (<65m). Tube wells installed in between 65m to 275m are also deep tube wells and this percentage is second highest (40%) amongst all the installed water points.

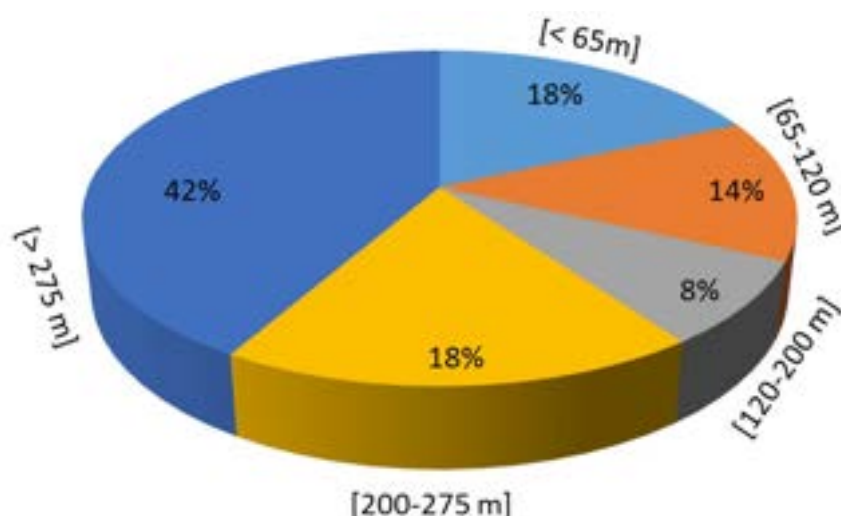


Fig. 7 Distribution of Water Points based on Depth of Boring

8.3 Countrywide distribution of water sources & wash blocks

Countrywide distribution of tube wells and wash blocks were analyzed and division wise categorization for water source and wash block is depicted in Figs. 8 and 9 respectively. Fig. 8 depicts the equity in distribution of water sources. Among the total installed water points, the highest number was installed in Rajshahi division followed by Sylhet and Chattogram division while the minimum number of water points was installed in Mymensingh division. This is as per need assessment criteria and approved list issued by DPE based on approved IPG.

Fig. 9 reflects the nationwide distribution of wash blocks depending on the number of districts and upazillas in each division. The maximum number of wash blocks were constructed in the Dhaka, Chattogram, Rangpur, Khulna division as these divisions cover maximum districts. The lowest number of wash blocks (536) was constructed in Mymensingh division as it is the smallest division of Bangladesh and thus, equity in distribution is justified.

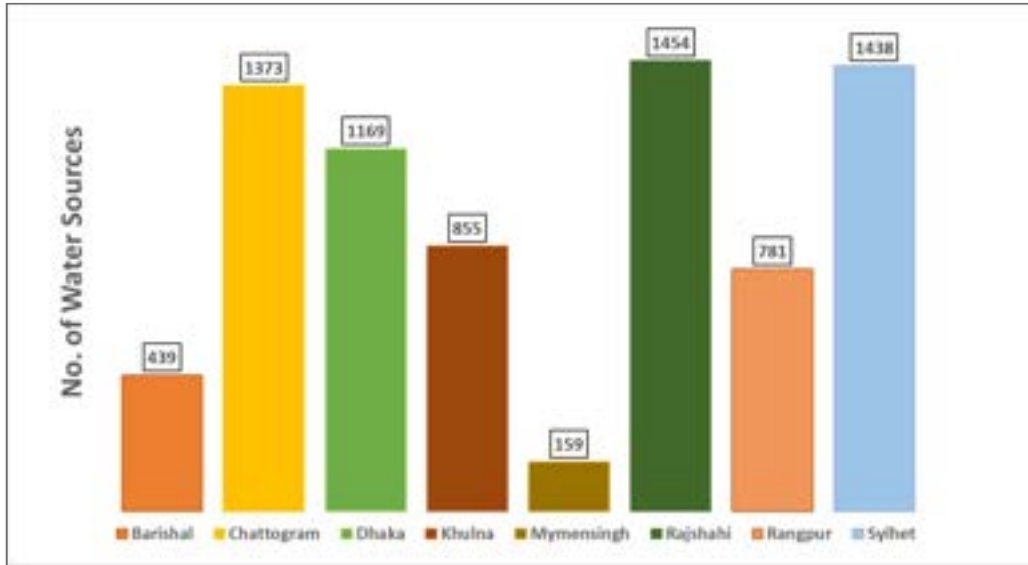


Fig. 8 Countrywide distribution of water points

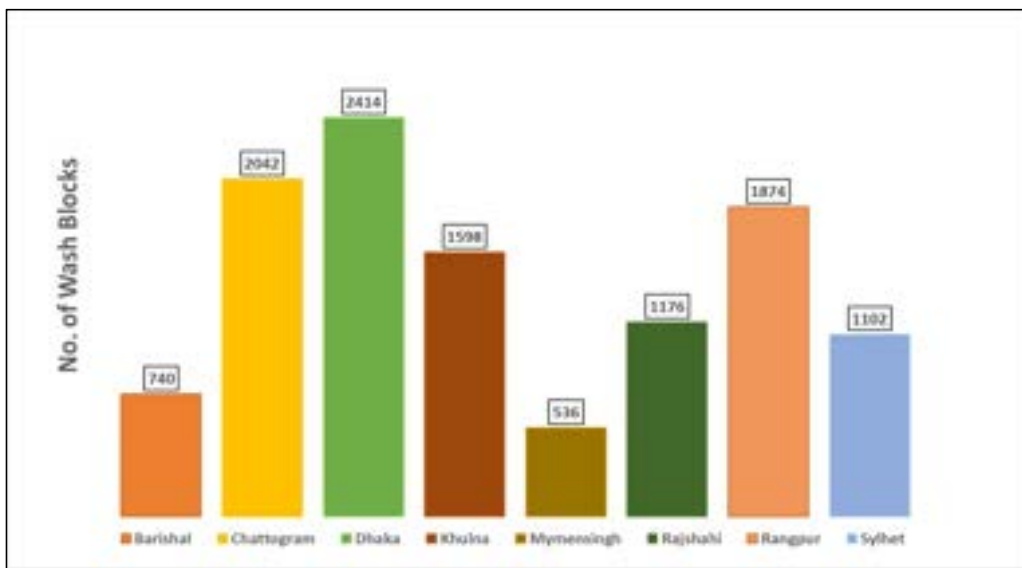


Fig. 9 Countrywide distribution of wash blocks

Wash Block is serving as a unique unit of hygiene practice for the school children as well as for teachers. Its impact on environment is high as it helps to promote hygiene as well as safe and clean school environment. Open defecations and urination practices decreases and confirms better health through improved washing facilities. On the other hand, tube well ensures safe drinking water for the school children as well as for the teachers.

8.4 Loss of agricultural land

During the preparation of site plan/ master plan it was the prime focus that the installation of the new water supply facility does not preclude the use of existing agricultural lands. No loss of



agricultural lands was recorded from the environmental screening survey conducted for the water points installed from January'22 to June'22. Similarly, construction of wash block was carried out in those schools where land is owned by the respective school. Furthermore, prior to the construction of either wash block or installation of water sources, it was confirmed that the master plan was prepared by the MoMPE approved committee. In some cases, (approximately 1% of total construction) design and arrangement of wash blocks were modified based on the prevailing site condition keeping the floor area similar. However, the overall process of construction of wash block did not require purchase of new land from school which ensured no loss of agricultural land.

8.5 Environment of water supply facility

In case of water points 'Clean Environment' refers to the surrounding of the installed water option. If the surrounding environment is not dirty and/or not covered with algae, then it would be referred to as 'Clean'. Post installation monitoring of all water points have been conducted. Clean environment was found in 97% of the total water points. As the schools remain closed due to the COVID-19 situation, there was lack of maintenance and blocked drainage due to waste dumping near the outlet was observed. It can be noted that due to the provision of basin type water points, water logging and or other problems related to dirty environment have been dramatically reduced than that observed during the environmental screening of other types of tube well installed in PEDP-3 program.

Mitigation Measures Suggested (MMS):

During the monitoring phase, mitigation measures were suggested to the concerned school such as cleaning of basin, removal of leaves and other utensils that causes blockage of the drains etc. Because of taking mitigation measures, caretakers' training and routine maintenance during monitoring phase, environment of water supply facility improves to 100% from 97%.

8.6 Surface Water Pollution:

Both the water sources and wash blocks were installed in such a manner that they do not adversely pollute the surface water. The environmental screening of all 4,064 Wash Block and 2,500 Water Points installed from January'22 up to June'22 revealed that they did not pollute any surrounding water bodies.

8.7 Facilities for draining out of water

From the lessons learnt during the environmental screening in PEDP-3, DPHE took initiative in solving the water logging problem by adopting different measures.

- 1) Pipe out used water to the existing drains.
- 2) Construction of 5 user water collection basin having 50mm dia. PVC washout pipe. Fig. 10. Shows a newly constructed 5 outlet hand washing basins under PEDP-4.



- 3) Use of 5 ring soaks well to drain out basin water where surface drain is absent.



Fig. 9 water collection basin of 5 outlet

As because, DPHE local office took initiative in solving the drainage issue, it has been observed that, the water logging problem is insignificant compared to that in PEDP-3. However, it is revealed that out of 2,500 water sources about 0.25% had the problem of water logging. The reasons observed are mainly lack of cleanliness which created blockage of drainage pipe by wastes like paper, tree leaves, mud etc. It is hence suggested that, SMC needs to look after this issue and run regular cleanliness program in the water collection basin and drains.

8.8 Source of Existing Water Supply

During preliminary survey it was found that, out of 2,500 schools 87% did not have their own active water option. 58% of them used the facility of their neighborhood. Though 13% schools have their own tube wells, yet those tube wells were found as non-functional or did not provide sufficient water during dry season. From the lessons learnt during the environmental screening in PEDP-3, DPHE took initiative in solving the above problem by installing new tube wells with submersible pump but at different depth as appropriate to the site geology.



Fig. 10 Assessment of schools where new water points were installed



8.9 Water Quality test in Laboratory

Water testing facilities in DPHE zonal laboratory:

It is fact that DPHE has a permanent set up of 13 laboratory buildings including a central laboratory at Mahakhali, Dhaka. Recently, DPHE completed the set-up of 52 laboratory buildings in 52 districts which confirmed the establishment of zonal laboratories in all districts to expedite the water quality monitoring. These newly established laboratories are equipped with modern machineries so that all relevant water quality parameters can be monitored.

During installation of water points, suitable water layers are generally selected based on DPHE’s experience and geographic location. After installation of new water points in the said 2,500 schools, laboratory tests were conducted to identify potential hazards of Arsenic, Iron and Chloride in water. The tests were done by the laboratory circle of DPHE and the reports are stored in the DPHE MIS database. From the screening of 2,500 tube wells, it was found that 37 of them had the concern of excess arsenic (As) and/or, Iron (Fe) beyond the Bangladesh standard (arsenic, iron and chloride content below 50ppb, 5mg/l and 600mg/l respectively) of safe drinking water. For the rest of the cases arsenic, iron and chloride content were found satisfactory during laboratory tests.

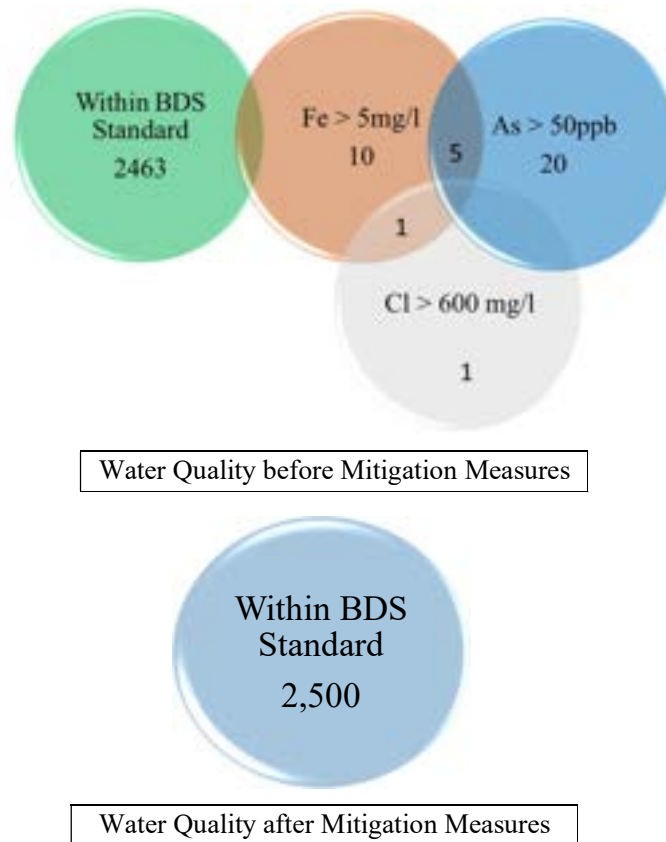


Fig. 11 Water Quality test result at a glance



Water Quality report of those 37 unacceptable water sources and suggested alternative option along with retest result is summarized in Table 4 of Appendix-7. Fig. 12 shows the diagrammatic presentation of water quality test results. In addition, ample field tests were conducted in those schools during post monitoring phase by DPHE by using field kit which re-confirmed the DPHE laboratory test results. A sample copy of water test result is provided in Appendix-3 and water quality test report for 37 unacceptable water sources have been presented in Appendix-7. A summary of water quality monitoring report is provided in Table 4.

Table 4 Summary of Water Quality Monitoring Result

Sl. No.	District	Water Quality not Satisfactory				Remarks
		Fe > 5mg/L	Cl > 600mg/L	As > 0.05mg/L	Total	
1.	Munshiganj	1	-	-	1	List of 'Not Satisfactory' water sources are given in Appendix-7 and Actions taken for the water sources where water quality is not satisfactory are listed in Table 2 of Appendix-7.
2.	Brahmanbaria	3	1	1	5	
3.	Rangpur	2	-	-	2	
4.	Chuadanga	1	-	10	11	
5.	Gaibandha	4	-	9	13	
6.	Dhaka	-	-	2	2	
7.	Narail	1	1	1	3	
8.	Manikganj	4	-	2	6	
Total =		16	2	25	43*	

* 6 water sources out of 43 have contamination of both either Iron and Arsenic or Iron and Chloride; resulting the total no of water sources as = $(43-6) = 37$ [For details please refer to Appendix 5].

Mitigation Measures suggested for water sources having unsatisfactory water quality results:

In cases where arsenic/iron/chloride is found beyond allowable BDS standard in installed water sources, DPHE adopts other approved alternate water options. DPHE goes for options like deep tube well of greater depth, ring well, pond sand filter, rain water harvesting, Reverse Osmosis Filter, AIRP,



Fig. 12 Different Suggested Improved Filtration Technologies



Small box type AIRP etc. whichever is feasible. In some cases, if all the options in hand fails, i.e., boring in greater depth becomes impossible, arsenic is found even in deep tube well and none other option is feasible, DPHE has started implementing 'SONO Filter' as well. DPHE upazilla offices will arrange and install the said filter in those water sources whichever is feasible, convenient and justified. In addition, water from those sources will be further tested and declared safe if found well below the BDS standard of drinking water. Fig. 13 shows some of the suggested filtration technologies.

It is fact that, in the reporting tenure a total of 37 water sources were found to have water quality concerns with excessive iron, chloride or arsenic. For all the said 37 water points, options like Reverse Osmosis (RO), AIRP and Pressure Vessel were installed and filtered water was tested in DPHE zonal Laboratories. The water sources were handed over to the respective schools once the water quality results were found satisfactory. Water quality test results are summarized in Table 2 of Appendix 7.

8.10 Routine Water Quality Monitoring

As per MoU signed in between DPE and DPHE in September 15, 2019, DPHE will conduct water quality monitoring of 65,000 water points installed earlier in PEDP-3 with an aim to provide arsenic free safe drinking water in the primary schools of Bangladesh. It has been decided that 90% of the tests will be conducted in field by utilizing field test kits for arsenic and the rest 10% will be conducted in DPHE zonal laboratory. Due to COVID-19 pandemic, schools were closed which is why the field tests could not be conducted in the financial year 2020-2021. However, all the test kits were bought and well preserved by DPHE in order to conduct the field tests as soon as the schools re-open.

Soon after the re-opening of the schools, steps were taken to conduct water quality screening of 15,000 water points as selected by DPE. In the previous EMR and SMR [Jul'21-Dec'21] test results of those 15,000 water points were reported which indicated 1.44% arsenic contamination. In addition, it was confirmed that water of 98.56% of 15,000 installed tube wells in PEDP-3 are drinkable. DPHE officials immediately took steps in stopping the water intake from these contaminated water points.

On 3rd May, 2022 DPE issued a list of 25,000 water sources installed in PEDP-3 for routine water quality monitoring. All the received school lists are sent to the concerned EE Office and the routine water quality monitoring program is currently underway.

8.11 Hand washing facility and Hygiene Promotion

Prior to the installation of water sources, hand washing of students before and after meal especially mid-day meal and after using toilet was a matter of concern. As a result, students were more susceptible to diseases which triggered the absence of students from school. Besides these,



newly constructed wash blocks with modern interior facility will surely create enthusiasm among children for the best utilization of wash blocks. A glimpse of wash block interior is shown in Fig 14.

Mitigation Measures Suggested (MMS):

Working with the moto of ‘clean hand, safe hand’ DPHE confirmed the installation of tube wells with running water supply by provision of submersible pump in all the above-mentioned schools during the reporting tenure. Construction of wash basin for hand washing (Fig.10) ensured total hand washing facilities in the school. Due to the global pandemic situation, although regular hygiene promotion activities could not be conducted yet monthly coordination meeting with DPE officials, TEO, ATEO and Primary School Headmasters is the indication of intensity of preparation for hygiene activities.



Fig. 13 Modern Interior of Wash Blocks

8.12 COVID-19 Reality, School Re-Opening and New Normal

Countries all over the world are trying new ways of softening or partially lifting COVID-19 related restrictions while keeping the virus progression in check. In this challenging time, the future of education depends on the provision of water, sanitation and hygiene services. So, Hygiene Promotion has been emerged as an issue of particular concern when considering reopening of schools.

In order to confirm adequate hygiene practise, DPHE district and upazilla level officers monthly conduct sessions related to hygiene promotion activities with TEO, ATEO and Primary School Headmasters in the schools or DPHE district offices. All these activities put positive sign to the improvement of total environment. Prior to the re-opening of the schools DPHE district offices and Upazilla offices conducted disinfection of school premises and maintenance of wash blocks and water sources as and where required. Besides these all the construction activities regarding construction of



wash blocks, maintenance of wash blocks and installation of water sources are constructed following the guidelines by Ministry of Local Government, Rural Development and Cooperatives (Appendix-5).

8.13 Miscellaneous observations

During the implementation phase, two basic standards were maintained.

- 1) Ensure at least a distance of 10m between water points and leach pit/soak well/ septic tank etc.
- 2) Ensure that the water collection basin is not clogged by paper, dry leaves, mud etc.

During monitoring phase, these options were found to be maintained properly.

8.14 Summary of observations

The post installation monitoring of all 4,064 Wash Blocks and 2,500 water points confirmed no major concern or significant issues that can cause adverse environmental impact. Table 5 summarizes some other environmental issues observed during survey of Water points/ Wash Blocks.

Table 5 Important environmental issues observed

Issues/Environment Criteria	Findings from the Survey for all TWs	Findings from the Survey for all WBs
Is the TW installed?	Yes	Yes
Is the existing TW working?	Yes	Yes
Was the installed TW water tested?	Yes	Yes
Is Arsenic < 50ppb?	Yes	Yes
Is Iron < 1mg/l, for iron prone area up to 5 mg/l [Based on Water Quality Monitoring and Surveillance Protocol for Running Water Supply System in Bangladesh by DPHE, Appendix-8]	Yes	Yes
Is Cl ≤ 600 mg/l, for coastal area up to 1000 mg/l [Based on Water Quality Monitoring and Surveillance Protocol for Running Water Supply System in Bangladesh by DPHE, Appendix-8]	Yes	Yes
Loss of agricultural land?	No	No



Issues/Environment Criteria	Findings from the Survey for all TWs	Findings from the Survey for all WBs
Negative effect on flora/fauna?	No	No
Conflicts with water supply, right?	No	No
Any potential health risks?	No	No
Is there provision of separate toilet for male and female?	N/A	Yes
Is there provision for adequate ventilation?	N/A	Yes
Is there provision for disabled children?	N/A	Yes

Note: Only the particular water source that met the drinking water quality in the laboratory test is handed over to the primary school authority. DPHE preserves all the testing report in the MIS cell.

8.15 Positive environmental impact

The outcomes of the environmental screening as discussed in the previous subsections pointed out the achievement of following positive impacts through the implementation of revised EMF and SMF during the construction works under PEDP-4.

- 1) Regular WASH related programs such as hygiene promotion through hand washing campaign not only increased the personal safety of students but also spread the positive vibe in the surrounding society which is now the key lessons for the inhabitants to fight against COVID-19.
- 2) Through the assurance of contamination free safe water sources in the said primary schools during the reporting tenure, a long-awaited demand was fulfilled which not only improved health potential of users but also reduced the dropout rate.
- 3) Lessons learnt from PEDP-3 helped in designing the type and structure of water sources with provision of running water free from bacteriological contamination. This initiative dramatically reduced the problem of water logging and drainage which was encountered in PEDP-3.

A summary status of environmental safeguard document is given in Table 6 while overall performance in relation to environmental compliance is given in Table 7.

Table 6 Summary Status of Environmental Safeguard Documents

Type of safeguard document	Agency	Latest version	Coverage
Semi Annual Environmental Monitoring Report	DPHE	June/2022	Jan – June/2022
National Standards of Water, Sanitation and Hygiene for Schools in Bangladesh	UNICEF	January/2011	Till Date
National Strategy for Water Supply and Sanitation	MoLGRD	June/2021	Till Date



Type of safeguard document	Agency	Latest version	Coverage
Response to Covid-19 Outbreak Through Water, Sanitation and Hygiene Interventions	MoLGRD	June/2020	July/2020-December/2023
COVID-19 Exposure Prevention, Preparedness & Response Plan	DPHE	December/2020	Project Tenure
Site specific Environmental Management Plan (SEMP)	DPHE	December/2019	Project Tenure
Complain and sick register report	DPHE	December/2021	Project Tenure
OHS Plan	DPHE	December/2019	Project Tenure
Overall monitoring checklist	DPHE	December/2019	Project Tenure
Environment test report: included environmental monitoring, checklist, HSE monitoring	DPHE	December/2019	Project Tenure
National Menstrual Hygiene Management Strategy 2021	MoLGRD	June/2020	Till Date

Table 7 Overall performance in relation to environmental compliance

No.	Aspects of Environmental issues	Compliance Status			Remarks
		FC	PC	NC	
A.	General				
1.	Legal working hours approval	✓			
2.	Employment Record keeping arrangement	✓			
3.	Payment Record keeping arrangement	✓			
4.	Environment, Health and Safety Officer designated			✓	No provision of fund in DPP in favor of DPHE
5.	Provision for monthly meeting for inspection of site activities	✓			
B.	Health and Sanitation				
	Occupational Health				
1.	First-Aid Box availability at work sites	✓			
2.	Provision of personal protection equipment's (PPEs)		✓		In some instances, it is difficult to avoid situations like use of mixture machine, vibrator machine etc. during construction
3.	Handling of cement and other hazardous materials by workers	✓			
4.	Workers' complains taken care of by the supervisor	✓			
5.	Children below 18 employment (Not employed)	✓			
C.	Environmental Pollution				
	Dust and emission control				
1.	Construction vehicles and machineries maintained properly to reduce emissions	✓			
2.	Proper storage of materials and regular watering.	✓			
	Noise Pollution				
1.	Movement of vehicles at desired hours	✓			
2.	Noise control measures at sites	✓			
	Water Pollution				
1.	Land filling	✓			
2.	Wastes, cement, effluents and junks not disposed in water	✓			
	Flora and Fauna				
1.	Trees and bushes outside the construction area preserved from damages	✓			
2.	Disturbance to terrestrial fauna minimized	✓			
	Waste Management				



No.	Aspects of Environmental issues	Compliance Status			Remarks
		FC	PC	NC	
1.	Construction wastes are removed off site regularly	✓			
2.	Chemical wastes, if any, collected and disposed of properly	✓			
D. Environmental documents at Field Office and Project sites					
1.	Field Office possesses copies of EMP, contract document and Technical Specifications	✓			
2.	Heavy equipment maintenance records	✓			
TOTAL =		20	1	1	

The corrected action measures for the Partially Compliant (PC) and Non-Compliant (NC) issues presented in Table 7 are listed in Table-8 below.

Table 8 Corrective Action Plan (Jan/22-June/22)

Sl. No.	Initial Status	Recommended Corrective Action Measures	Responsibility	Due Date
1.	NC	Designated Environment, Health and Safety Officer at DPHE Head Quarter to be appointed. Although currently there is no funding provision in DPP, DPHE is trying to utilize its own implementation arrangement to sort out the issue through management support cost.	DPHE	By November/ 2022
2.	PC	Provision of Personal Protection equipment's (PPEs) at construction site to be ensured.	Contractors of DPHE	By October/2022

9. Health and Safety Guidelines against COVID-19

COVID-19 has disrupted day to day operations in construction work but as the time progresses, our understanding of how the virus spreads has also evolved. In these uncertain times, worksite safety and health are more important than ever before. DPHE follows the rules and regulations proclaimed by the Ministry of Local Government, Rural Development and Co-operatives (MLGRD&C). On 7th May'2020, the MLGRD&C provided some instructions on a basis of emergency for the safety considerations during the pandemic situation (Attached in Appandix-5) vide memo No. 1629 on 07/05/2020. Specific COVID-19 safety guidelines which is recommended for construction workers include-



- i) The workers in construction sites have to maintain safe distance (i.e., 1m) from each other and have to wear the mask, hand gloves, gumboot, helmet etc. and no worker will be permitted in the project site without this equipment.
- ii) There should be a proper arrangement of soap and hand sanitizer in worksite and all the workers must wash hand with antiseptic soap in an interval of 1 hour and also wash their faces and hands before taking meals and after using meals.
- iii) The officials from DPHE headquarter should arrange cautionary meetings on covid-19 safety issues at district level and upazilla level with the Executive Engineer, Assistant Engineer, Sub-Assistant Engineer, and collect the updates from the construction sites about precautionary affairs through proper channel.
- iv) In addition to the district level, DPHE officials should arrange meeting with School Head Masters at Upazilla level to make them informed about the safety issues for workers in the construction sites of schools as well as the special affairs due to corona pandemic.

DPHE followed the construction safety protocol during COVID-19 pandemic as outlined above. Table 9 summarizes the COVID response performance at the work sites in all the 454 completed contracts (406 for Wash block and 48 for Water Sources) during the reporting tenure.

Table 9 COVID response performance at worksite

COVID-19 Response questions	No. of Contracts			Comments
	FC	PC	N/A	
Site re-opening and entry protocol				
Locate the closest medical establishment equipped with COVID -19 response facilities.	454			
Engage a full time EHS professional at site			454	Currently there is no fund provision in DPP in favor of DPHE for addressing safeguard. However, it is under consideration.
Purchase thermometer gun, soap, hand sanitizer, disinfectants and PPEs (mask, hand gloves, hard shoes etc.) and keep it at worksite office.	454			
Establish site entrance protocol. Redesign the site safety notices/signboards/protocol according to the ADB guidelines	454			
Arrange washbasin, soap and clean water at the entrance of every worksite/campsite. Also keep either a disinfectant tub for shoes or keep disinfectant spray that must be sprayed under the boots/hard shoes of the persons entering worksite.	454			
Provide every personnel working in the site with mask, hand gloves and hard shoes for their personal use.	454			
Everyone entering the worksite must wear a mask, gloves and hard shoes	454			
A designated EHS and medical person should stay all time during work. The EHS/Medical person should also monitor campsite. He/she will be in charge of ensuring physical distances (minimum 1m) among workers, disinfecting surfaces that are commonly used and investigate workers'/site personnel health and safety.			454	Currently there is no fund provision in DPP in favor of DPHE for EHS/medical professional
At the start and end of the day disinfect the total worksite.			454	Workers stay at the worksite in labour shed



COVID-19 Response questions	No. of Contracts			Comments
	FC	PC	N/A	
Encourage site personnel/camp dwellers to not touch their eyes, mouth or nose if not washed thoroughly with soap recently. Also discourage hand shaking or hugs.	454			
Arrange a mandatory site brief on COVID awareness in the morning. The session must be conducted by the EHS/medical professional.		454		Currently there is no fund provision in DPP in favor of DPHE for EHS/medical professional
While worksites are commonly well ventilated (if not make sure the work sites are well ventilated), ensure that the camp sites including the rooms designated for the camp dwellers are well ventilated and spacious.	454			
Before sharing common tools/machines at worksite, ensure to disinfect.		454		In some instances, it is difficult to avoid situations like use of mixture machine, vibrator machine etc. during construction
Discourage site personnel to gather and gossip at any time, rather encourage physical distance while chatting/discussing.	454			
Restrict worksite personnel to go outside unnecessarily. Also restrict campsite personnel to go outside without any valid cause.	454			
If any person related at worksite/campsite fall victim to COVID-19 or being kept isolated for pre-caution, consider paid leave with no exception allowed.			454	No such event has been identified during the reporting tenure
Train workers on how to properly put on, use/wear, and take off protective clothing and equipment. The on-site EHS/Medical person should be in-charge of these trainings. These trainings must maintain the WHO's social distancing protocol. Make these trainings mandatory at worksites. Provide 10-15 minutes of a workday for such 'training and encouragement' activities.		454		Since, there is no fund provision in DPP in favor of DPHE for EHS/medical professional training was not conducted by EHS/medical professional. However, such training has been conducted by SAE/AE of DPHE.

10. Grievance redressal status

A comprehensive grievance redressal system has been developed to address any issues generated due to the construction of wash blocks and installation of water sources in the primary schools. To address such issues, there is a designated GR committee in the DPHE Headquarter, the detail of which is given in Appendix-6. In addition, DG, DPE issued a letter Vide Memo. 18; dated March 18, 2022 to follow the instructions as stated in revised SMF. Since, no complain were raised from the concerned community, there was no issue of grievance redressal during the reporting tenure.

11. Monitoring progress report

It is fact that environmental screening report is related to the monitoring of implementation progress of environmental and social management plan. During the planning stage, all possible environmental and social safeguard issues are forecasted and related mitigation plans are included in the related contract packages. Issues related to EMP and SMP are clearly indicated in the 'Particular Conditions of Tender and Contract for Water Sources/ Wash Blocks' which is provided by default as



a part of tender and contract. Following table shows the monitoring progress report of EMP during the reporting tenure.

Table 10 EMP progress monitoring

Monitoring Criteria	Progress Detail						Comment	Compliance Status
	FY-18-19	FY-19-20	FY-20-21	July'21-Dec'21	Jan'22-June'22	Cumulative		
No. of contracts that incorporated environmental clause	73/73	28/28	1251/1251	143/143	454/454	1949/1949	During tendering, environmental clauses were included which became part of contract	Complied
Funds utilized for addressing safeguards	N/A	N/A	N/A	N/A	N/A	N/A	Currently there is no fund provision in DPP in favor of DPHE for addressing safeguard	N/A
No of schools having dirty environment around water source	6/331	4/240	54/4070	37/527	51/2500	152/7668	Lac of routine cleanliness caused dirty environment which was mitigated in all 152 schools.	Complied
Schools with drainage congestion identified and solved	2/331	2/240	28/4070	7/527	9/2500	48/7668	Blockage in drainage system caused drainage congestion which was mitigated in all 48 schools.	Complied
No. of water points having problem with quality of water	0/331	8/240	57/4070	29/527	37/2500	131/7668	Alternate options such as AIRP, RO, TW in deeper depth were utilized which mitigated the water quality problem in all 131 schools.	Complied

12. Compliance Status to ADB Loan Covenants

The compliance status to ADB loan covenants relevant to environmental safeguards is listed in Table 11.

Table 11 Compliance with ADB Loan Covenants

Serial no. as per Loan Agreement	Program Specific Covenants	Compliance Status	Remarks	
Schedule 4	10	To ensure that all program actions in the area of environmental and social safeguards are implemented in a timely and efficient manner	Complied	Semi-Annual environmental and social safeguards are implemented based on revised EMF/SMF.
	11 (a)	To ensure that no construction or rehabilitation works involve significant adverse environmental impacts that may be classified as category A under the SPS through screening.	Complied	Through the comprehensive screening it was confirmed that no adverse environmental impact as related to category A under the SPS was found.



Serial no. as per Loan Agreement	Program Specific Covenants	Compliance Status	Remarks	
Schedule 4	11 (b)	To ensure that the preparation, design, construction, implementation, operation, decommissioning of all activities under the program comply with all applicable laws, regulations and guidelines related to health and safety, environmental safeguard.	Complied	The applicable laws, regulations and guidelines related to the H&S and Environmental safeguard were strictly adhered.
	12	To ensure that the program does not involve any resettlement risks.	Complied	No resettlement risks were involved since the construction of wash blocks and water sources were conducted in the location owned by the primary schools.
	13	To ensure that the program does not involve any negative risks or impacts on tribes or minor races, ethnic sects and communities.	Complied	No negative risks or impacts on tribes or minor races, ethnic sects and communities were reported through the comprehensive environmental and social safeguard screening.

13. Implementation Status of CAP recommended in aide memoire

The implementation status of CAP recommended in comprehensive aide memoire is listed in Table 12.

Table 12 Implementation Status of CAP recommended in aide memoire

Sl. No.	Recommended Corrective Action Measures	Implementation Status
1	All tube wells that have been built for more than one year are to be screened annually by DPHE for water quality and physical status of tube wells to ensure fixture damaged/choked up tube wells and where water quality parameters	DPHE completed the screening of 15,000 water points by Dec/2021 and currently undertaking the screening of another 25,000 water points, the list of which is made available on May 3 rd , 2022 by DPE. Please refer to section 8.10 for details.
2	The mission advised DPHE to take initiative for water treatment if deep tube wells are found contaminated with arsenic.	As mentioned in Table 4 of section 8.9, 25 water sources were found to have arsenic contamination during the reporting tenure. It can be seen from Table 2 of Appendix 7 that water treatment facilities were provided in those arsenic contaminated water sources.
3	The mission also advised DPHE to consider soak pits to mitigate water stagnation around the tube well platforms.	As mentioned in section 8.7 (3), 5 ring soak wells were installed to drain out basin water where surface drain is absent.

14. Conclusions

This study investigates the environmental safeguard concerns during the implementation of wash blocks, water points and major maintenance of wash blocks based on the approved EMF guidelines for PEDP-4. This report has presented potential environmental impacts associated with the pre-construction, construction and operation phases of the project. The environmental monitoring screening confirmed ***no significant instances or issues*** that may hamper or influence the environmental safety during the reporting tenure. Being an implementing agency DPHE would like to uphold this status in its ongoing and upcoming works related to infrastructure development.



Appendix-1: Sample Environmental Screening for Wash Block

Environmental Screening Report for Wash Block

District: Natore
 Upazilla: Singar
 Name of School: Sarda Nagar-Growth primary school.
 School ID: 11406100801 ✓
 Type of Wash Block: Isolated / Attached

Screening Questions	Base Line		Impact Without Intervention			Impact During Implementation			Impact after Implementation			Remarks
	Yes	No	+	-	N/A	+	-	N/A	+	-	N/A	
Condition of existing toilets Good/Usable?	✓				✓			✓			✓	
Are there provisions for safe solid & liquid waste disposal?	✓			✓				✓			✓	
Are there provisions for hand washing?	✓				✓			✓			✓	
Are there provisions for foot washing?	✓				✓			✓			✓	
Does the existing toilets have running water supply?	✓			✓				✓			✓	
Is there provision for disabled children?	✓			✓				✓			✓	
Are there provisions of adequate urinals in male compartment?	✓			✓				✓			✓	
Is there provision for menstrual hygiene in the female compartment?	✓			✓								
Are there provisions of separate toilets for male & female users?	✓			✓				✓			✓	
Are the existing toilets have adequate ventilation?	✓				✓			✓			✓	
Distance of Existing water Source from Soak Pit > 10m	✓											
Is there any reported events of sickness?	✓			✓				✓			✓	
Any Loss of Agricultural Land?		✓										
Any Negative effect on flora/fauna?	✓				✓			✓			✓	
Are the existing toilets clean and hygienic?		✓			✓			✓			✓	

Signature of SAE

[Signature]
 13.06.22
 Signature of AE
 (সহকারী পরিদর্শক)
 জেলা পরিদপ্তর
 নারায়ণ: ১১৪০৬১০০৮০১
 সাধারণ প্রশাসন, নারায়ণ।

[Signature]
 Signature of Executive Engineer
 (সহকারী প্রকৌশলী)
 জেলা পরিদপ্তর, নারায়ণ
 সাধারণ প্রশাসন, নারায়ণ।



Appendix-2: Sample Environmental Screening for Water Sources

Environmental Screening Report for Water Sources

District : Kishoreganj
 Upazila : Kishoreganj Sadar
 Name of School : Nagyaor Government Primay School
 School ID :

9	1	3	0	5	0	0	0	9	1	1
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 Type of Water Source : Water Sources

Screening Questions	Base Line		Impact Without Intervention			Impact During Implementation			Impact after Implementation			Remarks
	Yes	No	+	-	N/A	+	-	N/A	+	-	N/A	
Any Source of existing drinking water?		✓		✓				✓	✓			
Environment of water supply facility good?		✓		✓				✓	✓			
Facilities for draining out of water proper?		✓		✓				✓	✓			
Any reported event of sickness?		✓		✓				✓	✓			
Is the existing TW working?		✓		✓				✓	✓			
Was the water quality tested?		✓		✓				✓	✓			
Are there provisions for water collection basin?		✓		✓				✓	✓			
Any concern about water quality?		✓		✓				✓	✓			
Is there provisions for RO filter?		✓		✓				✓	✓			
Any health risk associated?	✓			✓				✓	✓			
Distance of existing water source from Soak Well > 10m		✓		✓				✓	✓			
Height & location of new water source appropriate?	✓			✓				✓	✓			
Any loss of agricultural land?		✓		✓				✓	✓			
Any negative effect on flora/fauna?		✓		✓				✓	✓			
Any conflicts with water supply right?	✓			✓				✓	✓			

Shamir
 03-02-22
 (সহকারী প্রকৌশলী)
 উপ-সহকারী প্রকৌশলী
 জনস্বাস্থ্য প্রকৌশল অধিদপ্তর
 কিশোরগঞ্জ জেলা।

[Signature]
 07.02
 Signature of Executive Engineer 22
 (সহকারী প্রকৌশলী)
 উপ-সহকারী প্রকৌশলী
 জনস্বাস্থ্য প্রকৌশল অধিদপ্তর
 কিশোরগঞ্জ জেলা।



Appendix-3: Sample water quality monitoring by DPHE zonal Lab

Sl No	District	Upazila	Village	ID	Type of School	Water Point			Name of School	GPS			Water Quality				
						Type	Depth (ft)			N	E	Sand	Chlor	Fe	As	Cl	
1	Naogaon	Raibangar	Sarbozaman pur	111100207	1	Pump		Sarbozaman pur GPS	24°42'41"	88°55'56"	1	1	1.5	0.003	19		
2	Naogaon	Raibangar	Raibangar Model	9111100101	1	Pump		Raibangar Model GPS	24°44'28"	88°58'02"	1	1	0.8	0.002	21		
3	Naogaon	Raibangar	Khagra	111100105	1	Pump		Khagra GPS	24°44'16"	88°00'15"	1	1	1.4	0.003	48		
4	Naogaon	Raibangar	Arji Bishnupur	111100404	1	Pump		Arji Bishnupur GPS	24°44'48"	88°05'08"	1	1	2.1	0.025	14		
5	Naogaon	Raibangar	Charar Dighi	111100602	1	Pump		Charar Dighi GPS	24°43'55"	88°41'30"	1	1	1.5	0.002	18		
6	Naogaon	Raibangar	Sadikpur	111100904	1	Pump		Sadikpur GPS	24°39'13"	89°02'52"	1	1	2.3	0.002	20		
7	Naogaon	Raibangar	Pousta Para	99111109203	1	Pump		Pousta Para GPS	24°40'22"	88°59'22"	1	1	1.3	0.002	18		
8	Naogaon	Atrai	Lakhari	111010304	1	Pump		Lakhari GPS	24°38'14"	88°00'27"	1	1	0.1	0.002	19		
9	Naogaon	Atrai	Behula	99111019006	1	Pump		Behula GPS	24°41'08"	88°58'05"	1	1	0.7	0.002	22		
10	Naogaon	Atrai	Bihari	99111010704	1	Pump		Bihari GPS	24°38'47"	88°52'39"	1	1	0.4	0.002	24		
11	Naogaon	Atrai	Godhari	99111019017	1	Pump		Godhari GPS	24°38'49"	88°53'28"	1	1	0.9	0.002	21		
12	Naogaon	Atrai	Dariganthi	111019001	1	Pump		Dariganthi GPS	24°35'57"	88°57'09"	1	1	1.6	0.017	19		
13	Naogaon	Atrai	Tajandi	111011581	1	Pump		Tajandi GPS	24°34'06"	88°02'38"	1	1	0.1	0.002	10		
14	Naogaon	Atrai	Paharpur	111019005	1	Pump		Paharpur GPS	24°39'42"	88°51'00"	1	1	1.1	0.004	20		
15	Naogaon	Atrai	Kakbajpur Purbapara	111010796	1	Pump		Kakbajpur Purbapara GPS	24°41'34"	88°53'58"	1	1	1.6	0.001	48		
16	Naogaon	Atrai	Beranason	99111019023	1	Pump		Beranason GPS	24°40'13"	88°59'05"	1	1	0.2	0.002	18		
17	Naogaon	Dhanochhat	Bodal	111020795	1	Pump		Bodal Aonla GPS	25°05'19"	88°54'15"	1	1	1.9	0.005	10		
18	Naogaon	Dhanochhat	Bendhar	111020166	1	Pump		Bendhar GPS	25°08'55"	88°53'15"	1	1	0.4	0.001	15		
19	Naogaon	Dhanochhat	Kolgram	111020403	1	Pump		Kolgram GPS	25°09'44"	88°48'57"	1	1	3.3	0.003	10		
20	Naogaon	Dhanochhat	Malabar	111020405	1	Pump		Malabar GPS	25°09'24"	88°59'20"	1	1	5.4	0.015	11		
21	Naogaon	Dhanochhat	Arji Ara Nagar	111020523	1	Pump		Mandana Giza Uddin GPS	25°05'20"	88°51'50"	1	1	2.3	0.004	11		
22	Naogaon	Dhanochhat	Morhal	111020802	1	Pump		Morhal GPS	25°09'19"	88°43'09"	1	1	3.2	0.002	12		
23	Naogaon	Dhanochhat	Nanda	111020105	1	Pump		Nanda GPS	25°08'58"	88°50'56"	1	1	1.4	0.002	10		
24	Naogaon	Dhanochhat	Purba Rajshahipur	111020103	1	Pump		Purba Rajshahipur GPS	25°08'49"	88°54'29"	1	1	1.5	0.005	12		
25	Naogaon	Dhanochhat	Rauran Pur	111020106	1	Pump		Rauran Pur GPS	25°07'18"	88°53'07"	1	1	0.8	0.001	20		
26	Naogaon	Dhanochhat	Ajot Nagar	111020124	1	Pump		Sheela Banat GPS	25°09'24"	88°52'58"	1	1	1.6	0.002	16		

Water Quality Test Report
 Name of Project: PEDP-4
 District: Naogaon
 Package No. PKG-265




Samples Analyzed
 10.03.22
 Md. Abdul Jabbar
 Sample Analyzer
 DPHE, Zonal Laboratory
 Rajshahi.

Senior Chemist
 10.03.22
 Md. Shariful Islam
 Senior Chemist
 DPHE, Zonal Laboratory
 Rajshahi.



Appendix-4: Sample water quality monitoring by Field Test Kit

EE, DPHE

	 Government of the People's Republic of Bangladesh Arsenic Test at School by Field Kit under Water Quality Monitoring of Fourth Primary Education Development Program (PEDP4)	
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ARSENIC TEST RESULT BY FIELD KIT

(A) Information of Primary School:

1. Name of School	: pachim Dhemushia Reg: primary school										
2. EMIS Code	: 4	: 1	: 2	: 0	: 5	: 1	: 2	: 0	: 3	: 0	: 2
3. District	: Cox bazar					4. Upazilla:	: chakarua				

(B) Information of Drinking Water Source:

1. Provision of Water Sources	: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Project	: <input checked="" type="checkbox"/> PEDP3 <input type="checkbox"/> GPS-1 <input type="checkbox"/> NNGPS-1 <input type="checkbox"/> PEDP-4 <input type="checkbox"/> Others
3. Installed By	: <input checked="" type="checkbox"/> DPHE <input type="checkbox"/> Others
4. Year of Installation	: 2017
5. Type of Tube Well	: <input type="checkbox"/> Deep <input checked="" type="checkbox"/> Shallow <input type="checkbox"/> Tara <input type="checkbox"/> Ring Well <input type="checkbox"/> TSP <input type="checkbox"/> Others
6. Present Condition	: <input checked="" type="checkbox"/> Running <input type="checkbox"/> Temporary Choked up <input type="checkbox"/> Permanently Choked up
7. Platform/Collection Basin Condition	: <input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> No Platform/Collection Basin.

(C) Water quality & Present status:


Field Observation: (Please ✓)	<p style="font-size: small;">Arsenic ppb</p> <table style="margin: auto;"> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">50</td> <td style="text-align: center;">92</td> <td style="text-align: center;">176</td> <td style="text-align: center;">400</td> <td style="text-align: center;">800</td> <td style="text-align: center;">2000</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	0	50	92	176	400	800	2000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0	50	92	176	400	800	2000									
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>									
Arsenic test Result	: 10 ppb (approx.)	TEST KIT HACH EZ Arsenic Test Kit Cat. No. 28228-00													
BDS Standard	: 50 ppb (0.05mg/l)														

For School	For DPHE
Signature & Date: Name: Designation: Phone:	Signature & Date: Name: Designation: Phone:

[এই প্রতিবেদন সঠিকভাবে তৈরি করার জন্য সকল খসড়া সঠিকভাবে পূরণ করা হয়েছে]

Appendix-5: Construction Guidelines by MoLGRD during COVID-19

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
স্থানীয় সরকার, পল্লী উন্নয়ন ও সমবায় মন্ত্রণালয়
স্থানীয় সরকার বিভাগ
পুন-১ অধিশাখা
www.lgd.gov.bd



শেখ মুজিবুর মুন্সীতি
প্রতি শ্রমের উন্নতি

স্মারক নং-৪৯.০০.০০০০.০৮০.১২.০০২.১৭(অংশ-১)-১৬২৯

তারিখ: ২৪ বৈশাখ ১৪২৭
০৭ মে ২০২০


বিষয়: জনস্বাস্থ্য প্রকৌশল অধিদপ্তর কর্তৃক বাস্তবায়নধীন প্রকল্পের কাজ সম্পাদনের জন্য অনুরোধের নির্দেশনা।

সূত্র: জনপ্রশাসন মন্ত্রণালয়ের প্রকাশন নং- ০৪.০০.০০০০.১৭০.০৮.০২৪.০৭-১০০, তারিখ: ০৪ মে ২০২০।

উপর্যুক্ত বিষয় ও সূত্রে স্থানের প্রেক্ষিতে নির্দেশনায় জানানো যাচ্ছে যে, জনস্বাস্থ্য প্রকৌশল অধিদপ্তর কর্তৃক বাস্তবায়নধীন প্রকল্পের কাজ সম্পাদনের জন্য নিম্নবর্ণিত নির্দেশনা অনুসরণ করতে হবে:

- ০১) প্রকল্প এলাকায় করোনা ভাইরাস (কভিড-১৯) বিষয়ক স্বাস্থ্য ও পরিবার কল্যাণ মন্ত্রণালয় কর্তৃক জারিকৃত নির্দেশনা সর্বলিঙ্গ সাইনবোর্ড স্থাপন করতে হবে;
- ০২) স্বাস্থ্য বিধি অনুসরণ ও সামাজিক দূরত্ব বজা করে প্রকল্পের কাজ সম্পাদন করতে হবে। প্রকল্প কাজে যে সকল শ্রমিক কাজ করবে তারা পর্যাপ্তভাবে সুস্থ কিনা তা নির্ণয়ের জন্য থার্মাল স্ক্রিনিংয়ের মাধ্যমে তাদের পরীক্ষার আওতাধীন রাখা করতে হবে;
- ০৩) ট্রাকে করে নির্মাণ সামগ্রী পরিবহন/সরবরাহের সময় ট্রাকের সামনে স্থানীয় জনস্বাস্থ্য প্রকৌশল অধিদপ্তর কর্তৃক বাস্তবায়নধীন সুনির্দিষ্ট প্রকল্পের নাম উল্লেখ থাকতে হবে;
- ০৪) প্রকল্প কাজ সম্পাদনের জন্য শ্রমিকদের নির্দিষ্ট পোশাক পরিধান করতে হবে এবং প্রয়োজ্য ক্ষেত্রে মাস্ক, হ্যান্ডগ্লোভস, গাম্বুট, ফেসমেক ব্যবহার করতে হবে;
- ০৫) প্রকল্প এলাকায় নির্মাণ শ্রমিকদের জন্য সাবান পানি দিয়ে হাত ধোয়ার ব্যবস্থা থাকতে হবে। প্রয়োজনে হাত স্যানিটাইজার সরবরাহ করতে হবে;
- ০৬) চলমান প্রকল্প এলাকায় কার্বিডিম ওলোপেটিন ক্যামের বিবরণ সজ্জিত সাইনবোর্ড স্থাপন করতে হবে;
- ০৭) প্রকল্প কাজে নির্মাণ সংশ্লিষ্ট অসুস্থতা বাসস্থানের ক্ষেত্রে স্বাস্থ্য সুরক্ষার বিধিগণ নিশ্চিত করতে হবে;
- ০৮) প্রকল্প কাজে নিয়োজিত নির্মাণ শ্রমিকদের স্বাস্থ্য বিধি অনুসরণপূর্বক সামাজিক দূরত্ব বজায় রেখে নির্ধারিত নির্মাণ শেষে অবস্থান করতে হবে;
- ০৯) পথের, সিমেট বা অন্যান্য নির্মাণ সামগ্রী এক জেলা হতে অন্য জেলায় পরিবহনের প্রয়োজন হলে সংশ্লিষ্ট জেলা প্রশাসকগণকে অবহিত করতে হবে;
- ১০) প্রয়োজ্য ক্ষেত্রে প্রকল্পের কাজ চালানোর জন্য সংশ্লিষ্ট জেলা প্রশাসক/উপজেলা নির্বাহী অফিসারের অনুমতি গ্রহণ করতে হবে;

অপার পৃষ্ঠায় স্বাক্ষর-





-০২-

১১) উল্লিখিত নির্দেশনা যথাযথভাবে অনুসরণ করা হচ্ছে কিনা তা মত পর্যায়ে তদারকির জন্য জনস্বাস্থ্য প্রকৌশল অধিদপ্তর একটি কমিটি গঠন করবে। কমিটি প্রতি মাসে স্থানীয় সরকার বিভাগ বরাবর প্রতিবেদন দাখিল করবে।

১২) ইন-উন-ফিল্ডের সরকারি ছুটিতে সকল কর্মকর্তা-কর্মচারীকে তার স্ব-স্ব কর্মস্থলে অবস্থান করতে হবে।

(স্বাক্ষর) ০৫/১০/২০২০
মো: খাইয়ুল ইসলাম
মুখসচিব
ফোন: ৯৫৭৪২৬২

প্রধান প্রকৌশলী
জনস্বাস্থ্য প্রকৌশল অধিদপ্তর
কাকরাইল, ঢাকা।

স্মারক নং-৪৪.০০.০০০০.০৬৩.১২.০০২.১৭(অংশ-২)- ১৬২৯/৩১(০৬)

তারিখঃ ২৪ বৈশাখ ১৪২৭
০৭ মে ২০২০

অনুলিপি (সময় অবগতির জন্য)

১. অতিরিক্ত সিনিয়র (পাস), স্থানীয় সরকার বিভাগ।
২. বিভাগীয় পরিপত্র (সকল), বিভাগ।
৩. মাননীয় মন্ত্রীর একান্ত সচিব, স্থানীয় সরকার পল্লী উন্নয়ন ও সমবায় মন্ত্রণালয়।
৪. জেলা প্রশাসক (সকল), জেলা।
৫. উপসচিব, সিডিএ শাখা, জনপ্রশাসন মন্ত্রণালয়, বাংলাদেশ সচিবালয়, ঢাকা।
৬. সিনিয়র সচিবের একান্ত সচিব, স্থানীয় সরকার বিভাগ।
৭. কম্পিউটার সোফটওয়্যার, স্থানীয় সরকার বিভাগ।
৮. অফিস কপি।

(স্বাক্ষর) ০৫/১০/২০২০
মো: খাইয়ুল ইসলাম
মুখসচিব



Appendix-6: Grievance Redressal Committee of DPHE

অনিক ও আপিল কর্মকর্তা	
<p>নাম : মো. শমসুল আলম পদবী: প্রকল্প পরিচালক, পলি সারেকণ ও নিরাপদ পলি সরবরাহের মাঝে জেলা পরিষদের পুকুর/সিঁথি/ জলাশয় সমূহ পুনঃস্থাপন/সাহায্য প্রকল্প। জনস্বাস্থ্য প্রকৌশল অধিদপ্তর, ঢাকা। ফোন: +৮৮ ০২ ৫৫১০০৫৩০ মোবাইল :+৮৮ ০১৭১১২৭৫৯২৩ ইমেইল: pd.pcp@dphe.gov.bd</p>	অতিরিক্ত নিষ্পত্তি কর্মকর্তা (অনিক)
<p>নাম: মীর আবদুল সহিদ পদবী: প্রকল্প পরিচালক, বাংলাদেশের ০০ টি পৌরসভায় পলি সরবরাহ প্রকল্প, ঢাকা। ফোন: +৮৮ ০২ ৫৫১০০১৯ মোবাইল :+৮৮ ০১৫৫৮০০৯০৬৩ ইমেইল: pdfmwssp@dphe.gov.bd</p>	বিকল্প অতিরিক্ত নিষ্পত্তি কর্মকর্তা (বিকল্প অনিক)
<p>নাম: মুন্সেরী জামান পদবী: ফুডসারিস (পলিসি সাপোর্ট অধিশাখা) ই-মেইল: psbr@lgd.gov.bd মোবাইল: ০১৮৪৬৫২০২৩৪ ফোন (অফিস) ০২৯৫৫৮২২৯</p>	আপিল কর্মকর্তা



Appendix-7: Water Quality Report of Unacceptable Water Sources

Government of the People's Republic of Bangladesh
 Department of Public Health Engineering (DPHE)
 Office of the Senior Chemist
 Zonal Laboratory, Comilla
 Water Testing Results of FTDP-4

Sl No	District	Upazila	Union	Village	School ID	School Type	Name of school	GPS Reading	Water Quality				
									Sand	Clear	As (mg/l)	Fe (mg/l)	Cl (mg/l)
1	Brahmanbaria	Barisalpur	Barisalpur	Ahmedia	20001100	Primary	Ahmedia Govt/UPS	20000000	N	S	0.004	0.001	0

Sample was collected by: *Sedam Akmalia, Medicline* and sent by: *AI, DPHE, Ashraful* via *LU, DPHE, Brahmanbaria*.

Sh. Faruk
 Senior Chemist
 Zonal Laboratory, Comilla.

SAD-CHANDRA MOHAMMAD
 Senior Chemist
 Zonal Laboratory, Comilla.

SHARMIN SULTANA
 Senior Chemist
 DPHE Zonal Lab, Comilla.

KANAI LAL BARBER
 Junior Chemist
 DPHE Zonal Lab, Comilla.



Government of the People's Republic of Bangladesh
 Department of Public Health Engineering (DPHE)
 Office of the Senior Chemist
 Zonal Laboratory, Comilla
 Water Testing Results of FEEDP-4 Samples

Sl No	District	Upazila	Union	Village	School ID	School Type	Name of school	GPS Heading	Sand	Clear	Water Quality		
											As (mg/L)	Fe (mg/L)	Cl (mg/L)
1	Bandhanabari	Hijrahat	Budboni	Sambon	405012604	FEEDP-4	Sambon GPS	2470279° 91°16'59"	N	Y	0.001	1.09	44
2	Bandhanabari	Dijonagar	Budboni	Durpona	405012608	FEEDP-4	Boorpona GPS	2470479° 91°16'21"	N	Y	0.001	1.09	94
3	Bandhanabari	Phonagan	Pokorpa	Kauriga	405011901	FEEDP-4	Kauriga GPS	2470571° 91°16'22"	N	Y	0.001	1.10	142
4	Bandhanabari	Ashganj	Chandranata	Chandranata	405011204	FEEDP-4	Chandranata Model GPS	2470149° 90°49'38"	N	Y	0.001	1.73	142
5	Bandhanabari	Ashganj	Durgapur	Higga	405011004	FEEDP-4	bagua Union GPS	2470322° 91°00'58"	N	Y	0.002	4.83	42
6	Bandhanabari	Ashganj	Chandranata	Chandranata	405011205	FEEDP-4	Chandranata Dakhin GPS	2470112° 90°49'34"	N	Y	0.002	4.19	133
7	Bandhanabari	Ashganj	Durgapur	Khoricha	405012803	FEEDP-4	Khoricha GPS	2470258° 91°00'31"	N	Y	0.001	7.31	284
8	Bandhanabari	Ashganj	Taladar	Kamara	405011806	FEEDP-4	Kamara GPS	2470221° 91°00'48"	N	Y	0.001	4.72	71
9	Bandhanabari	Ashganj	Arshadnagar	Masulha	405011307	FEEDP-4	Masulha GPS	2470367° 91°00'41"	N	Y	0.002	1.52	89
10	Bandhanabari	Narayanpur	Phulchak	Ethana	405011101	FEEDP-4	Masulha GPS	2470698° 91°15'12"	N	Y	0.002	1.52	89
11	Bandhanabari	Narayanpur	Kopra	Masulha	405011301	FEEDP-4	Masulha GPS	2470760° 91°02'33"	N	Y	0.003	1.09	71
12	Bandhanabari	Narayanpur	Nara Bera	Sambon	405020104	FEEDP-4	Masulha GPS	2471148° 91°11'58"	N	Y	0.011	1.28	79
13	Bandhanabari	Sandol	Sandol	Mudhat	91405011001	FEEDP-4	Regener Kandi GPS	2470278° 91°16'58"	N	Y	0.002	4.43	67
14	Bandhanabari	Sandol	Faridpur	Chhatra	91405020101	FEEDP-4	Tanpur GPS	2470478° 91°05'30"	N	Y	0.003	1.81	69
15	Bandhanabari	Sandol	Masulha	Masulha	91405030101	FEEDP-4	Tanpur GPS	2470478° 91°05'30"	N	Y	0.004	1.18	148

SHRIGI NAO
 Senior Chemist
 Zonal Laboratory, Comilla

SHRIGI NAO
 Senior Chemist
 Zonal Laboratory, Comilla

KANAI LATIF
 Junior Chemist
 Zonal Laboratory, Comilla



Government of the People's Republic of Bangladesh
Office of the Senior Chemist
Department of Public Health Engineering (DPHE)
Zonal Laboratory, Bangladesh



Water Test Report of PRIP-4 Project

Sl. No.	District	Upazila	Village	School ID	Type of School	Year point	Name of School	Water Quality		
								Temperature	pH	TDS
1	Barisal	Barisal	Barisal	101	PS	20/09/21	Barisal PS	21.11°C	7.8	100
2	Barisal	Barisal	Barisal	102	PS	20/09/21	Barisal PS	21.11°C	7.8	100

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29.9.21
Md. Hossain Kabir
Sample Analyst
DPHE, Zonal Lab, Bangladesh

Handwritten signature
29.9.21
Md. Akbarul Kabir
Senior Chemist
DPHE, Zonal Lab, Bangladesh

Memo: 46.03.2020.196.16.004.2.1.164
CC: 01. Project Director & Field Post, PRIP-4, DPHE, Dhaka
02. Executive Engineer, Office, Rangpur Division, Rangpur.
03. Sub-Dir. Engineer, DPHE, Comaplex, Bangladesh Ref. Office, Dhaka. Memo: 46.03.2020.01.14.03.15.22. Date: 29/09/2021

Date: 29/09/2021

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29.9.21
(Signature of Sample Analyst)
Sample Analyst
DPHE, Zonal Lab, Bangladesh

Handwritten signature
29.9.21
Md. Akbarul Kabir
Senior Chemist
DPHE, Zonal Lab, Bangladesh



Handwritten signature and date: 22/07/2020

Government of the People's Republic of Bangladesh
 Office of the Senior Chemist
 Department of Public Health Engineering (DPHE)
 Zonal Laboratory, Shabid Kamlar Rahman Road, Jhenaidah,
 Phone: 0451-61416, Fax: Email: wqpc@jhenaidahlab.dphe.gov.bd



Work order No. 46.01.18002/01.14.004.15-205- (Rev : 20/08/2020)

Water Test Report of PEDP-4 Project

Package No. : Contact No. : M. Shah Almeri, Chaprainsahapur.

Sl. No.	District	Upazila	Village/Ward	ID	Type of School	Water Point		Name of School	GPS Reading	Water Quality					Remarks
						Type	Depth (ft)			SS	Cl	Turb	Hard	Ca	
1	Chandriga	Alamdarga	Bhaddarbaripara	203010211	1	DTW (Sub-Mer.)	106.71	Haddarbaripara Govt. Primary School	N: 23°46'30.51" E: 88°52'22.07"	Free	Clear	0.008	0.08	15	
2	Chandriga	Alamdarga	Ramnagar	203010301	1	DTW (Sub-Mer.)	106.71	Ramnagar Govt. Primary School	N: 23°44'58.77" E: 88°51'05.67"	Free	Clear	0.010	0.02	40	
3	Chandriga	Alamdarga	Hajladari	203010613	1	DTW (Sub-Mer.)	91.46	Hajladari Govt. Primary School	N: 23°43'10.37" E: 88°50'58.67"	Free	Clear	0.007	0.01	20	
4	Chandriga	Alamdarga	Sonadanga	203011341	1	DTW (Sub-Mer.)	91.46	Govt. Al-Masrur Sonadanga Govt. Primary School	N: 23°39'40.37" E: 88°54'49.27"	Free	Clear	0.006	0.09	11	
5	Chandriga	Alamdarga	Ward No.-07	203012306	1	DTW (Sub-Mer.)	92.99	Alamdarga Thana Illa Terminal Govt. Primary School	N: 23°45'25.77" E: 88°56'07.77"	Free	Clear	0.001	1.80	30	
6	Chandriga	Alamdarga	Dopdanga	203010910	1	DTW (Sub-Mer.)	108.23	Dopdanga Alambha Govt. Primary School	N: 23°44'02.21" E: 88°53'29.30"	Free	Clear	0.003	0.02	13	
7	Chandriga	Alamdarga	Ashpangar	203019022	1	DTW (Sub-Mer.)	108.23	Ashpangar Govt. Primary School	N: 23°45'09.57" E: 88°53'28.30"	Free	Clear	0.006	0.02	10	
8	Chandriga	Alamdarga	Gonbari	203010404	1	DTW (Sub-Mer.)	109.76	Gonbari Govt. Primary School	N: 23°43'04.17" E: 88°52'20.27"	Free	Clear	0.025	1.91	29	
9	Chandriga	Alamdarga	Bedipura	203010611	1	DTW (Sub-Mer.)	108.23	Bedipura Shiksha A.G. Girls' Govt. Primary School	N: 23°41'11.57" E: 88°50'58.17"	Free	Clear	0.032	2.47	19	
10	Chandriga	Alamdarga	Agthakha	203011324	1	DTW (Sub-Mer.)	108.23	Ramnagar Agthakha Govt. Primary School	N: 23°47'14.61" E: 88°52'01.10"	Free	Clear	0.017	2.13	19	

Sample Collected by:
Handwritten signature
 M.A. Mostafizuraman
 Sample Analyser
 DPHE, Zonal Lab, Jhenaidah.

Sample Analyzed by:
Handwritten signature
 M.A. Mostafizuraman
 Sample Analyser
 DPHE, Zonal Lab, Jhenaidah.

Sample Analyzed by:
Handwritten signature
 Md. Nazim Hossain
 Senior Chemist
 DPHE, Zonal Lab, Jhenaidah.

Contaminated/Approved by:
Handwritten signature
 Md. Nazim Hossain
 Senior Chemist
 DPHE, Zonal Lab, Jhenaidah.



Signature
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Signature

Government of the People's Republic of Bangladesh
 Office of the Senior Chemist
 Department of Public Health Engineering (DPHE)
 Zonal Laboratory, Shabbul Karim Rahman Road, Dhaka.
 Phone: 0451-61416, Fax: Email: seniorchemist@dphe.gov.bd



Work order No. 46.01.18002/01.14.004.15-205. (Date: 20/08/2020)

Water Test Report of PEDP-4 Project

Package No.: Contact: M. Shah Almeri, Chapman@dphe.gov.bd

Sl. No.	District	Upazila	Village/Ward	ID	Type of School	Water Point		Name of School	GPS Reading	Water Quality					Remarks
						Type	Depth (ft)			SS	Chlor	As	Fe	Cd	
1	Chandriga	Alamdarga	Bhaddarbaripara	203010211	I	DTW (Sub-Mer.)	106.71	Haddisonpur Hard Govt. Primary School	N: 23°46'30.51" E: 88°52'22.07"	Free	Clear	0.008	0.08	15	
2	Chandriga	Alamdarga	Ramnagar	203010301	I	DTW (Sub-Mer.)	106.71	Ramnagar Govt. Primary School	N: 23°44'58.77" E: 88°51'05.67"	Free	Clear	0.010	0.02	40	
3	Chandriga	Alamdarga	Hogladari	203010613	I	DTW (Sub-Mer.)	91.46	Hogladari Govt. Primary School	N: 23°43'10.37" E: 88°50'58.67"	Free	Clear	0.007	0.01	20	
4	Chandriga	Alamdarga	Sonadanga	203011341	I	DTW (Sub-Mer.)	91.46	Govt. Al-Masrur Sonadanga Govt. Primary School	N: 23°39'40.37" E: 88°54'49.27"	Free	Clear	0.006	0.09	11	
5	Chandriga	Alamdarga	Ward No.-07	203012306	I	DTW (Sub-Mer.)	92.99	Alamdarga Pura Iba Terminal Govt. Primary School	N: 23°45'25.77" E: 88°56'07.77"	Free	Clear	0.001	1.80	30	
6	Chandriga	Alamdarga	Dopdanga	203010910	I	DTW (Sub-Mer.)	108.23	Dopdanga Adarsha Govt. Primary School	N: 23°44'02.21" E: 88°53'29.30"	Free	Clear	0.003	0.02	13	
7	Chandriga	Alamdarga	Ashpurgar	203019022	I	DTW (Sub-Mer.)	108.23	Ashpurgar Govt. Primary School	N: 23°45'09.57" E: 88°53'28.37"	Free	Clear	0.006	0.02	10	
8	Chandriga	Alamdarga	Gonbari	203010404	I	DTW (Sub-Mer.)	109.76	Gonbari Govt. Primary School	N: 23°43'04.17" E: 88°52'20.27"	Free	Clear	0.025	1.91	29	
9	Chandriga	Alamdarga	Bedpura	203010611	I	DTW (Sub-Mer.)	108.23	Bedpura Shiksha A.G. Girls' Govt. Primary School	N: 23°41'11.57" E: 88°50'58.17"	Free	Clear	0.032	2.47	19	
10	Chandriga	Alamdarga	Agthabada	203011324	I	DTW (Sub-Mer.)	108.23	Ramnagar Agthabada Govt. Primary School	N: 23°43'14.61" E: 88°52'01.10"	Free	Clear	0.017	2.13	19	

Sample Collected by:
Signature
 M.A. Akbaruzzaman
 Sample Analyser
 DPHE, Zonal Lab, Dhaka.

Sample Analyzed by:
Signature
 M.A. Akbaruzzaman
 Sample Analyser
 DPHE, Zonal Lab, Dhaka.

Sample Analyzed by:
Signature
 M.A. Nazim Hossain
 Senior Chemist
 DPHE, Zonal Lab, Dhaka.

Contaminant Approved by:
Signature
 M.A. Nazim Hossain
 Senior Chemist
 DPHE, Zonal Lab, Dhaka.



Signature
Date
 Head of Laboratory
 DPHE, Zonal Lab, Dhaka

Government of the People's Republic of Bangladesh
 Office of the Senior Chemist
 Department of Public Health Engineering (DPHE)
 Zonal Laboratory, Shaddi Kaniar Rahman Road, Dhaka.
 Phone: 0451-61416, Fax: Email: seniorchemist@dphe.gov.bd



Work order No. 46.01.18002/01.14.004.15-2015, dtm: 20/08/2015

Water Test Report of PEDP-4 Project

Package No.: Contact: M. Shah Almeri, Chaprainship/pt.

Sl. No.	District	Upazila	Village/Ward	ID	Type of School	Water Point		Name of School	GPS Reading	Water Quality					Remarks
						Type	Depth (ft)			SS	Chlor	As	Pb	Cr	
1	Chandriga	Alamdanga	Bhadracharpur	203010211	I	DTW (Sub-Mer.)	106.71	Haidarshapur Hard Govt. Primary School	N: 23°46'30.51" E: 88°52'22.07"	Free	Clear	0.008	0.08	15	
2	Chandriga	Alamdanga	Ramnagar	203010301	I	DTW (Sub-Mer.)	106.71	Ramnagar Govt. Primary School	N: 23°44'58.77" E: 88°51'05.67"	Free	Clear	0.010	0.02	40	
3	Chandriga	Alamdanga	Hajladari	203010613	I	DTW (Sub-Mer.)	91.46	Hajladari Govt. Primary School	N: 23°43'10.37" E: 88°50'58.67"	Free	Clear	0.007	0.01	20	
4	Chandriga	Alamdanga	Sonadanga	203011341	I	DTW (Sub-Mer.)	91.46	Shad. Al-Masrur Sonadanga Govt. Primary School	N: 23°39'40.37" E: 88°54'49.27"	Free	Clear	0.006	0.09	11	
5	Chandriga	Alamdanga	Ward No.-07	203012306	I	DTW (Sub-Mer.)	92.99	Alamdanga Thana Illia Terminal Govt. Primary School	N: 23°45'25.77" E: 88°56'07.77"	Free	Clear	0.001	1.80	30	
6	Chandriga	Alamdanga	Dopdanga	203010910	I	DTW (Sub-Mer.)	108.23	Dopdanga Adarsha Govt. Primary School	N: 23°44'02.21" E: 88°53'29.30"	Free	Clear	0.003	0.02	13	
7	Chandriga	Alamdanga	Ashpurgar	203019022	I	DTW (Sub-Mer.)	108.23	Ashpurgar Govt. Primary School	N: 23°45'09.57" E: 88°53'28.37"	Free	Clear	0.006	0.02	10	
8	Chandriga	Alamdanga	Gandari	203010404	I	DTW (Sub-Mer.)	109.76	Gandari Govt. Primary School	N: 23°43'04.17" E: 88°52'20.27"	Free	Clear	0.025	1.91	29	
9	Chandriga	Alamdanga	Bedipura	203010611	I	DTW (Sub-Mer.)	108.23	Bedipura Shiksha A.G. Girls' Govt. Primary School	N: 23°41'11.57" E: 88°50'58.17"	Free	Clear	0.032	2.47	19	
10	Chandriga	Alamdanga	Agthakha	203011324	I	DTW (Sub-Mer.)	108.23	Ramnagar Agthakha Govt. Primary School	N: 23°43'14.61" E: 88°52'01.10"	Free	Clear	0.017	2.13	19	



Sample Collected by:
Signature
 M.A. Akbaruzzaman
 Sample Analyser
 DPHE, Zonal Lab, Dhaka.

Sample Analyzed by:
Signature
 M.A. Akbaruzzaman
 Sample Analyser
 DPHE, Zonal Lab, Dhaka.

Sample Analyzed by:
Signature
 M.A. Nazim Islam
 Senior Chemist
 DPHE, Zonal Lab, Dhaka.

Contaminant/Approved by:
Signature
 M.A. Nazim Islam
 Senior Chemist
 DPHE, Zonal Lab, Dhaka.



	Government of the People's Republic of Bangladesh Office of the Senior Chemist Department of Public Health Engineering (DPHE) Bogra Zonal Lab, Seojgari, Jamtola, Bogra. Phone: 031-75295, Fax: , Email: wpmc_bograzonalab@yahoo.com	
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Memo 48.03.1000.105.16.01.21.230

Date: 10/11/2021

Physical/Chemical/Bacteriological Analysis of Water Sample

Sample ID: BOG2021110116 to BOG2021110130, Total: 15	District: Gaibandha, Upazila: Gobindagarj
Sent by: Sub-assistant Engineer, DPHE, Gobindagarj, Gaibandha.	Sample Source: STW-Other Pump
Ref. Memo No: 48.03.3230-401.14.014.21-269 & Dated: 26/09/2021 PH: TSP-PEDP-4/0349 TID 995264	Date of Testing: 09/11/2021 & 10/11/2021
Collection date: 06/11/2021 & 09/11/2021	Receiving date: 09/11/2021

LABORATORY TEST RESULTS:

Sample ID	Name of School	ID	Global Position (GPS)		Arsenic (mg/l)		Nitrite (mg/l)		Iron (mg/l)	
			Latitude	Longitude	LOG 0.005, 0.05, 0.25	Method	LOG 0, 0.05, 0.10, 0.20	Method	LOG 0.1, 0.5, 1.0, 5.0	Method
BOG2021110116	Bogran GPS	8118626403	25°0'12"	89°13'10"	0.043	AAS	30	Titrimetric	2.3	AAS
BOG2021110117	Pargari GPS	188626103	25°1'14"	89°12'21"	0.020	AAS	34	Titrimetric	2.7	AAS
BOG2021110118	Kakra GPS	188621203	25°0'34"	89°13'09"	0.023	AAS	28	Titrimetric	4.1	AAS
BOG2021110119	Mandor GPS	81188021103	25°0'12"	89°12'17"	0.012	AAS	28	Titrimetric	4.5	AAS
BOG2021110120	Pargari GPS	188626113	25°1'35"	89°12'17"	0.025	AAS	36	Titrimetric	1.7	AAS
BOG2021110121	Mandor GPS	81188021103	25°0'42"	89°12'31"	0.20	AAS	29	Titrimetric	3.4	AAS
BOG2021110122	Chakra Singa GPS	188626003	25°0'34"	89°12'52"	0.042	AAS	32	Titrimetric	0.7	AAS
BOG2021110123	Prostha GPS	188621903	25°0'29"	89°12'47"	0.051	AAS	30	Titrimetric	2.8	AAS
BOG2021110124	Kakra GPS	188621003	25°0'47"	89°12'37"	0.051	AAS	32	Titrimetric	0.8	AAS
BOG2021110125	Nakra Shodh GPS	188621203	25°0'12"	89°12'12"	0.017	AAS	28	Titrimetric	1.1	AAS
BOG2021110126	Hanjar GPS	188626003	25°14'24"	89°21'17"	0.033	AAS	28	Titrimetric	0.8	AAS
BOG2021110127	Old Praga GPS	188626003	25°12'30"	89°12'32"	0.035	AAS	34	Titrimetric	4.2	AAS
BOG2021110128	Sandhoru GPS	188621103	25°0'49"	89°12'51"	0.033	AAS	30	Titrimetric	1.5	AAS
BOG2021110129	Shankar GPS	81188021103	25°04'05"	89°22'24"	0.071	AAS	29	Titrimetric	0.8	AAS
BOG2021110130	Teal Barua GPS	81188626703	25°12'17"	89°24'14"	0.024	AAS	32	Titrimetric	2.1	AAS

Note: Sample Collected by Md. Sahab Uddin. LOD-Level Of Quantification, BGS- Bangladesh Standard, AAS- Atomic Absorption Spectrophotometer, UVS- Ultra Violet Spectrophotometer. Lab St: 5657-5671

Test Performed by: Name: Md. Alauddin Al Faruque Designation: Junior Chemist Name: Md. Halizur Rahman Designation: Sample Analyzer	Countersigned/Approved by: 1.) Name: Md. Sohail Rana Designation: Senior Chemist 2.) Name: Designation:
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ডিপার্টমেন্ট অফ পাবলিক
 হেলথ ইঞ্জিনিয়ারিং
 বগরা জোনাল ল্যাব, সেজগারী, জামতলা, বগরা
 ১০১১, ১০১২, ১০১৩



১৭৯ ১৩/১২/২০২১

	Government of the People's Republic of Bangladesh Office of the Senior Chemist Department of Public Health Engineering (DPHE) Bogra Zonal Lab, Seojgai, Jamsola, Bogra. Phone: 051-79293, Fax: , Email: wpmst_bogra@dphe.gov.bd	
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Memo#4E00.1000.100.16.01.21.321

Date:14/12/2021

Physical/Chemical/Bacteriological Analysis of Water Sample

Sample ID: BOG20211202/PS/1/BOG20211202/1, Tube: 10	District: Gaibandha
Servicy: Sub-division Engineer, DPHE, Gaibandha Circle, Gaibandha	Location: Sewer, STD Office Floor
Ref. Memo No: 49.202.2224.401.10.001.20.131 & Dated: 18/11/2021 Phy. TPA-PEDF-4, DO: 258234	Date of Testing: 13/12/2021 & 14/12/2021
Collection date: 07/12/2021 & 08/12/2021	Receiving date: 09/12/2021

LABORATORY TEST RESULTS

Sample ID	Geograph Name	ID	Upazila/Kaushasha	Municipal City Corp.	Global Position(GPS)		Amount (mg/L)		Unit (mg/L)	
					Latitude	Longitude	DO	Method	DO & T	DO & T
BOG20211202/PS	Rajshahi Subdivision Engineer	BOG20211202/1	Rajshahi Puranpura	Corporation	23°19'57"	88°11'27"	3.841	AAS	0.2	AAS
BOG20211202/PS	Sub-division Engineer DPHE	BOG20211202/2	Kamarkhanda Jir.	Corporation	23°19'57"	88°11'24"	0.071	AAS	2.1	AAS
BOG20211202/PS	Sub-division Engineer DPHE	BOG20211202/3	Sakhalia	Corporation	23°19'57"	88°11'25"	0.014	AAS	8.8	AAS
BOG20211202/PS	Sub-division Engineer DPHE	BOG20211202/4	Barisal	Corporation	23°19'57"	88°11'27"	0.014	AAS	1.5	AAS
BOG20211202/PS	Sub-division Engineer DPHE	BOG20211202/5	Barisal	Corporation	23°19'57"	88°11'27"	0.014	AAS	0.2	AAS
BOG20211202/PS	Sub-division Engineer DPHE	BOG20211202/6	Barisal	Corporation	23°19'57"	88°11'27"	0.705	AAS	17	AAS
BOG20211202/PS	Sub-division Engineer DPHE	BOG20211202/7	Barisal	Corporation	23°19'57"	88°11'27"	0.014	AAS	2.1	AAS
BOG20211202/PS	Sub-division Engineer DPHE	BOG20211202/8	Barisal	Corporation	23°19'57"	88°11'27"	0.014	AAS	0.1	AAS
BOG20211202/PS	Sub-division Engineer DPHE	BOG20211202/9	Barisal	Corporation	23°19'57"	88°11'27"	0.038	AAS	2.1	AAS
BOG20211202/PS	Sub-division Engineer DPHE	BOG20211202/10	Barisal	Corporation	23°19'57"	88°11'27"	0.014	AAS	1.4	AAS

Note: Sample Collected by Md. Shihab Uddin, LOQ-Limit On Quantitation, DO: Bangladesh Standard, AAS: Atomic Absorption Spectrophotometer, UVF: Ultra Violet Spectrophotometer, Lab. No: D.M.-1225

<p>Test Performed by:</p> <p>1.1 Name: Md. Alauddin Al Farouque Designation: Junior Chemist</p> <p>2.1 Name: Md. Hafizul Karim Designation: Sample Analyst</p>	<p>Checked/Approved by:</p> <p>1.2 Name: Md. Sahel Hossain Designation: Senior Chemist</p> <p>2.2 Name: _____ Designation: _____</p>
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চেমিস্ট্রি সেকশন চেমিস্ট
 ডিবিএল সিস্টেম
 বাংলাদেশ প্রকৌশল ও
 পরিবেশ সুরক্ষা বিভাগ



Water Test Report of PEDP-4
DPHE Zonal Laboratory, Tongli, Gazipur.

SL.	District	Upazila	Union/ Pouroshava	Village	ID	Type of School	Type of Water Point	Name of School	GPS	Water Quality			Remarks	
										Send	Clear	Iron-Fe (mg/L)		Arsenic-As (mg/L)
1	Dhaka	Dharmas	Sankar	Chandabhat	310150802	GPS	DTWISDP	Chandabhat Govt Primary School	23°42'42.87N 90°02'31.97E	✓	3.33	0.002	10	
2	Dhaka	Dharmas	Chandabhat	Naha	310150600	GPS	DTWISDP	Govt. Naha Govt Primary School	24°00'45.27N 90°02'07.67E	✓	0.59	0.197	15	

Comments: Samples were collected by S.M. Farves Talabdar Sample Analyzer. Arsenic(As) & Iron-Fe parameters have been tested by Atomic Absorption Spectrophotometer(AAS) & Chloride(Cl) parameter has been tested by Titrimetric method. Benzotriazole Standard for As=0.05 mg/L, Fe=0.3-1.0 mg/L & Cl (150-600) mg/L. Limit Of Quantitation(LQ) of As=0.001 mg/L, Fe=0.05 mg/L & Cl=1.0 mg/L. DTWISDP Deep Tala Water/Scholarship Fund.

Almofin
10-02-2022
সি.এম. ফারেস তালাভদর
সেমি-অ্যানালিটিক্যাল
সেমি-অ্যানালিটিক্যাল
সেমি-অ্যানালিটিক্যাল
সেমি-অ্যানালিটিক্যাল

Deep Talabdar
10/02/2022
সি.এম. ফারেস তালাভদর
সেমি-অ্যানালিটিক্যাল
সেমি-অ্যানালিটিক্যাল
সেমি-অ্যানালিটিক্যাল

Almofin
10-02-2022
সি.এম. ফারেস তালাভদর
সেমি-অ্যানালিটিক্যাল
সেমি-অ্যানালিটিক্যাল
সেমি-অ্যানালিটিক্যাল



Water Test Report of PCD-4
DPHE Zonal Laboratory, Tirupur, Gazipur.

Sl. No.	District	Division	Union/ Panchayat	Village	ID	Type of Sample	Type of Water	Area of Interest	GPS	Water Quality	Priority				
										Hardness (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Total (mg/L)
1	Coimbatore	Chinnai	Chinnai	Chinnai	2100001	Open	Open	Open	22.423 1.6	1.42	8.001	100			
2	Coimbatore	Chinnai	Chinnai	Chinnai	2100002	Open	Open	Open	22.423 1.6	1.42	8.001	100			
3	Coimbatore	Chinnai	Chinnai	Chinnai	2100003	Open	Open	Open	22.423 1.6	1.42	8.001	100			
4	Coimbatore	Chinnai	Chinnai	Chinnai	2100004	Open	Open	Open	22.423 1.6	1.42	8.001	100			
5	Coimbatore	Chinnai	Chinnai	Chinnai	2100005	Open	Open	Open	22.423 1.6	1.42	8.001	100			
6	Coimbatore	Chinnai	Chinnai	Chinnai	2100006	Open	Open	Open	22.423 1.6	1.42	8.001	100			
7	Coimbatore	Chinnai	Chinnai	Chinnai	2100007	Open	Open	Open	22.423 1.6	1.42	8.001	100			
8	Coimbatore	Chinnai	Chinnai	Chinnai	2100008	Open	Open	Open	22.423 1.6	1.42	8.001	100			

Comments: Samples were analyzed by MLT 15000 Analyser. Samples were analyzed & reported as per the standard method. The results are reported as per the standard method. The results are reported as per the standard method.

Analysed by: [Signature]
Checked by: [Signature]
Approved by: [Signature]

DPHE Zonal Laboratory, Tirupur, Gazipur.



Government of the People's Republic of Bangladesh
 Office of the Senior Chemist,
 Department of Public Health Engineering
 Khan Jahan Ali Road, Rupsha, Khataba
 Phone : 041-721348, Fax: e-mail : wqme_mhdo@dohe.gov.bd



Water Test Report of PEDP-4 Project

Executive Engineer Memo No-46.03.6500.061.16.201.19-724, Date: 24/08/2021
 Name of Contractor: M/S Moonalisa, Raupura, Dhaka, Package No: -, Work Order No: 805, Date: 26/10/2020

Sl. No.	Disease	Location	Village	School ID	Type of School	Water Test			Name of School	GPS	Water Quality					Remarks
						Type	Depth (m)	Temp			Sand	Clear	As (mg/L)	Fe (mg/L)	Cl (mg/L)	
1	Dysentery	Lokarga	Mondobang	207010206	1	-	-	-	Mondobang Govt. Primary School	N: 23°16'04" E: 89°18'59"	11	12	13	14	15	16
2	None	Lokarga	Nasra	207010201	1	-	-	-	113 No. Nasra Govt. Primary School	N: 23°16'26" E: 89°17'14"	11	12	13	14	15	16

Collected by

[Signature]
 24/08/2021

Analyzed by

[Signature]
 26/10/2020

Approved by

[Signature]
 26/10/2020

Md. Jabbar Iqbal
 Sample Collector, DPHE
 (Copy: Veterinary Officer)

[Signature]
 24/08/2021
 (Copy: etc. etc. etc.)
 Health Officer (for etc.)
 District Office of Public Health Engineering, Dhaka

[Signature]
 26/10/2020
 (Quantity: 100ml)
 Sample Analysis, DPHE
 Zonal Laboratory, Dhaka

(M4: Avinoid Hossain)
 Junior Chemist, DPHE
 Zonal Laboratory, Dhaka

(M4: Avinoid Hossain)
 Junior Chemist, DPHE
 Zonal Laboratory, Dhaka



Ministry of Natural Resources and Environmental Conservation
 Government of the People's Republic of Bangladesh
 Dhaka-1000
 Telephone: 880-2-9530444
 Fax: 880-2-9530444
 E-mail: mnrce@doe.gov.bd
 Website: www.mnrce.gov.bd

Water Test Report of PE-DP-4 Project

Executive Engineer, Manu No. 2607 dated 16/01/19-198, Date: 27/06/2021
 Name of the project: M/S. Moudin, Bangladesh Plastic Package No. 5, Ward 03/A, Nur 001/5/A, Date: 20/10/2020

Sl. No.	Type of Sample	Village	Sub. (H)	Type of Sample	Year	Name of School	GPS	Parameters					
								Hardness	TDS	Ca	Mg	pH	
1	Water	1st Ward	1	1	1	1st No. Madanghat Primary School	23.85 91.85	110	150	0.002	0.001	7.5	110
2	Water	1st Ward	2	1	1	1st No. Madanghat Primary School	23.85 91.85	110	150	0.002	0.001	7.5	110
3	Water	1st Ward	3	1	1	1st No. Madanghat Primary School	23.85 91.85	110	150	0.002	0.001	7.5	110
4	Water	1st Ward	4	1	1	1st No. Madanghat Primary School	23.85 91.85	110	150	0.002	0.001	7.5	110
5	Water	1st Ward	5	1	1	1st No. Madanghat Primary School	23.85 91.85	110	150	0.002	0.001	7.5	110
6	Water	1st Ward	6	1	1	1st No. Madanghat Primary School	23.85 91.85	110	150	0.002	0.001	7.5	110
7	Water	1st Ward	7	1	1	1st No. Madanghat Primary School	23.85 91.85	110	150	0.002	0.001	7.5	110
8	Water	1st Ward	8	1	1	1st No. Madanghat Primary School	23.85 91.85	110	150	0.002	0.001	7.5	110
9	Water	1st Ward	9	1	1	1st No. Madanghat Primary School	23.85 91.85	110	150	0.002	0.001	7.5	110
10	Water	1st Ward	10	1	1	1st No. Madanghat Primary School	23.85 91.85	110	150	0.002	0.001	7.5	110

Handwritten signature and date: 27/06/21

(Signature)
 27/06/21



Water Test Report of PEDP-4 Project

Sl No.	Sample Type	Village	No	Date	Water Point			Name of School	Type	Water Quality				Remarks	
					Height	Depth	Flow			pH	CaCO ₃ (mg/L)	TDS (mg/L)	Hardness (mg/L)		Chloride (mg/L)
1	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
2	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
3	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
4	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
5	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
6	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
7	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
8	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
9	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
10	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
11	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
12	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
13	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
14	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
15	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
16	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
17	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16
18	Well	Thal	200/1001	1	0	0	0	0	0	11	12	13	14	15	16

Handwritten notes in Malayalam script, including a signature and date.

Analysed by: *[Signature]*
 S.A. & C.S.
 Deputy Engineer (I)
 Sample Analysis, DMHS
 Zonal Laboratory, Mysuru

Approved by: *[Signature]*
 DMHS Mysuru (Zone)
 Joint Comm. - DMHS
 Zonal Laboratory, Mysuru



Water Test Report of PEPF-4
DPPE Zonal Laboratory, Tongji, Gazipur.

Sl. District	Upazila	Union Parishada	Village	ID	Type of School	Type of Water Point	Name of School	GPS	Water Quality			Remarks	
									Lead	Cadmium	Mercury		
1	Moulvibazar	Barindia	Kala	20001012	GP	OTW029	Shri Saptak Gaur Primary School	25.718 8°N 88.882 8°E	9	0.97	0.813	58	
2	Moulvibazar	Barindia	Uda Kala	20001003	GP	OTW029	Shri Saptak Gaur Primary School	25.718 8°N 89.485 7°E	4.23	0.508	188		
3	Moulvibazar	Barindia	Ladaha	20001002	GP	OTW029	Shri Saptak Gaur Primary School	25.718 8°N 89.485 7°E	19.23	0.505	68		
4	Moulvibazar	Barindia	Mandaha	20001004	GP	OTW029	Shri Saptak Gaur Primary School	25.718 8°N 89.485 7°E	18.07	0.508	148		
5	Moulvibazar	Barindia	Hawrah	20001001	GP	OTW029	Shri Saptak Gaur Primary School	25.718 8°N 89.485 7°E	3.26	0.586	12		
6	Moulvibazar	Barindia	Mahadaha	20001005	GP	OTW029	Shri Saptak Gaur Primary School	25.718 8°N 89.485 7°E	3.26	0.378	48		
7	Moulvibazar	Barindia	Madaha	20001006	GP	OTW029	Shri Saptak Gaur Primary School	25.718 8°N 89.485 7°E	3.78	0.203	18		
8	Moulvibazar	Barindia	Madaha	20001007	GP	OTW029	Shri Saptak Gaur Primary School	25.718 8°N 89.485 7°E	4.28	0.378	93		
9	Moulvibazar	Barindia	Madaha	20001008	GP	OTW029	Shri Saptak Gaur Primary School	25.718 8°N 89.485 7°E	3.26	0.208	118		

Chemistry Samples were collected by Mr. Tanvirul Karim, Senior Chemist, Analytical & Control Laboratory, Tongji, Gazipur, Dhaka. The results are given in the table. The results are given in the table. The results are given in the table.

21.06.2018

Charulita Begum
Senior Chemist
Water Office, Dhaka, 1000

Dr. Md. Tanvirul Karim
Senior Chemist
Water Office, Dhaka, 1000

Dr. Md. Tanvirul Karim
Senior Chemist
Water Office, Dhaka, 1000

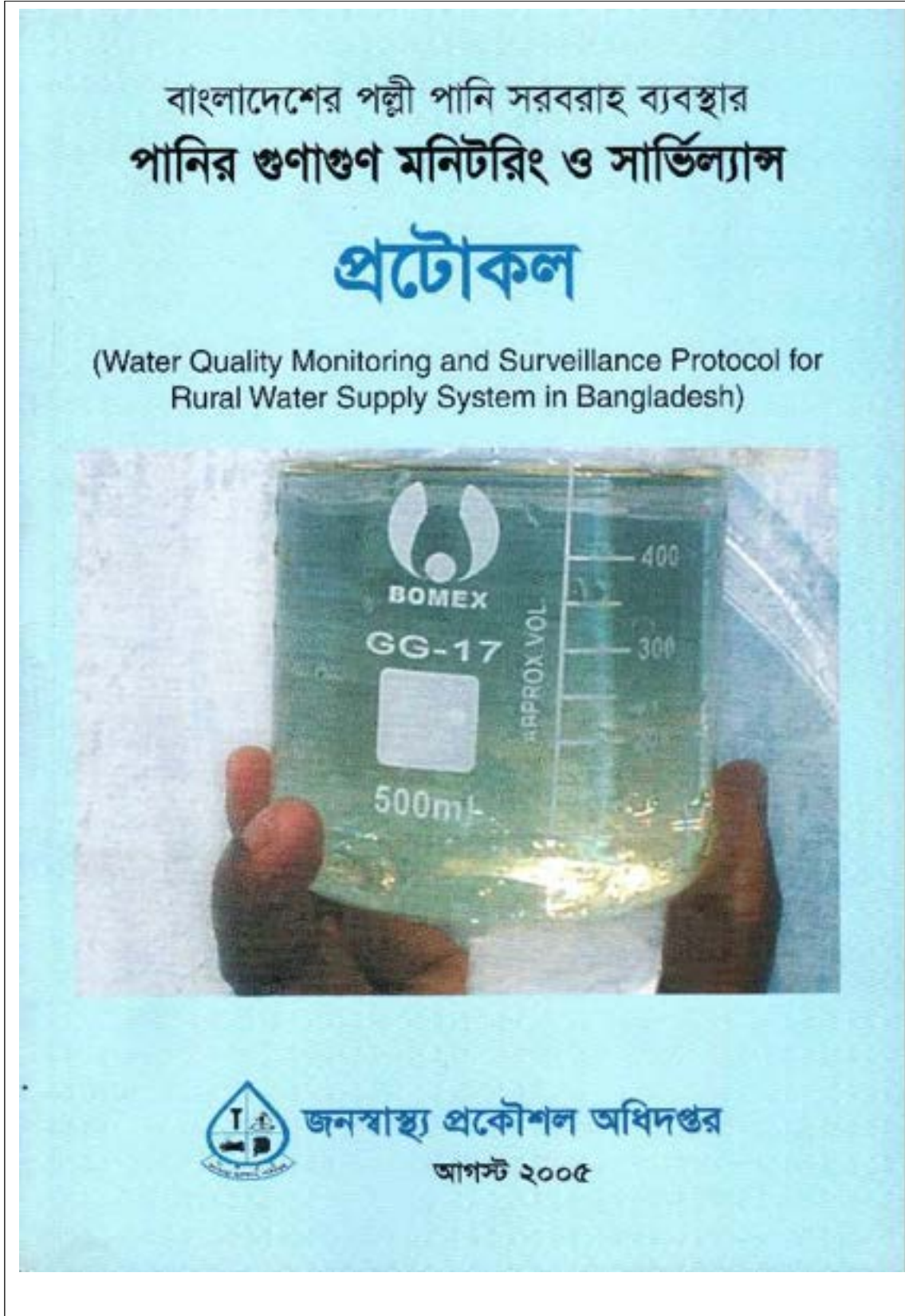
**Table 2 - List of Unacceptable Water Sources where mitigation measures were considered**

SL No	District	Name of School	EMIS Code	Test Result			Remark	Suggested Option	After intervention		
				As	Fe	Cl			As	Fe	Cl
1	Munshiganj	Atpara GPS	312060805	0.001	6.96	120	not acceptable	RO Filter	<LOQ	<LOQ	<LOQ
2	Brahmanbaria	Khatinga GPS	405011901	0.003	6.86	625	not acceptable	RO Filter	<0.001	<LOQ	<LOQ
3	Brahmanbaria	Araisidha GPS	405011202	0.101	3.6	97	not acceptable	RO Filter	<0.001	<LOQ	<LOQ
4	Brahmanbaria	Araishidha (south) GPS	405011202	0.004	5.33	27	not acceptable	RO Filter	<LOQ	<LOQ	<LOQ
5	Brahmanbaria	Mslondapur GPS	405070404	0.001	8.66	71	not acceptable	RO Filter	<0.001	1.85	<LOQ
6	Rangpur	Imadpur Taltola GPS	99105071707	<LOQ	6.5	<LOQ	not acceptable	AIRP	<LOQ	<LOQ	<LOQ
7	Rangpur	Jogoda Nandapur GPS	99705079013	<LOQ	6.0	<LOQ	not acceptable	AIRP	<LOQ	<LOQ	<LOQ
8	Chuadanga	Gabargara GPS	203040201	.0145	5.38	20	not acceptable	RO Filter	0.04	2.50	<LOQ
9	Chuadanga	Kotali GPS	203040604	0.091	4.88	28	not acceptable	RO Filter	<LOQ	<LOQ	<LOQ
10	Chuadanga	Kedargonj GPS	203040103	0.114	1.97	15	not acceptable	RO Filter	<0.03	<LOQ	<LOQ
11	Chuadanga	Nehalpur GPS	203040607	0.082	2.67	10	not acceptable	RO Filter	<0.02	<LOQ	<LOQ
12	Chuadanga	Sarajgonj GPS	203040501	0.084	2.62	15	not acceptable	RO Filter	<0.02	<LOQ	<LOQ
13	Chuadanga	Rajapur GPS	203040114	0.078	4.28	35	not acceptable	RO Filter	<0.01	<LOQ	<LOQ
14	Chuadanga	Jhajri GPS	203040303	0.078	2.74	15	not acceptable	RO Filter	<0.01	<LOQ	<LOQ
15	Chuadanga	Shisukallan GPS	203040809	0.085	2.02	10	not acceptable	RO Filter	<0.02	<LOQ	<LOQ
16	Chuadanga	Ishak Ali Mondal Sonatonpur GPS	203011581	0.168	0.89	15	not acceptable	RO Filter	<0.04	<LOQ	<LOQ
17	Chuadanga	Puraton Panchila GPS	203010905	0.83	3.28	20	not acceptable	RO Filter	<0.02	<LOQ	<LOQ
18	Gaibandha	Ghagoya	99108010903	0.076	4.3	<LOQ	not acceptable	RO Filter	<0.001	<LOQ	<LOQ
19	Gaibandha	Kuptoia	99108010102	0.080	20	0	not acceptable	RO Filter	<LOQ	<LOQ	<LOQ
20	Gaibandha	Baoyali	99108010505	0.074	7.4	0	not acceptable	RO Filter	<0.004	<LOQ	<LOQ



SL No	District	Name of School	EMIS Code	Test Result			Remark	Suggested Option	After intervention		
				As	Fe	Cl			As	Fe	Cl
21	Gaibandha	Shakpala GPS	91108021102	0.22	8.4	26	not acceptable	RO Filter	<0.03	<2.40	<LOQ
22	Gaibandha	Polashbari GPS	108021006	0.057	2.9	32	not acceptable	RO Filter	<0.001	<LOQ	<LOQ
23	Gaibandha	Khiribari GPS	108021502	0.061	0.9	32	not acceptable	RO Filter	<0.001	<LOQ	<LOQ
24	Gaibandha	Uttar popgoil GPS	108020806	0.295	4.2	34	not acceptable	RO Filter	<0.003	<LOQ	<LOQ
25	Gaibandha	Bordhonkuthi GPS	108021104	0.065	1.3	30	not acceptable	RO Filter	<0.001	<LOQ	<LOQ
26	Gaibandha	Shalmara GPS	91108021702	0.071	0.8	32	not acceptable	RO Filter	<0.002	<LOQ	<LOQ
27	Gaibandha	Taluk Kanupur GPS	91108020701	0.234	2.1	32	not acceptable	RO Filter	<0.003	<LOQ	<LOQ
28	Dhaka	02 No. Nikla GPS	31050502	0.107	0.58	15	not acceptable	RO Filter	<0.003	<LOQ	<LOQ
29	Dhaka	BG Charchona GPS	300161102	0.077	4.90	120	not acceptable	RO Filter	<0.002	<LOQ	<LOQ
30	Narail	Mondolbhag GPS	207030306	0.002	5.9	305	not acceptable	RO Filter	<LOQ	<1.45	<LOQ
31	Narail	98 No. Bhatudaha GPS	207030102	0.067	1.32	215	not acceptable	RO Filter	<0.002	<LOQ	<LOQ
32	Narail	Debi Sultia GPS	207030404	0.005	2.51	850	not acceptable	RO Filter	<LOQ	<1.45	<LOQ
33	Manikganj	08 No. Lautara GPS	309070702	0.005	10.23	85	not acceptable	RO Filter	<LOQ	<4.45	<LOQ
34	Manikganj	41 No. Mandarta GPS	309070606	0.068	10.07	125	not acceptable	RO Filter	<LOQ	<LOQ	<4.45
35	Manikganj	Noyadangi GPS	309031583	0.06	0.20	12	not acceptable	RO Filter	<LOQ	<LOQ	<0.002
36	Manikganj	Bezpara GPS	309060509	0.018	8.20	65	not acceptable	RO Filter	<LOQ	<4.45	<LOQ
37	Manikganj	68 Dakkhin Khando Char Bharenga GPS	309070403	0.01	7.28	8.00	not acceptable	AIRP	<LOQ	<LOQ	<LOQ

Appendix-8: Water Quality Monitoring and Surveillance Protocol by DPHE



পরিধি ১-৭ মূলে নির্দেশ করা হয়েছে। নির্দিষ্ট ক্রিটিক্যাল কেমিক্যাল (critical chemical) পরামিতিরসমূহ নিচে বর্ণনা করা হলো।

আর্সেনিক

১৯৯৫ সালে সু-পার্ক পানিতে আর্সেনিক সূচকের বিষয়টি উন্মোচিত হওয়ার পর থেকে বাংলাদেশের ২৭৫ টি উপজেলার অধীনে ন-কৃপসমূহে বিস্তৃত মাত্রার আর্সেনিক সূচকসংঘটিত হয়েছে। আর্সেনিক সূচক পানি ব্যবহারে ফলে জনস্বাস্থ্য ঝুঁকিত সঞ্চারিত হয়, যা জনস্বাস্থ্যের হাকে কয়েক বছরের মধ্যে আর্সেনিকোসিস (arsenicosis) এর লক্ষণ হিসেবে প্রকাশ পাবে, এবং অকাজেরীশ ও চর্ম রোগসহিত হতে পারে। বাংলাদেশে আর্সেনিকটই একমাত্র ক্যান্সারমিত সৌখ ঘর হলে স্বাস্থ্যের প্রতি মারাত্মক ঝুঁকিতো দেখা দিয়েছে।

নির্ধারিত স্যাক্রেটরি স্ট্রিক্ট স্ট্যান্ডার্ডের মাধ্যমে পানিতে আর্সেনিকের মাত্রার সীমিত বিশ্ব স্বাস্থ্য সংস্থার গাইড লাইনে (৩য় সংস্করণ) পানীয় জলের সাময়িক গাইড লাইন মান হিসেবে প্রতি লিটার পানীয় জলে ০.০১ মিলিগ্রাম (১০ মাইক্রোগ্রাম/লিটার) আর্সেনিকের উপস্থিতি নির্ধারণ করেছে। বাংলাদেশে বর্তমানে আর্সেনিকের স্ট্যান্ডার্ড মান প্রতি লিটারে ০.০৫ মিলিগ্রাম বা ৫০ মাইক্রোগ্রাম।

ক্লোরাইড বা লবণাক্ততা (chloride)

বাংলাদেশের উপকূলীয় অঞ্চলের অধীনে ন-কৃপসমূহে উচ্চ মাত্রার ক্লোরাইড বা লবণাক্ততা রয়েছে। লবণাক্ততা কৃপসংশোধন করলে বাংলাদেশে অপর্যাপ্ত পরিমাণে লবণাক্ততা প্রশস্ত থাকবে। তবে পানীয় ন-কৃপসমূহে সাধারণতঃ কম মাত্রার লবণাক্ততা রয়েছে। পানির তথ্যগত বিষয়ক বিশ্ব স্বাস্থ্য সংস্থার গাইড লাইনে (৩য় সংস্করণ) স্বাস্থ্যগত কোন গাইড লাইন মান প্রতিষ্ঠা করা হয়নি। তবে লক্ষণীয় যে, প্রতি লিটারে ২৫০ মিলিগ্রাম মাত্রার বেশী লবণাক্ততা পানীয় জলের স্বাস্থ্য এবং গ্রহণযোগ্যতার প্রভাব ফেলে। ক্লোরাইড থেকে উদ্ভূত স্বাস্থ্যগত কেশনের (cation) উপর নির্ভরশীল এবং সোডিয়াম, পটাশিয়াম এবং ক্যালসিয়াম ক্লোরাইডের মাত্রা প্রতি লিটার পানিতে ২০০ থেকে ৩০০ মিলিগ্রাম। বাংলাদেশে প্রতি লিটার পানিতে ১৫০ থেকে ৩০০ মিলিগ্রাম ক্লোরাইড গ্রহণযোগ্য এবং উপকূলীয় অঞ্চলে তাপ কেম জলে বা খাদ্যের প্রতি লিটারে ১০০০ মিলিগ্রাম পর্যন্ত গ্রহণ করা যায়।

আয়রন বা লৌহ (iron)

পানীয় জলে সাধারণভাবে লক্ষণীয় অয়রন বা লৌহের উপস্থিতি স্বাস্থ্যের জন্য উদ্বেগের বিষয় নয়। যদিও এর নিম্নতর মাত্রার সূচকে পানির চোখেরা ও ঘাসে প্রভাব ফেলে। পানীয় জলের তথ্যগত বিষয়ক বিশ্ব স্বাস্থ্য সংস্থার গাইড লাইনে (২য় সংস্করণ)-এ প্রতি লিটার পানিতে অয়রনের সাময়িক গাইড লাইন মান ০.৩০ মিলিগ্রাম নির্ধারণ করা হয়েছে। ৩৫৫ এর ৩য় সংস্করণে আয়রনের জন্য কোন গাইড লাইন মান নির্ধা করা হয়নি।

বাংলাদেশের অনেক অঞ্চলে অয়রনের উপস্থিতি গ্রহণযোগ্য সীমার চেয়ে বেশী। তাই কৃত্রিমকৃত উদ্দেশ্যে সূত্র আয়রন দূরীকরণ ইউনিট (mini iron removal units, IRIU)-এর মাধ্যমে আয়রন দূরীকরণের চেষ্টা করা হয়। বাংলাদেশ স্ট্যান্ডার্ড অনুযায়ী পানীয় জলে অয়রনের উপস্থিতি হলো ০.৩-১.০ মিলিগ্রাম / লিটার। পানীয় জলে যেখানে পানির বিকৃত ভোগে উৎস বেই, সেখানে প্রতি লিটারে ৫.০ মিলিগ্রাম পর্যন্ত অয়রনের উপস্থিতি গ্রহণযোগ্য বলে বিবেচিত হয়। এ সীমা বেড়ে গেলে আয়রন দূরীকরণ ইউনিট (iron removal unit) স্থাপন করা প্রয়োজন।

ম্যাঙ্গানিজ (manganese)

পানীয় জল সঞ্চারিত বিশ্ব স্বাস্থ্য সংস্থার গাইড লাইনে (২০০৪) প্রতি লিটারে ০.৫ মিলিগ্রাম ম্যাঙ্গানিজের উপস্থিতি সাময়িকভাবে স্বাস্থ্যগত গাইড লাইন মান হিসেবে গ্রহণ করা হয়েছে। পানি সরবরাহে প্রতি লিটারে ০.১ মিলিগ্রামের অধিক মাত্রায় ম্যাঙ্গানিজের উপস্থিতি থাকলে প্রথমল পানীয়তে অনাকর্ষিত ও খাদ্য এবং তাপক জোপে ৩ খণ্ড-বাসনে মন্য সৃষ্টি করে। বাংলাদেশ স্ট্যান্ডার্ড অনুযায়ী পানীয় জলে ম্যাঙ্গানিজের উপস্থিতি হলো ০.১ মিলিগ্রাম / লিটার।