SEMI-ANNUAL ENVIRONMENTAL MONITORING REPORT

#11 Semi-annual Report

(Reporting Period: July-December 2022) Project Number: 43405-027

GEORGIA: URBAN SERVICES IMPROVEMENT INVESTMENT PROGRAM (TRANCHE 5) (FINANCED BY THE ASIAN DEVELOPMENT BANK)

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ABBREVIATIONS

| ADB | Asian Development Bank | |
|----------------|---|--|
| CAP | Corrective Action Plan | |
| DC | Design Consultant | |
| DEPP | Department of Environmental protection and Permit | |
| PMD | Projects Management Department | |
| EA | Executing Agency | |
| EARF | Environmental Assessment and Review Framework | |
| EHS | Environmental Health & Safety | |
| EIA | | |
| EIP | Environmental Impact Assessment Environmental Impact Permit | |
| EMP/ SSEMP | | |
| EIVIP/ 33EIVIP | Environmental Management Plan/ Site-Specific Environmental Management Plan | |
| ES/ EMS | Environmental Specialist/ Environmental Monitoring Specialist | |
| GoG | Government of Georgia | |
| GRC | Grievance Redress Committee | |
| GRM | Grievance Redress Mechanism | |
| IPMO | Investment Program Management Office | |
| USIIP | Urban Services Improvement Investment Program | |
| IA | Implementing Agency | |
| IEE | Initial Environmental Examination | |
| MFF | Multi-tranche Financing Facility | |
| MoEPA | Ministry of Environment Protection and Agriculture | |
| MoRDI | Ministry of Regional Development & Infrastructure | |
| NEA | National Environmental Agency | |
| SC | Supervision Consultant | |
| TN | Total Nitrogen | |
| TP | Total Phosphorus | |
| USIIP | Urban Sector Improvement Investment Program | |
| UWSCG | United Water Supply Company of Georgia | |
| WS | Water Supply | |
| WSS | Water Supply & Sanitation | |
| W33 | Water Supply & Samation Waste Water Treatment Plant | |

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I. INTRODUCTION

1.1 Preamble

- 1. This report represents the Semi Annual Environmental Monitoring Review (SAEMR) for the Urban Services Improvement Investment Program, Tranche 5 for the period of January-June 2022.
- 2. This report is the 11th Environmental Monitoring Review (EMR) of Tranche 5 under USIIP.

1.2 Headline Information

- 3. In the reporting period, civil work within the framework of the USIIP/T5 was not carried out, since all construction activities under REG-03a and ZUG-02 sub-projects have already been completed and construction activities under REG-03b (MES-03) sub-project: Construction of WWTP in Mestia has not yet been launched due to the fact that the design of the project has not yet been commenced.
- 4. As mentioned above, the final design of the wastewater treatment plant in Mestia under REG-03b was not commenced during the reporting period. No teams have been mobilized to Mestia, no site establishments for the contractor have been erected. The reason for the delay is the agreement of the final design of the Waste Water Treatment Plant is Mestia and approval by UWSCG. The only site activity was Geotechnical Soil investigations for the bridge foundations which was completed in July 2021 so far, no site activities at all are ongoing.

II. PROJECT DESCRIPTION AND CURRENT ACTIVITIES

2.1 **Project Description**

- 5. The Urban Services Improvement Investment Program was developed as the Government's response to the lack of adequate and/or safe water supply, sewerage and sanitation in urban areas of Georgia. This is intended to optimize social and economic development in selected urban areas through improved urban water and sanitation services, and is financed by the ADB through its Multi-tranche Financing Facility. The Ministry of Regional Development and Infrastructure is the Executing Agency and the United Water Supply Company of Georgia, LLC is the Implementing Agency of the Investment Program. UWSCG is a 100% state-owned company.
- 6. The Investment Program will improve infrastructure through the development, design and implementation of a series of subprojects, each providing improvements in a particular sector (water supply and/or sewerage) in one town. Subprojects will rehabilitate existing infrastructure and/or create new and expanded infrastructure to meet the present and future demand. Water supply improvements will include source augmentation and head works, pumping systems, treatment facilities, transmission and distribution network; and, sewerage improvement works will include sewer network, pumping stations, main collectors and waste water treatment plants.

7. Tranche 5 of the Investment Program includes:

- Construction of Sewage System in Zugdidi (ZUG-02);
- Construction of Wastewater Treatment Plants in Zugdidi (A) REG-03a
- Construction of Waste Water treatment Plant in Mestia (B) REG-03b

The following projects are financed under Tranche 5:

8. Construction of Sewage System in Zugdidi (ZUG-02). The Zugdidi wastewater project envisages the rehabilitation and extension of the sewer network with gravity sewers and pressure lines and the construction of wastewater pumping stations. The project measures for the sewer network comprise the laying of 160 km new gravity pipes (DN 100 to DN 800) and 9.7 km new pressure pipes (OD 110 and OD 630). There will be 24 new wastewater pumping stations. The new network will convey the wastewater to a new wastewater treatment plant, which will be constructed under Reg-03 – Zugdidi (A) WWTP project.

The contract No P43405-ICB-Zug-02 was signed on February 1, 2017 with Ludwig Pfeiffer Hoch-und Tlefbau GmbH & Co.KG, initial completion date 31st was Jan 2020. The Contract has been extended till 2nd August 2021 through contract addendum no. 07 and was substantially completed by that date.

- **9.** Post Construction Audit will be conducted under ZUG-02 sub-project by SC and audit report will be submitted to UWSCG and ADB during the next reporting period January-June 2023.
- **10.** Construction of Wastewater Treatment Plant in Zugdidi (REG-03a). The project comprises of the construction of new Wastewater Treatment Plant with the capacity of 22,000 m³/day.
- **11.** The contract No UWSCG-USIIP-ICB-REG-03a was signed on February 1, 2017 with "JV "Pfeiffer EMIT" comprised by "Ludwig Pfeifer Hoch and Tiefbau Gmbh7Co. KG

(Germany)" and "EMIT |Group – Ercole Marelli Impianti Tecnologici S.r.I. (Italy)", completion date was: September 2021. Construction activities on REG-03a sub-project are completed. At this stage commissioning works are on-going.

- **12.** Post Construction Environmental Audit will be conducted under ZUG-03a sub-project by SC and audit report will be submitted to UWSCG and ADB during the next reporting period January-June 2023.
- Construction of Wastewater Treatment Plant in Mestia (REG-03b). The project comprises of the construction of new Wastewater Treatment Plant with the capacity of 3,200 m³/day.
- 14. The contract No UWSCG-ICB-MES-03-2019 was signed on 5 November 2019 with "JV of Toshiba Water Solutions Pvt. Ltd and IN-SI" LLC (India/Georgia)". Contract completion date was April 2021. The contract became formally effective by 12th Dec 2019 after the Contractor agreed to postpone one of the preconditions for effectiveness, the "irrevocable confirmed letter of credit" to be submitted later (e.g. after design phase). The resulting initial contractual completion date was 04th June 2021. Change Order for extension time is under preparation. Considering this suspension period, the revised theoretic completion period would be January 2023.

Current Condition of Zugdidi WWTP

- 15. With regard to the operation of Zugdidi WWTP, it should be noted that the certified Laboratory of the Zugdidi WWTP, construction within the REG-03a sub-project measures the parameters specified in the agreed EIA and Maximum Allowable Discharge Limits (MADL), a document that is also agreed within the framework of the EIA, with the frequency required by these documents. Effluent concentrations of Biochemical Oxygen Demand BOD, Chemical Demand for Oxygen COD, Total Suspended Solids (TSS) as well as Total Phosphorus (TP) and Total Nitrogen (TN) throughout the reporting period is within the effluent standards. The above analysis were performed on the daily and weekly basis as presented in MADL and EIA. According to MADL, daily analysis is carried out on the following components:
 - TSS
 - PH

16. Once a week, complete chemical analyzes were performed on the following ingredients:

- BOD
- COD
- TN
- TP
- **17.** Currently from the sludge line only, the mechanical pre-thickening is operating. For the safe operation of the digester still the boiler and the gas line is missing, therefore without these it was not permitted to operate the digester with pre-thickened sludge.
- **18.** It is therefore not possible at the time being to further process or dispose extracted excess sludge. As a consequence, the plant is presently storing sludge in excessive quantities. The excessive sludge is stored in the temporary sludge storage area in the WWTP of Zugdidi.

19. During the reporting period (November 2022), in order to properly remove the above excess sludge to the nearest Landfill of Zugdidi in accordance with the agreed EIA and Environmental Decision issued by Ministry of Environmental Protection and Agriculture and IEE, laboratory analyzes of sludge were carried out by the independent certified Laboratory in accordance with the relevant technical regulation - Decree of the Government of Georgia No. 421 "On the arrangement, operation, closure and further maintenance of the landfill" (11 August 2015). If the sludge is not contaminated with the heavy metals, it will be disposed of at the Zugdidi landfill based on the above-mentioned Decree and agreements. The results of measurements and further actions will be reflected in the next SEMR for January-June 2023.

2.2 **Project Contracts and Management**

- **20.** The main institutions that are involved in implementation of the EMP are UWSCG executing agency (EA), Supervision Consultant (SC) the Contractor and to a lesser extent the Ministry of Environment and Natural Resources Protection (MoENRP).
- **21.** The Investment Program Management Office (IPMO) under UWSCG which is the Donors Funded Project Management Department, is responsible for the day-to-day management of the project, including the implementation of the EMP. IPMO has an Environmental Specialist who is responsible for managing the environmental aspects of the USIIP. The head of the department is Ms.Irina Chikhladze.
- 22. The IPMO Environmental Specialist (Ms.Kate Chomakhidze) responsibilities in respect of implementation of the EMP are as follows:
 - (i) Approve the Site-Specific Environmental Management Plan (SSEMP) before Contractor takes possession of construction site;
 - (ii) Monitor implementation of EMP and ensure the environmental safeguards compliance;
 - (iii) Review the updated IEE and/or SEMP and send it for clearance to ADB;
 - (iv) Ensure that contractors have access to the EMP and IEE report;
 - Finalize SAEMRs (and Final EMRs upon project completion), send it to ADB and address potential ADB's comments until SAEMR disclosure; Provide ENG and GEO final versions of SAEMRs to be uploaded on UWSCG website;
 - (vi) Review and approve the Corrective Action Plan and provide to ADB for review and comments if any;
 - (vii) Participate in public consultations during project implementation;
 - (viii) In case of need assist IPMO Social/Resettlement Consultant in resolving process of environmental safeguards related complaints;
 - (ix) Assist in organizing trainings for the Contractors in coordination with ADB/RETA consultant;
 - (x) Participate in external trainings in environmental management and environmental auditing
 - **23.** The SC's team includes a full time Environmental Specialist to assist the IPMO supervise and monitor implementation of the EMP during construction.
 - 24. The Contractors under USIIp/T5 also appoint a full time Environmental specialists to be a senior member of the construction management team based on site for the duration of the contract. The ESs a university degree in Environmental Science and related discipline and have about 10 years work experience in environmental management of infrastructure project
 - 25. During the reporting period the Department of Environmental Protection and Permits of the UWSCG was renamed the Department of Permits, Environmental Protection and Social Affairs and is working alongside IPMO to address the environmental and social issues of USIIP. The head of the department is Ms. Maka Goderdzishvili. The Department of Environmental Protection have two divisions, the Division of Permits and the Division of Environmental Protection and Social Affairs. Ms. Salome Mosidze is the Head of the Division of Environmental Protection and Social Affairs. More detailed description of the Division of Environmental Protection and Social Affairs. More detailed description of Environmental Protection and Social Affairs. More detailed description of Environmental Protection and Social Affairs. More detailed description of Environmental Protection and Social Affairs. More detailed description of Environmental Protection and Social Affairs. More detailed description of Environmental Protection and Social Affairs.

INTERNAL. This information is accessible to ADB Management and staff. It may be shared outside ADB with appropriate permission.

implementation arrangements; responsibilities and staffing are provided in the Table 1 below.

| # | Millstones/Actions | Contractor (Environmental Specialist) | Construction Supervision Consultant (Environmental Specialist) | IPMO (Environmental Specialist) | Department of Permits, Environmental Protection and Social Affairs (Environmental Specialist) |
|---|---|--|---|--|---|
| 1 | Environmental planning and management Contractors Environmental Management Plan (site-specific EMP) | Prepare Specific EMP (SEMP) with supplemented Topic Specific EMPs at pre- construction stage based on IEE/EMP Implement SEMP approved by IPMO. | Review and endorse the SEMP; Monitor implementation of SEMP on daily basis; Monitor monthly environmental monitoring reports or results prepared by the Contractor and report to IPMO. | Review and approve the SEMPs; Monitor implementation of EMP and ensure the environmental safeguards compliance. | Work together with IPMO on addressing the environmental non- compliance issues, if any. |
| 2 | Changes in design | Provide details of design changes to CSC required to update IEE/EIA, or SEMP; Implement updated SEMP. | Approve the design change to be submitted to IPMO; Make environmental assessment of the change and update the IEE and/or SEMP. | Review the updated IEE and/or SEMP and send it for clearance to ADB | Liaise with CSC in preparing updated IEE and/or SEMP; Upload the approved IEE/SEMP provided by IPMO to UWSCG website for Public Disclosure. |
| 3 | Unanticipated impacts | Inform CSC about unanticipated impact and follow the instructions received from IPMO. | Make environmental assessment of the unanticipated impact and update the IEE and/or SEMP | Review the updated IEE and/or SEMP and send it for clearance to ADB | Liaise with CSC in preparing updated IEE and/or SEMP |

Table 1: Institutional Arrangement, Responsabilités and Staffing

| # | Millstones/Actions | Contractor (Environmental Specialist) | Construction Supervision Consultant (Environmental Specialist) | IPMO (Environmental Specialist) | Department of Permits, Environmental Protection and Social Affairs (Environmental Specialist) |
|---|------------------------|---|--|--|---|
| 4 | Reporting | Prepare monthly environmental monitoring reports and send it to CSC and IPMO | Prepare inputs to environmental part of quarterly construction progress reports; Prepare inputs to semi-annual environmental monitoring report (SAEMR) to be submitted to IPMO for further review, comments and improvement. Conduct Post-Construction Final Environmental Audit and prepare final environmental audit report. | Finalize SAEMRs (and Final EMRs upon project completion), send it to ADB and address potential ADB's comments until SAEMR disclosure; Provide ENG and GEO final versions of SAEMRs to be uploaded on UWSCG website. | Upload the approved reports (ENG and GEO) provided by IPMO to UWSCG website for Public Disclosure |
| 5 | Permits and clearances | NA | NA | NA | Obtaining environmental permits and clearances |
| 6 | Non-compliances | Prepare a corrective action plan (CAP) | Assist contractor in preparing the CAP. | Review and approve the CAP and provide to ADB for review and comments if any. | |

| # | Millstones/Actions | Contractor (Environmental Specialist) | Construction Supervision Consultant (Environmental Specialist) | IPMO (Environmental Specialist) | Department of Permits, Environmental Protection and Social Affairs (Environmental Specialist) |
|---|--------------------------------|--|---|---|--|
| 7 | Public consultations | Participate in public consultations during project implementation | Organize public consultations: inform people about activities and prepare the record of consultations. | Participate in public consultations during project implementation | UWSCG & IPMO host PCs, CSC will present the topics related to environmental issues |
| 8 | Grievance Redress Mechanism | Project site Focal person to record environmental grievances in the logbook and follow up with UWSCG established practice for grievance redress | Ensure that grievances, if any, are being properly documented and addressed timely and effectively. Assist IPMO to develop consolidated GRM database and consolidation of GRM cases both for ENV and Social safeguards | In case of need assist IPMO Social/Resettlement Consultant in resolving process of environmental safeguards related complaints; Assist IPMO Social/Resettlement Consultant in GRM database consolidation and data analysis. | UWSCG maintains GRM applicable to all projects. UWSCG will ensure IPMO information on grievances is consolidated into the UWSCG grievances (both - environmental and social) without duplication. |
| 9 | Trainings | Attend on-site trainings organized by IPMO and ADB/RETA Consultant | Assist the IPMO in organization of trainings for the Contractors on environmental safeguards requirements. | Organize trainings for the Contractors in coordination with ADB/RETA consultant. Participate in external trainings in environmental management and environmental auditing | Participate in external trainings in environmental management and environmental auditing |

26. Main organizations involved in the USIIP/T5 and related to environmental safeguard are presented in the table 2 below:

| Type of | Name of | Environmental Staff | Name and contact details |
|--------------------------------------|---------------------------|---|--|
| project Agency/Company — participant | | | |
| Lender | Asian Development Bank | Country Environmental Focal | Ninette R. Pajarillaga E-mail: npajarillaga@adb.org |
| | | Associate Safeguards Officer Georgia Resident Mission Asian Development Bank | Nino Nadashvili Tel: +995 595 070442 nnadashvili@adb.org |
| | | ADB RETA, Environmental Consultant | George Kobaladze Tel: +995 599 689834 E-mail <u>gkobaladze.consultant@adb.org, m</u> <u>e_</u> |
| Borrower | UWSCG | UWSCG, Department of Environmental Protection and Permits, Head | Ms. Maka Goderdzishvili Tel: +995 599 229925 E-mail: <u>m.goderdzishvili@water.gov.ge</u> |
| | | UWSCG/IPMO Donor Funded Project Management Department, Acting Head | Ms. Irine Chikhladze Tel: +995 598 179898 E-mail: <u>ana.onashvili@water.gov.ge</u> |
| Borrower | . UWSCG/USIIP/T5 | Environmental Specialist | Ms. Ketevan Chomakhidze Tel: +995 577 380309 E-mail: <u>Chomakhidzek@yahoo.com</u> |

Table 2: List of Main Organizations under USIIP/T5

| Type of project participant | Name of Agency/Company | Environmental Staff | Name and contact details |
|-----------------------------------|--|--|---|
| Supervision Consultant | . Posch&Partners Consulting Engineers | Environmental Specialist: | Ms. Eliso Barnova Tel: +995 551 300112 E-mail: <u>tikozhizhiashvili@yahoo.com</u> |
| Contractor ZUG-02 | . Ludwig Pfeiffer Hoch-und Tlefbau GmbH & Co.KG | Environmental H&S Specialist | Mr. Nikoloz Neparidze Tel: +995 599 346821 E-mail: <u>nikoloz.nepharidze@ludwigpfeiffer.com</u> |
| Contractor REG-03a | . JV "Pfeiffer - EMIT" comprised by "Ludwig Pfeifer Hoch – and Tiefbau Gmbh7Co. KG (Germany)" and "EMIT Group – Ercole Marelli Impianti Tecnologici S.r.I. | Environmental H&S Specialist | Mr. Nikoloz Neparidze Tel: +995 599 346821 E-mail: <u>nikoloz.nepharidze@ludwigpfeiffer.c</u> om Mr. Irakli Abuladze |
| | (Italy) | H&S Specialist | Tel: +995 568 012858 E-mail: <u>irakli.abuladze.1974@gmail.com</u> |
| Contractor REG-03b | . JV of Toshiba Water Solutions Pvt.Ltd and IN-SI" LLC (India/Georgia) | Since construction work under REG-03b has been delayed for more than one year, the contractor will hire new EC with relevant experience and coordinate him/her with SC/Posch and UWSCG/environmental team. | Contact information of the new ES will be provided in the next SAEMR, July-December 2022. |

2.3 Project Activities During Current Reporting Period

27. In the reporting period, construction works under USIIP/T5 were not carried out, since all construction works under REG-03a and ZUG-02 have already been completed, and construction works on REG-03b: Construction of WWTP in Mestia has not yet been started due to the fact that the design of the project has not yet been completed.

2.4 Description of Any Changes to Project Design

28. As mentioned already, the final design of the wastewater treatment plant in Mestia under REG-03b was not completed during the reporting period and will be finalized during the

next reporting period, and accordingly these changes will be reflected in the next SAEMR, July-December 2022.

2.5 Description of Any Changes to Agreed Construction methods

III. ENVIRONMENTAL SAFEGUARD ACTIVITIES

3.1 General Description of Environmental Safeguard Activities

29. No construction activities have been implemented during the reporting period under USIIP/T5.

3.2 Site Audit

30. No site audit was carried out during the reporting period, since all construction activities under REG-03a and ZUG-02 were already completed and construction activities under REG-03d has not been started as yet.

3.3 Issues Tracking (Based on Non-Conformance Notices)

N/A

3.4 Trends

N/A

3.4 Unanticipated Environmental Impacts or Risks

IV. RESULTS OF ENVIRONMENTAL MONITORING

4.1 Overview of Monitoring Conducted during Current Period

- **31.** During the reporting period no Environmental quality measurements of Noise level and ambient air Quality were carried out by contractor under USIIP/T5.
- **32.** Noise and air pollution standards defined by IFC/WHO 1999, are presented in the Table 3 and 4 below.

| Noise | dBA National Regulations | | dBA WHO | |
|---|-----------------------------|----------------------------|-------------------------|---------------------------|
| 1 | | | | |
| Receptor | Daytime 07:00 - 22:00 | Nighttime 22:00 - 07:00 | Daytime 07:00- 22:00 | Nighttime 22:00- 07:00 |
| Residential; institutional; educational | 55 | 45 | 55 | 45 |
| Industrial; commercial | 70 | 70 | 70 | 70 |

Table 3: Noise Level Guidelines

5 Air pollution standards by IFC/WHO 1999, are presented in the Table 4 below.

Table 4: Air pollution Guidelines

| Contaminants | IFC/WHO Guideline Value (Limit) mg/m ³)) | | |
|-------------------------------------|---|--|--|
| 1 | 2 | | |
| | (*IFC does not have a standard for "inorganic dust". Instead IFC applies standards for PM2.5 and PM10). | | |
| Inorganic dust | PM10 – 0,02/1 Year | | |
| | 0,05/24 Hour | | |
| | PM2,5-0,01/1 Year | | |
| | 0,025/24 Hour | | |
| Carbonic monoxide | n/a | | |
| Nitrogon diavida (NO.) | 0,2/ 1 Hour | | |
| Nitrogen dioxide (NO ₂) | 0,04/1 Year | | |
| Aldehyde | n/a | | |

33. No Environmental quality measurements were carried out during the reporting period due to completion of construction activities and therefore nothing is reported in this report.

4.2 Trends

N/A

- 4.3 Summary of Monitoring outcomes N/A
 - 4.4 Material resources Utilization
 - 4.4.1 Current Period

N/A

4.4.2 Cumulative Resources Utilization

N/A

4.5 Waste Management

4.5.1 Current Period

N/A

4.5.2 Cumulative Waste Generation

N/A

4.6 Health and Safety

4.6.1 Community Health and Safety

N/A

4.6.2 Worker Safety and Health

N/A

4.7 Training

V. FUNCTIONING OF THE SEMP

5.1 SEMP Review

- **34.** SSEMPs for Zugdidi WWTP under Reg-03/a sub-project were prepared by Contractor, endorsed by SC and approved by UWSCG on 13 March 2018. SSEMPs were reviewed/commented by the RETA Regional Environmental Consultant of ADB.
- **35.** SSEMP for ZUG-02 sub-project was updated in January 2020 due to the changes to the project design defined under the Variation Order #5: construction of two new sewage pumping stations, construction steel bridge structure across the river Chkhoushia for 200 mm diameter steel casing pipe and construction of 500 mm pipe including steel casing for the western collector river crossing and reinstatement asphalt works, demolition and removal of existing manholes, connection of new pipelines to existing sewer manholes and replacing non-functional manhole covers on old lines. SSEMP was prepared by Contractor, endorsed by SC, approved by UWSCG and reviewed/commented by the RETA Regional Environmental Consultant of ADB under RETA 8663 Ms. Keti Dgebuadze.

VI. GOOD PRACTICE AND OPPORTUNITY FOR IMPROVEMENT

6.1 Good Practice

N/A

6.2 **Opportunities for Improvement**

VII. SUMMARY AND RECOMMENDATIONS

7.1 Summary

- **36.** During the reported period no construction activities were implemented under ZUG-02 and REG-03/a sub-projects, since all construction activities under these sub-projects have been already completed.
- **37.** Construction work under the REG-03b subproject has not started as yet, as the design project of the WWTP in Mestia was not completed during the reporting period.

7.2 Recommendations

- **38.** Post Construction Audit will be carried out under REG-03a sub-projects and audit report will be submitted to UWSCG and ADB during the next reporting period, January-June 2023.
- **39.** The main findings and recommendations of this report will be reflected in the next SAEMR, January-June 2023.
- **40.** Post construction Audit will be carried out under ZUG-02 sub-project and audit report will be submitted to UWSCG and ADB during the next reporting period, January-June 2023.
- **41.** The main findings and recommendations of this report will be reflected in the next SAEMR, January-June 2023.
- **42.** SEMP will be prepared under REG-03b sub-project before starting the excavation works, after finalization of design project. SEMP will be prepared by contractor, endorsed by SC and approved by UWSCG/PIU after review/comment by the RETA International Environmental Consultant.