Project Number: 43405-025

Reporting Period: July-December 2019

GEORGIA: URBAN SERVICES IMPROVEMENT INVESTMENT PROGRAM (TRANCHE 3)

(FINANCED BY THE ASIAN DEVELOPMENT BANK)

Prepared by: Ketevan Chomakhidze, Environmental Specialist, "United Water Supply Company of Georgia", Tbilisi, Georgia

For: The Ministry of Regional Development and Infrastructure of Georgia and the Asian Development Bank

Endorsed by: Maka Goderdzishvili, Head, Department of Environmental Protection and Permits, "United Water Supply Company of Georgia"

February, 2020

Abbreviations

ABBREVIATIONS

ADB	Asian Development Bank
DC	Design Consultant
DEPRP	Department of Environmental protection, Resettlement and Construction Permit
DIPDR	Department of International Procurement and Donors Relations
EA	Executing Agency
EARF	Environmental Assessment and Review Framework
EHS	Environmental Health & Safety
EIA	Environmental Impact Assessment
EIP	Environmental Impact Permit
EMP/ SSEMP	Environmental Management Plan/ Site-Specific Environmental Management Plan
ES/ SES	Environmental Specialist/ Senior Environmental Specialist
GoG	Government of Georgia
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
IPMO	Investment Program Management Office
USIIP	Urban Sector Improvement Investment Program
IA	Implementing Agency
IEE	Initial Environmental Examination
MFF	Multi-tranche Financing Facility
MoENRP	Ministry of Environment and Natural Resources Protection
MoRDI	Ministry of Regional Development & Infrastructure
NEA	National Environmental Agency
SC	Supervision Consultant
UWSCG	United Water Supply Company of Georgia
WSS	Water Supply & Sewerage

Contents

1 introduction 4
1.1 Preamble 4
1.2 Headline Information 4
1.3 Project Description 4
1.4 Project Contracts and Management 6
1.5 Project Activities during Current Reporting Period 11
1.5.1 Project Activities during the Reporting Period 11
URE-01: ..... **Error! Bookmark not defined.**
KUT-01 11
2 SCOPE OF WORKS NEWW 11
SCOPE OF WORKS 14
2.1 Description of Any Changes to Project Design 15
2.2 Description of Any Changes to Agreed Construction methods 15
3 Environmental Safeguard activities 16
3.1 General Description of Environmental Safeguard Activities 16
3.2 Site Audits 17
3.3 Issues Tracking (Based on Non-Conformance Notices) 22
3.4 Trends 23
3.5 Unanticipated Environmental Impacts or Risks 23
4 results of environmental monitoring 24
4.1 Overview of Monitoring Conducted during Current Period 24
4.2 Trends 26
4.3 Summary of Monitoring Outcomes 26
4.4 Material Resources Utilisation 26
4.4.1 Current Period 26
4.4.2 Cumulative Resource Utilisation 27
4.5 Waste Management (Kut-01, ABA-01, URE-01) 27
4.6 Health and Safety 27
4.6.1 Community Health and Safety 27
4.6.2 Worker Safety and Health 27
4.10 Training 28

5 functioning of the SEMP 30
5.1 SEMP Review 30
6 good practice and opportunity for improvement 31
6.1 Good Practice 31
6.2 Opportunities for Improvement 31
7 summary and recommendations 32
7.1 Summary 32
7.2 Recommendations 32

1 INTRODUCTION

1.1 Preamble

1. This report represents the Semi - Annual Environmental Monitoring Review (SAEMR) for "Urban Services Improvement Investment Program" (USIIP), Tranche 3 and describes the period of July-December 2019.

2. This report is the 8th Semi-Annual EMR for the T3 of "Urban Services Improvement Investment Program".

1.2 Headline Information

3. During this reporting period no changes took place to the project design and accordingly nothing has been updated or prepared.

1.3 Project Description

4. 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.

5. 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.

6. Tranche 3 of the Investment Program includes:

- Construction of Water Supply and Wastewater Network in Ureki/Phase 3 (URE-01);
- Construction of Wastewater Treatment Plant in Ureki (URE-02);
- Construction and Rehabilitation of Water Supply System in Kutaisi/Phase 2 (KUT-01)
- Construction of New Transmission Pipeline in Abasha (ABA-01)
- Construction of Waste Water Treatment Plants in Gudauri (GUD-03)

The following projects are financed under Tranche 3:

7. [1]**Construction of Water Supply and Wastewater Network in Ureki/Phase 3 (URE-01)**. The project comprises of the construction of 1 water supply pumping station and 31 sewage

[1] T1-T3 BAEMRs may have some overlap, due to the financing arrangements of Ure-01 project, which is simultaneously financed by T1,T2 and T3.

pumping stations (Shekvetili - 18, Ureki - 13; construction of new reservoirs (2,000 m³ x 3,000 m³ and 1 x 1,200 m³); Distribution network - laying of approximately 70 km water supply pipelines (distribution network will be divided into 3 areas), laying of approximately 70 km sewage pipelines; installation of approximately 1,500 water meters; Wells - drilling of 10 drinking water wells.

8. The Contract is signed with JV of Peri Ltd (Georgia) Leading Partner and Slon LLC (Azerbaijan) on October 28, 2014. Commencement date was November 24, 2014. Initial Completion date was scheduled on November 22, 2018 but due to changes in the design of project, which include the construction of an Aqueduct across the Natanebi River, the construction of Gabion wall to protect well fields from flooding and erosion, and the construction of an additional deep well No. 8 along the banks of the Natanebi River, completion date was extended to July 2019. The project is foreseen to serve 35,000 tourists and 5,400 local inhabitants by year 2040.

9. **Construction of Wastewater Treatment Plant in Ureki (URE-02).** The project comprises of the construction of new Wastewater Treatment Plant with the capacity of 6,570 m³/day.

10. The contract URE-02 was signed on April 30, 2015 with JV of Ludwig Pfeiffer Hoch-und Tiefbau GmbH and Co.KG ProtechnoSrl (Germany) / Aritim (Turkey), the contract was completed on June 9, 2018.

11. The Post-Construction Environmental Audit was conducted and relevant Audit report was prepared in June 2019.

12. **Construction and Rehabilitation of Water Supply System in Kutaisi/Phase 2 (KUT-01).** The project envisages construction of Kvitiri 973 m³/h capacity and Mukhrani 660 m³/h capacity pumping stations; Reservoirs - construction of Near East and Mukhrani reservoirs with the capacity of 9,000 m³ (2x4,000+1,000). Distribution network - 332.1 km.

13. United Water Supply Company of Georgia signed a contract with SMK Ulusal Insaat Ve Ticaret A.S. (Turkey) for implementation of KUT-01 project on 22 April 2015. The initial date of completion of the contract - June 8, 2018 was extended until April 2020.

14. **Construction of New Transmission Line in Abasha (ABA-01)**. Within the Aba-01 project the following major works will be carried out: approximately 15 km long 500 mm diameter transmission pipeline will be installed from headworks to the town of Abasha, chlorination building will be constructed and the water meter will be installed at the headwork.

15. The contract for implementation of ABA-01 was signed on October 13, 2017 with AS Inshaat–N, LLC (Azerbaijan). The initial date of completion of the contract - June 8, 2018 was extended until March 2020.

16. **Construction of Waste Water Treatment Plants in Gudauri (GUD-03).** The Proposed project envisages construction of 5 Waste Water Treatment Plants with different sizes but using the same technological process:

    - New Gudauri. The new development in the north of Gudauri (ab. 750 m^3/day) and Gudauri Heights (350 m^3/day).

- Upper and Central Gudauri: Located at the same site that the old WWTP, near the church (estimated up to 2000 m^3/day).
- Gudauri Downtown. In the head of the big plot of the plateau, down the downtown. (ab. 350 m^3/day).
- Plateau-Lower Gudauri. At the end of the plateau for the new development (ab. 750 m^3/day).
- Seturebi. One plant to treat the water in Seturebi village (ab. 350 m^3/day).

17. The Contract was signed on June 3, 2019 with "China Nuclear Industry 23 Construction Co." LTD (CNI23). Project completion date is April 2021.

1.4 Project Contracts and Management

18. The following agencies are involved in implementing the Investment program: Ministry of Regional Development and Infrastructure (MoRDI) is the Executing Agency (EA) responsible for management, coordination and execution of all activities funded under the loan. MoRDI has overall responsibility for compliance with loan covenants.

19. Ministry of Environmental Protection and Agriculture of Georgia (MEPA). MEPA has the overall responsibility for protection of environment in Georgia. The Department of Permits of MEPA is responsible for reviewing EIAs and for issuance of the Environmental Permits. MEPA is the main state body pursuing state policy in the sphere of environment. Their functions for regulating economic or development activities with regard to environmental protection include:

- Issuing permits for project development (Environmental Decision)
- Setting emission limits and issuing surface water intake and discharge consents
- Responding to incidents and complaint

20. United Water Supply Company of Georgia (UWSCG) is the implementing agency (IA), which is responsible for administration, implementation (design, construction and operation) and all day-to-day activities under the loan. Since September 2018, the Investment Program Management Office (IPMO) under UWSCG is Project Management Department, the Head of Department is Mr. Giorgi Archaia. Environmental issues are followed by the Department of Environmental Protection and Permits of UWSCG. The head of the department is Ms. Maka Goderdzishvili. Ms. Ketevan Chomakhidze is the Environmental Specialist of USIIP under the Department of Environmental Protection and Permits.

21. UWSCG as responsible IA for the project recruited a Supervision Consultant (SC) – Eptisa under T1. The national and international team of consultants assists UWSCG in the supervision of the construction of subprojects under the USIIP. The SC also provides capacity building training to contractor staff in the management and operation and maintenance of the subprojects. The SC assists UWSCG in ensuring that the subprojects are implemented according to the specified standards. SC assignment also includes the supervising of the implementation of the environmental management plans.

22. All mitigation measures during construction are implemented respectively by the contractor companies: SMK; As Inshaan-N and LTD CNI23. Each contractor company have Environmental and safety officers responsible for HSE issues during construction process. Construction companies are monitored by the supervision consultant (Eptisa) environmental specialist – Irakli Legashvili and Environmental Specialist of UWSCG/USIIP Ms. Ketevan Chomakhidze. Environmental Specialists of SC and UWSCG/USIIP conduct routine observations and surveys of project sites, issues non-compliance notes. ES of Eptisa prepares quarterly environmental reports and submits to UWSCG.

23. The Contractor, prior to the onset of the construction, is obliged to conduct a number of studies and develop environmental plans, including "Site Environment Management Plan" (SEMP). Such plans can be further subdivided into Topic Specific or Site Specific EMP's. The number of such plans will depend upon the type of project, complexity and sensitivity of the receiving environment.

24. Topic Specific EMPs are developed on a topic by topic basis. For example:

- Waste Management Plans;
- Traffic Management Plans;
- Protected Species Management Plans;
- Water Management Plans.

25. These plans are detailed and set out how the project will address potential issues identified in the impact assessment process and ensure that specific mitigation and monitoring measures are fully implemented. A topic specific environmental management plan will cover all of the project.

26. The environmental specialist of UWSCG/USIIP assists and advise the Department of Environmental Protection and Permits of UWSCG for implementation of USIIP in compliance with the ADB Safeguard Policy Statement 2009 and National Legislation, and oversee the work of DCs and SCs in safeguards compliance. ES supports DEPP in EARF implementation, in particular, reviewing IEE/EIA Reports, overseeing implementation of EMPs, Reviewing and approving SEMPs and carrying out training and capacity-building activities in cooperation with Supervision Company. The ES prepares Semi-annual and annual environmental monitoring reports and submits to ADB.

27. Department of Environmental Protection and Permits of UWSCG is responsible for the implementation of mitigation and monitoring measures during construction and operation of subprojects under USIIP. Currently DEPP is staffed with a Head of Department and 5 specialists, those are responsible for environmental safeguard and construction permission issues.

28. ADB is the donor financing the Investment Program. Environmental management organization is shown in Figure 1 and Figure 2.

Figure 1: Structure Diagram of the Environmental Management Unit of UWSCG

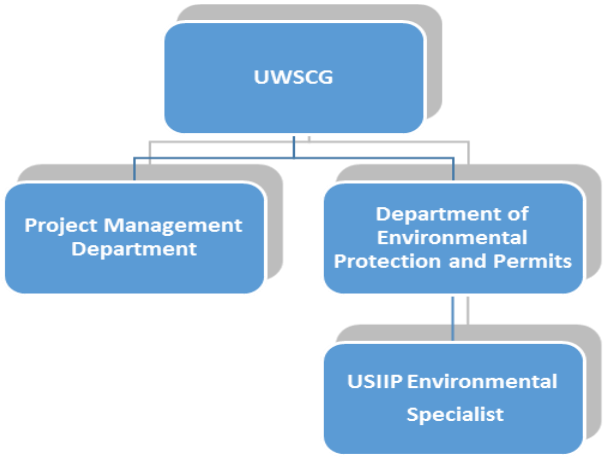
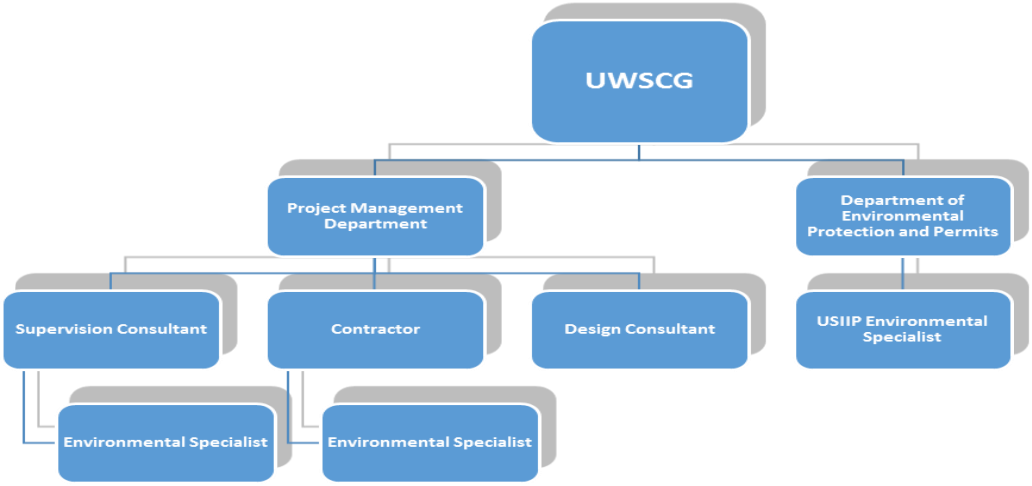


Figure 2: Structure Diagram of the Agencies Involved in Investment Program Implementation



29. A list of main organizations involved in the USIIP/T3 and relating to environmental safeguards is presented in Table 1 below.

Table 1: List of Main Organizations under USIIP/T1

Type of project participant	Name of Agency/Company	Environmental Staff	Name and contact details
Lender	Asian Development Bank	Head Office, Environmental Specialist, Portfolio, Results, Safeguards and Gender Unit (PSG), CWRD.	Nurlan Djenchuraev E-mail: ndjenchuraev@adb.org
		Associate Safeguards Officer Georgia Resident Mission Asian Development Bank	Nino Nadashvili +995 595 070442 nnadashvili@adb.org
		ADB RETA International-Regional Environmental Consultant	Keti Dgebuadze +995 577232937 ketdgeb@yahoo.com
Borrower	UWSCG	UWSCG, Department of Environmental Protection and Permits, Head	Ms. Maka Goderdzishvili Tel: +995 599 229925 E-mail: m.goderdzishvili@water.gov.ge
		UWSCG/IPMO Department of Projects Management, Head	Mr. Giorgi Archaia E-mail: G.Archaia@water.gov.ge Tel: +995 577 380213
Borrower	UWSCG/USIIP/T3	Environmental Specialist	Ms. Ketevan Chomakhidze Tel: +995 577 380309

Type of project participant	Name of Agency/Company	Environmental Staff	Name and contact details
			E-mail: Chomakhidzek@yahoo.com
Supervision Consultant	A Consortium of Consulting Firm led by Eptisa Servicios de Ingeniria S.L. (Spain) in association with SAFEGE (Belgium) and JSC Georgian Water Project (Georgia)	Environmental Specialist:	Mr. Irakli Legashvili Tel: +995 577 177016 E-mail: chem_ira@yahoo.com
Contractor URE-02	JV of Ludwig Pfeiffer Hoch-und Tiefbau GmbH and Co.KG ProtechnoSrl (Germany) / Aritim (Turkey)	Environmental H&S Specialist	Mr.Nikoloz Meparidze Tel: +995 599 346821 E-mail: niko@telenet.ge
Contractor URE-01	JV of Peri Ltd (Georgia) Leading Partner and Slon LLC (Azerbaijan)	Environmental H&S Specialist	Mr. Levan Asabashvili Tel: +995 599 962 693 Email: levani.asabashvili@mail.ru
Contractor KUT-01	SMK Ulusal Insaat Ve Ticaret A.S. (Turkey)	Environmental Specialist	Ms. Natia Babukhadia E-mail: natiiibab@gmail.com Tel: +995 595 150444
		H&S Specialist	Mr. Beso Balanchivadze E-mail: besobal84@gmail.com Tel: +574 188 653

Type of project participant	Name of Agency/Company	Environmental Staff	Name and contact details
Contractor ABA-01	. AS Inshaat–N, LLC (Azerbaijan)	Environmental H&S Specialist	Mr. Nodar Usupishvili E-mail n.usupashvili@gmail.com Tel: +995 577 68 16 71
Contractor GUD-03	. "China Nuclear Industry 23 Construction Co." LTD (CNI23)	Environmental H&S Specialist	Mr. Aleksandre (Sasha) Mchedlishvili E-mail alexandermchedlishvili1@gmail.com Tel: +995 574 02 77 33

1.5 Project Activities during Current Reporting Period

30. During the reported period construction activities were implemented only under KUT-01 and Aba-01 sub-projects and is reported in this Semi-annual EMR. Contractors have intensified all activities to improve the progress of the works on sites. The Engineers gave processed frequent instructions to the Contractor for the planning and outstanding documents preparation which shall ensure steady improvement of the works progress.

1.5.1 Project Activities during the Reporting Period

KUT-01

SCOPE OF WORKS

- **Piping works**

31. A total length of exclusively installed PE pipe has achieved 294.3 Km on a total of 302.9 Km, meaning that 2,57% are remaining. Regarding previous month, progress is not really consistent because works are focused on some connections but not on long sections. All 8 remaining valves PRV have to be installed in various places in town. Works on chambers is complete.

32. Houses connections have been completed till 2211 units on a total of 2734 connections to be done. 19.1% are remaining according to BOQ. A small district of Sakuslia is pending waiting for booster pumps installation. Boosters' pumps will be operational soon and water meters will be installed which represent about 80 houses.

DCI.

- **Piping works**

33. Subcontractor has finished remaining parts of piping. 100 % of piping is complete excepted 3 chambers.

Apartment Connections.

34. 90% of water meters have been installed regarding only 67% of flats which are connected.

Pressure tests

35. Several tests have passed successfully during the period. Remaining length to be tested is 6,7 Km including the difficult Solomon street.

36. During investigation for leakages researches, it was discovered several issues to be blamed to Subcontractor:

- Problem of flanges setting
- Problem of damaged seals
- Problem of broken pipes
- Problem of length
- Problem of disconnection under test pressure

Reinstatement and new access roads

37. Access road of Godogani reservoir has been finished including the surface of parking in front of reservoirs. Access gate to site has been installed.

Reservoirs and Pumping Station.

- **New East Reservoir**

38. Activity in Godogani reservoir has been progressed thanks to numerous workers.

- Fence is finished
- Flow meter is installed
- Chlorination system is operational
- Plate forms details should be finished
- Electrical installations are finished

- **Mukhnari**

39. Situation is similar as in Godogani because many workers are active. It was done:

- Plate forms and handrails are finished
- Mechanical installation in reservoir and pumping room is complete including flow meters.
- Temporary surge vessel has been connected

40. Remaining works:

- Final surge vessel installation after delivery
- Toilets and drainage
- Access road.

41. Progress of construction activities during the reporting period, July-December 2019 is presented in the Table 2 below.

Table 2: KUT-01, project progress during the July-December 2019

Ure-01	**Sites**
	Pipelines
Works undertaken during July-December 2019	Total: 97,66% Earthworks – 99,92% Pipes – 99,97% Manholes and Chambers – 92,57% Surface Reinstatement – 95,67%
	New East Reservoir
Works undertaken during July-December 2019	Total: 97,80% Earthworks – 99,85% Fencing – 94,00% Civil Works – 99,73% Finishes – 98,18% Mechanical and Electrical – 97,25%
	Mukhnari Reservoir
Works undertaken during July-December 2019	Total: 98,12% Earthworks – 97,27% Civil Works – 98,00% Finishes – 95,00% Mechanical and Electrical – 95,87%

ABA-01

SCOPE OF WORKS

42. The following works were carried out under AB-01 sub-project during the reporting period.

City water supply NETWORK

43. Total 485 water meters are replaced in apartments and 150 water meters in private houses.

Main Gravity Transmission Line OD500

44. 539m of earth-pipe working are carried out. Installation of valve chambers are completed.

45. Test for existing 315mm pipeline is ongoing. More than 9 km is already tested.

Apartment connection

46. All (485pcs) old water meters are replaced with new water meters (New ones have volumetric measuring mechanism) in City.

Headwork

47. Reconstruction of chlorination building finalized.

48. Electrical and mechanical installations almost complete. Remains installation of pole lightings and Generator.

49. Installation of fence at the headwork is completed in the front side. Installation the fence on the back side of headwork with barbed wire is on-going.

50. Progress of implemented works during the reporting period July-December 2019 are presented in the Table 3 below.

Table 3: ABA-01, project progress during the July-December 2019

Site	Pipe Diameter (mm)	Installed
Works undertaken during July-December 2019	PE 100-pipes OD 110	96.85%
	PE 100-pipes OD 63	100%
	PE 100-pipes OD 500	100%
	PE 100-pipes OD 90	100%

51. Despite the fact that contract for construction of five WWTPs in Gudauri under GUD-03 sub-project was signed in July 2019 no physical construction activities took place during the reporting period.

1.6 Description of Any Changes to Project Design

52. No changes in project design during the reporting period.

1.7 Description of Any Changes to Agreed Construction methods

N/A

2 ENVIRONMENTAL SAFEGUARD ACTIVITIES

2.1 General Description of Environmental Safeguard Activities

53. Individual and joint on-site monitoring activities were conducted by Environmental Monitoring Specialist of SC and Environmental Specialist of USIIP on a regular basis, during the reporting period. Also unscheduled monitoring visits were carried out and non-compliance notes has been issued to the contractor as needed. Mitigation measures in order to reduce major environmental impacts have been instructed to CCs during the monitoring of construction sites.

54. The monitoring activities included monitoring of compliance of construction activities to the IEE/EMP and SEMP requirements under KUT-01 and ABA-01 sub-projects.

55. Environmental Monitoring Specialist hired under the KUT-01 project Ms. Natia Babukhadia conducted the day-to-day monitoring of the construction sites, filled out the weekly checklists, developed monthly monitoring reports and submitted to SC/Eptisa.

56. Environmental Monitoring Specialist hired under the ABA-01 project by contractor Mr. Nodar Usupishvili conducted the day-to-day monitoring of the construction sites, developed the monthly monitoring reports and submitted to SC/Eptisa.

57. Environmental Monitoring Specialist of Eptisa, Mr.Irakli Legashvili conducted monthly monitoring of project sites under T3 and developed Non-compliance Notices were required. He also developed quarterly environmental monitoring reports based on the monthly reports submitted by Contractor and environmental site inspections and submit to UWSCG.

58. Environmental Specialist of USIIP Ms. Kate Chomakhidze performed monitoring of contractor's performance in accordance with the requirements of approved IEE/EMPs, SEMPs, and other environmental commitments of the contractor. USIIP/ES developed Semi-Annual Environmental Monitoring reports and submitted to ADB based on the quarterly reports prepared by SC and monitoring results.

59. In accordance with the requirements of IEEs, Contractor is required to undertake parametric measurements and observations on air quality and noise and socio-cultural resources. The monitoring guidelines were set as shown in the Table 4 below for KUT-01 and ABA-01.

Table 4: Parametric Measurement Guidelines

Parameters	Frequency & Location	Remarks
KUT-01		
Air Quality	Every 6 months Mukhnari Reservoir, Networks, Transmission Main	Watering site during excavation works to avoid dust spreading Conduct measurements of Dusts Mg/m3; CO Mg/m3; NO2 Mg/m3; SO2 Mg/m3

Parameters	Frequency & Location	Remarks
Noise	Every 6 months Mukhnari Reservoir, Networks, Transmission Main	Ensure that all equipment & vehicles used for construction activity are in good condition Limiting working hours to 8 am – 6 pm
Impact on Flora and Fauna	Monthly during the site Inspection and audit	Avoid tree cutting In unavoidable cases, plant four trees of same species for each tree that is cut for construction
ABA-01		
Impact on Flora and Fauna	Monthly during the site monitoring.	Avoid tree cutting In unavoidable cases, plant four trees of same species for each tree that is cut for construction
Cultural heritage Disturbance to cultural resources	Every time along the alignment Archaeological & Cultural Properties	Contractor shall put in place a protocol for conducting any excavation work, to ensure that any chance finds are recognized and measures are taken to ensure they are protected and conserved. Calling in the state archaeological authority if a find is suspected, and taking any action they require to ensure its removal or protection.

2.2 Site Audits

60. Regular inspection and monitoring of construction sites under Kut-01 and ABA-01 projects were conducted by ESs of USIIP and Eptisa. The schedule of Joint inspection and summary of audits carried out under KUT-01 and ABA-01 projects are provided in the Table 5 below.

Table 5. Summary of site audits

Date of visit	Name of Company Name of Contract	Auditors name,	Purpose of audit	Summary of any significant findings	Cross reference to Audit report
Continuously during reporting period (July December 2019)	SMK Kut-01	Environmental Specialists of Contractor Ms. Natia Babukhadia, Health and Safety Specialist Mr. Beso Balanchivadze under KUT-01 project	Day to day monitoring of sites Compliance with Environmental and HES requirements	1. Health and Safety issues on construction sites 2. Regular cleaning of the construction site	Weekly Monitoring Checklists (Please see Annex D)
5 July 2019	Kut-01	Environmental monitoring specialists of SC/EPTISA Mr.Irakli Legashvili	Monthly monitoring of construction sites	Construction waste should be timely removed from the construction site and disposed properly	Verbal instruction was given to contractor to improve the situation and send improved photos of sites to UWSCG
8 August 2019 Godogani Reservoir		Environmental monitoring specialists of SC/EPTISA Mr.Irakli Legashvili Environmental specialists of USIIP Ms.Ketevan Chomakhidze	Monthly monitoring of construction sites	High visible safety signs/tapes and trench side barriers around of deep open excavation should be installed from all sides to avoid accidents Soil (surplus/accumulated soil) for backfilling purposes should be managed/stored properly	Verbal instruction was given to contractor to improve the situation

Date of visit	Name of Company Name of Contract	Auditors name,	Purpose of audit	Summary of any significant findings	Cross reference to Audit report
30 September 2019	Kut-01 Godogani Reservoir	Environmental specialists of USIIP Ms.Ketevan Chomakhidze Environmental monitoring specialists of SC/EPTISA Mr.Irakli Legashvili	Monthly monitoring of construction sites	Containers with fuel/lubricant should be managed properly (stored at the proper organised place with concrete floor and roofing) to avoid leakage and ground contamination Proper waste containers should be installed and labeled	Verbal instruction was given to contractor to improve the situation
3 October 2019	Kut-01 Godogani Reservoir Water Supply Network	Environmental monitoring specialists of SC/EPTISA Mr.Irakli Legashvili	Monthly monitoring of construction sites	High visible safety signs/tapes and trench side barriers around of deep open excavation should be installed from all sides to avoid accidents (also danger of animals entrance and falling). Proper warning and information signs should be arranged Safety tapes around open holes should be arranged. Proper waste containers should be installed and labeled Waste should be placed only at the proper waste container and discharged timely.	Non-Compliance Notice issued (Please see Annex C)

Date of visit	Name of Company Name of Contract	Auditors name,	Purpose of audit	Summary of any significant findings	Cross reference to Audit report
				Waste should be timely removed from the construction site and disposed properly. Safety norms during working at height (ladder safety norms) should be provided. All construction materials should be properly segregated and stored adequately. Concrete washout pit should be managed properly. Workers always should use complete PPE. Site internally should be arranged properly and cleaned regularly. Refilling/compaction and reinstatement process should bring site at the same or better condition	

Date of visit	Name of Company Name of Contract	Auditors name,	Purpose of audit	Summary of any significant findings	Cross reference to Audit report
14 November 2019	Kut-01 Network	Environmental monitoring specialists of SC/EPTISA Mr.Irakli Legashvili	Monthly monitoring of construction sites	Construction waste should be timely removed from the construction site and disposed properly All construction materials should be properly segregated and stored adequately Complain box should be labeled Workers always should use complete PPE Site internally should be arranged properly and cleaned regularly Workers always should use complete PPE	Verbal instruction was given to contractor to improve the situation
Continuously during reporting period (July-December 2019)	AS Inshaat–N, LLC (Azerbaijan) ABA-01	Environmental Specialist of Contractor Mr. Usupashvili	Day-to-day monitoring of sites	H&S issues of workers	Fill out checklists Develop monthly monitoring reports and send to SC
23 August, 2019		Environmental monitoring specialists of SC/EPTISA Mr.Irakli Legashvili	Monthly monitoring of sites	Site internally should be arranged properly and cleaned regularly Surplus waste soil should be removed and disposed in a proper place Construction activities information signs should be installed at each construction segment	Verbal instruction has given to contractor to immediately improve the situation and send improved photos of site

Date of visit	Name of Company Name of Contract	Auditors name,	Purpose of audit	Summary of any significant findings	Cross reference to Audit report
4 October 2019		Environmental monitoring specialists of SC/EPTISA Mr.Irakli Legashvili Environmental specialists of USIIP Ms.Ketevan Chomakhidze	Monthly monitoring of sites	Construction activities information signs should be installed at each construction segment Surplus/accumulated soil for backfilling purposes should be managed/stored properly	Verbal instruction has given to contractor to immediately improve the situation.
20 December 2020		Environmental monitoring specialists of SC/EPTISA Mr.Irakli Legashvili	Monthly monitoring of sites	Site internally should be arranged properly and cleaned regularly	Verbal instruction given to contractor to improve the situation on construction sites

2.3 Issues Tracking (Based on Non-Conformance Notices)

61. Several Non-Conformances have been observed during the site visits under KUT-01, ABA-01 sub-projects. The contractors were always informed on the detected non-conformances and were demanded to improve on the deadline set and send photos of improvements made together with the corrective action plans. Environmental team of EPTISA and UWSCG/USIIP monitored the improvements during the next monitoring visits. All Non-conformance Notices issued during the reporting period is presented in ANNEX C of this Semi-Annual EMR.

62. A summary of the identified environmental issues for July-December 2019 is presented below.

Table 6: Summary Table Kut-01
(All sites)

Total Number of Issues for Project	21
Issues Opened This Reporting Period	2
Issues Closed This Reporting Period	19
Percentage Closed	90%

Table 7: Summary Table ABA-01

Total Number of Issues for Project	5
Issues Opened This Reporting Period	1
Issues Closed This Reporting Period	4
Percentage Closed	80%

2.4 Trends

63. To identify trends in environmental issues information from previous Semi-Annual EMR (January-June 2019) is used. The summary of the issues is provided in the Table 8 below.

Table 8: Summary of identified trends in environmental issues

Semi-Annual EMR No	Total No of Issues	% issues Closed	% issues closed late
2 January-June 2019	69	84%	16%
July-December 2019	26	85%	15%

64. All major Non-Conformances under USIIP/T3 during the reporting period are provided in an Annex C of this report.

2.5 Unanticipated Environmental Impacts or Risks

N/A

3 RESULTS OF ENVIRONMENTAL MONITORING

3.1 Overview of Monitoring Conducted during Current Period

65. During the reporting period Environmental measurements of Noise level and Ambient air Quality were carried out by contractor under Kut-01 and Ure-01 projects.

66. Noise and air pollution standards defined by IFC/WHO 1999, are presented in the Table 9 and 10 below.

Table 9: Noise Level Guidelines

Noise	dBA National Regulations		dBA WHO	
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

67. Air pollution standards by IFC/WHO 1999, are presented in the Table 10 below

Table 10: Air pollution Guidelines

Contaminants	IFC/WHO Guideline Value (Limit) mg/m^3))
1	2
Inorganic dust	(*IFC does not have a standard for "inorganic dust". Instead IFC applies standards for PM2.5 and PM10). PM10 – 0,02/1 Year 0,05/24 Hour PM2,5-0,01/1 Year 0,025/24 Hour
Carbonic monoxide	n/a
Nitrogen dioxide (NO_2)	0,2/ 1 Hour 0,04/1 Year
Aldehyde	n/a

68. Monitoring measurements of noise level and ambient air quality under KUT-01 project was conducted by Ltd "NaSeTo Group" in 14 December 2019 (See Annex A) to the nearest sensitive receptors of construction sites. Location and data are included in the Tables 11 and 12 below. The next monitoring measurements will be conducted in May 2020 and results will be reflected in the next January-June SAEMR 2020.

69. According to data received in December 2019 under KUT-01 project, noise level exceeds the standards required by National Regulations and World Health Organization (IFC/WHO),1999, and therefore additional measures provided in **Table 15** below is required (Please see table Recommendations to Address Environmental Issues under KUT-0 and ABA-01 sub-projects). IFC/WHO standards for Noise and Air pollution are presented in Tables 9 and 10 above. It should be noted also that measurements carried out at construction sites, were temporary and conducted during the daytime from 15:00pm to 17:45pm.

Table 11: Environmental Quality Monitoring Measurements under KUT-01 Project

Results of Noise and Air quality measurements

No	Measurement Point		Measurement results							
1	Location	Coordinates	[2]Noise dBA (max) (1-hour)	Vibro Speed		Vibro Acceleration		Dust mg/m^3		
				mm/s	db	m/s^2	db	Pm_{25}	Pm_{10}	total
2	Kutaisi Godogani Reservoir	38TO314133 4679770	75.6	<0.1	<66	<0.1	<100	0.035	0.042	0.171
3	Kutaisi Mukhnari	38TO310567 4677796	74.6	<0.1	<66	<0.1	<100	0.025	0.030	0.041
4	Kutaisi Kvitiri Pump Station	38TO305585 4680019	77.0	<0.1	<66	<0.1	<100	0.027	0.036	0.075
5	Kutaisi #1 Solomon St.	38TO311848 4681825	70.7	<0.1	<66	<0.1	<100	0.028	0.039	0.064

[2] This data for noise propagation is the Maximum and Average will be obtained for the next reporting period and reflected in the next SAEMR - January-June 2020.

Table 12: Environmental Quality Monitoring Measurements under KUT-01 Project
Nitrogen Dioxide, Sulfur Dioxide, Carbon monoxide and Total Hydrocarbons

N	Measurement Point		Measurement results mg/m^3				Measurement Results mr/h
	Location	Coordinates	Nitrogen Dioxide	Sulfur Dioxide	Carbon monoxide	Total Hydrocarbons	
1	Kutaisi Godogani Reservoir	38TO314133 4679770	0.001	<0.01	0.87	<0.1	9
2	Kutaisi Mukhnari	38TO310567 4677796	0.004	<0.01	0.41	<0.1	11
3	Kutaisi Kvitiri Pump Station	38TO305585 4680019	0.006	<0.01	1.24	<0.1	10
4	Kutaisi #1 Solomon St.	38TO311848 4681825	0.008	<0.01	1.59	0.1	8

70. During the reporting period, no environmental quality measurements were carried out under ABA-01 sub-projects, since construction activities were carried out in remote areas, where there is no nearby population.

3.2 Trends

71. All mitigation measures identified within the KUT-01 and ABA-01 projects are effective and no additional measures are required.

3.3 Summary of Monitoring Outcomes

72. Noise level during the construction period under KUT-01 sub-project exceed the existing standards of IFC/WHO and therefore additional mitigations are required by contractor. These mitigations are provided in table 15 below. SC and UWSCG/USIIP will monitor the improvements under Kut-01sub-rpoject and reflect findings in the next Semi-annual EMR of January-June 2020.

3.4 Material Resources Utilisation

3.4.1 Current Period

73. Constructor provided material resources utilization during the current reporting period.

74. Material resources utilization under KUT-01 sub-project during the current reporting period is provided in the table 13 below.

Table 13: Material Resources Utilization under KUT-01 project

Construction of Water Supply Sub-project in Kutaisi/Phase II July - December 2019	
Water M^3 Indication	468 m^3
Electricity M^3 Indication	23752 KV

75. The contractor did not provide any information on the material resources utilization under the ABA-01 subproject, despite the fact that the contractor was strictly requested to provide this information. The contractor promised to collect this data for the next reporting period, which will be reflected in the Semi-annual EMR of January-June 2020.

3.4.2 Cumulative Resource Utilisation

N/A

3.5 Waste Management (URE-01, Kut-01)

KUT-01

76. At the construction sites there are mainly produced household and solid waste. The amount of waste generated during the current reporting period is provided in the table 14 below.

Table 14: Waste Generated under the KUT-01 Sub-project

Construction of Water Supply Sub-project in Kutaisi/Phase II July-December 2019	
Solid Waste M^3 Indication	8040 m^3
Household Waste KG Indication	1050 kg

3.6 Health and Safety

4.6.1 Community Health and Safety

77. No community incidents have been reported by contractor and SC during the reporting period under KUT-01 and ABA-01 projects.

3.6.2 Worker Safety and Health

KUT-01

78. Environmental H&S Manager of KUT-01 project Mr. Beso Balanchivadze was performing every day monitoring, induction and supervision of ongoing works according to HSE standards and by requirements of ADB/UWSCG/EPTISA and kept H&S incidents/accidents/Near Misses log book.

79. Health & safety and environment issues which were covered during the reporting period are as follows:

- PPE;
- Reinforcement;
- Protected all trees nearby construction to avoid its damage;
- Ground works;
- Manual works;
- Bending rebar, Cutting;
- Installation and dismantle formwork
- Toolbox Talk
- Dust and Noise Measurements

80. The Near Missis, which resulted in Worker's Health and Safety problems were reported under KUT-01 project. The injured person is Rezo Tvaradze, address and contact details as well as implemented measures are provided in the Annex E below – the filled Near Missis form.

81. No workers incidents have been reported during reporting period under ABA-01 sub-project.

4.10 Training

82. Routine personnel trainings and toolbox talks happen by the construction companies almost on daily basis under KUT-01 and ABA-01 sub-projects. The recording of such toolbox talks are available at the sites. SC also provides routine instructions and verbal trainings for Construction Company environmental and H&S officers. Statistics of routine toolbox talks will be communicated by the construction companies during next reporting period.

83. On December 4 2019 a training was held for representatives of the Construction Companies under GUD-03 sub-project. Training was attended by Ms. Maka Goderdzishvili, Head, Department of Environmental Protection and Permits (DEPP) of UWSCG, Ms. Liza Chovelidze, senior specialist of DEPP and Ms. Kate Chomakhidze, Environmental Specialist of UWSCG/USIIP. The agenda, photos of the meetings and signed list of participants is attached to this report (Please see Annex F – Training Materials).

84. During the training PwP presentation were presented by Mr.Irakli Legashvili, Environmental Specialist of EPTISA about the implementation of IEE/EMP and SEMPs, and Ms.Ketevan Chomakhidze about the GRM implementation under GUD-03 sub-project.

4 FUNCTIONING OF THE SEMP

4.1 SEMP Review

85. A new Location Specific Environmental Management Plan was prepared within the proposed reporting period under the GUD-03 sub-project.

GUD-03

- Location Specific EMP for Construction of Gudauri WWTPs (September 2019)

86. The following SSEMPs were prepared by contractor, within the framework of URE-01, URE-02 and KUT-01 projects during the previous reporting periods:

URE-01:

- SSEMPs for Ureki Well Fields (May 2016)
- Reservoir#1 (November 2016)
- Water Supply Pumping Station (November 2016)
- Reservoir #2 (Laituri Reservoir) (August 2018);

URE-02:

- SSEMP for Ureki Waste Water Treatment Plant (November 2015)

KUT-01

- SSEMP for Godogani Reservoir (August 2016)
- SSEMP Mukhnari Reservoirs (March 2016)
- SSEMP Aqueduct River Crossing (December 2019)
-

ABA-01

87. Under ABA-01 new service center will be constructed. Preparation of SEMP for the construction of service center is on-going and will be submitted in February 2020

88. All SSEMPs under GUD-03, KUT-01, URE-01, URE-02 and ABA-01 projects were prepared by Contractor, endorsed by SC and approved by UWSCG and reviewed/commented by the RETA International Environmental Consultant of ADB under RETA 8663 - Ms. Keti Dgebuadze. No Location Specific SEMP was prepared under ABA -01 project as the project includes only rehabilitation of existing water supply network.

89. All of the SSEMPs listed above are effective, mitigation measures are still relevant, no changes are required.

5 GOOD PRACTICE AND OPPORTUNITY FOR IMPROVEMENT

5.1 Good Practice

90. N/A

5.2 Opportunities for Improvement

91. N/A

6 SUMMARY AND RECOMMENDATIONS

6.1 Summary

92. During the reported period construction activities were implemented only under KUT-01 and ABA-01 sub-projects. Contractors have intensified all activities to improve the progress of the works on sites. Individual and Joint on-site monitoring activities were conducted by Environmental Monitoring Specialist of EPTISA and UWSCG/USIIP on a regular basis.

93. Day-to-day monitoring of the construction sites were carried out by the environmental Specialists of Contractor, weekly checklists were filled out and monthly monitoring reports were developed and sent to Supervision Consultant.

94. Environmental Monitoring Specialist of Eptisa, Mr.Irakli Legashvili conducted monthly monitoring of project sites under T3 and developed Non-Conformance Notice were required (Please see Annex C). He also developed quarterly environmental monitoring reports based on the monthly reports submitted by Contractor and environmental site inspections and submit to UWSCG.

95. The monitoring activities included monitoring of compliance of construction activities to the IEE/EMP and SEMP requirements under KUT-01 and ABA-01 sub-projects.

96. Environmental Specialist of USIIP Ms. Kate Chomakhidze performed monitoring of contractor's performance in accordance with the requirements of approved IEE/EMPs, SEMPs, and other environmental commitments of the contractor. USIIP/ES developed Semi-annual monitoring reports and submitted to ADB based on the quarterly reports prepared by SC and monitoring results.

97. Also unscheduled monitoring visits were carried out and Non-Conformance Notice has been issued to the contractor by the environmental specialist of UWSCG/USIIP if needed. Mitigation measures in order to reduce major environmental impacts have been instructed to CCs during the monitoring visits as well.

98. In accordance with the IEE, and the accompanying Environmental Monitoring Plan (EMP), the Contractor is required to undertake parametric measurements and observations on air quality, noise and socio-cultural resources.

99. Necessary instructions have been given to the Contractor by UWSCG and SC to follow the EMP's and SSEMP's requirements for KUT-01 and ABA-01 sub-projects.

6.2 Recommendations

100. During the reporting period, from July-December 2019, the T3 of Investment Program was implemented in accordance with the requirements of ADB - SPS 2009 and the National Legislation.

101. More detailed recommendations/next steps for the implementation of T3 during the next reporting period January-June 2020 are provided in the Table 15 below:

Table 15: Recommendations to Address Environmental Issues under KUT-01, URE-01 and ABA-01 sub-projects

Recommendations KUT-01 and ABA-01 projects	
Recommendations KUT-01	**Implementation status and date**
Godogani, Mukhnari Reservoirs and Network	
High visible safety signs/tapes and trench side barriers around of deep open excavation should be installed from all sides to avoid accidents	Contractor is given strong instruction to improve the situation, develop CAP (if requested) and send improved photos of Site to SC and UWSCG by the end of January 2020.
Waste should be timely removed from the construction site and disposed properly.	
Noise from the construction activities should not cause disruption and nuisance to nearby community and other sensitive receptors (i.e. school, hospitals).	Instruction are given to contractor to improve the situation and to conduct following mitigation measures: Plan activities in consultation with SC and IPMO/UWSCG so that activities with the greatest potential to generate noise are planned during periods of the day that will result in least disturbance; Noisy construction activities will be avoided during night time; All construction equipment and vehicles shall be well maintained, regularly inspected for noise emissions; Impose speed limits on construction vehicles to minimize emissions along areas where sensitive receptors are located (i.e. temples, hospitals, schools, houses) Install noise barriers (e.g., panels, curtains, or

Recommendations KUT-01 and ABA-01 projects	
	partitions) to reduce the emission of engine noise. Conduct meetings with population and provide information related to schedule of construction activities and noise caused by the project activities.
Recommendations ABA-01 sub-project	
Site internally should be arranged properly and cleaned regularly	Contractor is given strong instruction to improve the situation, develop CAP (if requested) and send improved photos of Site to SC and UWSCG by the end of January 2020. Preparation of SEMP for the construction of service center is on-going and will be submitted in February 2020.

102. Conduct monitoring of Noise and Ambient Air quality under KUT-01 project near the sensitive receptors of Construction sites in May 2020.

Table 16: The Specific Plan for Environmental Measurement under KUT-01 Project

Parameters	Quarterly measurement
Dust	May 2020
Vibration	May 2020
Carbon monoxide	May 2020
Nitrogen dioxide	May 2020
Sulfur dioxide	May 2020
Noise	May 2020

103. Conduct monitoring of Noise and Ambient Air quality under ABA-01 project at the nearest sensitive receptors of Construction sites in May 2020.

Table 17: The Specific Plan for Environmental Measurement under KUT-01 Project

Parameters	Quarterly measurement
Dust	May 2020
Vibration	May 2020
Carbon monoxide	May 2020
Nitrogen dioxide	May 2020
Sulfur dioxide	May 2020
Noise	May 2020

ANNEX A: ENVIRONMENTAL MONITORING DATA OF NOISE AND AMBIENT AIR QUALITY (July-December 2019)

KUT-01 Sub-project

საქართველო
შპს „ნასეტო გრუპ“

GEORGIA
LTD "NaSeTo Group"

საქართველო, ქუთაისი, ხუნდაძის 65, email: nato-gabunia@mail.ru, ტელ. 595-270-451, TBC ა/ა № GE29TB7064236020100019
Georgia, Kutaisi, Khundadze str. 65, , email: nato-gabunia@mail.ru, tel. 595-270-451, TBC bank № GE29TB7064236020100019

Kutaisi Water Supply Project

Monitoring measurements under project: 43405-023

December **2019**

1. Introduction

It is proposed to improve the water supply system in Kutaisi under the Asian Development Bank (ADB) funded Urban Services Improvement Investment Program. This Investment Program, implemented in seven towns, will develop the water and sanitation services, which will improve quality of life and optimize the social and economic development.

A first phase of the Kutaisi sub-project, financed under Tranche I, focuses in water supply measures and implemented in 2013 – 2015. Phase II, financed under Tranche 3, and with a start of implementation in 2014 will complete the rehabilitation and extension of the water supply system.

2. Regulatory Requirements

The environmental quality standards on the territory of Georgia are regulated by Decree No 297N of August 16, 2001 of the Minister of Labor, Health and Social Affairs of Georgia "On the approval of the environmental quality standards" (State Registration Code 470.230.000.11.119.004.920).

The following amendments were made to the above-mentioned decree:

1. Decree No 38/N of February 24, 2003 of the Minister of Labor, Health and Social Affairs of Georgia, SSM III, №16, 06.03.2002, Article 150

2. Decree No.251/N of the Minister of Labor, Health and Social Affairs of Georgia of September15, 2006– SSMIII, №129, 20.09.2006, Article 1716

3. Decree No.351/N of the Minister of Labor, Health and Social Affairs of Georgia of December 17, 2007– SSMIII, №179, 18.12.2007, Article 1974

4. Decree No.304/N of the Minister of Labor, Health and Social Affairs of Georgia of September 18, 2009– SSMIII, №115, 22.09.2009, Article 1312

5. Decree No.98/N of the Minister of Labor, Health and Social Affairs of Georgia of April 14, 2010– SSMIII, №39, 14.04.2010, Article 622

6. Decree No.350/N of the Minister of Labor, Health and Social Affairs of Georgia of October 25, 2010 - SSMIII, №138, 26.10.2010, Article 2000

7. Decree No.01-24/N of the Minister of Labor, Health and Social Affairs of Georgia of May 17, 2012 – web-site, 17.05.2012

3. Description of the works to be accomplished

Under the agreement concluded between the Construction Contractor SMK ULUSAL INSAAT Ve TICARET branch of Georgia and "Naseto Group" Ltd., the environmental quality analysis was accomplished at different points, in particular on the territory of Kutaisi (Godogani , at rezervior, Muxnari, Kvitiri Pump stancion, Solomon 1 st. trefic), where the project construction works are in progress, the environmental quality analysis of the adjacent area was done.

4. Accomplished measurements and results

4.1 Introduction

In Georgia, Kutaisi is one of the four cities where the National Environmental Agency regularly monitors the environmental quality. Consequently, the results of measurements of the National Environmental Agency can be considered as basic for the construction works taking place on the territory of eth city of Kutaisi.

The air pollution monitoring in Kutaisi in june - november 2019 accomplished at the observation point located in Chavchavadze Avenue. The concentrations of the following atmospheric air pollutants were fixed: dust, carbon monoxide, sulphur dioxide, nitrogen dioxide, nitrogen oxide and lead.

The identified maximum single and average monthly concentrations of each polluting ingredient are given in Table 1.

Table 1.Maximum single and average monthly concentrations fixed in the city of Kutaisi[1]

Point of observation	Dust		Nitrogen dioxide		Sulphur dioxide		Carbon monoxide		Nitrogen oxide	
	maximum single concentration, mg/m^3	Average monthly concentration, mg/m^3	maximum single concentration, mg/m^3	Average monthly concentration, mg/m^3	maximum single concentration, mg/m^3	Average monthly concentration, mg/m^3	maximum single concentration, mg/m^3	Average monthly concentration, mg/m^3	maximum single concentration, mg/m^3	Average monthly concentration, mg/m^3
Chavchavadze Avenue	0.067	0.031	0.062	0.037	0.005	0.002	2,8	2.0	0.045	0.042

[1]Source: http://nea.gov.ge/ge/service/garemos-dabindzureba/7/biuleteni/

4.2 Background radiation

The background radiation on the territory of the city of Kutaisi is permanently measured by the National environmental Agency. As the results of the current year suggest, the background radiation on the territory of the city of Kutaisi varies between 10-15 mR/h constituting thus being within the admissible limit of 30 mR/h.

The measurements accomplished in the project area yielded virtually the same result: the level in various sites was varied from 2 mR/h to 10 mR/h (see annex 1).

4.3 Noise and Vibration

The Construction Contractor carried out the construction works in Tsereteli, Agmashenebeli, Gansaxurdia and Miqeladze-Mevele streets and at reservoir. The trenches had been excavating at sites and the trenches were filled in some of them..

In all cases, the noise level in the immediate vicinity of the techniques varies within 60-80 dB. However, the noise level sharply reduced after 20-25 m and was within 55-70 dB in the vicinity of the nearest buildings and premises.

As a rule, noise caused by moving equipment's is reduced at some distance. Such reduction has logarithmic properties. In case of noise caused by construction activities, noise spread pattern from the noise point is used, that can be determined as: Noise level1-Noise level 2=20 log r2/r1, meaning that by doubling of distance noise is reduced by 6 dBA.

Table 26: Noise levels

Distance from noise source, m	Calculation level of the noise Average value - dBa	Calculation level of the noise Maximum value - dBa
10	80	90
20	74	84
40	68	78
80	62	72
160	56	66
320	50	60

4.4 Air quality values

The quality indicators of the following components measured in the project area: dust, CO, NO_2 and SO_2.

The results of the accomplished quality measurements given in Annex 1.

14.12.2019 წ. 15⁰⁰ – 17⁴⁵

Dust air pollution, noise and vibration measurements on 01.06.2019 წ. 15⁰⁰ – 17⁴⁵

№	გაზომვის წერტილის Measurement point		გაზომვის შედეგები Measurement results							
	ადგილ მდებარეობა Locastion	კოორდი-ნატები Coordinates	ხმაური A_{max} დბ Noise Amax db	ვიბრო სიჩქარე Vibro Speed		ვიბრო აჩქარება Vibro acceleration		მტვერი მგ/მ³ Dust mg / m3		
				მმ/წმ mm/s	დბ db	მ/წმ² m/s²	დბ db	$Pm_{2.5}$	Pm_{10}	Total
1	ქუთაისი,გოდოგანის რეზერუარი. Kutaisi, Godogani , at rezervior	38T0314133 4679770	75.6	<0.1	<66	<0.1	<100	0.035	0.042	0.071
2	ქუთაისი,მუხნარი. Kutaisi, Muxnari	38T0310567 4677796	74.6	<0.1	<66	<0.1	<100	0.025	0.030	0.041
3	ქუთაისი, ქვიტირის სატუმბო სადგური. Kutaisi, Kvitiri Pump stancion .	38T0305585 4680019	77,0	<0.1	<66	<0.1	<100	0.027	0.036	0.075
4	ქუთაისი, სოლომონ 1 ქ. 1. Kutaisi, Solomon 1 st. trefic .	38T0311848 4681825	70,7	<0.1	<66	<0.1	<100	0.028	0.039	0.064

ჰაერის აზოტის და გოგირდის დიოქსიდით, ნახშირბადის მონოქსიდით და ჯამური ნახშირწყალბადებით დაბინძურების და y გამოსხივების გაზომვების შედეგები 14.12.2019 . 15^{00} – 17^{45}

Nitrogen and sulfur dioxide, carbon monoxide and total hydrocarbon air pollution, and radiations measurement results 14.12.2019 . 15^{00} – 17^{45}

№	გაზომვის წერტილის Measurement point		გაზომვის შედეგები მგ/მ³ Measurement results mg/m³				გაზომვის შედეგები მკრ/სათ
	ადგილ მდებარეობა Locastion	კოორდი-ნატები Coordinates	აზოტის დიოქსიდი nitrogen dioxide	გოგირდის დიოქსიდი sulfur dioxide	ნახშირბა დის მონოქს იდი carbon monoxide	ჯამური ნახშირწყალ ბადები total hydrocarbons	Measurem ent results mr/h
1	ქუთაისი,გოდ ოგანის რეზერუარი. Kutaisi, Godogani , at rezervior	38T0314133 4679770	0.001	<0.01	0.87	<0.1	9
2	ქუთაისი,მუხნ არი. Kutaisi, Muxnari	38T0310567 4677796	0.004	<0.01	0.41	<0.1	11
3	ქუთაისი, ქვიტირის სატუმბო სადგური. Kutaisi, Kvitiri Pump stancion	38T0305585 4680019	0.006	<0.01	0.24	<0.1	10
4	ქუთაისი, სოლომონ 1 ქ. 1. Kutaisi, Solomon 1 st. trefic .	38T0311848 4681825	0.008	<0.01	0,59	0.1	8

გაზომვის დროს გამოყენებულია ხელსაქყოები:/During measurement tools used:
ხმაური/Noise - Mini Sound Level Meter N05CC;
ვიბრაცია/Vibration- Smart Sensor ® AR63B Vibration Meter:
დამტვერიანობა/ Dust- Portable Dust Deteqtor model LB-HD08
და Gasella Mikro Dust Pro (თვითკალიბრაცია ნულოვანი და ოპტიკური ფილტრით./Self-calibration zero and optical filter.). აზოტის დიოქსიდის და ნახშირბადის მონოოქსიდის - nitrogen dioxide and carbon monoxide - Элан CO/NO_2
ჯამური ნახშირწყალბადების - total hydrocarbon MiniRae 7600;
გოგირდის დიოქსიდის - sulfur dioxide – WASP-XM-E-SO2.

2001 წლის 16 აგვისტოს, საქართველოს შრომის, ჯანმრთელობისა და სოციალური დაცვის მინისტრის ბრძანება №297/ნ, გარემოს ხარისხობრივი მდგომარეობის ნორმების დამტკიცების შესახებ: / August 16, 2001, the Ministry of Labor, Health and Social Affairs of Georgia №297 / N, approval environmental quality of the norms:
დამტვერიანობის ნორმა შეადგენს 0.5 მგ/მ^3; / Dust norm is 0.5 mg / m3;
აზოტის დიოქსიდის ნორმა შეადგენს 0.2 მგ/მ^3; / nitrogen dioxide norm is 0.2 mg / m3;
გოგირდის დიოქსიდის ნორმა შეადგენს 0.5 მგ/მ^3; / sulfur dioxide norm is 0.5 mg / m3;
ნახშირბადის მონოოქსიდის ნორმა შეადგენს .5 მგ/მ^3; / carbon monoxide norm is 5 mg / m3;
ჯამური ნახშირწყალბადების ნორმა შეადგენს 1 მგ/მ^3;/total hydrocarbons norm is 1 mg /m3;
ვიბროსიჩქარის ნორმა შეადგენს 112 დბ; / Vibro-speed norm is 112 db;
ვიბროაჩქარების ნორმა სპეციალური დამცავი საშუალებების გამოყენების გარეშე - 126 დბ./Vibro acceleration norm special protective outlets without using - 126 db.

დირექტორი: ნ. გაბუნია

ტექნიკური შემსრულებელი: ს. ბაცაძე

NASETO GROUP 412741626


GPSmap 60CSx
Location
38 T 0310567
UTM
4677796
N


PPM
MODE
RJ
OL

ANNEX B: PROJECT PHOTOS

Kut-01 - Godogani reservoir (New East Reservoir)

KUT-01 - Mukhnari Reservoir

KUT-01 First layer of asphalt front of Godogani reservoir

Photo: Aba-01 Construction of Network

ABA-01: Guard's Box

ABA-01: Insolation of the fence on the front side of Headworks

ANNEX C: NON-CONFORMANCE NOTICE

KUT-01 SUB-PROJECT

Non-Compliance Notice

Project: USIIP	**Non-compliance Notice KUTAISI**
Contract No: KUT-01	
Contractor: SMK	
Reference: Kutaisi – Godogani Reservoir, Network	

This notice is to advice you, the prime Contractor, on the referenced Contract, of the following notice on environmental measures to be implemented **urgently.**

NON-COMPLIANCE IN KUTAISI

Godogani Reservoir

- High visible safety signs/tapes and trench side barriers around of deep open excavation should be installed from all sides to avoid accidents (also danger of animals entrance and falling)
- Proper warning and information signs should be arranged
- Safety tapes around open holes should be arranged
- Proper waste containers should be installed and labeled
- Waste should be placed only at the proper waste container and discharged timely
- Waste should be timely removed from the construction site and disposed properly
- Safety norms during working at height (ladder safety norms) should be provided
- All construction materials should be properly segregated and stored adequately
- Concrete washout pit should be managed properly
- Workers always should use complete PPE
- Site internally should be arranged properly and cleaned regularly
- Refilling/compaction and reinstatement process should bring site at the same or better condition

Photos of Godogani Reservoir

MUKHNARI RESERVOIR

- All workers (even personnel of subcontractor) should be equipped with complete PPE
- Safety tapes around open trenches should be arranged
- Safety norms during works electrical equipment should be respected
- Proper waste containers should be installed and labeled
- Waste should be placed only at the proper waste container
- Construction waste should be timely removed from the construction site and disposed properly
- All construction materials should be properly segregated and stored adequately
- Soil (surplus/accumulated soil) for backfilling purposes should be managed/stored properly
- Site internally should be arranged properly and cleaned regularly

Photos of Mukhnari Reservoir

KUTAISI NETWORK

- Safety signs/tapes around of all open trenches should be installed to avoid accident of population
- Walls of the deep trenches (>1.5m) should be strengthened by boards to avoid landfall of the soil and accidents (workers damage)
- Construction activities information signs should be installed at each construction segment
- Construction materials should be brought when needed to avoid its long time disposal in the streets and disturbance of residents and businesses
- All transmission line construction segments should be cleaned/well organized on regular bases

- Workers always should use complete PPE
- Refilling/compaction and reinstatement process should bring site at the same or better condition as it was before construction

Photos of Kutaisi Network

All these conditions have to be remedied within four days (by the 8 October 2019) by the prime Contractor (SMK).

Date of site visits 27.09.2019	
Irakli Legashvili EPTISA - Environment	

ANNEX D: SAMPLE WEEKLY MONITORING CHECKLISTS

გარემოსდაცვითი გარდამავალი ზედამხედველობის ანგარიშგების ფორმა
Weekly Environmental Monitoring

Name of the Contractor and project members/list მშენებელი კონტრაქტორის სახელი და პროექტის წევრების ჩამონათვალი	SMK Ulusal Insaat Ve Ticaret A.S. (Turkey). Construction and Rehabilitation of Water Supply System in Kutaisi / Phase 2 (KUT-01)
კონტრაქტის #: Contract #:	Contract No: P439405-ICB-KUT-01
Description and Location of the Site: საშენებლო სამუშაოს აღწერილობა და ადგილმდებარეობის აღწერა	Cadagani Reservoir
Implementing Agency განმახორციელებელი სააგენტო	შპს „ქალაქთაშორისი წყალმომარაგების წყალმომარაგების კომპანია" "United Water Supply Company of Georgia", LLC
Date of Visit: (Year/Month/Day) ვიზიტის დრო და თარიღი	05.08-09.08.2019
Supervisor's Identity (name, last name, contact information and signature) სამეთვალყურეო პირის ვინაობის წარმოდგენა (სახელი, გვარი, საკონტაქტო ინფორმაცია და ხელმოწერა)	კონტრაქტორი/Contractor: Signature and stamp/ხელმოწერა და ბეჭედი ორმაგული დოკუმენტი
Current Stage of Civil Works სამშენებლო სამუშაოების მიმდინარე სტადია	On-going
Weather Conditions ამინდის პირობები	
ორგანიზაციის უსაფრთხოებასა და გარემოს დაცვაზე პასუხისმგებელი პირი (კონტრაქტორი) Staff responsible for environment/safety at the site (contractor)	სახელი: ბესო ბალანჩივაძე Name: Beso Balanchivadze ხელმოწერა/Signature:
მშენებლობის ინსპექტორი (ზედამხედველი) Construction site inspector (supervisor)	სახელი: Name: ნოდარ ბერიძე ხელმოწერა/Signature:

გარემოს დაცვის სპეციალისტი (კონტრაქტორი) Environmental Specialist (contractor)	სახელი: ნათია ბაბუხადია Name: Natia Babukhadia	ხელმოწერა/ Signature: 

N	Documents and Facts to be Examined შესამოწმებელი დოკუმენტები და ფაქტები	კი/ yes	არა/ no	ნაწ-ად Partially	არ ეხება N.A	შენიშვნა/ Comment
1	**EMPs/SSEMPs, Protocols and Reports**					
1.1	Contractor's Site-specific Environmental Management Plan (SSEMP) is prepared, reviewed and approved by PIU prior to contractor commencing the works. შეფასებული და დამტკიცებული საიტ- სპეციფიკური გარემოდაცვითი მართვის გეგმა.					Construction of Water Supply System un Kutaisi - phase II
1.2	Construction contractor has National Environmental Specialist in staff. მშენებელ კონტრაქტორს დაფებული აქვს ხელშეკრულება ადგილობრივ გარემოდაცვითი საკითხების მართვის სპეციალისტთან.	✓				
1.3	Construction contractor has International Environmental Specialist in staff. მშენებელ კონტრაქტორს დაფებული აქვს ხელშეკრულება საერთაშორისო გარემოდაცვითი საკითხების მართვის სპეციალისტთან.	✓				
1.4	Monthly environmental monitoring reports are prepared by the Contractor and submitted to the Supervision Consultant მომზადებულია გარემოდაცვითი მართვის გეგმის განხორციელების ყოველთვიური ანგარიში კონტრაქტორის მიერ და წარდგენილია კონსულტანტისათვის	✓				
1.5	Emergency Response Plan is prepared and approved. შეფასებული და მოწონებულია ავარიულ სიტუაციებზე რეაგირების გეგმა .	✓				
1.6	Health and Safety Management Plan is prepared and approved. შეფასებული და მოწონებულია ჯანდაცვის და უსაფრთხოების მართვის გეგმა და ჯანდაცვის და უსაფრთხოების მართვის სისტემა შეფასებისა და მონიტორინგის ფორმით.	✓				
1.7	Complaints log exists on construction site. სამუშაოების წარმოების ტერიტორიაზე არსებობს საჩივრების ჟურნალი სარეგისტრაციო ფორმით.	✓				
1.8	Site inspection non-compliance notices issued and corrective action requests implemented.	✓				

	შეუსაბამობების შეტყობინებების მომზადება და წარდგენა კონტრაქტორისთვის და შესრულებული ქმედებების განხორციელება.					
1.9	Training/Capacity building activities undertaken as per EMP requirements and records kept of trainings. გადაცემული და ხელმოწერილია მუშახელის ტრენინგი ა რეში უსაფრთხოების და უსაფრთხოების საკითხებზე. ტრენინგის ანგარიში მომზადებულია და ინახება საიტის კლუბზე.	✓				
2	**Permits, Licenses and Contracts**					
2.1	The Contractor has a permit or relevant contract from the Municipality for final disposal of construction waste/კონტრაქტორს მოცემული აქვს სამშენებლო ნარჩენების სახელოო განთავსების ნებართვა ან შესაბამისი კონტრაქტი ადგილობრივ ორგანიზებას.	✓				
2.2	The Contractor has a permit for final disposal of municipal waste. კონტრაქტორს მოცემული აქვს საყოფაცხოვრებო ნარჩენების სახელოო განთავსების ნებართვა.	✓				
2.3	The Contractor has executed the contract with the licensed organization on the hand-over and disposal of hazardous waste. კონტრაქტორს გაფორმებული აქვს სახიფათო ნარჩენების გადაცემისა და განთავსების ხელშეკრულება ლიცენზირებულ ორგანიზაციასთან.	✓				
2.4	The Contractor has a license for tree felling/კონტრაქტორს გააჩნია ლიცენზია ხეების ჭრისთვის.	✓				
3	**Performance of civil works**					
3.1	სამშენებლო ტერიტორიის სრულად შემოღობვა Adequate fencing of construction area from all sides	✓				
3.2	საკეტიანი შესასვლელი კარის მოწყობა, სტანდარტული გამაფრთხილებელი და საინფორმაციო ნიშნებით აღჭურვა Arrangement of lockable gate with standard warning and information signs	✓				
3.3	სამშენებლო ტერიტორიაზე და პერიმეტრზე სტანდარტული გამაფრთხილებელი და საინფორმაციო ნიშნების განთავსება Placement of standard warning and information signs at the perimeter and inside of construction area	✓				
3.4	ღიად დატოვებულ თხრილებზე და ქვებზე უსაფრთხოების ლენტების, ბარიერების და გამაფრთხილებელი ნიშნების განთავსება Installation of safety signs/tapes and trench side barriers around of open trenches	✓				
3.5	1,5 მეტრზე მეტი სიღრმის ტრანშეებში კიბეების გამაგრება				✓	

	Strengthening of walls of the deep trenches (>1.5m) by boards					
3.6	დასახლებულ ადგილებში ღიად დატოვებულ თხრილებზე დროებითი გადასასვლელების მოწყობა Installation of proper temporary wooden/metal walkways/planks across open trenches in settlement areas				✓	
3.7	საშენებლო ტერიტორიაზე, სამუშაოების ზონაში არსებული ხეების შენარჩუნება (დაზიანების თავიდან აცილების ბორნით) Protect all trees nearby construction zone to avoid its damage	✓				
3.8	ეკსკავაციის დროს, ნიადაგის ნაყოფიერი (დახლოებით 20-30 სმ სიღრმის) ფენის მოხსნა და განცალკევებულად ჯეროვნად შენახვა Removal of top soil (about 20 cm depth) and separately storing in appropriate place	✓				
3.9	სამშენებლო ნარჩენების და ჭარბი ნარჩენი გრუნტის დროული გატანა/განთავსება Timely removal/disposal of construction waste and surplus waste soil	✓				
3.10	საშენებლო ტერიტორიის ღამის საათებში განათება Provide adequate lighting of construction territory	✓				
3.11	სამშენებლო ტერიტორიის შესაბამისად მოწყობა მასალების და მოწყობილობების და დანადგარების ორგანიზებულად განთავსება (საჭიროებიდან გამომდინარე) Proper arrangement of construction site and segregation/storing of construction materials/equipment (bring the material when required)	✓				
3.12	სამშენებლო ტერიტორიაზე საწვავის და საპოხი მასალების დაღვრის შედეგების სალიკვიდაციო ნაკრების (ქვიშა, ხის ფხვნილი, მცირე ზომის ავზი და სხვა) ხელმისაწვდომობა Availability of proper fuel/oil spill response items (sand, sawdust, special containers) at the construction site	✓				
3.13	საწვავის და საპოხი მასალების კონტეინერების განთავსება მხოლოდ სპეციალურ გადახურულ ადგილებში Allocation of fuel and lubricants containers at the special dedicated place (with roofing and concrete flooring)	✓				
3.14	სამშენებლო ტერიტორიაზე საყოფაცხოვრებო ნარჩენებისათვის თავსახურიანი კონტეინერის განთავსება და შესაბამისი წარწერებით აღჭურვა (მაგ. "HOUSEHOLD WASTE") Placement of proper Household Waste container at the special dedicated place with relevant indication signs (for example "Household Waste")	✓				
3.15	სამშენებლო ტერიტორიაზე სახიფათო ნარჩენებისათვის თავსახურიანი კონტეინერის განთავსება და შესაბამისი წარწერებით აღჭურვა (მაგ. "HAZARDOUS WASTE") Placement of proper Hazardous Waste container at the	✓				

	special dedicated places with relevant indication signs (for example "Hazardous Waste")					
3.16	სამშენებლო ტერიტორიაზე ან მის გარეთ ტრანსპორტისთვის პარკირების ადგილის მოწყობა და ნიშნით აღჭურვა (მაგ. P) Arrangement of proper Parking area at the adequate place inside/outside of construction territory with relevant sign (for example P)	✓				
3.17	სამშენებლო მასალების და ნარჩენების ტრანსპორტირების დროს ავტოტრანსპორტის სპეციალური საფარით (ბრეზენტით, ტენტითდასხვა) აღჭურვა Use tarpaulins cover during materials transportation		✓			
3.18	საჭიროებიდან გამომდინარე მტვრის წარმოქმნის პრევენცია Dust generation prevention activities (when needed)	✓				
3.19	მუშების და ინჟინერ-ტექნიკური პერსონალის მიერ ინდივიდუალური დაცვის საშუალებების (ჩაფხუტი, ხელთათმანი, ჩაქჩები, დამცავი სათვალე, და სხვა) სრულად გამოყენება Ensure that all workers are provided with and use appropriate Personal Protective Equipment - helmets, hand gloves, boots, masks, safety belts	✓				
3.20	სიმაღლეზე მუშაობის დროს სპეციალური დამცავი აღჭურვილობის გამოყენება Use of special safety equipment during working at heights	✓				
3.21	საშენებლო ტერიტორიის მუდმივად დალაგება და დასუფთავება Regularly cleaning of construction territory	✓				
4	**Monitoring Measurements**					
4.1	Monitoring measurement data (air, water, soil, erosion, noise, dust, vibration, etc). წყლის, ჰაერის, ვიბრაციის, ეროზიის, ხმაურის, მტვრის და ნიადაგის მონიტორინგის გაზომვების მონიტორინგი.	✓				
5	**Top Soil Protection**					
5.1	Topsoil is stripped and stored according to standard procedures and used further for landscaping and reinstatement. ნიადაგის ზედაპირული ფენის დაცვა	✓				
6	**Safety Measures**					
6.1	The workers use all personal safety equipments required for individual technological processes (hard hats, gloves, respirators, glasses, etc.). მუშახელი იყენებს ცალკეული ტექნოლოგიური პროცესებისათვის აუცილებელ პირად დამცავ საშუალებებს (ჩაფხუტები, ხელთათმანები, რესპირატორები, სათვალეები და ა.შ).	✓				
6.2	The sites are provided with the fire fighting and emergency medical aid kits, site is fenced, site lightening, signs are installed, etc .					

ANNEX E: NEAR MISSES UNDER KUT-01 SUB-PROJECT

ACCIDENT REPORT FORM

Date and time of Incident	24/12/19	
Name of Injured Person	Rezo Tvaradze	
ID of Injured Person		
Address Phone Number Date of Birth Physical Address	Mshvidobis ქ. 38. 598787629 1966 13 ივნისი	
Who was injured person?	Passenger	System Employee ✓
Type of injury		
Details of incident: Whilst operating at trench flipped his ande slided indo open chamber cover. issued 1 day vacation for Recovery! Result. Person Recovered /attanding by me. workplace		
Injury requires physician/hospital visit	Yes	No ✓
Name of physician/hospital		
Address: Physician/hospital phone number		
Signature of injured party		
OBSERVATION:		SAFETY MANAGER SIGNATURE

ANNEX F: TRAINING MATERIALS, 4 December 2019 (Agenda, Photos of Meeting, Signed List of Participants).

Agenda of the Meeting

TRAINING

FOR ENVIRONMENTAL MANAGERS OF CONTRACTOR COMPANIES

4 December, 2019
Tbilisi, Georgia

Training Venue: Eptisa Office Conference Hall – VI floor
Address: #15 Budapeshti street

Main Topics:

- **Environmental Management Plan *(EMP)***
- **Site-Specific Environmental Management Plan *(SSEMP)***
- **Environmental Impact and Mitigation Measures during Construction phase**
- **GRM system and procedures**
- **Case studies of Environmental Impact by Contractor Companies and proposed Mitigation Measures**

Agenda

Time	Topic	Trainer
12:00	Welcome	**Manuel Villafranca** Eptisa - Office Manager **Maka Goderdzishvili** UWSCG - Head of Environment Dept. **Mario de la Hoz** Eptisa - Team Leader
12:15-13:00	Environmental Management Plan *(EMP) and* Site-Specific Environmental Management Plan *(SSEMP)*	**Irakli Legashvili** Eptisa - Environmental Specialist
13:00-13:15	Q/A	
13:15-14:00	Environmental Impact and Mitigation Measures during Construction phase	**Irakli Legashvili** Eptisa - Environmental Specialist
14:00-14:15	Q/A	
14:15-14:45	Coffee Break	
14:45-15:15	Grievance Redress Mechanism (GRM)	**Ketevan Chomakhidze** UWSCG - USIIP
15:15-15:45	Case studies of Environmental Impact by Contractor Companies and proposed Mitigation Measure	**Irakli Legashvili** Eptisa - Environmental Specialist
16:00	Q/A Closure	

Photos of the Meeting

Signed list of Participants:

TRAINING

FOR ENVIRONMENTAL MANAGERS OF CONTRACTOR COMPANIES

4 December, 2019
Tbilisi, Georgia

Training Venue: Eptisa Office Conference Hall – VI floor

№	Name	Company	Contact	Signature
1.	Ketevan Chomakhidze	UWSCG	577380309 Chomakhidzek@yahoo.com	
2.	Liza Chobelidze	UWSCG	599 91 30 30 l.chobelidze@watergeo	
3.	Shalva Bostashvili	SAFEGE	595116041	
4.	Grantse Lakava	Eptisa	577570520 grantse.lakava@hotmail	
5.	Nikoloz Gogadze	Chine nuclear industry 23	599224546 nikushanikushell7@yahoo	
6.	Alexander Mchedlishvili	chine nuclear industry	599029933 Alexander Mchedlishvili [illegible] @gmail.com	
7.	Bidzina Sujashvili			

№	Name	Company	Contact	Signature
7.	Bidzina Sujashvili	China nuclear industry	Bidzina.Sujashvili@gmail.com	B. Sujashvili
8.	Mario de la Hoz Gómez	EPTISA	mdelahoz@eptisa.com	
9.	Wu Chao	CNI	wuchao@cnizs.com	
10.	Irakli Legashvili	Eptisa	chem_ira@yahoo.com 577 19 70 16	
11.	Sopho Lomtadze	Eptisa	s.lomtadze@eptisa.com	
12.	Maka Goderdzishvili	UWSCG		