Environmental Management Plan

Semestral Report
January 2012

ARM: Water Supply and Sanitation Project – Improvement of Water and Sanitation Systems of Town Kapan

Prepared by Armenian Water and Sewerage Company for the Republic of Armenia and the Asian Development Bank.

APPENDIX

CONTRACT No. L2363-NCB-1-08/1

Part D –Special conditions of the contract

SUB-PROJECT XIX - TOWN KAPAN

PACKAGE XIX.1 – IMPROVEMENT OF WATER AND SANITATION SYSTEMS OF TOWN KAPAN

ENVIRONMENTAL MANAGEMENT PLAN

TABLE OF CONTENT

LIST OF ABBREVIATIONS

RA MNP - Republic of Armenia Ministry of Nature Protection
RA MH - Republic of Armenia Ministry of Health
RA MTG - Republic of Armenia Ministry for Territorial Governance
RA MC - Republic of Armenia Ministry of Culture
LSGA – Local Self-governing authorities
EIA - Environmental Impact Assessment
AWSC/ADB PMU -"Armwatersewerage" /Asian Development Bank Project Management Unit
EMP Environmental Management Plan
IEE Initial Environmental Examination
DD Detailed design

According to the ADB Environmental policy (November 2002), the sub-project is ranked to Category B, which does not require a full/large scale EIA. The sub-project does not require also Conclusion of Environmental Expertize, in accordance with the RA legislation - RA Law on Environmental Impact Assesment (20 November 1995) and RA Government's Decision* "Established standards of designed activities subjected to Environmental Expertise" ***(N-193, 30 March 1999)..***

1. INTRODUCTION

This report has been developed for the sub-project on improvement of water supply and wastewater systems of Kapan town. The sub-project design was implemented by JINJ Ltd and HGSN joint venture. Rehabilitation of water supply sytsem includes reconstruction and repair of distribution network, construction of new water lines, regulation and metering nodes, repair of administrative and auxiliary buildings.

Adverse environmental impacts can be both in the course of construction implementation and during further operation of water supply systems. The impacts during construction can be cutting of vegetation, land erosion, air pollution, as well as land and water resources pollution with lubricants, chlorine, household and construction waste.

One of the essential positive environmental impacts is water resources protection, water loss reduction and sustainable use.

Social and economic impact of water systems improvement are mainly positive - excluding mixing of drinking, irrigation, and sewerage water, reduction of water pollution hazard, preventing, excluding penetration of infectious disease viruses into drinking water; increasing duration of water supply to population, providing sustainable water use, reasonable water consumption.

Below the description of possible adverse impacts during various stage of the project implementation is provided, as well as the proposed mitigating measures.

- *Design stage*

Design works have been implemented by JINJ Ltd. and HGSN Ltd. joint venture, which was selected as Consultant for ADB funded "Water supply and sanitation project". The design documents include items on climatic conditions, relief, soil types, hydrology, vegetation types and the requirements for obtaining the required permits from the Ministry of Nature Protection, other ministries and from the community leader. The documents include also appropriate environmental and social parts. The design package includes also the Environmental Management Plan (EMP) of this package. The project Consultant shall follow the corresponding provisions of RA environmental and social legislation, as well as ADB's guidelines and strategies, mentioned in the Contract.

- *Construction stage*

In general, during the construction stage the Contractor must follow the measures provided in the EMP, such as to reduce to minimum the noise and dust from the construction site.

- *Operation stage*

The operation must be implemented in accordance with the operation rules and standards.

To reduce adverse environmental impacts during the construction and operation stages, EMP has been developed, which represents the list of the required measures (Appendix A).

2 SCOPE OF WORK

2.1. Description of the existing water supply system

Currently water supply to town Kapan is carried out by the following four systems:

1. Geghi WTP-Kapan (conditionally Gyard-Kapan system)
2. Geghi spring intake – Kapan (conditionally Geghi-Kapan system)
3. Surin-kap and Jrakhor spring intakes – Kapan system (conditionally Surin-kap -Kapan system)
4. Chanakhchi WTP – Kapan system.

The town relief allows water supply to Kapan to be fully implemented by gravity, without pumping stations. The water supply system of the town is fed from 28 groups of DRRs of various capacity in different parts of the town, at different altitudes.

The internal network is fully constructed with steel pipes, which are in emergency condition. Leakage level in Kapan at present is 89.3 %. Total length of the internal network is about 150-160km. During recent years about 8-9km pipelines were replaced with polyethylene pipelines.

Distribution network of private house sector is about 35.0km long and is fully subject to replacement. In that district the pipelines mainly pass through private land areas and gardens that makes their operation difficult. Water meter chambers are installed on emergency steel inlet lines for about half of the private houses. There are houses, inlet lines of which pass through one or several private land areas.

According to the data obtained from Kapan branch, because of deteriorated distribution network in private house sector, daily water amount supplied per capita is about 7.0m^3.

Taking into account the fragmented relief of the tow and the location of the districts and DRRs, nine water supply zones were established

2.2. Description of the proposed rehabilitatin works

The purpose of this project is to rehabilitate Kapan town's drinking water supply system and provide the town's population with safe driking water, improve water distribution and metering systems.

Population number in Kapan as of January 1, 2010 is 46750. Considering population growth rate (with 0.8% annual growth rate), the estimated population number of the site for 20230will be 47130.

The housing stock in the town is 258 multi-apartment blocks and 1894 private houses.

The water demand rate, taking into account the losses, was assumed equal to 210 l/day per capita.

Average hourly flow of maximum daily demand of the whol etown is $Q_{av.h}$=166.44 l/sec.

Taking into account the feasibility calculations and justifications under the preliminary design, imrpovement measures for water supply distribution network of Kapan were developed under the detailed design, as well as reapir works for administrative and auxiliary buildings of "Geghi" WTP.

For improvement of Kapan town's water supply system, this detailed design plans:

- Full reconstruction of distribution networks of districts of II, IV, V, VII, VIII zones,
- Reconstruction of Kavart district's distribution network of IX zone,
- Replacement of ∅300-∅200mm diameter steel water line from the existing non – operating pressure reducing chamber of the VI zone up to the valve node designed for zoning purpose and located on the boarder of VI and V zone.
- Rehabilitation of the roofs of administration and filters' buildings of "Geghi" WTP's chlorination building and power station.
- Construction of two polyethylene water pipelines– 200mm with 2885, length and 160mm with 2631m length PE pipes in G. Arzumanyan street
- Construction of pressure reducing chamber on Surin-Kap – Kapan water main.

According to the agreement gained between the Clinet, the Consulatnt and the town administrtation, it was decided that independent on the diameter and significance of waterline, passing through the street:

1. In the streets with high quality of asphalt cover, the cover will be recovered with the same quality.
2. In the streets with destroyed and half ruined asphalt concrete cover, only 12cm thick gravel layer will be implemented with ramming.
3. In the segments with big inclination gravel cover impregnated with bitumen will be implemented.

3. ENVIRONMENTAL BASELINE CONDITIONS

3.1. . The geographical location and climate of town Kapan

Kapan town is the center of Syuniq marz. It is located in south-eastern part of Syuniq marz, at 320.0km distance from Yerevan. The region has dry, continental climate.

Absolute maximum air temperature is +42˚C. Absolute minimum air temperature is -22˚C.

Annual precipitation is 585mm, eastern and south-eastern winds are predominant. Once in 20 years winds with 21m/sec velocity are possible. Wind pressure – 27kg/m^2. Snow cover pressure – 50kg-f/m^2.
Maximum soil frost depth is 20cm.

From landscape point of view the area is located in mid-mountainous and foot parts of Zangezour ridge south-eastern ranges. From the relief origination point of view the area is ranked to the type of mountains composed of volcanogenic-fragmental and land carbonate rocks and is a high mountainous region with indented relief.

The residential areas are located at 730-1155m altitudes.

Among dangerous physical-geological processes are surface flooding, landslides, erosion volcanic weathering and destruction, because volcanic rocks are easily destroyed forming rocks of elluvial origin with presence of sand and fragmental soils.

3.2. Biodiversity

Syuniq marz Kapan region is characterized with brown carbonate stepped earth, there are also valley-terrace pebble lands here.

From geomorphologic point of view it is located in Voghji river basin.

In the geological structure of the area the groups of volcanic rocks of Middle Eocene Oligocene age take part: andesite-basalts covered by layers of Quaternary age alluvial, eluvial, deluvial-proluvial, deluvial formations - clay, sand, fragmental soils.

From hydro-geological point of view the area is included in the region of fracture waters of various eruptive rocks.
From hydro-geological point of view the area is scarce of water. Underground waters are related to both volcanic and alluvial rocks, belong to fractural cavity, porous-cavity, partially terrain water types. Groundwaters linked to volcanic rocks, according to the published literature, are located at 13.0-18.0m depth, and those linked to alluvial rocks – at 2.5-9m depths that can generate significant flow.
From seismotectonic point of view the area is located within the folded zone of Armenia. The area is considered one of the most seismically active zones of the Republic.
Flora: Kapan area flora includes exclusively the elements of Meghri floristic region.
Along Vorotan river bed riparian woodlands are spread, consisting of populus, willow, Ulmus, Acer, Sorbus, Tamarix, Juniperus, Rubus, Rosa zangezura, Numulus. Near reservoirs elements of wetland plants are mixed with the riparian woodlands, creating families of wetland plants in some places.

On the river canyon rocks there are Silene, Centaurea, Cotoneaster, Sempervivum, Sedum, Astragalus kirpicznikovii, Botriochitoa, Rosa zangezura, Amygadalus, Prunus, Acer, Juniperus, etc.
The woodland zone is followed by mountain-steppe zone, with plants characteristic for it - Ziziphora, Netepa, Salvia, Teucrium, Eryngium, Scutellaria.
The forest zone is presented by mixed forests where there are wild fruit and berry crops. Among endangered species there are Punica granatum, Ficus carica, Adiantum capillus - veneris, Periplosa graeca, Iris lineolata, Orchis schelkovnikovii. Osimia, Ophrys caucasica, Platanthera chlorantha, Zelkova carpinifolia.
Among endemic species are Symphyandra zangezura, Thlaspi zangezurum, Pyrus zangezura, Amygdalus nairica, Astragalus kirpicznikovii, Rosa zangezura.

Fauna: The fauna is also rich here. Among mammals there are several types of night bats and field mice, rabbit, wild pig, wolf, jackal, forest cat, among birds – Sittidae, Woodpecker, Gallinaceae, Tetrao mlokosiewiczi, Aiectoris chucar, birds of prey, magpie, also waterfowl – ducks, Fulica atra, Bubulcus ibis, Podiceps, various reptiles and amphibia, among fish – river trout, koghak, beghlou. etc.

4. ENVIRONMENTAL AND SOCIAL IMPACT

Among the positive impacts as a result of rehabilitation of town Kapan water supply network the following ones on community social condition and health are anticipated:

- water resources protection and sustainable use,
- excluding mixing of drinking, irrigation and sewerage water,
- preventing, excluding penetration of infectious disease viruses into drinking water;
- reduction of drinking water pollution hazard,
- providing high drinking water quality,
- improvement of health condition of population;
- water loss reduction,
- increasing duration of water supply to population,
- introduction of water metering system
- increasing water consumption efficiency,.

Initial environmental examination (IEE) has identified that in the area of water supply system improvement in Kapan town no adverse impact is anticipated in the landscapes, flora and fauna.

Possible adverse impacts are mainly related to the construction and are limited and short-term.

To prevent them mitigation measures have been planned and environmental management and monitoring plan has been developed; the constructor, supervising authorities shall follow the plan.

EMP and monitoring plan are environmental assessment document and are included in working drawings.

Based on the initial assessment, the following adverse impacts can be expected:

- Air pollution,
- Noise,
- Traffic congestion,
- Soil erosion and sediment transport,
- Environment pollution with household and construction waste,
- Land and water resources pollution with fuels and lubricants,
- Land and water resources pollution with chlorine.

The sub-project implementation will also have positive social results. It will immediately improve the life quality of the project-involved sites and the surrounding environment by providing sustainable and reliable water supply and safe use of water resources for about 40 thousand people.

5. MEASURES TO MITIGATE FOR ENVIRONMENTAL AND SOCIAL IMPACTS

Adverse impacts on the environment and human health while implementing construction works for improvement of Kapan town's water supply internal network are possible during the construction of: (i) treanches for water lines and (ii) pits for regulating and water metering nodes.

To prevent soil erosion and sediment transport, the following is to be implemented: in inclined sites of the water line route implement measures for retaining the inclinations to prevent soil erosion and sediment transport; minimize the time during which trench and pit excavations for regulation and metering nodes are open

At Voghji river bed, in the 2nd zone during the water-line rehabilitation the inclinations should be retained to prevent soil erosion and sediment transport.

Rehabilitate disturbed surfaces as soon as possible after completion of construction activity:

- In the streets with high quality of asphalt cover, the cover will be recovered with the same quality.
- In the streets with destroyed and half ruined asphalt concrete cover, only 12cm thick gravel layer will be implemented with ramming.
- In the segments with big inclination gravel cover impregnated with bitumen will be implemented:

To exclude **land and water resources pollution with fuels and lubricants,** the latter must be stored on a sealed surface, away from water resources, plan use of special tanks for their collection, which will then be removed to special sites envisaged for re-treatment.

To prevent e**nvironment pollution with construction and household waste,** remove construction waste to corresponding landfill of the community, having in advance a contract agreement with the community heads or landfill operators.

To exclude **land and water resources pollution with chlorine,** organize works for washing the water supply distribution network with chlorine, according to technical calculations. Provide appropriate technical means; implement chlorine discharge to surface water body or land area after washing the pipes, according to the regime planned under the design.

Water quality change – Environmental monitoring plan must include also control over water quality and residual chlorine level.

To reduce d**ust during the construction works,** the construction site and roads are to be regularly watered, and to prevent **noise**, night work in residential areas is to be limited, and usage of machines/equipment with extra noise is to be avoided; installation of silencers if needed.

To reduce **disturbance to population because of overloaded roads** safe area for trucks is to be provided; waste on the construction site must not be accumulated and burnt, construction should be implemented in stages, adequate notice of construction activities must be given to the population, effective road signs, diversions or barricades are to be provided.

To prevent hazards for workers and the population **during the construction, the following must be implemented: i**nstall fencing around construction site; control access of unauthorized persons to site; place warning signs in dangerous places; carry out regular examination of equipment by highly qualified staff, as well as make regular safety audits; provide first aid and safety training to construction staff.

Provide community participation in subproject design, which will minimize disruption to community social activities.

Drining water quality change: Environmental monitoring plan must include also control over water quality and residual chlorine level.

To provide drinking water quality in Sisian town, AWSC will implement planned sampling of water pumped from water sources supplying Kapan, checking all the parameters required by the Ministry of Health. Water quality monitoring is carried out also by State Hygienic and Epidemiological Surveillance Inspectorate, according to "Drinking Water. Requirements to the Centralized Water Supply System's Water Quality"; Quality Control № 2-III-A"2-1 sanitary rules and norms" (registered on 28.12.2002), document, which establishes the requirements to the drinking water quality, as well as the rules for quality control of water produced and supplied to residential area through water supply systems.

Since disinfecting is done by chlorine, also residual chlorine level monitoring must be done.

6. ENVIRONMENTAL MANAGEMENT

The organizational obligations for the proposed mitigating measures are distributed among the following agencies:

- ***Executive agencies, which are responsible for implementation of the measure.***

1. For this special task the executive agency (JINJ Ltd. and HGSN Ltd. joint venture) must provide in the design stage obtaining of all the required agreements and permits from corresponding state and local authorities, before tendering the construction works;

- Conclusion of environmental expert examination (if needed);

- Decision of town and village administrations related to land allotment during the construction works (if needed);
- Agreement of the State Agency for Protection of Historical and Cultural Monuments, if impact is envisaged by the design.

2. The executive agencies in the construction stage (construction contractors) will be responsible for physical implementation of mitigating measures planned under the EMP, as well as for obtaining of all permits and agreements required during the construction implementation. Those are:

- Agreements from the local self-governing authorities for the sites allotted for transportation of wastes and construction garbage,
- Agreement of the State Agency for Protection of Historical and Cultural Monuments, if unexpectedly historical and cultural or archaeological monuments are discovered during the construction implementation.

3. Before commencement of the construction, the following permits and certificates must be obtained from ADB/PMU, if needed:

- Cadastre certificate on the land allotment;
- Water use permit, if needed.

- ***Controlling agencies, which are responsible for controlling the executive units to provide implementation of the EMP measures by the latter***

1. AWS CJSC/ADP PIU environmental specialists will be responsible for in time, due and reliable implementation of the works and measures in the order under the EMP. The mentioned specialists will regularly visit the construction sites to provide due implementation of the measures aimed at mitigation of work impact. During the visits the possible gaps will be identified through the check list and the infringements in implementation of mitigating measures will be discovered.

The AWS CJSC/ADP PIU has the right also to require and check whether all permits are available and valid, all the measures and monitoring part under the EMP are implemented during the construction, in accordance with ADB guidelines and the RA environmental and social legislation.

2. JINJ Ltd. and HGSN Ltd. joint venture will also implement control of implementation of mitigating measures during the construction. The environmental specialist shall make visits to control the EMP implementation.

- ***State monitoring agencies, which are responsible for observing the extent and efficiency of EMP implementation and making corrections in the project, if needed.***

The state monitoring agencies are as follows:

- State Environmental Agency of the Ministry of Nature Protection,

- State Epidemiological Agency of the Ministry of Health,
- The State Agency for Protection of Historical and Cultural Monuments, if needed,
- The RA local self-governance bodies,
- The RA Ministry of Transport and Communication.

The amounts envisaged for implementation of environmental measures included in the EMP are included in the detailed design.

Implementation of mitigating measures for environmental impacts will be controlled regularly through visits to the construction sites. With the help of the specially developed check list the gaps and drawbacks will be discovered.

In case of not implementing or infringing the implementation of the mitigating measures, after warning, the next payment will be terminated until the infringement is completely eliminated.

Appendix A.

ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

Works and possible impacts	Proposed mitigating measures	Monitoring	Responsible bodies
Construction			
1. Air pollution, noise, traffic congestion – Dust and noise during the construction works – Disturbance to population because of overloaded roads	- Install fencing around construction site - regularly water the construction site and roads, - limit night work in residential areas, - Avoid usage of machines/equipment with extra noise; installation of silencers if needed, - Provide safe area for trucks, - Do not accumulate and burn waste on the construction site, - Carry out construction in stages, give adequate notice of construction activities to the population, - Provide effective road signs, diversions or barricades, - Provide community participation in subproject design, which will minimize disruption to community social activities	Daily site inspection	Constructor, Consultant, PIU
2. Environmental pollution – Soil erosion and sediment transport – Environment pollution with construction waste – Land and water resources pollution with fuels and lubricants – Land and water resources pollution with chlorine	- In inclined sites of the water line route implement measures for retaining the inclinations to prevent soil erosion and sediment transport, - Minimize the time during which trench and pit excavations for regulation and metering nodes are open - Rehabilitate disturbed surfaces as soon as possible after completion of construction activity, according to the design - Store oil, fuels and lubricants on a sealed surface, away from water resources, - Remove construction waste to corresponding landfill of the community, having in advance a contract agreement with the community heads or landfill operators, - Organize works for washing the water supply distribution network with chlorine, according to technical calculations. Provide appropriate technical means. - Implementation of chlorine discharge to surface water body or land area after washing the pipes, according to the regime planned under the design.	Daily inspection of construction contract and maintenance	Constructor, Consultant, PIU

Works and possible impacts	Proposed mitigating measures	Monitoring	Responsible bodies
Health and Safety – Hazards for Workers and the population	- Install fencing around construction site - Control access of unauthorized persons to site - Place warning signs in dangerous places - Carry out regular examination of equipment by highly qualified staff, as well as make regular safety audits, - Provide first aid and safety training to construction staff	Daily inspection throughout construction stage. Monthly inspection of accident reports and complaints register	Constructor, Consultant, PIU, Population

Appendix B

Դաշտային այցերի ստուգաթերթիկ
Field visits checklist

Ընդհանուր տեղեկատվու-թյուն General information	Ամիս/ ամսաթիվ D/M/Y			
	Ենթածրագիր / Subproject			
	Տեղակայում/ Location			
	Շինարարական կազմակերպություն Constriction contractor			
	Մարզ/Marz			
Նախագծում Design				
Անհրաժեշտ թույլտվություններ Required permissions	բնապահպանական փորձ. եզրակացություն/ EEC	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**
	հողահատկացման գրավոր համաձայնութուն /writen consent on land acquisition	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**
	պատմամշակութային փորձաքննության եզրակացություն / assessment of impact on cultural heritage	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**
Շինարարություն Constriction				
Անհրաժեշտ թույլտվություն-ներ Required permissions	շին. թափոնների տեղադրման գրավոր համաձայնություն /written consent on disposal of construction waste	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**
	անսպասելիորեն հայտնաբերման դեպքում պատմ- մշակ. համաձայնություն/ written consent in case of sudden discovery of cultural heritage	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**
Հասարակության իրազեկում Public awereness				
	շին. աշխատանքների վերաբերյալ բնակչության համապատասխան իրազեկում համաձայն նախագծին/ awareness of population regarding construction works according to the project design	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**
	համայնքի մասնակցություն շինարարական աշխատանքներին համաձայն նախագծին/ community's participation in construction works according to the project design	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**

Անվտանգություն Safety				
Բանվորների անվտանգու-թյուն Safety of workers	բանվորների անվտանգության հանդերձանքի առկայություն /ականջակալներ, շնչադիմակ/ availability of safety uniforms (earflaps,mask)	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**
	շինարարության մեջ ներառված տեխնիկական միջոցների պարբերական զննումներ՝ անվտանգությունը ապոհովելու նպատակով / regular study of equipment used for construction for safety matter	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**
Բնակչության անվտանգու-թյուն Safety of population	երթևեկության սահմանափակման կամ խախտման ժամանակ համապատասխան ճանապարհային նշանների կամ պատնեշների տեղադրում, շրջանցի կազմակերպում / Installation of road signs or fences, organization of a bypass during interrupted or limited traffic	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**
Շինարարության իրականացման ժամանակ կառավարման միջոցառումներ Management measures during construction				
Շին. հրապարակի/տեղանքի շահագործում Operation on area/construction site	Շին հրապարակի/տեղանքի պարբերաբար ջրում/ regular sprinkling to area/construction site	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**
	Մեքենաների համար ապահով տարածքի առկայություն շին. հրապարակում/ availability of safe place at the construction site for vehicles	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**
	Յուղերի և քսուկների համապատասխան պահեստների առկայություն շին. հրապարակում/ availability of storagefor oils and lubricants at the appropriate part of the construction site	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**
Օդի ժամանակավոր աղտոտում Temporary air pollution/dust				
	շինանյութ տեղափոխող բեռնատարների վրա ծածկի օգտագործում/ use of cover for the vehicle transporting construction waste	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**
	շինարարության տարածքի խոնավեցում ջրի շիթով/ moisturing of the construction site by water	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**

Հողի էռոզիա **Soil erosion**				
	զառիվար տեղերում հողի էրոզիայի կանխարգելման միջոցառումների իրականացում ըստ նախագծի/ soil erosion prevention measures at the slope places according to the project design	Այո Yes	Ոչ No	Ո/Կ N/A
	փոսորակների ժամանակին հետլիցք/ timely coverage of holes by soil	Այո Yes	Ոչ No	Ո/Կ N/A
	շին. աշխատանքների ավարտից հետո վնասված մակերեսների վերանորոգում ըստ նախագծի/ repair of damaged surface after completion of construction works	Այո Yes	Ոչ No	Ո/Կ N/A
Ջրի աղտոտում **Water pollution**				
	ջրի աղտոտում քսանյութերով և վառելանյութերով/ water pollution caused by fuel and lubricants	Այո Yes	Ոչ No	Ո/Կ N/A
	խողովակների լվացումից հետո քլորի արտահոսք համապատասխան նախագծով նախատեսված ռեժիմի/Leakage of chlorine after wash up of the pipes according to the scheduled regime.	Այո Yes	Ոչ No	Ո/Կ N/A
Աղմուկ բնակավայրերի տարածքին մոտ **Noise close to settlements**				
	աշխատանքների իրականացում սահմանված աշխատանքային ժամերին, հակառակ դեպքում սահմանված կարգով/ implementation of the works during working hours, otherwise in projected manner	Այո Yes	Ոչ No	Ո/Կ N/A
Շինարարական և կենցաղային թափոնների տեղադրում **Construction west disposal**				
	շինարարական և կենցաղային աղբի տեղափոխում և տեղադրում համայնքի համապատասխան աղբավայրում/transportation and disposal of construction and consumer waste in appropriate community landfill	Այո Yes	Ոչ No	Ո/Կ N/A
Շահագործում **Operation**				

Խմելու ջրի աղտոտում Drinking water pollution	Մնացորդային քլորի քանակի համապատասխանում խմելու որակի ջրի նորմերին/Correspondence of balance quantity of residual chlorine to the quality of potable water	**Այո Yes**	**Ոչ No**	**Ո/Կ N/A**