KYRGYZ REPUBLIC

MINISTRY OF AGRICULTURE, FOOD PROCESSING AND LAND IMPROVEMENT OF THE KYRGYZ REPUBLIC

STATE WATER RESOURCES AGENCY

AGRICULTURAL PRODUCTIVITY AND NUTRITION IMPROVEMENT PROJECT

ENVIRONMENTAL MANAGEMENT PLAN
For subproject rehabilitation of WUA "Ten-Alysh", Kara-Kulja rayon, Osh oblast

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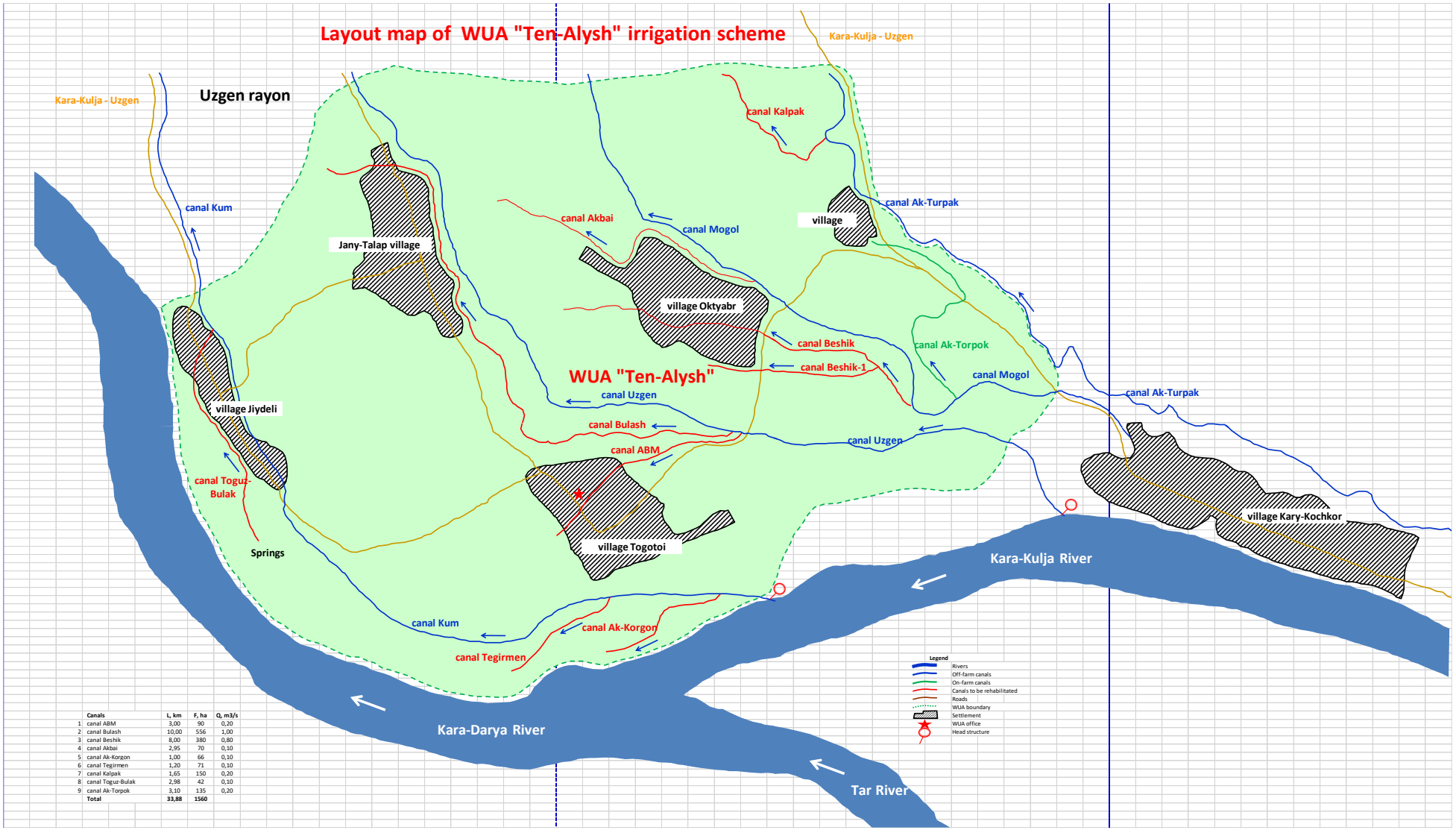
CONTENT

1. Introduction

The Agricultural Productivity and Nutrition Improvement Project (APNIP) for the Kyrgyz Republic is being implemented with the support of the International Development Association (IDA) and financed by the Trust Fund, provided by the Global Agricultural and Food Security Program. The general Environmental Management Plan (EMP) was prepared under APNIP. The EMP is addressed to ensure compliance of the Subproject with the environmental management principles and practice and, therefore, with the requirements of environmental protection policy and laws of the Government of the Kyrgyz Republic, as well as the IDA environmental safeguards.

The objectives of environmental assessment (EA) is to identify the significant impact(s) of the proposed Subproject on the surrounding environment (positive and negative), identify appropriate preventive and mitigation interventions aimed at preventing, minimizing or eliminating any expected irreversible impact(s). The EMP serves as a management tool that ensures proper implementation of interventions to prevent and mitigate an environmental impact(s), as well as monitoring and institutional acknowledgement of recommended activities during the implementation of the proposed Subproject. The EMP also establishes the necessary institutional obligations, proposes the implementation timing of such activities and cost estimates within the budget proposed by the Subproject. APNIP, in the World Bank safety measures quality rating system (WBSMQRS), is classified as "B". No irreversible or significant impact(s) on the surrounding environment is expected. Based on the general EMP, the Environmental Management Plan (EMP) for WUA «Ten-Alysh», Kara-Kulja rayon, Osh oblast, has been developed, considering the subproject specifics.



	Canals	L, km	F, ha	Q, m3/s
1	canal ABM	3,00	90	0,20
2	canal Bulash	10,00	556	1,00
3	canal Beshik	8,00	380	0,80
4	canal Akbai	2,95	70	0,10
5	canal Ak-Korgon	1,00	66	0,10
6	canal Tegirmen	1,20	71	0,10
7	canal Kalpak	1,65	150	0,20
8	canal Toguz-Bulak	2,98	42	0,10
9	canal Ak-Torpok	3,10	135	0,20
	Total	**33,88**	**1560**	

Image 1. Layout map of WUA "Ten-Alysh" irrigation networks.

2 Description of Subproject under rehab

The WUA "Ten-Alysh" located 95 km off the c. Osh, Kashka-Jol AA, Kara-Kulja rayon, Osh oblast. The population of the AA - 7950 people. Service area – 1560 ha, masl - 1150-1200 m. The WUA established in 2005 in accordance with the Law "On WUAs" (Registry certificate №5947-3306-АВП, dated 28.10.2005). The WUAs irrigation system owns no NSR, dams, or collector-drianage network.

2.1 Salient features of Subproject under rehab

The WUA abstracts water from 4 off-farm canals: Mogol, Kum, Ak-Turpak, Uzgen, and which are on the balance of Kara-Kuldja RVK. The WUA also abstracts spring-wells water into on-farm canal Toguz-Bulak. The off-farm network is in adequate condition, no serious problems observed. However, construction of 2 cross-regulators on canals Mogol and Kum required. The on-farm network is predominantly in earthbed and partially in prefabs. The issue of water losses caused by earthbed, and attrition of the prefabs is obvious. Water distribution complicated due to faulty water outlets and cross- regulators.

The total length of 9 on-farm canals – 33,88 km, of which 0,30 km – concrete lined, 1,90 km – prefabs, remaining 31,68 km – earthbed. The (average) annual water consumption – 10 253 th.km² from owned water sources. The average WUAs efficiency – 0,60, and only 6 152 th.km² of water reaching the irrigated lands. The specialists` projections, after rehab completed, the efficiency ratio rise up to 0,75, and 7 630 th.km³ will be delivered to the irrigated lands. This will result in an opportunity to increase an agricrop yields and, due to this, WUA can increase the ISF respectively, leading to WUAs irrigation network operation and maintenance funding strengthened.

2.2. Description of interventions executed under Subproject

2.2.1. Off-farm c-l Mogol

The canal abstracts water from the r. Kara-Kuldja via head intake point, length – 12,0 km in earthbed, command area – 3392 ha, throughput – 5,5 m³/s. The water distribution for the on-farm c-l Ak-Torpok is complicated due to faulty cross-regulator. The Subproject planned construction of a cross-regulator.

2.2.2. Off-farm c-l Kum

The canal abstracts water from the r. Kara-Kuldja via head intake point, length – 3,3 km in earthbed, command area – 2158 ha, throughput – 3,5 m³/s. The water distribution is complicated due to faulty cross-regulator. The Subproject planned construction of a cross-regulator.

2.2.3. On-farm c-l ABM

The canal abstracts water from the off-farm c-l Uzgen, length – 3,0 km in earthbed, command area – 90 ha, of which – 0,256 km the subject of rehab, the calculated throughput – 0,2 m³/s. The water distribution for the on-farm c-l Ak-Torpok is complicated due to faulty cross-regulator. The Subproject planned construction of a cross-regulator. The upper reaches of the canal in gravel soil, resulting in sufficient water filtration losses. The Subproject planned concrete lining at the length – 256m.

2.2.4. On-farm c-l Bulash

The canal abstracts water from the off-farm c-l Uzgen, length – 10,0 km, of which 0,8 km – prefabs and 9,2 km - earthbed, of which – 1,55 km the subject of rehab, the calculated throughput – 1,0 m^3/s, command area – 556 ha. The canal, mainly, is in earthbed resulting in sufficient water filtration losses. Water distribution complicated due to faulty cross-regulator and water outlet. The Subproject planned concrete lining at length 1,550 km, and construction of a cross-regulator and water outlet.

2.2.5. On-farm c-l Beshik

The canal abstracts water from the off-farm c-l Mogol, length – 8,0 km, of which 0,3 km – concrete lined and 7,7 km - earthbed, of which – 2,176 km the subject of rehab, the calculated throughput – 0,8 m^3/s, command area – 380 ha. The canal, mainly, is in earthbed resulting in sufficient water filtration losses, due to long-time operation, the concrete lining is destroyed. Water distribution complicated due to faulty water outlets. The Subproject planned concrete lining at length 2,176 km, and construction of 10 water outlets on c-l Beshik.

2.2.6. On-farm c-l Акbay

The canal abstracts water from the off-farm c-l Mogol, length – 2,95 km, of which 0,7 km – prefabs and 2,25 km - earthbed, of which – 0,44 km the subject of rehab, the calculated throughput – 0,1 m^3/s, command area – 70 ha. The canal, mainly, is in earthbed resulting in sufficient water filtration losses. Water distribution complicated due to faulty water outlet on HM 13+30. The Subproject planned concrete lining at length 440 km, and construction of a water outlet.

2.2.7. On-farm c-l Ак-Коrgon

The canal abstracts water from the off-farm c-l Kum, length – 1,0 km in earthbed, of which – 0,382 km the subject of rehab, the calculated throughput – 0,1 m^3/s, command area – 66 ha. The upper reaches of canal in earthbed resulting in sufficient water filtration losses. Water distribution complicated due to faulty water outlet. The Subproject planned concrete lining at length 382 km, and construction of a water outlet.

2.2.8. On-farm c-l Tegirmen

The canal abstracts water from the off-farm c-l Kum, length – 1,2 km in earthbed, of which – 0,74 km the subject of rehab, the calculated throughput – 0,1 m^3/s, command area – 71 ha. The canal is in earthbed resulting in sufficient water filtration losses. Water distribution complicated due to faulty water outlet. The Subproject planned concrete lining at length 740 km, and construction of a water outlet.

2.2.9. On-farm c-l Кalpak

The canal abstracts water from the off-farm c-l Ak-Turpak, length – 1,65 km, of which – 0,4 km in prefabs and 1,25 km - earthbed, the calculated throughput – 0,2 m^3/s, command area – 150 ha. The canal is in earthbed resulting in sufficient water filtration losses. Water distribution complicated due to faulty stilling basin on HM4+60. The Subproject planned construction of a stilling basin.

2.2.10. On-farm c-l Toguz-Bulak

The canal abstracts water from springs located in the r. Kara-Daria floodplain, length - 2.98 km in earthbed, command area - 42 ha, calculated throughput - 0.1 m³/s. the water distribution complicated due to faulty cross-regulator on HM26 + 50 (there are no gates, service bridge, etc.). the Subproject planned construction of the cross-regulator to improve water distribution.

Water reservoirs, dams and dikes rehabilitation is not planned. Therefore, the irrigation dams and reservoirs policy (OP 4.37) is not applicable. The construction and rehab workloads deadline is July 2019 – December 2021.

3. Description of environmental parameters at the site

3.1. Climiatic conditions

The area`s climatic specifications are introduced in accordance with the meteo-station "Kara-Kuldja" data and indicative with a hot extended summer and short moderately cold winter:

- Average annual air T° +11,1°
- Average annual air T° during a vegetation period +21,6°
- Absolute maximum air T° +39,0°
- Absolute minimum air T° –26,0°
- Average T° of the hottest month +31,0°
- Volume of annual precipitations 584 мм
- Maximum daily precipitation 40 мм
- Weight of snow cover per 1 м2 of horizontal surface 75,0 kgs/м^2
- Maximum height of snow cover 89 см
- Maximum soil freezing depth 60 см
- Average depth of soil freezing 28 см
- Average wind speed at 10 m height from earth surface 18,0 м/с
- Wind speed ratio 1,0 м/с

3.2. Landscape

The landscape nature of WUA "Ten-Alysh" relates to the south Ferghana branch of the Tien Shan ridge. The surface nature of the WUA lands there is a geomorphological zone of piedmont plains, which is genetically associated with erosion-accumulative activity of rivers, streams and temporary canals. The absolute marks are in the range of 1150-1200 meters above sea level. The object located on the territories the general terrain slope of which is directed from north to south. The canals' designed with a slope from the northeast to the southwest. The average slope of the landscape is 0,004506. The Subproject workload will not impact the soil and landscape negatively. The removal of the soil layer is not needed and works will not be executed on the agricultural lands. To prevent soil erosion during irrigation, on the existing irrigation network tail regulators are intact.

3.3. Hydrology

The main irrigation source for Kashka-Jol AA is the r. Kara-Kuldja. The river pierce through the territories of Kara-Kuldja rayon, which is the right tributary of r. Kara-Dariya and starts from the southwest slope of the Ferghana ridge. In the upper reaches the river is called Karakol, below the confluence with the right tributary Uygum is called Kara-Kuldja. The river length - 104 km, the catchment area - 1200 km². There are more than 200 tributaries, among which the largest tributaries are Uch-Seyit, Kashka-Suu, Kara-Shoro, Kok-Jangak and others. The main water sources are melted snow and glacial waters. The water regime indicative to the Tien-Shan type

rivers. Flooding occurs in April-September. The average long-term water consumption is 21.3 m³/s[1].

Average mutiyear water flow of the r. Kara-Kulja

Average monthly flow, м³/с												Q_{ave}, м³/с	
I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**	**XI**	**XII**	**год.**	**вег.**
5,44	6,73	9,07	11,20	12,94	41,74	71,33	47,18	23,61	11,58	7,43	7,37	21,3	34,67

monthly mean runoff, th.m³												W_{year}, th.m³
I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**	**XI**	**XII**	
14565	16275	24297	29022	34653	108195	191020	126349	61194	31004	19252	19727	675 552

3.4. Geo-engineering conditions

The geological-lithological structure along the route of WUA`s on-farm canals is represented by alluvial-proluvial deposits. The surface has a thick layer of loess-like clayey soils - loams. Loams of light gray color, dry, macroporous, solid, with inclusion of carbonate deposits. Ground thickness from 0,6 to 2,0 m. Below the loamy soil is gravel soil.
The physical specifications of loams as follows:

- natural weighed humidity 7,87%
- specific weight 2,71 g/cm3
- volumetric weight 1,61 g/cm3
- dry density 1,49 g/cm3
- plastic index 9,2
- maximum molecular moisture capacity 15,79%
- porosity ratio 0,815
- filtration ratio 0,4-0,005 m/day
- ground water level more than 5,0 м

The loam belongs to the II-building development difficulty category. The standard pressure is up to 2.0 kg/cm² (SNiP IV-5-82). Gravel soil with sand aggregates up to 40% and pebble content up to 10%. The bulk density of the soil is 1.85 t/m³. The gravel soil belongs to the III-building development difficulty category. The thickness of gravel soil is more than 10.0 m. The seismicity area is 9 points[2].

3.5. Vegetation cover

Vegetation cover: tree and shrubbery vegetation, herbaceous plants. The SVL will not be disturbed, because (re)construction workload will be executed on existing facilities. The works will not affect agricultural irrigation fields, because all rehabilitation facilities are beyond their borders. During the canals` rehab process the permission for shrubbery and tree surgery and felling will be needed. At those areas there are no entities that discharge pesticides/toxic chemicals and sewage into the source of irrigation.

4. Description of procedures related to regular operation workload

4.1. Technical surveillance on canals and HTS condition

[1] Ramazan M.S: Certain distinctive features of hydrological regime and hydrotechnical classification of rivers in Kirghizia.
[2] Инженерно-геологические данные приведены из рабочей документации объекта "Реабилитация ирригационной системы АВП "Куршаб-Арзыбек" Узгенского района Ошской области" (ОРП "УСПиП")

In the operational scheme activities, the paramount importance is paid to the timely conduct of preventive and rehab workload that exclude probability of a system failure, while complying to the rules of its operation. The main indicators of a normal technical condition and a reliable operation of the on-farm irrigation network are provision of designed canal's throughput, minimum filtration and performance specification water losses, absence of sedimentation, greenery overgrowing, collapse and canal's erosion. If the actual canal's capacity corresponds to the estimated throughput, then the technical condition of a canal is good and considered as reliable. If there are 20 -25% throughput deviations, then a canal's reliability is reduced, and the technical condition is average. If the deviations are more than 25%, then a canal's performance considered as unreliable and its technical condition is below the average. To ensure a canal's throughput, it is necessary to conduct a careful monitoring over water regulating structures. The water volumes regulating structures must be easily and reliably (re)adjusted and controlled. While operating water regulating structures, it is necessary to ensure that there is no water leakage through the water outlet/inlet gates and no canals' erosion and destruction observed on its structural parts. Expansion and (re)construction of a canal's lined sections and joint sections are the subject of constant surveillance. The damaged lining must be reworked immediately. A canal's lined and unlined sections and HTS daily maintenance (cleaning, desilting) must be executed on a permanent daily basis to prevent cracking, to ensure proper performance and removal of floating debris that hinder a canal's performance. A particular attention must be paid to subsiding soils, as concrete lining on those soils is prone to cracks formations, leading to irreparable damages, if lining failure appears it should be reworked without any delay.

The joint sections of a canal, with prefabricated reinforced concrete slabs, are the subject of particular attention. Constant surveillance of which is necessary and, if there any urgency, must be treated with resilient watertight materials that can withstand a vegetation impact. Within the concrete flumes it is prohibited to dissolve various types of fertilizers that may cause destruction of concrete. It is also not recommended to operate concrete flumed network if water flow temperature is below -5 - 10°C. Therefore, in the process of preparing the network for the winter, the whole canal's route must be completely absent of water. The livestock crossing and pasturing on canal's dams and slopes is strictly prohibited. The livestock drinking and dipping allowed on a special canal's sections only. To monitor the quality of irrigation water and prevent a canal's sedimentation, the water samples must be regularly inspected for the following indicators: turbidity, temperature, hydrogen index and mineralization.

4.2. Preparing on-farm network for the winter period

In the winter period, the on-farm irrigation network can be used for water charging irrigation, washing off and other types winter watering, as well as for supplying water to the residential areas and livestock farms, filling up reservoirs. The control over canals and structures operation, in the winter, should be paid a particular attention, as to prevent formation of ice jams near bridges, crossings, etc. The trash racks that were set for the summer in front of water structures must be removed for the winter. When frosts are formed and HTS are covered with the ice, in this case the ice must be chipped without disturbing integrity of the structures and canal's lining/coating.

4.3. Looking after wood lines and access roads

Forest plantations alongside of a canal are designed to protect a canal from vegetation overgrowing, lowering the level of groundwater alongside a canal's route and reducing the adverse effect of wind force on agricrops. Alongside of permanently embedded canals within the farm network that require constant desilting interventions, it is recommended to create, on the one side, two-row or three-row strips of fast-growing trees and shrubbery. The distances between trees in the strip is 1-3 m, between bushes - 0.75 - 1 m with the distance between greenery strips of 1.5 - 3

m. The field and on-farm roads on irrigated area, as a rule, are ground roads. If they pass through silty loams and solonchaks, then a road is made of gravel or other coating. A road maintenance is reduced to keeping the upper layer in good condition. The thickness of gravel coated roads is maintained within 8 - 10 cm. The roadbed condition is also the subject of maintenance and must be periodically planned and compacted. Roadside cuvettes and canals must be cleaned off dirt and vegetation. To improve the water flow into cuvettes, the roadways must be made with slopes and with a slight lateral inclination from the middle to the cuvettes.

4.4. Repair workload

The irrigation schemes are subject to repair workload according to the annually developed and approved plans. In the irrigation and drainage systems operation practice, the current, major and emergency repair workloads are executed.

The current repair works executed annually including desilting of canals, removal of vegetation, strengthening and widening dams, cleaning berms, eliminating small landslides, collapses, rifts and sandpits, repairing damaged anchorages and canals' lining, repairing small damages of a structural parts. While carrying out current repair works, a complex technical upgrading and modifying a structural construction is not included. The preventive (prophylactic) repair workloads include:

- Patching ratholes;
- Structural cracks maintenance after ice impact;
- Tightening fixing bolts;
- Drainage structures winterization etc.

The preventive repair and a significant part of the current repair, including desilting of canals, vegetation and landslides removal, a minor canal repair(s), repair of structures, buildings and other devices are performed annually without stopping the scheme's operation.

The major repair is executed, as required, within a few years' period and includes: repair workloads on a canal's sections, dams and parts of a structure attrition and destruction, structural modification or replacement of certain elements and structural units.

The emergency repair is rehabilitation of canals, dams and structures or parts of them, destroyed as a result of natural phenomena (mudslides, floods, etc.), or violations of the technical operation rules, execution of which carried out 24/7, and all available material and technical resources and labor resources are mobilized for the execution of emergency repair.

Rehab and (re)construction workloads on the on-farm network canals performed by WUAs contracting a construction company. Repair works expenses and operation of the on-farm network are annually provided by the WUA's budget.

4.5. Desilting of canals and vegetation removal

The solid particles of soil form sedimentation that moved around by water flow. The content of solid particles, per water volume unit, characterizes the water flow saturation with sediments, or its turbidity. Sediments, often, are formed as a result of soil wash-away in the catchment basin via snow/glaciers melting and rain waters. Partly the sedimentation is a product of a canal/river bed and banks erosion. The largest bed's sedimentation with pebbles and coarse sand observed and remain at the head section of a bulk water supply canal. The average sized sediment particles washed into a canal's distribution network and even into on-farm irrigation network. On average, about 80% of sediments remains in the off-farm canals network and about

20% inflows into on-farm irrigation network. A canal's slopes have an impact on sedimentation process, if an inclination is too steep then about 60% of sediments washed in on-farm network and fields. Desilting executed on an annual basis and, if necessary, more often.

5. Environmental impact

The implementation of APNIP is addressed to provide economic, social and environmental benefits to farmers, farming entities and local communities through WUA's development, the rehabilitation and modernization of irrigation and drainage infrastructures in projected areas. The best practices of previous Projects demonstrate positive impacts on the environment. Namely, this Project is aimed at reducing water losses in irrigation schemes, improving water resources management, scaling up agricultural productivity and improving soil fertility. The Project workloads require compliance with a number of mandatory requirements, including strict compliance with noise reduction, air quality, timely removal of solid and liquid domestic waste, construction debris. The requirements for the prevention of environmental pollution and negative impact on the population are provided by the Law of the Kyrgyz Republic "General Technical Regulations for Ensuring Environmental Safety in the Kyrgyz Republic", the Law "On Production and Consumption Wastes", the Law "On Protection of Atmospheric Air", SanPin "Noise in the workplaces, in premises of residential, public buildings and on the territory of residential buildings" the Governmental decree of the KR, dated 11/04/2016. №201.

5.1. Expected positive environmental impact

In order to reduce water filtration losses, the Subproject provides the implementation of a canal`s lining with cast/monolithic concrete. All canals will be provided with the necessary HTS to facilitate the use (HP/gauging stations, water outlets, bridge crossings, etc.), which will provide aesthetical view of a canal, ease of use and reduce an alienation zone alongside of it. The workload conducted will not impact on surrounding environment. Improving an irrigation system will create optimal conditions for temperature and humidification, reduce soil deformation and degradation, improve the landscape. The positive impact consists of:

- Water losses reduction;
- Improved water resources management, consisting of construction and rehabilitation of water distribution and water-metering structures;
- Scaling up agricultural productivity;
- Improved soil fertility by increasing humus while applying an efficient irrigation practices.

5.2. Potential negative environmental impact

At the same time, while carrying out irrigation network (re)construction works, there may be some potentially negative impacts on environmental conditions in the projected areas that require attention, preventive actions, and appropriate mitigation measures during planning, development, construction, operation and maintenance. While performing the planned irrigation networks rehabilitation works, no asbestos-containing materials will be used. It is necessary to mention that previously asbestos cement pipe crossings were used. But they were replaced with structures of more inert materials and, at the moment, problems with asbestos-containing materials are not foreseen. Thus, no issues concerning asbestos-containing materials are expected. In the case(s) if asbestos-cement pipes will be detected, asbestos-containing materials will be stockpiled, transported and finally disposed, and specific protective interventions will be executed in accordance with the hazardous wastes standards handling and disposal. For detailed information concerning the asbestos-containing materials removal, see section 10. The potential negative impacts are relatively minor, and positive economic, social and environmental benefits far outweigh them in environmental assessment. The consideration of these impacts is given below.

5.3. Impact on climate change

The irrigation and drainage schemes rehab will enhance the agricultural and farming practices, improve materially-technical procurement, land owning, pastures and water management, resulting on productivity increase and adaptation to climate change, and sustainable use of natural resources.

Table 1. Assessment and ranking of environmental risks

Activities	Impact	Type	Duration	Term	Degree	Risk	Reversibility	Probability
construction phase								
Construction site location	Soil contamination at a construction site as a result of storage, construction and household waste, including liquid wastes.	direct	short-term	immediate	low	low	reversible	average
	surface water and ground water contamination at a construction site, as a result of stockpiling of construction and household waste, including liquid waste	direct	mid-term	immediate or delayed	low	low	reversible	low
uploading of excavated soil during (re)construction of a canal's bed	the landscape degradation, destruction of the animal world habitat	Direct	Mid-term	Immediate	Low	Low	Reversible	Average
construction materials transportation, heavy machinery use	air pollution and noise impacting the population/workers while heavy machinery and vehicles use	Direct	short-term	Immediate	Low	moderate	Reversible	High
canals rehab	Damage and trees felling and shrubbery cutting	Direct	long-term	Immediate	High	Low	Reversible	High
Operation and maintenance phase								
earth-bed canals and drains cleaning while in operation	landscape and animals' natural habitat degradation	Direct	Mid-term	Immediate	Low	Low	Reversible	Average

increase in irrigation water volumes delivery, which increases the volumes of waste water	surface water pollution with agrochemicals, as a result of excessive application of pesticides and mineral fertilizers	indirect	Mid-term	delayed	moderate	moderate	Reversible	Average
increase in irrigation water volumes increase affects the surface water filtration and GWT	GWT increase as result of excessive irrigation and leads to waterlogging and soils mineralization	indirect	long-term	delayed	moderate	moderate /low	reversible	high
increase in irrigation water volumes delivery that leads to water speed increase	soil erosion related to existing agricultural production practices	indirect	long-term	delayed	moderate	moderate	Reversible	Low
Increase in water volumes delivery impact on surface water filtration increasing GWT	Increase shallow GWT resulted from excessive irrigation, leading to soil mineralization	indirect	long-term	delayed	moderate	moderate	Reversible	Low

6. Environmental management and monitoring plan (EMP)

For each of the Subproject the EMP is elaborated based on site-specifics, all the (re)construction phase risks are easily monitored and eliminated. They can be minimized by properly designing mitigation measures and monitoring the Contractor, while executing workload. Among the O&M risks, the risk of landscape and animals' natural habitat degradation, while cleaning earth-bed canals and drains, is clear and easily controlled. The risks of surface and groundwater pollution by agrochemicals, due to excessive use of pesticides and mineral fertilizers, soil erosion associated with the existing practices of agricultural production, increase of near-surface (shallow) groundwater table, due to excessive irrigation and, as a consequence, soil salinization, require a specific monitoring. The need for environmental mitigation interventions, while on O&M phase, is determined exactly in the process of environmental monitoring.

7. Health and safety at work

In accordance with the KR`s legislation requirements, concerning occupational health and safety, as well as the World Bank protective policies, the EMP has developed measures to protect health and safety during the (re)construction work under the Subproject, see Table 2. The regulation "Requirements for environmental protection, occupational health and safety to people involved in work and the provision of services at facilities implemented as part of the World Bank's project "Improving Agricultural Productivity and Nutrition" had been developed and approved by the PIU Director`s Order No. 8/p, dated March 16, 2018. The regulations are sent to all subcontractors involved in rehabilitation and (re)construction works under this subproject. Control over compliance with safety at a construction site will be carried out by the PIU, state control executed by the State Inspectorate of Environmental and Technical Safety under the Government of the Kyrgyz Republic

Table 2: Mitigation plan

phase	subject	preventive/mitigation activities	Cost, US $		Institutional responsibility		control
			installation	operation	installation	operation	
Construction	organizing a construction site	1) It is forbidden to locate a construction site in the water protection zones of rivers and canals; 2) Ensure removal of all waste and construction rubble from (re) construction sites to dispose on the authorized municipal landfills, with the permission of local authorities; 3) Execute planning and restoration measures to restore troubled lands during and after completing (re)construction	n/a	part of the (re)construction works contract 855 586	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) A construction site inspections made by PIU; 3) State Ecological Inspectorate
	soil after a canal's cleaning	1) soil transportation to the designated areas, approved by the local authorities; 2) execution of rehab-design interventions	n/a		PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) A construction site inspections made by PIU; 3) State Ecological Inspectorate
	trees and shrubbery cover;	Coordination with the specially authorized environmental protection agency/body cutting greenery plantations that grow outside of a canal`s alienation zone	n/a	part of the (re)construction works contract	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) A construction site inspections made by PIU; 3) State Ecological Inspectorate
	vehicular emissions into the atmosphere	1) vehicular exhaust systems and construction equipment should be in good condition, in order to minimize air pollution; 2) Limiting the speed of vehicles and selecting suitable transportation routes to minimize dust emissions; 3) Moisturizing the road surface while driving through the residential area territories	n/a	part of the (re)construction works contract	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) A construction site inspections made by PIU; 3) State Ecological Inspectorate
	noise impact within labor area	machinery and equipment operation	n/a	part of the (re)construction works contract	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) State Ecological

							Inspectorate
	Workers' and rural population health and safety	1) construction sites will be equipped with information and designator boards concerning working regulations and requirements; 2) easily accessible and complete first aid kit to treat an injury. 3) ensuring personal protection equipment (helmets, protected shoes, gloves); 4) to create registry for health and safety induction and work permit.	n/a	part of the (re)construction works contract	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) State Ecological Inspectorate 3) PIU
	safety of local population	limiting access to (re)construction sites, zones and equipment locations by local citizens.	n/a	part of the (re)construction works contract	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) State Ecological Inspectorate 3) PIU
operation	Threats to water quality due to contamination by agrochemicals and drainage monitoring	- best practices on pesticides application, - application of agrochemicals in accordance with recommended norms, - preventing effluent water discharge into canals and surface water objects, - monitoring waterlogging	n/a	n/a	AAS/AISP	WUA members	RSU on-site inspection, approval and coordination with SETI
	Increased of soil erosion	- outreach campaign - rational use of irrigation water and applying water regimes in accordance with the irrigation requirements, - Arrangement of irrigation furrows on the lowest slope (cross-cut furrows); - shortened furrows length; - altering irrigation technology (sprinklers, drip irrigation)	n/a	n/a	AAS/AISP	WUA members	RSU on-site inspections
	Climate change impact	- education on environmental mitigation activities; - compliance of irrigation norms and regulations.	n/a	n/a	AAS/AISP	WUA members	DWRLI

Table 3. Environmental monitoring plan

Project Phase	Parameter	Location	Method/Equipment	Frequency	Objective	Costs		Responsibility	
						Organization	Performance	organization	performance
baseline	salinity, concentration of hydrogen ions (pH), water turbidity	upper and lower reaches of irrigation system: rr. Kara-Kungoy, Ukok	Field equipment for parameters measurement	At the beginning, in the middle and at the end of vegetation season	Rehabilitation works and agricultural activities impact assessment	0	Insignificant	Samples selection RSU	Samples selection RSU
construction	Salinity, concentration of hydrogen ions, turbidity	Canals under rehabilitation, located upstream and downstream of the rehabilitation site	Field equipment for parameters measurement	At the beginning, in the middle and at the end of vegetation season	assessment of construction works impact	0	Insignificant	RSU	RSU
	Pollution of watercourses by petroleum, oil and lubricants	Selectively for subprojects when suspected of contamination. Downstream of rehabilitation subproject	Sample for laboratory analysis	During construction	Civil works impact assessment	0	100 USD	Contractor	Accredited laboratory Water sampling and analysis. Introduction of results to PIU
operation	salt content in the soil	problematic locations	soil sampling	quarterly	soil quality grading	0	300 USD	AHS	AHS
	Salinity, concentration of hydrogen ions, turbidity	upper reach of WUA`s irrigation system – r. Kara-Kulja and discharge waters from WUA	Field equipment for parameters measurement	Before, during and after completion of construction	irrigation and waster waters quality control	0	Insignificant	RSU	RSU

8. Stockpiling, transportation and disposal of asbestos containing materials/wastes

Asbestos-containing materials disposal will be executed in accordance with the local legislation, including construction standards, occupational health and safety regulations, emissions of harmful substances into the atmosphere, disposal/removal of construction and hazardous wastes (in cases of a specific domestic legislation absence, the European Parliament Directive 2003/18/EU, which amends and updates the EU Directive 83/477/EEC on protection of workers against workplace exposure to hazards from asbestos and asbestos containing materials: the air pollution thresholds are 0.1 fiber/cm³, and also use the recommended standards Notes: Asbestos: "Health problems at the workplace and in the community", the World Bank). The asbestos materials are subject to immediate unconditional disposal/entombment in special conditions.

In accordance with the Government of the Kyrgyz Republic's Order No. 885 "On Management of Hazardous Wastes in the Kyrgyz Republic, December 28, 2015," asbestos-containing wastes should be disposed the following order:

- The process of handling hazardous wastes (waste lifecycle) consists of the following stages: generation, accumulation (collection, temporary storage, stockpiling), transportation, neutralization, recycling, reuse of processed products and disposal/entombment.
- If there is asbestos on a construction site, it should be clearly marked as a hazardous material. Asbestos-containing materials should not be cut or destroyed, as this leads to dust formation. During the (re)construction, all workers should avoid crushing/destroying the asbestos-containing waste, store such waste(s) in designated areas on a construction site and properly dispose thereafter in a special place or landfill.
- When asbestos-containing wastes are to be temporarily stored at a designated area(s)/construction site, they should be properly placed in sealed containers and marked appropriately as a hazardous material. Precautions must be taken to prevent unauthorized disposal of such wastes from a designated area/site.

8.1. Storage and stockpiling of wastes

- The asbestos containing materials extraction should be minimized through the use of efficient technologies
- All asbestos containing materials should be recycled and disposed by the experienced specialists. The specialists are obliged to wear protective outfit (face masks, gloves, uniform)
- The stockpiled wastes, on a designated area(s), should not exceed established volumes/requirements.
- The access roads for removal of industrial and construction wastes from a designated area(s) should not be obstructed.
- While handling asbestos containing wastes, all operating staff members should wear protective outfit (facemask, gloves etc.). Prior to removal of asbestos waste (if necessary) the stockpiled area should be treated with a moisturizing agent to minimize emission of asbestos containing dust. Disposed asbestos should not be reused.
- Storage of inappropriate items, individual protective or working outfit is strictly prohibited at the designated asbestos waste(s) locations.
- During handling operations, all workers should strictly follow the asbestos treatment requirements, and health and safety requirements. All operations should be executed with the use of mechanized machinery, elevating and transportation equipment.
- Hazardous waste(s) should be transported by the superficially equipped Vehicles to the landfill locations, either contracted, or owned. The Vehicles should be designed and used in such a way, as to prevent possible incidents, losses and pollution of the environment, both on the way to the disposal site location, and during the (re)loading of waste from one vehicle

onto another. All types of handling and transportation of waste operations from/to the main and supporting facilities should be mechanized, and an airtight equipment used. It is strictly prohibited, during the transportation, to open the hazardous waste containers.

- Solid and dusty wastes are the subject of transportation in a specially designed containers, equipped with gripping devices for (un)loading by cranes. The transportation of asbestos wastes on the open-bed vehicles and railway cars is strictly prohibited.
- The use of hooks and other sharp tools, while processing the waste, is strictly prohibited.
- The driver of the Vehicle, transporting hazardous waste and authorized accompanying staff only, are allowed on the Vehicle(s). the Driver(s) must be aware of the safe transportation requirements.
- All handling, transportation, (un)loading and disposal of waste must be mechanized. The waste must be transported in such a way, as to prevent transport losses and impact on environment.

8.2. Disposal of asbestos containing wastes

Asbestos-containing waste must be disposed in municipal solid waste dumps or non-recyclable industrial solid waste damp-yards.

9. Legislative support

In the Kyrgyz Republic, there are a number of environmental protection laws, regulations and requirements, which address the specific issues of environmental protection. Table 5 summarizes the legal norms relevant to the Subproject.

Table 5: The main subordinate legislations, regulations and requirements

Legal authority	Legal mandate
Constitution (2010)	The state's ownership of natural resources, rights and duties of citizens.
Water Code of the Kyrgyz Republic (2005)	It identifies the state policy, legislative and institutional basics on water resources management and protection
Law on environmental protection (1999)	It identifies state policy on environmental protection, legislative and institutional basics on water resources management and environmental protection
Law "General technical regulation on ensuring environmental safety in the Kyrgyz Republic" (2009)	The Regulation determines the main provisions of technical regulation in the field of environmental safety and establishes general requirements for ensuring environmental safety while designing and implementing of interventions within economic and other types of production activities, storage, transportation and production disposal.
Law on environmental expertize (1999)	It requires review of environmental protection issues (environmental appraisal) and prevents negative environmental impacts and human health as a result of economic and other activities
Law on specifically protected natural reservations (2011)	It establishes regulations for specially protected natural areas, various types and/or levels of economic activity.
Law on protection of atmosphere (1999)	It regulates emissions to atmosphere and specific obligations on protection of atmosphere
SanPin "Noise on the workplaces, in premises of residential, public buildings and on the territory of residential buildings" the Governmental decree of the KR, dated 11/04/2016. №201,	Establishes a sanitary-epidemiological requirements, standardized parameters and maximum permissible noise levels at (re)construction sites, noise classification, permissible noise levels in the Projected rooms, (re)construction sites, (re)constructed and operated residential, public buildings and on the territory of residential buildings.
the GovKR. Provision No.224 of 03/05/2013. "On approval of fees for calculating the amount of penalties for damages caused to objects of animal and plant life, mumijo-containing mineral materials and mushrooms by legal entities and individuals"	Fees designed to ensure preservation of biodiversity, proper protection of flora and fauna

The Government of the Kyrgyz Republic ratified multiple international conventions on environmental protection and agreements, related to this Project:

- Convention on environmental impact assessment of the transboundary territories Espoo(2001);

- Agreement on cooperation in environmental protection and efficient use of natural resources (Kyrgyz Republic, Kazakhstan, Uzbekistan) (1998),
- Convention on wetlands, representing the international importance for the waterfowls main habitat (Ramsar Convention) (2002);
- Convention on right to use international watercourses as transport routes (1997), Agreement on the use of water structures for interstate purposes on the Chu and Talas Rivers (Kyrgyz Republic and Kazakhstan) (2000);
- the United Nations Framework Convention on Climate Change (2000 г.);
- Kyoto Protocol (2003).

10. Awareness rising campaign, consultations and public attendance

10.1. Public consultations

In accordance with Operational Procedures OP4.01.[3] The WB has special requirements for disclosure of information and public consultations. The disclosure includes introduction of information about the Project affected population (PAP) and other stakeholders, from the Project's early implementation cycle, and throughout lifecycle of the Project. The information disclosure is intended to facilitate comprehensive interaction with the Project affected population, and stakeholders throughout the lifecycle of the Project. Moreover, the Kyrgyz Republic is a member of the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, the United Nations Economic Commission for Europe, which also contains provisions for ensuring the disclosure of the objectives and environmental considerations of the subroject.

The Public hearings in WUA "Ten-Alysh,, held after no objections by the World Bank obtained concerning the EMP, on July 5, 2019, which was attended by 51 people: WUA representatives, local authorities, farmers, WUA RSU, design engineers, PIU. The public hearings delivered a general info on the subproject, as well as technical solutions and activities that will be undertaken to prevent and mitigate impact(s). The attendees asked several questions on EMP and which was uploaded APNIP webpage, section "Reports on environment": http://apnip.water.gov.kg/en/reports/environmental-reports/.

10.2. Grievance redress mechanism (GRM)

Objective. The primary target of GRM and population's statements is identification, registry and assistance in solving complaints that were stressed during the Project activities.
The GRM main principles are:

(i) Protection of Citizens' rights;
(ii) Transparency;
(iii) Accessibility to a free GRM mechanism and without follow-up prosecution;
(iv) Appropriateness, from the point of local cultural sensitivities view;
(v) Personal responsibility for the performance duties;
(vi) Accountability of during the GRM consideration and applications by the PIU.

Complaints and applications filed in accordance with the established procedure are subject to a mandatory review, refusal to admit is not allowed. Complaints and applications of citizens, without indication of the name and postal address, to which the reply should be sent, are considered anonymous and are not subjected to revision.

The GRM does not hinder the right of citizens to applying into the Judiciary authorities. Citizens have the right to apply to the court, or other state bodies for the resolution of emerging issues related to the violation of their rights, emerged under the Project. For the GRM implementation, the PIU and WUA created a register of complaints and statements from the population. Moreover, anyone can apply to the PIU in an online format at:
https://mail.rambler.ru/m/redirect?url=http%3A//apnip.water.kg/%25D0%25BE%25D0%25B1%25D1%2580%25D0%25B0%25D1%2589%25D0%25B5%25D0%25BD%25D0%25B8%25D1%258F-%25D0%25B8-%25D0%25B6%25D0%25B0%25D0%25BB%25D0%25BE%25D0%25B1%25D1%258B/&hash=8ef50d487d10168e5d891f2d9dd443cd

[3] The World Bank operational procedures 4.01, "Environmental Assessment", Para. 3.

10.3. Management of registered complaints

- In the process of the assets assessment, PAP will be introduced to the information concerning filing and reviewing procedure.
- The first step in the process of handling complaints will be a personal verbal appeal to the Project representative, AO's authority, or by phone (the mobile phone number will be provided on the information board of AO's office, and also posted in ads in places frequented by the population). If the problem cannot be resolved within 5 days, consideration of the complaint will be done at the next level.
- An aggrieved person can file a complaint on the issue related to the process of resettlement or compensation, in written from, to the PIU APNIP Director. A complaint must be signed and dated by an aggrieved party. The APNIP social affairs consultant will maintain a direct link with the PAP. The PIU will determine the validity of a complaint and notify an aggrieved person that he/she will be assisted. The answer will be provided within 14 working days, during which meetings and discussions will be held with an aggrieved person.
- If a complaint concerns an asset assessment at the expense of the Project, a secondary or even a third assessment of an asset will be carried forward, until it is accepted by both parties. The follow-up assessments can also be carried forward by and independent appraiser(s) at the expense of an aggrieved party. The PIU will assist to an aggrieved party at all stages to resolve a complaint and ensure that a complaint is treated the best-of-breed

A local representative of the Subproject should ensure a weekly transfer of received complaints from the PAP to the PIU, as well as the first instance consideration result(s). The local authorities should work with complaints in accordance with the established order and should file the complaints and proposals in the processing registry. The PIU upon receipt of an information, the social consultant should ensure that each complaint has an individual identification number and a progress report in reviewing each complaint reflected in the FRP, which identifies a person(s) responsible for each individual complaint and recording the dates of the following events:

- the date of filing a complaint;
- the date of entering a Complaint(s) Registry in the Project database;
- the date when the information on the proposed solution measure(s) was sent to an aggrieved party (if applicable);
- the response date to an aggrieved party.

The general information on complaints received (number, type of complaint), progress in resolving it and problems encountered, should be included in the Subproject's periodic reporting submitted to the World Bank.

Annex 1. The minutes of Public hearings

The minutes of public hearings on environmental protection and social issues in WUA «Ten-Alysh», Kra-Kuldja rayon, Osh oblast, under "APNIP" the World Bank,

Kashka-Jol AO **July 5. 2019.**

Attendees:
Ardinov A.– Chair of WUA Council;
Rakhmanberdy uulu Shaiyrbek – Head of Kasha-Jol AO;
Bayiev O.- WUa «Ten-Alysh» Director;
Ajimatov A. – PIU APNIP Engineering coordinator (north);
Neronova T. – National environmental consultant, PIU APNIP;
Jeenaliev K. – Design engineer for south regional team

The public hearing was attended by 51 people; waterusers, representatives from farming entities, WUA members, of whom 6 women. The list of attendees is applied.

Chariperson – Ardinov A.

Ajimatov A. – the PIU APNIP Engineering coordinator (south) has introduced the information related to the Project and outlined rehab activities envisioned under the APNIP.
Neronova T. - has explained about the Kyrgyz Republic's environmental legislation requirements and the World Bank's policy on environmental protection under the Project. The task of environmental assessment is to identify the Project's significant impact on the environment (positive and negative), identify appropriate preventive measures and mitigation measures aimed at preventing, minimizing or eliminating any expected irreversible impact(s). The experience of previous projects demonstrates the positive impact of the Project on the environment. In fact, many positive impacts of projects have been identified during the environmental assessment. Namely, this Project is aimed at reducing water losses in irrigation systems, improving water management, scaling up agricultural productivity and improving soil fertility.

At the same time, while executing civil works on (re)construction of irrigation networks, there may be some potentially negative impacts on environmental protection conditions in projected areas that may require attention, to undertake preventive actions and appropriate mitigation measures during planning, development, construction, operation and maintenance.

- No asbestos-containing materials will be used for the planned rehabilitation of irrigation networks, noting that previously asbestos-cement pipe crossings were used. But even in the past years they were dismantled and replaced with structures of more inert materials. Thus, no problems with asbestos-containing materials are expected.
- Potentially negative impacts are relatively small and positive economic, social and environmental benefits far outweigh them in environmental assessment. Consideration of these impacts is given below.

The main impact(s) that can be seen as a result of the (re)construction works:

1) Soil pollution within (re)construction site.
2) Groundwater pollution within (re)construction site.
3) Deterioration of the landscape, destruction of the animal world`s natural habitat, altering the local drainage network.
4) Air pollution and impact on workers/population during traffic and heavy equipment operation.

The site specific EMP is composed for each of the rehabilitation subproject to prevent or mitigate the negative impact of (re)construction works. It includes a mitigation and monitoring

plan, both for the construction phase, and for the O&M phase. All the risks of the (re)construction phase are easily controlled and eliminated. They can be minimized by properly designing mitigation measures and controlling the Contractor, while carrying out the works.

The operation and maintenance risks impacting the landscape are deterioration and destruction of the animal world`s natural habitat while cleaning earth-bed canals and drains, which is obvious and easily controlled. There are also risks of surface and groundwater contamination by agrochemicals due to excessive use of pesticides and mineral fertilizers, soil erosion associated with existing practice of agricultural production, increased groundwater level in a zone of its near-surface occurrence due to excessive irrigation and, as a result, salinization of soil require special monitoring. The need for mitigating measures at the O&M stage is specified precisely by the environmental monitoring process.

In the interests of the population and WUA members, a grievance redress mechanism (GRM) has been developed. The WUA owns a GRM registry and have a complaint form and a complaint management matrix. In addition, the PIU site (www.apnip.water.gov.kg) has a separate section on appeals and complaints, where anyone can send their appeal or complaint about the Project's activities. For effective monitoring and management of complaints of the population and GRM, the PIU maintains a database of appeals and complaints

Question:

Jusubaliev B.- Any state body(ies) will be controlling (re)contruction?

Neronova T. – Prior to start of (re)contruction activities, the Project is being submitted to the State ecological expertize. And after obtaining the positive response from ecological expertize the Project can start. During (re)construction works State ecological inspectorate is in charge to conduct monitoring and conformance to the EMP requirements. The Contractor is bearing full responsibility for compliance with the requirements.

Abdurakhmanov Zh. – Waste removal, who is issuing permissions for it - Eco-inspectorate or AO? And where all the waste will be removed??

Neronova Т.И. – the (re)construction and household wastes will be removed by the Contractor to the designated locations, which is subject of approval with the local governments. Some of the waste could be reused, if applicable.

Baltabaev K.- Any impact(s) on the local population caused by the (re)construction works?

Neronova T. – the EMP includes various activities to mitigate environmental impact(s), such as noise and exhaust fumes reduction. Speed limits on vehicle circulation and day-time operation only etc.

Ardinov O. - Tree and shrubbery felling, is permission needed for it?

Neronova Т.И. – During surveying of canals, it was found that there are some greenery and trees, And WUA has to compose an official letter to the Djalal-Abad territorial environmental protection administration concerning that issue, they will consider it

Pusuev A. - Whether water quality monitoring in canals will be performed and who is responsible for that?

Neronova Т.И. – the EMP also includes the Water quality control and will be performed by the RSU, which will perform a rapid assessment analyzes of water for salinity, acid-base analysis and water turbidity.

Neronova T. – Some members and local residents who have certain issues and question related to the (re)construction works can register them in the Registry. If WUA is not capable to resolve an issue, then the complaint will be redirected to the PIU APNIP for further revision and solution.

Bayiev O. – Who can address a complaint?

Neronova T. - Any member of WUA or local resident is eligible to compose a complaint, which could be done in any moment, either in written, or verbal form during preparation or execution stages.

At the end of the meeting, all attendees have supported implementation of the subproject and expressed their gratitude for the information introduced.

Chairperson **Ardinov A.**

Environmental consultant **Neronova T.**

Неронова Т. – Лица, у которых возникают вопросы и замечания в ходе ведения строительных работ, могут сделать запись в журнале. Если не получит ответа в АВП, жалоба будет передана в ОРП УСПП для дальнейшего удовлетворения.

Байиев О. - Кто может обратиться с жалобой?
Неронова Т. - С жалобой может обратиться любой член АВП и житель. Жалобы можно подать в любой момент в устной или письменной форме в ходе подготовки и реализации проекта.

В заключении, все собравшиеся поддержали реализацию данного проекта.

Председатель от имени всех присутствующих поблагодарили за поддержку и предоставленную информацию.

Председатель **Ардинов А.**

Консультант по охране окружающей среды **Т. Неронова**

Список участников общественных слушаний по экологическим и социальным вопросам в АВП «Тен-Алыш» Кара-Кульжинского района Ошской области в рамках проекта «Улучшение сельскохозяйственной производительности и питания»

05.07.2019г.

№№	ФИО	Подпись
1	Байсев Джорбаем	
2	Ахмедов К	
3	Апанбаков А	
4	Жоркошев	
5	Итебаев Ж.С.	
6	Рамиев Б	
7	Олугалиев Р	
8	Атамбеков А.	
9	Азимбаев М	
10	Бармашабов Д	
11	Пайчиев Алимбек	
12	Ерменкулов А	
13	Боемиев Т	
14	[illegible] Бл	
15	Бекенов А	
16	Дуйшонбаев Байыш	
17	Нажимидинов Байыш	
18	Абдыгазаков Р.К.	
19	Ардиков А.Б.	
20	Казарбаев К	
21	Мамасалиев Р	
22	Баракаев Т	
23	Камчыбеков А	

24	Торогуев Аскарбек	
25	[illegible]	
26	Омурзаков. П.	
27	Жусуболиев А.	
28	[illegible]	
29	Дусуев А	
30	Исраилов Э	
31	[illegible] Анарбек	
32	Маманов А	
33	Уметалиев Р	
34	[illegible] Рыскулов	
35	Арзиматов Ж	
36	Мырзабеков И.	
37	Осмоналиев Б.	
38	Абдурахманов Ж.	
39	Арап уулу Турар	
40	[illegible] Аким	
41	Назаров Бейшен	
42	Камчибердиев Кияз	
43	Нурдинов З	
44	Болтобаев Копбот	
45	[illegible]	
46	[illegible]	
47	Ажимаматов Осмон	
48	Бекиев [illegible]	
49	Жусупалиев Бектемир	
50	Рахман бабадин уулу М-	
51	[illegible]	

Image №1. WUA «Ten-Alysh» public hearings, July 2019.

11. Canals in current condition

Image №2. C-l Tegirmen, July 2019.

Image №3. C-l Ak-Korgon, July 2019.

Image №4. Water distribution point on c-l Kum, July 2019.

Image №5. Water distribution point on c-l Bulash, July 2019.