

Semi-Annual Environmental Monitoring Report

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Kyrgyz Republic:

CAREC Corridors 1 and 3 Connecting Road Project (Phase 2). Additional Financing. Lot 1 "Balykchy km 0 -km. 43", Lot 2 "Kochkor - Epkin (km. 62+400 - km. 89+500)".

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Prepared for:

Ministry of Transport and Communications of the Kyrgyz Republic

Approved by: [Name and signature of Executive Agency staff]

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Abbreviations

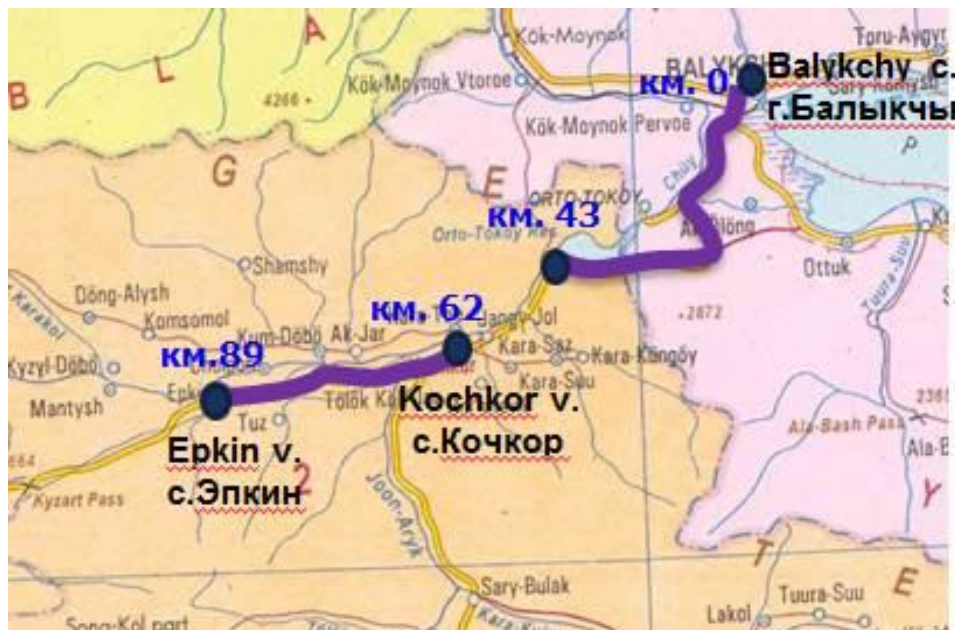
ADB	-	Asian Development Bank
CAREC	-	Organization of the Central Asian Regional Economic Cooperation
CSC	-	Construction Supervision Consultant
EMP	-	Environmental Management Plan
PIU	-	Project Implementation Unit
km	-	kilometer
KR	-	Kyrgyz Republic
MPC	-	Maximum Permissible Concentration
MPL	-	Maximum Permissible Level
MOTC	-	Ministry of Transport and Communication of KR
MEoC KR	-	Ministry of Economy and Commerce of the Kyrgyz Republic
MoF KR	-	Ministry of Finance of the Kyrgyz Republic
MoNRE and TS KR	-	Ministry of Natural Resources, Environment and Technical Supervision of the Kyrgyz Republic
DDPSSES	-	Department of Disease Prevention and State Sanitary and Epidemiological Surveillance of the Ministry of Health of the Kyrgyz Republic
TOR	-	Terms of Reference
SSEMP	-	Site Specific Environment Management Plan
ACP	-	Asphalt Concrete Plant
SCP	-	Stone Crushing Plant
CBT	-	Concrete Batch Plant
MoCIT KR	-	Ministry of Culture, Information and Tourism of Kyrgyz Republic
OHCH	-	Objects of Historical and Cultural Heritage
IBAT	-	Integrated Biodiversity Assessment Tool

1 INTRODUCTION.

1.1 Preamble.

1. The The Government of the Kyrgyz Republic (GoKRG) requested the Asian Development Bank (ADB) to identify, design and prepare a follow-on loan and/or grant for the CAREC Corridors 1 and 3 Connectivity Improvement Project under Lot 1 "Balykchy km. 0 -km. 43" and Lot 2 "Kochkor – Epkin (km. 62+400 - km. 89+500)". The project will improve socio-economic indicators of the Kyrgyz Republic regions: (i) shortened travel time for movement of people and goods from the southern regions to Naryn and Issyk-Kul Oblasts; (ii) reduced transport costs due to reduced route and better road conditions; (iii) increased local and international traffic and movements; (iv) additional income generating opportunities for local residents; (v) creation of new jobs; (vi) good condition of vehicles and (vii) reduced transportation costs.

Figure 1. Schematic layout of Lot 1 (Balykchy km. 0 –43) and Lot 2 (Kochkor – Epkin, km. 62+400 - km. 89+500).



2. The Consultancy Company "Roughton International Ltd., and sub-consultants RAM Engineering Associates LLC" is Construction Supervision Consultant. Company "Sinohydro-Powerchina Roadbridge JV" is General Contractor performing repair and construction works at project sections.

3. This report is the **fourth** "semi-annual" environmental monitoring report, covering period from July to December 2021, under ongoing CAREC project connecting Corridors 1 and 3, Additional financing, Lot 1 "Balykchy km. 0 -km. 43", Lot 2 "Kochkor - Epkin (km. 64 - km. 89)". It presents environmental aspects, mitigation and monitoring activities undertaken by Contractor and reviewed by the CSC Roughton International Ltd. and sub-consultant RAM Engineering Associates LLC.

4. This report contains material reported by Contractor and Construction Supervision Consultant. The results are based on monitoring, inspections carried out from July to December 2021 by National Environmental Specialist and information received from Contractor.

5. The CAREC Corridor 1 and 3 Connecting Road Improvement Project covers two sections of Lot 1 "Balykchy km.0 - km.43" and Lot 2 "Kochkor - Epkin" (km 62+400 - km 89+500) with a total

length of 70 km. More detailed information on the sections is provided below.

6. Section – 1 "Balykchy km.0 – km.43" of the road is a 43 km, traversing from east to west. It begins at a traffic circle located at the entrance to Balykchy city. Five roads converge at this point, one of which is a section of the project road heading south – east. As a rule, this section follows the existing highway, right up to post km 43. A major part of this section, about 29 km, is located within Issyk-Kul Oblast. While the remaining 14 km are in Kochkor Rayon of Naryn Oblast.

7. According to zoning of "Issyk-Kul" biosphere territory, this section of corridor "Balykchy km.0 - km.43" is located in the zone of "Rehabilitation Zone", i.e., in the zone that includes anthropogenic disturbed territories that require regeneration and re-cultivation measures (Regulation on the "Issyk-Kul" biosphere territory, approved by the Decree of the Government dated January 24, 2000 N 40). The territory of the project section of the road, since its construction in the 1970s, has been under anthropogenic impact for a long time. Separate cordons or observation stations in this section are not installed due to the lack of such necessity. Rare and endangered species included in the Integrated Biodiversity Assessment Tool (IBAT) report and occurring in the biosphere area¹. In this area of the Balykchy section they do not occur, because they live in high mountainous areas. In this regard, rehabilitation work in this project section of the road will not have a potential negative impact on the existing biological resources of the biosphere area, including red-listed species, on species included in the IBAT report.

Figure 2. Layout of project Lot 1 "Balykchy km.0 - km.43"



8. Lot 2 "Kochkor – Epkin", project road is 25 km long, running from east to west. It begins at the junction of three roads. It crosses Village Kochkor, where the highway Bishkek-Naryn-Torugart serves as a detour for Kochkor Village and this road section. This section follows the existing highway to Epkin village (89 km). The entire Section is located in Naryn Oblast and crosses only one district, namely Kochkor District (Kochkor village being the center).

Figure 3. Layout of project Lot 2 "Kochkor - Epkin (km. 62+400 - km. 89+500)".



1.2 Headline Information.

9. The important results of reporting period are as follows:
 - Installation of asphalt concrete plant on Lot 2 and its commissioning. Asphalt concrete paving started on Lot 1 and Lot 2;
 - To determine the presence / absence of monuments of historical and cultural value in areas where it is planned to quarry for the extraction of materials, the archaeological survey was conducted (photo.1).
10. Due to lack of available quarries of construction materials for Lot 1, additional sites were identified for developing of six quarries, along rehabilitated road on LHS: km 31+240 at a distance of 220 m from road; km. 34+240 at a distance of 325 m from road; km. 36+560 at a distance of 160 m from road; km. 39+450 at a distance of 520 m from road; km. 43+400 at a distance of 40 m from road and for Lot 2 at km. 89+093.
11. Local specialist archaeologist Tabaldiev K. conducted an archaeological survey of the selected site for the quarry. Based on the results of the survey, no monuments and other traces of historical and cultural heritage were found in the planned areas for the development of quarries of building materials.
12. These quarries have all necessary permits for development: permits from local authorities, a temporary permit for development issued by State Agency for Geology of Subsoil Use №03-5/682 from 20.12.2021.



Photo 1. Archaeologist Tabaldiev K. inspection of territory under quarry at km.39+450.

13. Two laboratories were engaged by the Contractor to conduct instrumental monitoring: One Governmental - Laboratory of Chui-Bishkek Territorial Department of the State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic to conduct laboratory research on the quality of environmental components (water, atmospheric air). Second is a private laboratory of LLC "ProfiLab" for instrumental measurements of vibration, noise levels in areas of high environmental sensitivity and socially sensitive receptors of impact located along the Project road, as well as in the quarries.

14. During the reporting period, instrumental monitoring of air, water, noise and vibration levels was scheduled for August, October and December. Instrumental measurements of noise and vibration levels were made in accordance with the Environmental management and monitoring plan. Instrumental air and water quality monitoring was provided in October and December. Due to the reorganization and restructuring of the laboratory of the Chui-Bishkek Territorial Office of the State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic into the Department of Environmental Monitoring of the Ministry of Natural Resources, Environment and Technical Supervision, the laboratory staff was not able to provide the planned monitoring in August.

2 PROJECT DESCRIPTION AND CURRENT ACTIVITIES.

2.1 Project Description.

15. According to the classification of ADB Safeguard Policy Statement 2009 (SPS-2009), the project is classified as category B. Kyrgyzstan is a mountainous and landlocked country, where regional trade is heavily dependent on roads, which dominates Kyrgyzstan's transport system. There is no rail or water transport network, while air transport is not possible for mass transport and becomes expensive for any freight.

16. Implementation of this project will help to connect the southern districts of Osh, Batken and Jalalabad with the northern districts of Naryn, Issyk-Kul, Chui and Talas, which in-turn will be connecting all with regional road corridors that allows: (i) reduce cost of passenger and freight traffic between southern and northern regions by providing direct access; (ii) provide a more direct route between Republic of Kazakhstan and Republic of Tajikistan; (iii) promote trade.

17. The project includes rehabilitation of total 70 km road length, of which 43 km on Lot 1 "Balykchy km.0 - km. 43" and 27 km on Lot 2 "Kochkor - Epkin (km 62+400 - km 89+500)".

18. The entire road corridor lies within Northern and Inner Tien Shan Mountain ranges. The route passes through mountain and plain parts of Issyk-Kul, Naryn regions at altitude of 700 – 3,500 m above sea level, crossing Chu River valley. The climate is local steppe climate, which is described as continental with cold winters and hot summers.

19. According to general characteristics of districts, in accordance with geo-botanical zoning, Tonsky District of Issyk-Kul Oblast (Lot 1) shall be referred to desert steppe with fragments of forests and spruce woods. The flora of Issyk-Kul BR includes about 1,500 plant species, including about 30 species of very important wild medicinal plants. The road section "Balykchy km.0 - km.43" is in the sanitation zone (i.e., the zone in the anthropogenic disturbed areas) and is characterized by absence of growth of forests, spruce trees and medicinal plants in this area. Project road section is located at 1,632 m (beginning of section) to 1,756 m (end of section) above sea level. Throughout the section elevating difference ranges from 1,610 to 1,820 meters.

20. The territory of Kochkor Rayon, Naryn Oblast (Lot 2) is a vast area of agricultural land occupied by crop and livestock production. The Kochkor Valley is bounded by the Kyzart mountain ridges in the north and Karagatty Kyzart in the south. The mountainous region has a very dissected relief with high slopes. The height difference in the valley varies from 1,700 – 2,400 meters, and the tract from 2,400 – 4,502 meters. The area is characterized as wavy and mountainous terrain, which is covered with highly palatable grasses, suitable for grazing. Project road section is located at 1845 m (beginning of section) to 2080 m (end of section) meters above sea level.

21. Reconstruction of road will be carried out in accordance with the Kyrgyz State Standard (SNIP 32-01:2004), with geometrical and structural requirements up to Technical Category II (strip width 3.5 – 3.75 m; width of carriageway 7.00 – 7.50 m; width of shoulder 3.25 – 3.75 m (of which 0.50 m - 0.75 m will be paved). In this way the total road width of 15 m will be achieved. Existing small bridges and culverts will be repaired and/or replaced, side drains and other drainage facilities will be constructed, retaining walls and, if necessary, measures to protect the river will be provided, proper road signs, markings will be provided, bus stops will be built, and one underground crosswalk will be constructed.

22. It is expected that majority of environmental impacts from the rehabilitation project will be directly from construction work and some impacts will occur during operation. These impacts are attributable to increased traffic and high vehicle speeds due to good road surface. In turn, it gives rise to increased gas emissions and noise generation, as well as potentially increased traffic accidents involving pedestrians and vehicles. In addition, there is an increased risk of accidents associated with possible spills of harmful substances. During the feasibility study of the project, following impacts were identified in the IEE study of 2018:

23. Noise, airborne pollutant emissions, as well as vibration, are of particular importance within communities near the project road and in places where sensitive receptors such as schools, hospitals, mosques, etc. are located;

- Impacts on watercourses/ rivers.
- Impacts resulting from quarrying.
- Impacts on soil and vegetation, including forced removal of trees near the project road due to site clearance activities.
- Impacts resulting from rehabilitation of bridges and drainage structures.
- Impacts from asphalt mixing, concrete batching plants and aggregates crushing plants.
- Impacts from Contractor's work camps.
- Impacts on historical and archaeological sites.

2.2 Project Contracts and Management.

24. Key features of this contract and its management descriptions are being presented in the following matrix tables:

Table 1. Project contracts and management.

Project	Improvement of connecting road for Corridors 1 and 3 under CAREC. Additional funding.
Construction Supervision Consultant (CSC)	Roughton International Ltd., and sub-consultants RAM Engineering Associates LLC
Notification for CSC's commencement of work:	20/05/2020
Contractor	Sinohydro-Powerchina Roadbridge JV
Road Sections:	Total length of two road sections - 68 km
Lot 1	«Balykchy km. 0 –km. 43» - 43 km
Lot 2	«Kochkor – Epkin» - 25 km
Donor:	Asian Development Bank
Date of contract	14/02/2017
Executing Agency	Ministry of Transport and Roads Kyrgyz Republic
Order for commencement of works	22/06/2020
Date of completion	22 June 2022.
Time to finish - days	730 days
Extension - days	-
Warranty period - days	36 months
Contract Amount	
Lot 1 «Balykchy km.0-km.43»	USD 22,671,896.26
Lot 2 «Kochkor-Epkin»	US\$ 17,537,958.57

Figure 4. Project organizational structure and management.

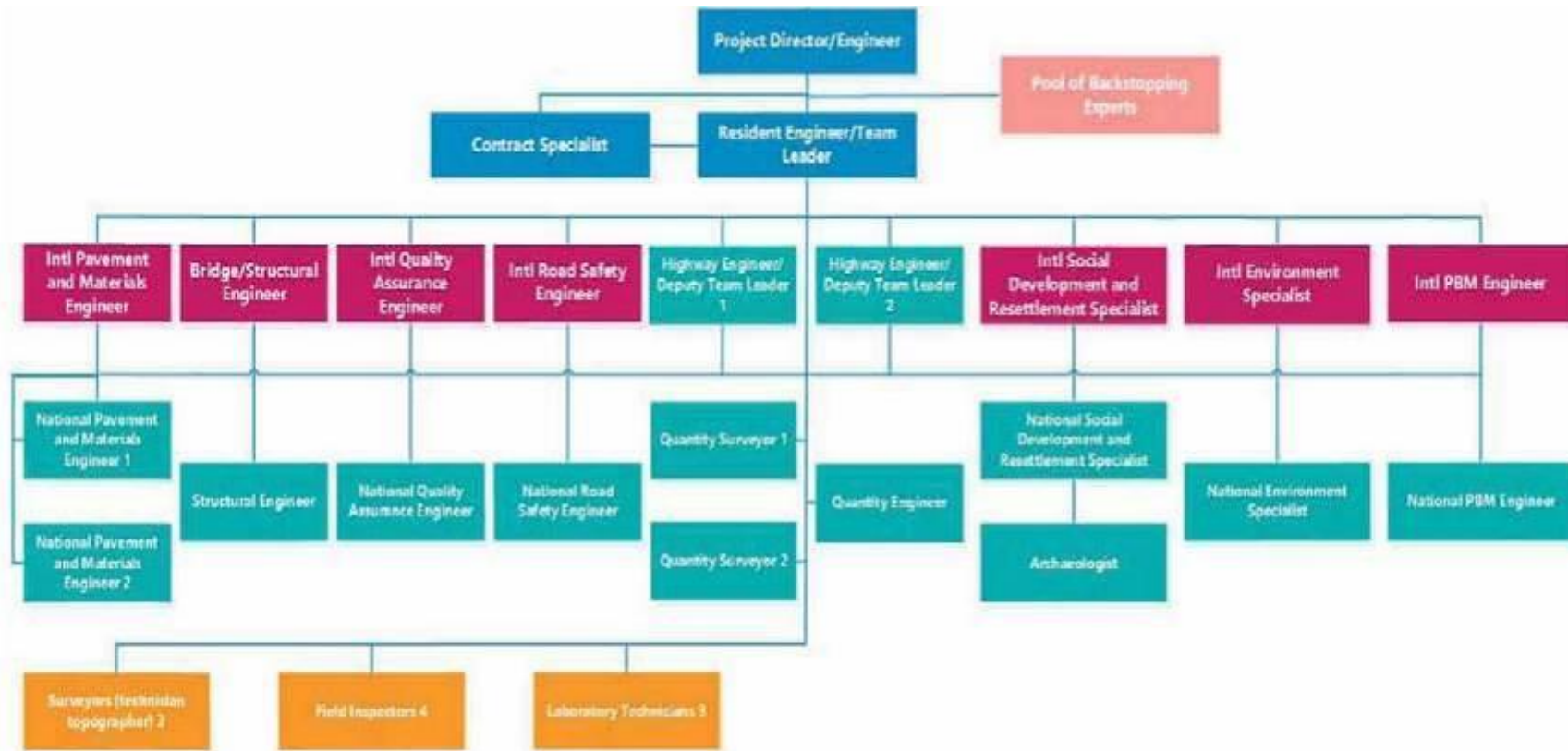


Table 2. Consultant's staff list.

International staff	
Project Director	Edin Begovich
Resident Engineer-Team Leader	Jukka Pekka Lepisto
Contract Specialist	Ed Vowles
Social Development and Resettlement Specialist	Iraklii Kaveladze
Environment Specialist	Elsie B. Monsanto
PBM Engineer	Alexandra Spornol
Quality Assurance Engineer	Donald Gater
Road Safety Engineer	Francisco Javier Lopez Delgado
Bridge/Structural Engineer	Ferdinand Tejares
Local staff	
Assistant Engineer -1	Mamatbek Mambetaliev
Assistant Engineer -2	Izat Toktomambetov
Pavement and Materials Engineer - 1	Torobek Osmonov*
Pavement and Materials Engineer - 2	Taalai Ermatov
Quality Engineer	Eldar Samarkulov*
Bridge Engineer	Dmitrii Gerasimov
Road Safety Engineer	Shyloobek Sadyraliev
Quantity Engineer	Edil Shabdanov
Quantity Engineer - 1	Emil Bayseitov
Quantity Engineer - 2	Dastan Tashtanov
Translator - 1	Kanat Abaskanov
Translator - 2	Bakytbek uulu Bakai
Office manager - 1	Ruslan Boronov
Office manager - 2	Nursultan Ishenaliev
PBM Engineer	Nurbek Zhumaliyev
Archaeologist	Kubatbek Tabaldiev
Topographer -1	Rinat Zhumabekov
Topographer - 2	Mayrambek Sabyraliev
Topographer - 3	Dilshat Tajibayev
Site Inspector - 1	Nurbek Omorov
Site Inspector - 2	Emilbek Atambekov
Site Inspector - 3	Ravshan Seyitov
Site Inspector - 4	Erlan Berdibaev
Laboratory Technician - 1	Kanybek Korkombayev
Laboratory Technician - 2	Melis Ayazbekov
Laboratory Technician - 3	Kenzhebek Andakeev
Environmental Protection Specialist	Nasiba Akhmatova
Resettlement Specialist	Yuri Dolgov

2.2.1 Volume of work under contract.

25. This road section was designed in accordance with the building codes and regulations of the Kyrgyz Republic SNiP KR 32-01:2004 "Highway design" according to standards of II-Technical Category (main streets of city importance). The general carriageway specification of the road is

displayed as below:

- number of traffic lanes - 2;
- traffic lane width -3.5 - 3.75 m;
- width of the carriageway - 2x7,5;
- shoulder width - 3,25 m-3,75 m (of which 0,50 m-0,75 m with covering);
- total width of the carriageway - 15 m;
- design axle load - 11,5 tons.

26. A two-layer asphalt-concrete pavement with thickness of 14 cm, top layer - 5 cm, bottom layer - 9 cm will be laid throughout the project area.

27. The width of the road right-of-way is 30-60 meters. The project envisages construction and repair of the following engineering structures and communications, as well as parameters of the scope of work.

28. Scopes of work on the laying of roadway are:

- Top pavement (SMA) layer 6cm - 42505 m³;
- Coarse-grained asphalt at junctions 5cm - 682 m³;
- Leveling layer 9cm - 63633 m³;
- Base thickness 20cm – 152829 m³;
- Sub-base 25cm - 345850 m³ thickness;
- Asphalt concrete mixture on sidewalks 4cm – 434 m³;

In addition, the project provides:

- Bridge repair with widening - 5 pcs;
- Small artificial structures - 113 pcs;
- Underground crosswalk - 1 pc;
- For drainage of water there are reinforced concrete trays of 1726 running meter.
- Parking near markets - 4 pcs;
- Automobile pavilions - 15 pcs;

Elements of road safety:

- Parapet fencing (boots) - 2285 pcs;

Reconstruction of engineering communications

- Overhead line -10kV - 30 poles;
- Overhead line - 0.4 kV - 7 poles;
- Communication line -14 poles;
- Lighting poles - 530 pcs;
- PVC pipes - 23114 l/m.

29. Tree Planting. Along project road sections there are green areas (trees) on both sides. According to IEE the preliminary number of trees for forced removal is 68. (Including 38 trees on Lot 1 and 30 trees on Lot 2). In 2020, during fixing the project marks on project site, 1909 pieces of trees falling under "forced" felling, of which: 160 pieces on Lot 1 and 1,749 pieces on Lot 2. To save the existing greenery, the Consultant together with the Contractor conducted an additional study of project marking points, which actually allowed to reduce number of trees falling under "forced cutting", in particular 519 pcs. trees were saved. Thus, the actual number of felled trees on

Lot 1 was 122 pcs., on Lot 2 actual number of felled trees was 1268 pcs. Total number of felled trees amounted to 1390 pcs. As a compensatory measure, it is supposed to plant new seedlings of trees at the ratio of 1:2 (two new trees will be planted instead of one felled tree). All work on cutting trees were completed in 2020.

30. The Contractor and Consultant's ecologists conducted a joint field trip to the nurseries, in Kochkor, to review the range and selection of tree seedlings for planting to replace those that were cut down. During the 2022 construction season, the Consultant together with the Contractor will identify sites for planting new tree seedlings.

31. Land acquisition and resettlement plan. The project section passes in vicinity of settlements. Section 2 envisage construction of a new road section through agricultural land. The project plans demolition of fences that are under impact of road widening and construction of new sidewalks. Land Acquisition and Resettlement Plan (2018) was developed according to which 40 persons are impacted and lands for acquisition are 24 959.4 m², including 21453.0 m² agricultural (Tendik village) and 3 506.4 m² residential lands (Kok-Jar, Chekildek and Epkin villages). In 2021, by reviewing sidewalk design, it was possible to reduce: the number of affected people from 40 to 31, and land acquisition from original total area of 3,506.4 m² to 864.38 m².

2.2.2 Main organizations involved in the project.

32. Relevant agencies working with project include:

- Ministry of Finance of KR (MoF KR)
- Ministry of Transport and Communication of KR (MOTC)
- Project Implementation Unit (PIU) MOTC,
- Ministry of Natural Resources, Environment and Technical Supervision of the Kyrgyz Republic (MoNRE and TS KR),
- Department of Disease Prevention and State Sanitary and Epidemiological Surveillance of the Ministry of Health of the Kyrgyz Republic (DDPSSES)
- MOTC is responsible for development of transport sector and is the Executive Agency (EA) for the project. MOTC has overall responsibility for planning, design, implementing and monitoring of the project. PIU operates under MOTC and performs tasks assigned from MOTC.
- MoF KR is authorized state body responsible for coordination with ADB and other donors regarding external assistance issues.
- MoNRE and TS KR is leading government agency for environmental protection, which is responsible for government policy in this area and coordinates environmental protection with other government agencies. Its functions include:
 - development of environmental policy and its implementation;
 - conducting state environmental impact assessment;
 - issuance of environmental licenses;
 - environmental monitoring;
 - supervising environmental information service, environmental legislation, established rules, limits and norms of environmental management, norms of emissions and discharges of pollutants and waste disposal;
- DDPSSES supervises sanitary and epidemiological well-being of population, safety of goods, products, environmental facilities and conditions, prevention of harmful impact of environmental factors on human health.

Table 3. Main organizations involved in project and related to environmental protection.

No	Organization	Project activity	Responsible for environmental protection	Contact information
1	ADB	Country Environment Focal	Ninette R. Pajarillaga	npajarillaga@adb.org
2	ADB Resident Mission in the Kyrgyz Republic	National Environmental Consultant	Sultan Bakirov	Sbakirov.consultant@adb.org
3	IPIG under MOTR	Implementing Agency	Abdygulov Asylbek	asylbeka@piumotc.kg
4	Roughton International Ltd., and sub-consultants RAM Engineering Associates LLC.	International Environmental Specialist	Elise B. Monsanto	
		Local Environmental Protection Specialist	Akmatova Nasiba	nasibamn@hotmail.com
5	Sinohydro-Powerchina Roadbridge JV.	Contractor's Local Environmental Protection Specialist	Beisheev Isake	isake.beysheev@bk.ru

2.3 Project Activities During Current Reporting Period.

Road construction works.

33. Following works conducted on Lot 1

- Road widening. The road widening included roadside clearing and uprooting (Photo 2). The amount of work performed in reporting period was 37.6%, since beginning of Project - 65.7%;
- Removal of existing asphalt (Photos 3-5). The volume of performed works for reporting period amounted to 31%, since beginning of Project - 48%;
- Preparation of existing roadbed: loosening, removal of unsuitable soil, leveling and compaction with wetting. The volume of work performed during reporting period was 51%, and 77% since beginning of Project;
- Earthworks: soil compaction, leveling of earth bed and embankment construction (Photos 6-8). The volume of works performed during reporting period was 55%, and 82% since beginning of Project;
- Arrangement of the road surface: bedding layer, base layer, bottom layer of asphalt concrete (Photos 9-14). The amount of work performed for reporting period on laying: the bedding layer is 43.65%, since start of Project is 46.65%; base course - 22%, since start of Project is 22%; bottom layer of asphalt concrete 9 cm - 16%, since start of Project is 16%.
- Construction works on culvert installation with diameter of 1 m in number of 12 pieces, with diameter of 1.5 - 5 pieces (excavation of excavation pit, pouring of foundation, installation of header and links, waterproofing, backfill (Photos 15-16) were completed. The volume of work performed during reporting period was 16.4%, since beginning of Project - 63%;
- Construction work of new bridge at km. 12+063 - completed: piers #1 and #2 - completed and 13 floor slabs installed. Both transition slabs have been poured, curbs have been installed (Photos 17, 18).



Photo 2. Road widening on the section km. 17+500-18+500: after clearing and uprooting.



Photo 3. Scraping and removal of old asphalt concrete at km.10+900.



Photo 4. Scraping old asphalt at km 17+500.



Photo 5. Scraping and removal of old asphalt at km.28+200-28+700 RHS.



Photo 6. Compaction of roadbed soil at km. 7+800.



Photo 7. Compaction at km 12+300 - km 15+750.



Photo 8. Earthworks for the embankment of road shoulder at km. 7+350.



Photo 9. Laying subbase course km 10+100-10+600.



Photo 10. Arrangement of sub-base at km 24+260-24+700.



Photo 11. Laying of asphalt concrete on section km 3+140 - km 5+000.



Photo 12. Bottom layer of asphalt concrete km 8+845-9+269 LHS.



Photo 13: Compaction of the asphalt base at km 3+140-km 3+700.



Photo 14: Bottom layer of 9 cm pavement at km 3+140-
km7+000.



Photo 15. Backfill compaction of culvert at km
20+670.



Photo 16: Backfill of pipe at km 16+150.



Photo 17: Fastening with a steel beam of bank bridge
abutment km 12+063.



Photo 18. Bridge construction completed.

34. The following works were carried out at Lot 2:

- Road widening. The road widening included roadside clearing and uprooting (Photo 19). The amount of work performed in reporting period was 49.2%, since beginning of Project - 55.6%;
- Removal of existing asphalt (Photos 20-21). The volume of performed works for reporting period amounted to 38.6%, since the beginning of Project - 86%;
- Preparation of the existing roadbed: loosening, leveling and compaction with wetting (Photos 25, 26). The volume of performed works for reporting period was 11%, and since beginning of the Project - 24%;
- Earthworks: soil compaction, leveling of the earth layer and embankment arrangement (Photos 27-29). The volume of works performed during reporting period was 45%, and 76% since the beginning of Project;
- Arrangement of road clothes: bedding layer, base layer (base), bottom layer of asphalt concrete (photo). The amount of work performed for reporting period on laying: the bedding layer is 48.9%, since the start of the Project - 48.9%; base course - 23.4%, since start of Project - 23.4%; bottom asphalt concrete layer 9 cm - 15.6%, since start of Project - 15.6%.
- Construction of culverts with a diameter of 1 m: in amount of 13 pcs. - The construction of 1-m diameter culverts: the number of 13 culverts is 95% completed, there are still reinforcement works; six culverts are under construction (excavation of excavation, pouring of foundation, installation of header and links, waterproofing, backfill (photo 29-). The volume of work performed during reporting period was 28.4%, since beginning of Project - 37%;
- Ak-Uchuk River Bridge at km 86+261: foundations and supports to bridge openings have been poured. Waterproofing works on bridge foundations are in progress.
- Zharkurumdu River Bridge, km 88+795: the foundation under bridge piers has been poured, concrete pouring of piers #1 to opening of bridge has been completed and concrete pouring of piers #2 is in progress (photo).



Photo 19: Section after widening and shaping of roadway at km 78+840.



Photo 20. Removing existing asphalt pavement at km. 81+460-81+500.



Photo 21. Removing existing asphalt pavement at km. 74+550.



Photo 22: Road shoulder embankment at km.



Photo 23: Earthworks at km. 85+430



Photo 24. Arrangement of embankment of road shoulder.



Photo 25. Alignment of ground layer.



Photo 26. Earthworks of km. 76+540.



Photo 27. Works on laying base course km 80+660 - 81+260.



Photo 28. Laying of asphalt base at km71+880-72+640 (RHS).



Photo 29. Preparation of bedding material at km 81+720-km 82+300.



Photo 30. Backfilling of the in/out pipe km 80+100.



Photo 31: Installing the headers at km 78+772.



Photo 32. Pouring of the bridge abutment at km 88+795.

Territory of production site.

35. An asphalt concrete plant and a crushing plant for Lot 1 (photo 33) are located at section of project site Balykchy km 0 - km 43 at 16 + 200 km RHS of road at 50m distance (Figure 6). All necessary permits / approvals from local authorities, and the approval of the State Committee for Ecology and Climate have been received.



Figure 6. Location of ACP and SCP production facilities.



Photo 33. Production base on Lot 1.

36. Contractor's camp for Lot 1. The Contractor's camp for Lot 1 is located on section of project site Balykchy km.0 - km.43 at 16 + 100 km, RHS of the road 50m distance, with an area of 4.5 hectares (photo 34). All necessary documents / approval from local authorities, and approval of the State Committee for Ecology and Climate have been received.

37. The workers' camp is designed for 45 people. The camp consist of: office, first-aid post, rooms for workers, place for namaz (namazkana), canteen. A water tank is installed on the territory of the camp, where fresh drinking water is brought from a well located next to the camp. For used wastewater, a sealed septic tank is organized. The removal of wastewater is carried out as the septic tank is filled, by a specialized company for treatment facilities, which are located in the city of Balykchy. During reporting period, sanitary condition of camp area, living and working areas in good condition (Photos 35-42).



Photo 34. Location of camp construction workers km 16+100

38. Contractor's camp for Lot 2. The contractor's camp for Lot 2 is located on section of project site 2A "Kochkor-Epkin" at 81 km, 250 meters from project site, with an area of 4.5 hectares (picture 7). All necessary documents / approval from local authorities, and approval of State Committee for Ecology and Climate have been received. The area of the camp is fenced and landscaped with tree planting. Camp area includes: an office, a first-aid post, rooms for workers, a parking lot for construction equipment, a dining room with a kitchen unit. Each living room has a bathroom, a shower room. Water is supplied to the camp through pipes from an underground water well located next to the camp. For used wastewater, a sealed septic tank is organized. The removal of wastewater is carried out as the septic tank is filled, by the specialized company "Kochkor Tazalyk". During reporting period, sanitary, living and working areas was in good condition (Photos 43-50).

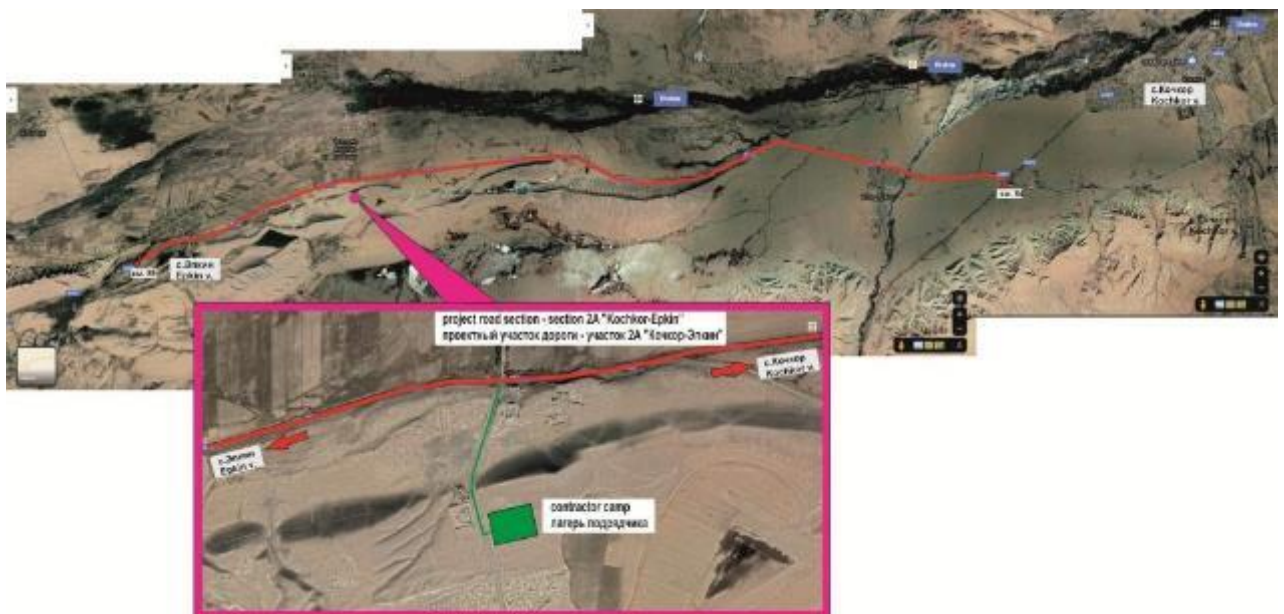


Figure 6. Map of Contractor's camp location on Lot 2.

Photos of Contractor's camp.

Lot 1.



Photos 35, 36. Lot 1. Camp area.



Photo 37, 38. Arrangement of the camp.

Photo 39. Medical Unit.



Photo 40. Office.

Photo 41. Kitchen.

Photo 42. Dining Room.

Lot 2



Photo 43. Location of CSU production base in foreground and Contractor's camp in background.



Photo 44, 45. Lot 2. Contractor's camp area.



Photo 46. Conference room.



Photo 47. Medical unit. Vaccination of employees.



Photo 48, 49. Kitchen.



Photo 50. Canteen.

39. Trees management. In 2020, Contractor jointly with Consultant carried out work on marking the road axis and road bed boundaries (including road slope). Determined number of trees falling under "forced" felling 1909 trees falling under the "forced" felling were identified, of which: 160 pcs for Lot 1 and 1749 pcs for Lot 2.

40. To preserve existing greenery, Consultant jointly with Contractor carried out an additional study of design set out points, which actually reduced the number of trees falling under the "forced cutting", in particular, 519 trees were preserved.

41. On Lot 1 cut down 122 trees. Cutting is completed in 2020. On Lot 2 actually felled trees 1268 pcs. The total number of trees cut down was 1,390 pcs. Cutting is completed in 2020. No trees were felled during the reporting period. The felled trees were transferred to the aiyl okmotu, an Act of transfer was drawn up.

42. As a compensation, new tree saplings will be planted at 1:2 ratio (two new trees will be planted instead of one cut tree). During 2022, Consultant with Contractor will identify areas where new trees will be planted during 2022. If necessary, areas for planting will be agreed with the Aiyl Okmotu.

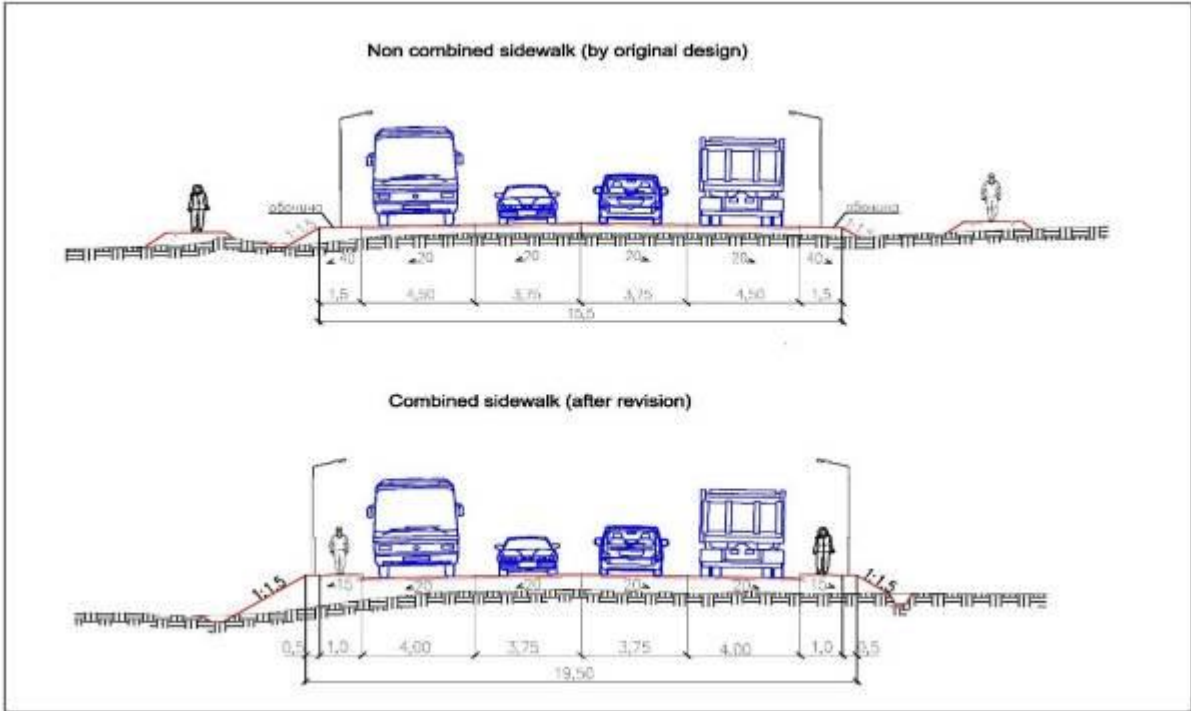
43. During reporting period, environmentalists of Consultant and Contractor jointly visited nurseries in Kochkor to familiarize with selection of tree seedlings for planting to replace cut down trees.

44. Staff information. In the reporting period, Contractor mobilized 311 people, including 15 foreign personnel (management, engineer, office manager) and 269 local personnel, including the personnel of the contracted companies involved. Below is a breakdown by local personnel of the Contractor and subcontractor involved in the project section.

Personnel	Contractor SINOHYDRO	«Arek stroy» LLC	«Jagylmai» LLC
Engineer / Technician	17	26	12
Operators and drivers	24	68	23
Qualified labor	9	34	10
Unskilled labor	11	29	7
Others	5	18	3

2.4 Description of Any Changes to Project Design.

45. To minimize impact on private plots in Kok-Jar, Chekildek and Epkin Lot-2 villages, the design of sidewalks was modified. The sidewalk width was combined by 1.0 m on road sections in these villages (see Figure 8). As a result of revised sidewalk design in three villages, the impact was reduced to 864.38 m2 from original total area of 3506.4 m2.



Picture 7. The scheme of combined sidewalk.

2.5 Description of Any Changes to Agreed Construction methods.

46. No changes were made in construction methods.

3. ENVIRONMENTAL SAFEGUARD ACTIVITIES.

3.1 General Description of Environmental Safeguard Activities.

47. Within the authority of the local environmental specialist of the Construction Supervision Consultant "Roughton International Ltd." and the sub-consultant "RAM Engineering Associates LLC" during the reporting period regularly monitored the implementation of the EMP and SSEMP requirements during construction works on sections of the Balykchy road km. 0 + 000- 43 + 000 and Kochkor-Epkin. Participated in instrumental monitoring. Participated in and conducted trainings on SSEMP implementation. The specialist has visited the site more than 30 times. During site visits, special attention was paid to visual monitoring of environmental components condition (water, air, soil) and the implementation of mitigating measures for environmental impact during construction works, quarrying process and waste disposal in the environment. During the reporting period, the environmental specialist of the PIG MOTC also visited the project site to be able to conduct visual monitoring for compliance with the requirements of the contractor.

48. Site inspection by a local environmental specialist was conducted jointly with Contractor's environmental specialist. During the reporting period, when environmental problems were identified, the Consultant warned the Contractor verbally or in written form regarding the necessity to eliminate violations within the specified terms, explanatory work was also conducted at places as well as trainings for employees who commit violations and those responsible for EMP and SSEMP implementation.

3.2. Site Audits.

49. The Engineer's and Contractor's ecologist jointly conducted visual monitoring of the construction sites. The dates of the inspections are in the table below.

Table 1. Dates of conducted site inspection.

No	Date	Auditor name	Purpose of audit	Summary of any significant findings
July				
1	01.07.2021	Akhmatova N. Beishev I.	Monitoring of construction sites for Lot 1 with the Contractor's environmental specialist	Visual monitoring of all construction sites, disposal of unusable soil, quarries and monitoring of the environmental documentation of the Contractor. Collecting information for the monthly report.
2	02.07.2021	Akhmatova N. Beishev I.	Monitoring of construction sites for Lot 2 with the Contractor's environmental specialist	Visual monitoring of all construction sites, unusable soil dumps, quarries and monitoring of the Contractor's environmental documentation.
3	05.07-14.07	Akhmatova N.	Monitoring of construction sites on Lots 1 and 2 with the	Visual monitoring of all construction sites, unusable soil dumps, quarries. Collection of

		Beisheev I.	Contractor's ecologist	materials and preparation of semi-annual report
August				
4	02-06.08.2021	Akhmatova N. Beisheev I.	Monitoring of construction sites on Lots 1 and 2 with the Contractor's ecologist	Visual monitoring of all construction sites, disposal sites, quarries and monitoring of the Contractor's environmental documentation.
September				
5	02-03.09.2021	Akhmatova N. Beisheev I.	Monitoring of construction sites on Lots 1 and 2 with the Contractor's ecologist	There was dust formation on the section of the road with a dirt surface at km 86+200 - 86+250 on Lot 2. There was contamination of the territory of the production base with oil products on Lot 2. - which was eliminated.
6	27-28.09.2021	Akhmatova N. Beisheev I.	Monitoring of construction sites on Lots 1 and 2 with the Contractor's ecologist	Verification of the Contractor's implementation of previously issued recommendations to eliminate the violation. Preparation of monthly and quarterly reports.
October				
7	04-08.10.2021 г	Akhmatova N. Beisheev I.	Monitoring of the Contractor's performance of the SSEMP	Visual monitoring of construction sites, production bases, quarries, dumps.
8	27-28.10.2021 г	Akhmatova N. Beisheev I.	Monitoring of the Contractor's performance of the SSEMP	Daily visual monitoring of all construction sites, production bases, quarries on Lot 1 and Lot 2. Preparation of monthly report.
November				
9	02-05.11.2021 г.	Akhmatova N. Beisheev I.	Monitoring of the Contractor's performance of the SSEMP	Visual monitoring of all construction sites, production bases, quarries, dumps.
10	08-12.11.2021	Akhmatova N. Beisheev I.	Monitoring of the Contractor's performance of the SSEMP	Visual monitoring of all construction sites, checking the elimination of violations identified earlier.
December				
11	02-03.12.2021 г.	Akhmatova N. Beisheev I.	Monitoring of construction sites, production bases, quarries, dumps together with the Contractor's ecologist	Monitoring of construction sites, production bases, quarries, dumps on Lot 1 and Lot 2

12	06.12.2021 г.	Akhmatova N. Beisheev I.	Monitoring of the Contractor's performance of the SSEMP	Monitoring of construction sites, production bases, quarries, dumps on Lot 2. Collection of information for the preparation of the semi-annual report.
13	07.12.2021 г.	Akhmatova N. Beisheev I.	ADB Mission, online. Instrumental monitoring of water and air quality on Lot 2	
14	08.12.2021 г.	Akhmatova N. Beisheev I.		training on environmental safety and enforcement of SSEMP on Lot 1
15	09.12.2021 г.	Akhmatova N. Beisheev I.		training on environmental safety and enforcement of SSEMP on Lot 2
16	10.12.2021 г.	Akhmatova N. Beisheev I.	Site Inspection	Monitor Contractor's implementation of previously issued corrective actions to correct non-compliances with the SSEMP.

3.3 Issues Tracking (Based on Non-Compliance Notices).

50. During reporting period, if non-compliances identified, a verbal warning was initially given to Contractor with a deadline. A letter was sent in case if Contractor did not eliminate identified non-compliances. Table 5 reflects issues and non-compliances that took place during reporting period.

Table 5. Contractor's activities to eliminate SSEMP non-compliances

No п/п	Comments, non-compliances, recommendations	Corrective measures	Responsible Executor. Deadlines	Status of the previous Corrective measures execution Deadlines for non-compliance elimination
Lot 1				
1	The place of inspection, repair and oil replacement of transport and construction equipment is in open air, the area around inspection pit has no hard surface and is exposed to contamination by oil products during oil replacement work (photo 51).	Provide the construction of a specialized box for the inspection, repair, and oil replacement equipment. Arrange a warehouse for storage of fuels and lubricants (motor oil, waste oil).	Deadline is August 25, 2021.	Eliminated. (Photo 53, 54).
2	Wastewater collection	Provide a waterproof	Deadline is	Performed. Reinforced

No n/n	Comments, non-compliances, recommendations	Corrective measures	Responsible Executor. Deadlines	Status of the previous Corrective measures execution Deadlines for non-compliance elimination
	pit from concrete-mixing unit on the production base is waterproof	septic tank to collect wastewater from the concrete-mixing unit at the production base	November 25, 2021.	concrete rings installed.
3	Provide a quality hard surface of the diesel and bitumen storage area on the production site of the asphalt plant (photo 55).	To prevent soil contamination by petroleum products at the production site of asphalt plant	August 2021.	Eliminated. (Photos 56, 57, 58).
4	Protection of Lot 1 production base from possible mudflows by installation of mudflow diversion trenches is insufficient. There are sections of its separation, through which there is a risk of flooding by mudflows, which can lead to destruction of production site, tech equipment and environmental damage through contamination with oil products in case of damage to storage tanks of fuel and lubricants, bitumen, etc.	Ensure that production site is adequately protected from mudslide hazardous runoff entering its territory.	Contractor "Synohydro." Due by September 12, 2021. Extended until November 25, 2021.	Eliminated.
Lot 2				
5	An additional diesel fuel storage tank was installed in fuel depot without measures to collect diesel fuel in case of an emergency leak/spill (photo 59).	Under tank area where possible fuel leaks (place where hose is connected to tank) - must have a hard waterproof surface, fenced along perimeter with a 200 mm high rim. A container for collecting emergency fuel spills should be installed. The capacity of this container should not be less than capacity of fuel storage tank (Construction standards of the Kyrgyz Republic "Filling stations" dated 12.11.2018).	Deadline is November 25, 2021. Extended until March 2022.	Not Fulfilled. Inability to perform concrete work because of cold weather. Contractor undertook to ensure performance by end of March 2022.

No n/n	Comments, non-compliances, recommendations	Corrective measures	Responsible Executor. Deadlines	Status of the previous Corrective measures execution Deadlines for non-compliance elimination
6	Lot 2, during development of open pit km.71+500 and 81+200, the industrial safety requirements are not observed in terms of ensuring stability of pit's slopes: there is a risk of collapse, i.e. the slope angle of pit's slope is 90°, according to "Methodological instructions for determining slope angle of slopes, benches and dumps, pits under construction and in operation, is 70° - which provides stability of slopes (photo 60).	Contractor was issued Instructions on need to ensure stability of pit walls during quarrying (letter KGZ4267/02/01/JPL/109 dated 23.11.2021).	Continuously throughout development period	Eliminated. Quarry at km 81+200. Quarry km 71+500 stability of quarry sides is not ensured. Stability works have been started and will be completed by spring.
7	To prevent soil contamination with petroleum products, ensure storage of tanks with fuel and lubricants on a waterproof and oil-proof surface and under a shelter to protect from precipitation	Accelerate construction of warehouse	Contractor "Synohydro. Deadline to May 25, 2021. Deadline extended to August 25, 2021.	Eliminated (Photo 61, 62)
8	Emissions of pollutants from technological equipment of asphalt concrete plant where sealing damaged on connecting hoses (photo 63, 64).	Inspect connection hoses, shutters, joints on technological equipment of concrete mixing plant and ensure their sealing	Deadline is urgent.	Partially completed. Works in progress. Asphalt concrete plant is stopped for winter period, during which all repair works on technological equipment will be carried out.
9	Pollution of territory by oil products (photo 65)	Ensure that area is cleaned up	As a matter of urgency	Eliminated (Photo 66)
10	There is no specialized place for inspection, repair and oil changes.	Ensure construction of a specialized box for inspection, repair and oil	Until August 25, 2021.	Eliminated. (Photo 67).

No n/n	Comments, non-compliances, recommendations	Corrective measures	Responsible Executor. Deadlines	Status of the previous Corrective measures execution Deadlines for non- compliance elimination
		change of equipment.		
11	There are expired fire extinguishers on production bases of Lot 1 and Lot 2.	Inspect all fire extinguishers and replace expired ones	Urgent.	Eliminated



Photo 52. An open-air observation pit.



Photo 53. Machine repair box and nearby container for storing used oil.



Photo 54. Concreted inspection pit inside the box.



Photo 55. Storage area for tanks with bitumen and diesel fuel.



Photo 56, 57, 58 Provided asphaltting and concreting of production site and warehouses of fuel and bitumen at asphalt plant.



Photo 59. Warehouse of fuel and lubricants on Lot 2.



Photo 60. Lot 2. Quarry km 71+500.



Photo 61, 62. Warehouse storage of fuel and lubricants and waste oil on Lot 2.



Photo 63 and 64. Lot 2. Emissions from the damaged sections on the connection hoses.



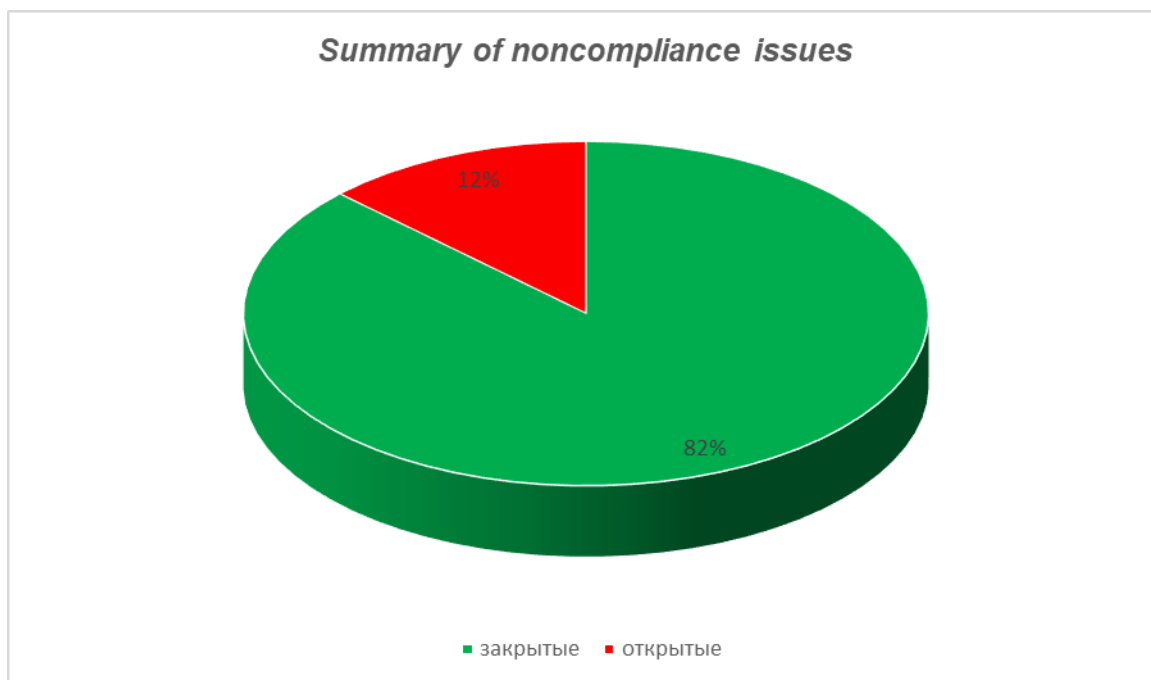
Photo 65 before cleaning and photo 66 after.



Photo 67. Specialized area for the inspection and repair of transport and construction equipment.

Summary of non-compliances based on current period notifications.

Total number of nonconformities	11
Number of closed nonconformities	9
Percentage of closed items	82 %
Nonconformities discovered during reporting period	2
Nonconformances closed during the reporting period	9



closed open

Summary of non-compliances for the previous reporting period.

Number of open non-conformities	2
Number of closed nonconformities	2
Percentage of nonconformities closed	100%

3.4 Trends.

51. In reporting period there were 11 non-compliances, of which 9 were resolved during reporting period, 1 was not resolved and 1 was partially resolved. One non-conformance is related to fact that fuel storage warehouse (Lot 2) does not provide protective measures in case of possible emergency leaks, spills. Corrective actions for safety in case of emergency diesel fuel spills were prescribed to Contractor to eliminate. Concrete pit devices to collect emergency spills should be constructed. Due to lower winter temperatures, the concreting work was postponed until March 2022. The second non-conformance is related to sealing of technological equipment and damage to connection hoses of ACP used for emission of pollutants into atmosphere. Contractor partially completed prescribed work. The operation of asphalt plant is suspended for winter period, during which it will be repaired.

3.5 Unanticipated Environmental Impacts or Risks.

52. There were no unexpected environmental impacts or risks during the reporting period.

4. RESULTS OF ENVIRONMENTAL MONITORING.

4.1. Overview of Monitoring Conducted during Current Period.

53. Instrumental monitoring, for reporting monitoring, was carried out in accordance with Monitoring Plan for quality of environmental components (water, air, noise, vibration), reflected in SSEMP. The list of socially sensitive receptors and objects of increased environmental sensitivity is shown in the table below.

Table. Sensitive recipients for each Lot

Lot 1:	Lot 2
<ul style="list-style-type: none"> • Balykchy town. High road, beginning of the section km 0 + 000 - 0 + 300 • Tash-Sarai village, km. 11+000 • Chu river, Tash –Sarai village (bridge), km 11+500 • Irrigation ditch, km 12+055 • Chu river, gauging station, bridge, km 42+600 • Production base km 16+600 • 	<ul style="list-style-type: none"> • Kok-Jar village at km 65+985 • Chekildek village 70+003L • Epkin village, next to mosque km 86+540 • Production base at km 81+500 • Joon-Aryk river km 65+410 • Sazdyn Suusu river km 86+261 • Mukandyn suusu river km 68+044 • Kok-Jar river cemetery km 68+000 • Cemetery Chekildek village km 69+800 • Cemetery Cholpon village km 82+800

54. The Contractor provided instrumental monitoring of: noise and vibration levels in August, October and December; the quality of environmental components (water, air) in October and December (68-70). The results of laboratory analyses and instrumental measurements are given in Tables 6 and 7.



Photo 68 and 69. Measurements of air quality in Chekildek village and quarry 71+500.



Photo 69. Lot 2. Water sampling from Sazdyn-Suusuu km. 86+261.



Photo 70. Measurements of vibration and noise levels.

55. Air quality was determined by the following indicators: sulfur dioxide, nitrogen dioxide, carbon monoxide and suspended substances. According to results of air quality analyses, the values for the above indicators were within established MPCs. There is no negative impact of construction works on environment. Exceedances are not related to construction works and are background values. Except for concentration of suspended substances in air at production base of Crushing and Screening Unit Lot 2, which exceeded MPC by 6.5 times. The reason is that measurements taken in a strong wind, picking up dust from ground, which is typical for this region in windy weather. Dust suppression at the crushing plant is carried out by watering when loading the material into the bunker. For these purposes, the contractor laid a pipe through which water is supplied to the crushing plant. In general, there is no negative impact of construction works on the air in reporting period. The Contractor was recommended to suspend Crushing and Screening Unit operations during strong winds and provide dust suppression at production site and on surface of bulk construction materials.

In December, according to test results, excesses of MPC on nitrogen dioxide from 1-2 times were detected in settlements (Balykchy town, Kok-Zhar village) located along project road in sampled atmospheric air. These exceedances are not related to construction activities, since they have not yet been started at these sites. The excess of nitrogen dioxide concentration in air may be related to winter heating period, inhabitants of these settlements use coal.

56. Surface water quality along and crossing project road was determined by: transparency, suspended solids, petroleum products, BOD5. According to the results of chemical analyses, the concentration of pollutants in water in all selected samples does not exceed MPC established for water bodies of fishery and cultural and domestic category for all determined ingredients, except for water transparency indicator, which depends on season of year and is typical for this period and is not related to construction activities.

57. Noise and vibration levels. According to the results of instrumental measurements, the noise level during operation of company's vehicles and equipment in quarries and production bases, as well as during construction works on road is within established MPL. The vibration level of operating construction equipment was also within established limits, except for a road roller. During operation of road roller, the vibration level exceeded established MPL by 6 dB. To reduce level of vibration, Contractor is recommended to use a vibration-free road roller during construction works (Letter KGZ4267/02/01/L2/JPL/105 of 16.11.2021).

Table 6. Results of instrumental monitoring: December 2015 (baseline indicators) - June 2021 - August 2021 - October 2021 - December 2021

Location, name of the monitoring site	Monitoring period	CO mg/m ³	NO ₂ mg/m ³	SO ₂ mg/m ³	Dust concentration, mg/m ³	Noise level, dB	Vibration level
Regulatory maximum permissible concentration of pollutants		5	0.085	0.5	0.5	80	112
LOT 1							
70. Balykchy town 0+000 km Latitude 42°27'09 Longitude 76°09'37''	December 2015 (baseline indicators)		0,022±0,004	0,05±0,006	0,29±0,07	43,1	92,4
	June 2021 (baseline indicators)	0,4±0,08	0,082±0,021	0,008±0,002	0,073±0,015	68	96
	Aug 2021 (baseline indicators)					65	97
	Oct 2021 (baseline)		0,135±0,24	0,085±0,01	<0,2	79	91
	Dec 2021 (baseline)		0,164±0,03	0,05	0,228±0,057	70	95
71. Tash-Sarai village 11+000 km Latitude 42°22'14 Longitude 76°04'53''	December 2015 (baseline indicators)		0,027±0,005	<0,05	<0,26	40,2	91,7
	June 2021 (baseline indicators)	0,2±0,08	0,025±0,0063	0,004±0,001	0,4±0,08	57	87
	Aug 2021 (baseline)					65	88
	Oct 2021 (baseline)		0,09±0,016	<0,05	<0,2	70	92
	Dec 2021 (baseline)		0,053	<0,05	0,228±0,05	68	92

Location, name of the monitoring site	Monitoring period	CO mg/m ³	NO ₂ mg/m ³	SO ₂ mg/m ³	Dust concentration, mg/m ³	Noise level, dB	Vibration level
Regulatory maximum permissible concentration of pollutants		5	0.085	0.5	0.5	80	112
72. Production base (Asphalt plant, crushing plant) Quarry km 16+600 Latitude 42°22'14 Longitude 76°04'53''	June 2021 (baseline indicators)	0,7±0,14	0,033±0,0083	0,006±0,0015	0,012±0,0024	62	93
	Aug 2021						90
	Oct 2021		0,05	<0,05	0,25	65	94
	Dec 2021		0,087	<0,05	0,19	58	87
Quarry km 7+100 Latitude 42°40'60 Longitude 76°09'32''	June 2021 (baseline indicators)					58	90
	Aug					50	91
	Oct					47	77
	Dec					70	90
Quarry 9+000 Latitude 42°38'89 Longitude 76°09'86''	June 2021 (baseline indicators)					46	90
	Aug					49	90
	Oct					47	77
	Dec					62	94
Quarry km 26+800 Latitude 42°29'36	June 2021 (baseline indicators)					51	85
	Oct					54	87

Location, name of the monitoring site	Monitoring period	CO mg/m ³	NO ₂ mg/m ³	SO ₂ mg/m ³	Dust concentration, mg/m ³	Noise level, dB	Vibration level
Regulatory maximum permissible concentration of pollutants		5	0.085	0.5	0.5	80	112
Longitude 76°09'94"	Dec 2021		0,02	0,05	0,2	52	91
LOT 2							
73. Kok-Jar village km 65+985 Latitude 42°19'17" Longitude 75°65'33"	December 2015 (baseline indicators)		<0,02	<0,05	<0,26	57	90
	June 2021 (baseline indicators)	0,3±0,06	0,018±0,0045	0,003±0,0008	0,012±0,0024	51	88
	Aug (baseline)					49	83
	Oct (baseline)		0,042	<0,05	<0,2	63	90
	Dec (baseline)		0,167	005	0,347	53	94
74. Chekildek village km 70+003 Latitude 42°19'44" Longitude 75°60'80"	December 2015 (baseline indicators)		0,023±0,004	<0,05	0,028±0,07	68,1	91,1
	June 2021 (baseline indicators)	0,3±0,06	0,018±0,0045	0,003±0,0008	0,103±0,021	56	85
	Aug (baseline)					59	94
	Oct (baseline)		<0,02	<0,05	<0,2	62	91
	Dec (baseline)		0,072	<0,05	0.27	60	96
76. Production base Quarry 81+200 Latitude 42°18'50"	December 2015 (baseline indicators)						
	June 2021 (baseline indicators)	0,5±0,1	0,016±0,004	0,004±0,001	0,109±0,022	83	98

Location, name of the monitoring site	Monitoring period	CO mg/m ³	NO ₂ mg/m ³	SO ₂ mg/m ³	Dust concentration, mg/m ³	Noise level, dB	Vibration level
Regulatory maximum permissible concentration of pollutants		5	0.085	0.5	0.5	80	112
Epkin village km 86+000 east side of the road Longitude 75°47'84" Latitude 42°10'24" Longitude 75°25'21"	Aug 2021	0,4				72	84
	Oct 2021	0,6	0,078	0,155	3,24±0,81	74	84
	Dec 2021	0,85	0,02	0,05	<0,2	65	93
	June 2021 (baseline indicators)					46	88
	Aug 2021					53	88
	Oct 2021	0,88	0,028	<0,5	0,02	61	83
	Dec 2021	0,92	0,056	<0,05	0,308	65	89
Quarry 75 + 400 near the house st. Orkoshov M, 30 Latitude 42°19'27" Longitude 75°54'45"	Aug 2021					52	98
	Oct 2021					67	83
	Dec 2021		0,012	0,05	0,347	69	90

Table 7. Results of laboratory research of surface water quality.

Sampling location	Selection period	Transpare ncy, cm	Petroleum products	BOD 5, mgO ₂ / dm ³	Weighted substances, mg / l	Notes
MPC for reservoirs household life category		Not less than 20	0,3**	2-4**	increase 0,25/0,75	
Lot 1						
148. Chu river	December 2015 (baseline)	41	<0,05			
	June 2021 (baseline)	24	0,012	1,3	3,2	
	Oct 2021 (construction in progress)	24	0,07	1,29	0,8	
	Dec 2021	15	0,066	2,0	13	
149. Irrigation ditch	June 2021 (baseline)	26	0,02	2,5	3,0	
	Oct 2021 (construction in progress)	25	0,15	1,23	0,6	
	Dec 2021	There was no water				
150. Chu river, gauging station Orto-Tokoy reservoir km. 42 + 600	December 2015 (baseline)	37	<0,05	0,3	3,0	Baseline measurements in 2015
	June 2021 (baseline)	23	0,017	1,1	3,4	
	Oct 2021	22	0,04	0,3	0,8	
	Dec 2021	20	0,048	3,2	18,0	
Lot 2						
151. Joon-Aryk river km.65 + 410	December 2015 (baseline)	40	<0,05			Baseline measurements in 2015
	June 2021 (baseline)	>50	0,03	1,4	1,4	
	Oct 2021	40	0,04	1,24	0,6	
	Dec 2021	13,4	0,05	1,4	18,4	
152. river Sazdyn-Suusuu km. 86 + 261	June 2021 (baseline)	39	0,026	0,3	3,0	
	Oct 2021	>50	0,07	0,46	7,6	
	Dec 2021	18	0,062	1,5	15,2	
153. Mukandyn-Suusuu river Km. 68 + 044	June 2021 (baseline)	10	0,026	1,1	20	
154. Zhar-Korundu river	June 2021 (baseline)	39	0,022	2,5	0,6	Color exceeding is not related to the impact of construction work

	Oct 2021	35	0,04	3,8	0,4	
	Dec 2021 above road	14,2	0,05	4,6	26	
	Below road	2,5	0,042	2,3	30	

4.2. Trends.

58. In reporting period, instrumental monitoring of air, water, noise and vibration quality was carried out in areas of construction works. The Consultant continuously interacted with Contractor and achieved Contractor's responsibility for environmental protection. There is a decrease in recurrence of previously identified non-compliances by the Contractor.

4.3. Summary of Monitoring Outcomes.

59. In reporting period, instrumental measurements of noise and vibration levels were made in August, October and December. Quality of environmental components (atmospheric air, water) in October and December. The instrumental monitoring of air and water quality planned for August was not provided, because State Environmental Laboratory of Bishkek-Chui Territorial Department of SAEPF is reorganized into Department of Environmental Monitoring under State Committee on Ecology and Climate. Laboratory staff could not visit to the sites (Letter of the Department of Environmental Monitoring #13 dated 11.12.2021). Based on instrumental studies results the conclusion is that construction works has not negative environment impact, since the concentrations of substances in air and water in terms of defined components are within established MPC, and the existing concentration exceedances are not related to construction activities.

4.4 Material Resources Utilization.

4.4.1 Current period.

60. Both camps of the contractor are provided with clean drinking water. For Lot 1, drinking water is taken from an underground well and brought to the contractor's camp, where it is loaded into a special container. Lot 2 is supplied with drinking water through pipes from an underground well located next to the camp. The Contractor has agreed with the local authorities on the sources (points) for water intake for the implementation of dust control:

- Letter of consent of the Kok-Jar village administration No. 319 dated July 21, 2020
- Letter of consent of the Cholpon village administration No. 405 dated June 20, 2020.

Table 8. Sources for water intake Lot 1 "Balykchy - km.43".

No	Water source.	GPS coordinates.
1	Orto-Tokoi reservoir	N 42* 12.765 E 075* 30.966
2	Orto-Tokoi reservoir	N 42* 18.315 E 075* 54.123
3	Orto-Tokoi reservoir	N 42* 17.739 E 075* 55.975
4	River Chu	N 42* 21.882 E 076* 03.894
5	River Chu	N 42* 22.324 E 076* 04.886
6	River Chu	N 42* 23.207 E 076* 05.868
7	River Chu	N 42* 23.831 E 076* 05.939

Table 9. Sources for water intake Lot 2 "Kochkor-Epkin".

No	The name of the reservoir	GPS coordinates.
1	Joon-Aryk	N 42* 10.394 E 075* 25.194
2	Mukandyn Suusu	N 42* 10.394 E 075* 39.708
3	Chekildektin Suusu	N 42* 11.852 E 075* 37.128
4	Sazdyn Suusu	N42*09.753 E075*23.393
5	Sazdyn Suusu	N42*09.798 E075*23.576
	Tarmal Saz	N42*11.266 E075*34.744

4.4.2 Cumulative Resource Utilization

61. During reporting period, Contractor identified 5 additional quarry sites. For Lot 1, 4 quarries - on km. 31+240 at a distance of 220 m from road, km. 34+240 at a distance of 325 m from road, km. 36+560 at a distance of 160 m from road; km. 39+450 at a distance of 520 m from road; km. 43+400 at a distance of 40 m from road and one for Lot 2 km.89+093 and necessary permitting documents were obtained for these quarries: agreement from local authorities, from archaeologist, Permit No.03-5/682 of 20.12.2021 from State Agency for Subsoil Use Geology was obtained.

62. As of December 22, 2021, Contractor has at its disposal 22 quarries for construction materials. All necessary documents/approvals from local authorities, state environmental authority and SCER for their development. Table 10 shows the main characteristics of quarries.

Table 10. Characteristics of quarries.

No	Quarry	Reserves (m ³)	Area (Га)	Distance from road	Quarrying conducted yes/no
Lot 1					
1	km. 5+500	600 000	5,09	430 м.	Yes
2	km. 7+100	164 000	4,1	122 м.	Yes
3	km. 7+200	195 200	4,88	122 м	No
4	km. 9+000	380 000	7,6	25 м.	No
5	km. 11+300	76 000	1,9	50 м	No
6	km.16+600	1 744 000	43,6	42 м	Yes
7	km. 16+600	51 000	12,84	42 м	-
8	km. 19+360	66 500	22,16		
9	km. 20+600	65 600	1,64	120 м	No
10	km. 22+700	380 000	9,5	37 м	No
11	km. 26+800	488 000	12,2	80 м	No
12	km. 33+000	609 000	20,3	25 м.	No
13	km. 31+240	225 200	5,63	220 м.	New
14	km. 34+240	245 600	6,14	325 м.	New
15	km. 36+560	160 000	4,0	160 м.	New
16	km. 39+450	164 000	4,1	520 м.	New
17	km. 43+400	124 000	3,1	40 м.	New
Lot 2					
18	km. 71+500	-	5,2	5 м.	Yes
19	km. 75+400	108 000	2,7	30 м.	Yes
20	km.81+200	-	5,6	50 м	Yes
21	km. 86+000	85 000	2,0	20 м	Yes
22	km. 89+093	105 145	0,77		New

4.5 Waste management.

63. The following wastes are generated in course of main and auxiliary economic activities in road reconstruction:

- unusable soil;
- removed old pavement of asphalt concrete;
- wastewater and solid domestic waste generated during activities of personnel at construction camp

64. Contractor has all necessary permits from relevant state agencies (aiyl okmotu, territorial environmental authorities) for disposal of unusable soil dumps in environment (Table 11) and old asphalt concrete in old pits (Table 12) in accordance with the Landfill Plan, agreed with the Territorial Department of Environmental Protection of SCER KR

Lot 1. km. 12 + 000 (letter of consent of Kok-Moynok village administration No. 465 of 10.16.2020. Permit of the Issyk-Kul territorial administration of the State Agency for Environmental Protection and Forestry for disposal of waste in the environment No. 005952 dated 19.10.2020, No. 005967 dated 20.05.2021) ...

Lot 2. km. 80 + 900 and km 89 + 090 (Permit of the Naryn Territorial Department of Environmental Protection No. 02-4 / 682 dated 03.11.2020, Letter of consent of Cholpon village administration No. 662 dated 29.10.2020, Permit of Kochkor Forestry Development Department Forest ecosystems No. 02-2 / 71 dated 27.04.2021).

Table 11. Dumps of unsuitable soil

№	Dumps	Area, m²	Distance from the road
1	km 12+000	12500	100m LHS
2	km 40+360	10645	30m LHS
3	km 71+640	3850	12 LHS
4	km 71+860	2069	12 LHS
5	km 80+900	4200	70 m LHS
6	km 89+090	12000	60m RHS

Table 12. Dumps of old asphalt.

№	Dumps	Area, m²	Distance from the road
1	Km 7+000	1,04	50m RHS
2	Km 20+100	18,3	50m RHS
3	Km 21+260	4,87	50m RHS
4	Km 32+720	0,41	150m LHS
5	Km 38+660	2,61	100m LHS
6	Km 40+200	3,99	100m LHS
7	Km 40+360	10,64	LHS
8	Km 70+180	1,88	400 RHS
9	Km 89+090	1,2	80m RHS

65. During reporting period old asphalt removed at Lot 1 in amount of 23750 m³ and transported to following authorized areas: dump at km 7+100 - 6400 m³, km 19+960 - 6720 m³. 19+960 - 6720 m³, km 21+260 - 6314 m³, km. 32+800 - 4316 m³.

66. Old asphalt at Lot 2 in volume of 6958 m³ was transported to following sites: to dump at km 70+180 - 1227 m³, km 89+090 - 1271 m³, was used for landscaping of peripheral roads in Cholpon and Epkin villages in volume of 3302 m³ and was laid on technological road leading to crushing and screening plant and asphalt concrete plant - 1157 m³.

67. Solid domestic waste is removed (photo 70) and disposed at municipal landfill in Balykchy and Cholpon villages. Wastewater is transported (photo 71) to treatment facilities of Balykchy in accordance with contract with municipal enterprise of Balykchy - "Gorvodokanal".



Photo 71. Solid waste disposal and photo 72 wastewater disposal from the production base of Lot 1.

4.5.1 Current period.

68. In reporting period, soil waste was formed on the Lot 1 section when road was widened. Unsuitable soil was taken out to dump area km. 40 + 360. Unsuitable soil hazard class - V. The volume of unusable soil waste in reporting period was 1325 m³. Unsuitable soil from sections is removed and stored in special places, allocated by local administration and obtained permission from environmental authorities.

69. In reporting period, soil waste was formed on Lot 2 section when road was widened. Unsuitable soil was taken to dump area km. km 70+180, km 71 + 640, km 71 + 860 and km 89+090. Unsuitable soil hazard class - V. The volume of unusable soil waste in reporting period was 16583 m³.

70. The solid waste was generated from activities of workers living in camp. The solidwaste belongs to hazard class IV and is disposed in Balykchy municipal landfill. Solid domestic waste in Lot 2 is transported from construction camp to Cholpon aiyl okmotu municipal landfill. The volume of solid domestic waste in reporting period at Lot 1 was 690 kg, at Lot 2 - 720 kg.

4.5.2 Cumulative Waste Generation

71. During reporting period, the following wastes were generated under Project:

- Waste of unusable soil on Lot 1 was taken to agreed areas of dumping.
- Solid household waste on Lot 1 and Lot 2 were taken to the sanctioned solid waste landfill in Balykchy city of the "Improvement and sanitary cleaning" Municipal enterprise

4.6 Health and safety.

4.6.1 Public health and safety.

72. During reporting period, there were no incidents or accidents related to construction activities that could lead to problems for public health and safety. Warning signs and information boards were installed at the work sites

4.6.2 Health and safety of workers.

73. During reporting period, there were no accidents or diseases among Contractor's working personnel. Workers' accommodation camps on Lots 1 and 2 are maintained in good condition and comply with hygienic and sanitary standards (Photos 35-50). Good living conditions have been created for workers. Contractor provided workers with disinfectants, antiseptics and personal protective equipment (masks, respirators, gloves), also disinfectants and antiseptics were installed in all public places (Photo 73).

74. In the camp on Lot 1 and Lot 2 there are conditions for personal hygiene: there is a bathroom with a shower bathroom with a shower, personal hygiene products in each room. Provided "entry" and daily temperature control with registration in the Logbook. Hospitals in Balykchy and Kochkor villages. Kochkor concluded agreements for the provision of medical services. Contractor complies with the "Plan of response, prevention and prevention of spread of COVID-19". In September vaccination of 99% of employees on Lot 2 was carried out (photo 74). During the reporting period, COVID-19 was not recorded among the personnel of the contractor and consultant.



Photo 73. Lot 1. Antiseptics Photo 74. Vaccination of employees on Lot 2.

75. That poster later was posted on Contractor's camp for Lot 1 and Lot 2:

- Structure of the safety management organization. Responsible persons and their contact information.
- information posters on protective measures against COVID-19, safety precautions, first aid.
- fire shields and fire extinguishers installed.

4.7. Training.

76. During reporting period, following trainings were conducted:

- In September, Contractor provided training on safety, road safety and health issues (Photo 75).
- In November, International Road Safety Specialist of Construction Supervision Consultant conducted training (Photo 76) on "Traffic Management on Construction Site" for local specialists of Consultant, employees of Contractor and Subcontractor.
- December 8, 9 the local environmental specialist of Construction Supervision Consultant conducted training (Photos 77-78) for Contractor and Subcontractor Lot 1 and Lot 2 environmental and social protection during Project implementation; measures to prevent/mitigate adverse environmental impacts of Project works provided for in Site-Specific Environmental Management and Monitoring Plan (SSEMMP). Discussed the occurring violations and inconsistencies, possible risks of non-compliance with requirements on environmental safety, labor safety, road safety, health, sanitation and hygiene, adverse impacts on the health and safety of people and the environment.



Photo 75. Training on Lot 2.



Photo 76. Traffic safety training in the office on Lot 2.



Photo 78. Office training on Lot 1



Photo 78. Office training on Lot 2.

77. In next construction season 2022, Contractor must organize and conduct training for all personnel on industrial safety and use of PPE;

5. FUNCTIONING OF THE SEMP

5.1 SEMP Review.

78. The SSEMP prepared by the Contractor for both sites was approved by the MoTC KR for Lot 1 in October 2020 and for Lot 2 in November 2020. The SSEMP according to the requirement of (IEE) includes 14 separate annexes:

1. Emergency Management Plan;
2. Grievance consideration mechanism;
3. Occupational safety, health and hygiene plan;
4. Construction camp management plan;
5. Construction waste management plan;
6. Noise management plan;
7. Water quality management plan;
8. Air quality management plan;
9. Tree management plan;
10. Dust control plan;
11. Land Protection Management Plan;
12. Plan of environmental protection during the construction and reconstruction of bridges;
13. Quarry Management Plan;
14. Plan for the prevention and control of COVID-19.

A plan to prevent the spread of COVID-19 was developed additionally considering epidemiological situation.

79. During construction work, Contractor ensured implementation of mitigating measures for impact of construction work on environment in accordance with SSEMP:

- Removal of topsoil and vegetation layer and its storage in cavalier.
- Removal of unsuitable soil from excavations to dumps, ensuring that soil is stored and leveled at specially designated and agreed locations. All necessary permits for dumping were obtained by Contractor.
- Disposal of old asphalt concrete in accordance with Disposal Plan (Photos 79, 80).
- Use of waste old asphalt for peripheral roads of settlements located near road to be reconstructed (Photos 81-83).
- To improve dust suppression in reporting period Contractor used three additional watering machines, thus the number of machines became 10, including 4 machines Lot 1 (DONGFENG, each 8 m³ - 3 pcs. and Kamaz, V=16 m³ - 1 pc.) and 3 machines Lot 2 (DONGFENG, each 8 m³ - 2 pcs. and WOVO V=20 m³ - 1 pc.).
- To prevent dust formation during construction works, extraction of material in open pits, movement of transport on unpaved roads, water irrigation of unpaved areas of roadway, rock masses during open-pit mining was performed (Photos 84-91).
- The sanitary condition of production base area is satisfactory, all tanks are marked.

- The envisaged measures on mitigation of environmental impact during quarrying, provided by the Quarry Management Plan, are fulfilled, namely: the soil and vegetation layer is removed, the borders of the quarry area are marked, irrigation of excavated material and access roads to quarry is performed.
- The storage of materials meets environmental requirements (photo 92).
- The construction of roofed specialized bays for inspection, equipment repair and oil replacement is provided (photos 53, 67).
- Water intake for hydro-irrigation of road bed and technological needs is carried out only from approved water sources (photo 93).
- Drainage for the time of works is provided during installation of artificial structures (photo



94).



Photo 79, 80. Old asphalt dump at km. 7+100 left prior to placement (April 2021) and right after completion of old asphalt placement (Aug 2021).



Photo 81, 82. Improvement of peripheral street with old asphalt (laying and leveling) in Cholpon village



Photo 83. Improvement of internal roads in village of



Epkin
Photos 84, 85. Water sprinkling of unpaved road sections on Lot 2.



Photo 87. Water sprinkling of access roads to quarry and Photo 88 to production base of the CSU on Lot 2



Photo 89, 90. Watering the unpaved roadbed on Lot 1.



Photo 91. CSU work on Lot 2.



Photo 92. Storage of materials on Lot1.



Photo 93. Lot 1. Water intake from Chu River



Photo 94. Lot 2. Drainage from sections of new culverts km 86+220.

6. GOOD PRACTICE AND OPPORTUNITY FOR IMPROVEMENT.

80. Based on experience of other alternative projects and ongoing projects in Kyrgyz Republic, for successful completion of construction work, one of important aspects is to ensure communication with local population and representatives of village administrations. Taking this into account, the Contractor's personnel, jointly with the Engineer, need to work more closely with the local population to resolve quickly any emerging issues.

6.1 Good Practice.

81. Contractor has ensured that archaeological surveys of new sites planned for quarrying of construction materials are conducted to exclude impact on OICN.

82. Contractor complies with all preventive measures stipulated by COVID-19 Prevention and Avoidance Plan. On Lot 1 and Lot 2 there is "incoming" and daily temperature control with registration in Logbook.

6.2 Opportunities for Improvement

83. Contractor should be more responsible to environmental protection, occupational health and safety, and provision of PPE.

84. Carry out timely and in sufficient quantity water sprinkling of roadbed ground surface with ongoing construction works, as well as at crushing and screening plant. Suspend work at crushing and screening plant in case of strong windy weather.

7. SUMMARY AND RECOMMENDATIONS

7.1 Summary

85. In general, based on monthly inspections results and monitoring of construction sites, it should be noted that Contractor has done a positive job in mitigating and preventing negative

impact of works on environment. Most of identified violations and non-compliances were eliminated by Contractor within t specified time: 9 out of identified 11 non-compliances were eliminated. However, it was noted that Contractor delayed and postponed replacement of expired fire extinguishers and industrial safety when developing the open pit (the pit wall stability is not observed, which may lead to its destruction and collapse). To avoid repetition of "delay and postponement" on identified discrepancies, separate meetings will be extended with Contractor's managerial staff to establish faster communication.

7.2 Recommendations.

86. The contractor must provide workers with personal protective equipment in a timely manner. Do not allow workers without Personal protective equipment to access their workplaces (helmets, special footwear, eye protector, respiratory and hearing protection).