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MINISTRY OF TRANSPORT AND COMMUNICATIONS
COMMITTEE OF ROADS

CONSTRUCTION SUPERVISION OF THE ASPARA-BLAGOVESHENKA
SECTION IN ZHAMBYL OBLAST, INVESTMENT PROGRAM PROJECT4
(ADB Loan # L2735-KAZ, CAREC Transport Corridor I)



**BI-ANNUAL ENVIRONMENTAL
MONITORING REPORT - OCTOBER 2012**



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Bi-annual Environmental Monitoring Report

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KAZAKHSTAN: MFF CAREC Transport Corridor 1 (Zhambyl Oblast Section) [Western Europe- Western People's Republic of China International Transit Corridor] Investment Program - Project 4

(Financed by the Asian Development Bank and Government of
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EXECUTIVE SUMMARY

The Project 4 of the CAREC Transport Corridor I within Kazakhstan territory entails the upgrading of a two-lane road to a four lane Category IB. The construction is being undertaken on the first component, which is the 49km Blagoveshenka-Aspara Section which starts at km 261+500 to 310+500 of the "Almaty-Korday-Blagoveshenka-Merke-Taskent-Termez" Road. The project is within Zhambyl Oblast, crossing the delta of the Shu River and running through an area of generally alluvial-proluvial flatland with some rigid-valley formation and avoiding territories of Kyrgyz Republic.

Construction is supervision is being undertaken under FIDIC with environmental supervision and monitoring scopes. The Contractor is obligated to obtain regular parameter measurements of water quality, noise/vibration and air quality, the results of which are submitted regularly to the Engineer. Environmental monitoring of the Engineer is done primarily by the International Environmental Specialist with field coordination with a local environmental consultant.

This initial reporting serves as the **First Bi-Annual Environmental Monitoring Report** as well as presentation of Baseline Parameter environmental observations in the project area. During the field inspection of the International Environmental Specialist, a number of issues were identified and discussed in a brief seminar. Corresponding measures were hereby presented and expected to be implemented promptly by the Contractor.

PART I: INTRODUCTION

1. PRELIMINARY INFORMATION

1.1. Project Background and Objective of the Environmental Monitoring

Project 4 of the CAREC Transport Corridor I within Kazakhstan territory will contribute to sustainable economic growth by stimulating transit traffic, promoting trade, and strengthening regional cooperation. The project hopes to provide efficient transport network in Zhambyl Oblast in particular and to the country in general. The primary output will be the upgradation of a 49 km section from category-II to category-IB from km 261.5 to km 310.5 section from existing two-lane to four lanes of Category IB within the existing right-of-way.

Through standard competitive bidding, a Contractor, JSC “KCC Engineering & Construction Co. Ltd” was selected by the Employer and to be supervised by Kocks-KECC-Almaty Jova-Quality Plan Joint Venture, as the Engineer. Construction supervision includes environmental monitoring, the main purpose of which is ensure that the environmental mitigation measures during construction are implemented through a thorough supervision by the Engineer during the construction phase. Environmental issues also are anticipated to be identified in advance for avoidance and ensure timely completion of the project.

The construction contract with KCC was signed in February 2012 between the Employer and the Contractor and official commencement date for construction determined to be 22nd May 2012. However the contract between the Consultant and Employer was signed only on the 25th June 2012 and the commencement date for the Consultancy Services was 22nd July 2012. Nevertheless, the Consultant, Kocks Consult GmbH with partner firms, started mobilization to the site from the beginning of July 2012. In the meantime some major works had been carried out already by the Contractor as early as February 2012 for Aspara to Blagoveshchenka Road Project. Prior to the mobilization of the Consultant the Employer was supervising the works at site.¹

1.2. The Project Area

The two project road sections are part of the “Almaty-Korday-Blagoveshenka-Merke-Taskent-Termez” Road: the (i) 49km Blagoveshenka-Aspara Section (km261+500 to km 310+500) and the (ii) 65km Taraz Bypass (km 483-km536). The project is generally following the existing highway alignment within the Zhambyl Oblast. The area traversed by the road is generally classified as lowlands and plains. The mountainous portions that serve as borders with the Kyrgyz Republic are found 15km south of the corridor. Several small rivers cross the project road from south to north. The project road is shown in the figure below:

¹ Kocks Consult GmbH. September 2012. Inception Report – Construction Supervision Services. Contract L2735-KAZ: MFF CAREC Transport Corridor I Investment Programme, Project 4 (Aspara-Blagoveshenka)



Figure 1: Location of the Project Road

2. PROJECT DESCRIPTION

This CAREC road sections were designed for Category IB, as per the following design details:

- Width of the road embankment –27,5m;
- Carriageway width: 7,5 m (2 x 3, 75 m);
- Number of lanes : 4
- Width of shoulder: (2 x 3, 75 m). Shoulders 2 * 0.75 m asphalted.
- Embankment slope ratio is changeable from max 1:1.5 to min 1:4, depend on height of embankment
- Cross slope of the carriageway 2 %;
- Shoulder cross fall 4 %;

There will be four Bridges built in the Project and drainage structures will be built. Details of the new bridges are shown in the following table.

Table 1: Project Bridge Description

New Station - km	Identification of Bridges	Note
262+372.60 Shu river	5*24 T beam L=127,115m,S=3410m2 W-11.5+5+11.5 Sidewalks 2*0.75	Existing bridge is on Kyrgyzstan land and bridge has to be built on new road.

New Station - km	Identification of Bridges	Note
270+223.000 Shorgo river	Slabs 3*15 L=35.15m,S=1048m ² , W=-9.5+5+9.5 m Sidewalks 2*0.75	Demolition of bridge and building a new one
277+593 Aksu river	Slabs 3*15 L=50.2,S=1340m ² , W=9.5+5+9.5 Sidewalks 2*0.75	Demolition of bridge and building a new one
282+179.58 Karabalta river	Slabs 2*15 L=35.15m,S=1048m ² , W=9.5+5+9.5 Sidewalks 2*0.75	Demolition of bridge and building a new one

The existing culverts on the project road are predominantly concrete pipes from diameter 750mm up to diameter 1,500 mm. Some box culverts with varying sizes from 2x2m up to 4x4m exist. Neither condition nor the size of the existing culverts meet the requirements of the new category I road all culverts are being replaced by new ones.

3. PREVIOUS CONSTRUCTION ACTIVITIES AND PROJECT PROGRESS

The construction activities for the project road section Almaty - Tashkent km 261+500-310+500 officially commenced on 22 May 2012. The construction works consisted mainly of excavation, cut-filling, compaction, fill of surface granular materials (SGM), and laying of lean concrete pavement and second layer pavement. In addition, major construction works were done on the bridges, box and pipe culverts. In this period, a number of borrow pits and quarry were operated located in Yermek, Zhumak Han, Tarylgan, Shu River and in the vicinity of 269+500. In addition several small borrow pits were also used as material sources but are now closed due to limited materials in those areas.

The Contractor's camp and Engineer's office is located along the Korday-Shu Road at km 261.5. The Contractor has two concrete batching plants. The first one is located near km 266 of the project road which was utilized to provide concrete for bridge and culvert construction. The second one is adjacent to the Contractor's campsite and was utilized in the early part of August for lean concrete construction at km 285-286.

PART II: ENVIRONMENTAL MONITORING

4. ENVIRONMENTAL MONITORING FRAMEWORK

4.1. Environmental Characteristics of the Project Area

Prior to the ADB funded project, a two lane road existed already along the current alignment with a right-of-way of 40 meters. The project enlarges the right-of-way to 70 meters. Except in portions where the road avoids the Kyrgyz territory, the project road follows the original alignment. Hence as per previous determination, the project was judged to be Category IB project with limited impact to the existing environment.

The land relief along the project road can be generally described as slightly inclined alluvial-proluvial flatland with some areas of rigidly undulating and with rigid-valley formed by loess and silty-clay soil. The reconstructed alignment crosses the Shu River delta. Within this region a number of Shu River tributaries are crossed necessitating waterway infrastructures such as bridges and culverts.

Natural vegetation follows the floodplain of the Shu River tributaries and mostly consists of feather grass, fescue, anabases salsa, rare ephemera, black saxaul and willow. The fauna is represented by wild rams, roe, hare, pheasants and partridges.

The local climate is abrupt continental dry, with hot summer and moderately cold winter. Spring seasons is short and warm with frost still occurring in late months of May, while the autumn is dry and warm. Frost free conditions lasts to around 5-6 months within a normal year.

Shu region has population of around 93,000 with Shu as the center. Merke region has population of around 71,900 concentrated mainly in Merke. It is anticipated that the road improvement project will enhance transport of fish, farm products and livestock in these regions and facilitate the delivery of cargoes to these centers.

During the archeological examination, around 13 artifacts, (Bur -1 to Bur -13), with cultural and historical were discovered in the near the vicinity of the project but far enough to be affected by the project as they were 210m to 2146 m from the road centerline.

4.2. Methodology for Environmental Monitoring in Construction Supervision

As stipulated in the Contract for the project, the Contractor will adhere to the requirements of the environmental aspects of the contract document particularly in the General Conditions of Contract (FIDIC) as follows:

- 4.8 – Safety Procedure**
- 4.18 – Protection of Environment**
- 4.15 – Access Route**
- 4.24 – Fossils**
- 6.7 – Health & Safety**

In addition, detailed requirements are found in the Technical Specifications particularly the following:

Section 106 – Protection of Environment

- A. General
- B. Fuel & Chemical Storage,
- C. Water Quality

- D. Air Quality.
- E. Noise, Earthwork,
- F. Preservation of Antiquities,
- G. Preservation of Antiquities
- H. Environmental Enhancement

Section 113 – Diversion and Traffic Control Measures – mainly the B. Traffic Management Plan

The initial obligation of the Contractor is to formulate a project Environmental Management Plan (EMP) based on the findings contained in the 2008 Environmental Impact Assessment (EIA) Report. The Contractor submitted such document but was found to be too generic for the project. Hence, the Contractor was asked to submit a detailed site/project specific Environmental Management Plan based on the EIA that was provided, and conforming to the Contract documents. As the work progresses, the Consultant shall monitor the Contractor's compliance with the Environmental Management Plan and report upon impacts encountered and mitigation measures employed and make further recommendations as deemed necessary.

In general, as stipulated in the ToR for the Construction Supervision on the environmental aspect the Consultant shall "Carry out the following duties related to environmental mitigation measures during construction (a) to ensure that all the environmental mitigation measures required to be implemented are incorporated in the contract documents; (b) supervise and monitor the implementation of environmental (management)/mitigation plan (EMP); and (c) in case of unexpected environmental impacts, coordinate with the Project Director and PMC to recommend necessary measures to the Committee of Roads and ADB for Implementation". Based on this the Environmental specialist shall establish coordinative work with relevant staff of the Consultant and the Contractor to ensure that environmental issues are recognized prior to or discovered during work implementation. The EMP for the project/s or component projects shall be the basis of the monitoring and accordingly, the Contractor should complete and submit their project EMP to the Engineer for approval as soon as possible. Coordinative communication channels shall be established according to the following work coordination chart:

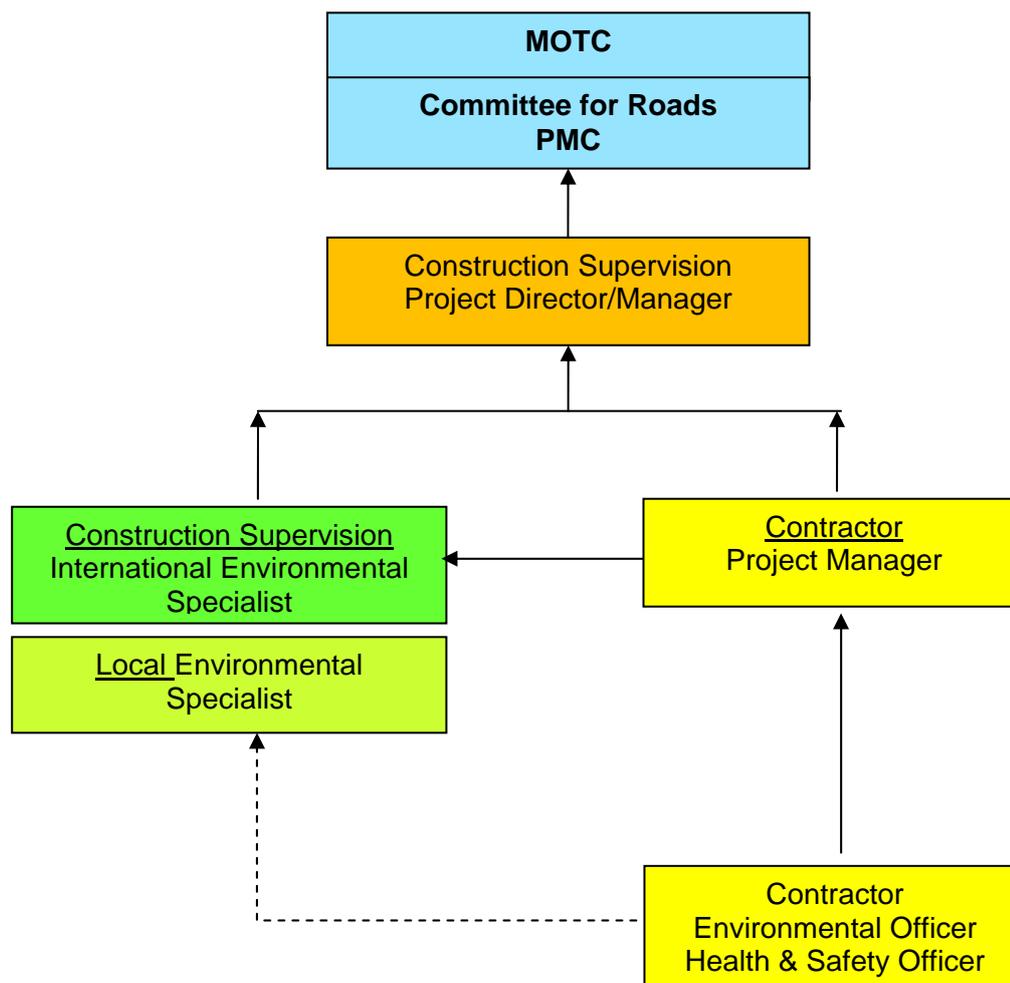


Figure 2: Work Coordination Arrangement

Specific tasks shall be undertaken by the Environmental Specialist as follows (E. Detailed Scope Item 22):

- “Manage and coordinate the update, implementation and monitoring of an initial Environmental Examination or Environmental Impact Assessment (IEE/EIA) as required by the Financing Framework Agreement (FFA) and loan agreement”. The Environmental Specialist will ensure that the EMP, as a dynamic document, is updated corresponding to every phase of the project implementation and that the Contractor shall be directed to produce additional details as deemed necessary.
- “Set-up internal monitoring system on the project’s environmental issues and requirement”. Monitoring protocols shall be established and will be explained to the Engineer’s and Contractor’s staff to be incorporated in the day-to-day monitoring activities. Periodic environmental reporting shall be required on the part of the Contractor as well.
- “Coordinate relevant parties, including civil society organizations, on environmental requirements of the Project”. Information dissemination shall be accomplished through reporting to the Client as well as formation of summary reports for inspection of interested project stakeholders and groups within the impact areas.
- “Closely monitor project sites against unexpected environmental impacts”. Planning is essential and such unexpected impacts can be anticipated with the inspection of the

Contractor's Method Statements. Every Method Statement should indicate potential impacts and their corresponding measures to eliminate and mitigate them.

- "Monitor Contractor's compliance to EMP". Since this is a commitment of the Client, the regular monitoring shall be done by the Local Environmental Specialist in compliance with the EMP and the directives of the International Environmental Specialist.
- "Advice the Project Director and PMC on environmental problems and /or requirements and recommend mitigation measures". The International and Local Environmental Specialist shall project future issues that may arise and advise the Project Director and PMC on the necessary steps to be undertaken. Field coordination shall be under the oversight work of the Local Environmental Specialist while project management level coordination work shall be performed by International Environmental Specialist.
- "Prepare report on EMP implementation and contractors compliance". Periodic reporting as required by the Client/s shall be prepared in accordance with reporting schedule of the Engineer / Consultant. This shall be a collaborative work between the local and international environmental specialist.
- "Take part in project performance monitoring and evaluation activities, develop key indicators, and perform surveys". The environmental specialists shall assess and survey the project site/s and compile necessary information which can form part of the key indicators as part of the project performance monitoring.
- "Assess and prepare capacity building program on environmental issues". Necessary training materials shall be prepared and training/s can be provided by both Local and International Environmental Specialist as part of the Capacity Building Component.

The next salient steps will be to operationalize these objectives and tasks to enable an efficient and effective environmental monitoring. Corresponding to delineation of roles and responsibilities, reporting procedure shall be set-up. Coordinative meetings shall be done to be abreast with the fulfillment of requirements of Client government and ADB.

4.3. Environmental Monitoring Procedures of the Contractor

The Contractor started monitoring the physical environment at the vicinity of the project road in April 2012. The parameters being monitored are (i) noise and vibration, (ii) water quality, (iii) air quality and (iv) flora and fauna monitoring. These indicators form the **Baseline monitoring parameters** for the project road which can be referred to in the course of the construction of the project as well as during its operation. The basic procedures are described below:

- **Noise and vibration** – Measurement for noise and vibration is performed monthly along the project road construction for every 10 km at 261+500, 271+500, 281+500, 291+500, 300+500, and 310+500. The Norms on protection of the environment from noise and vibration are in accordance with the established standards. The industrial sites of general contractor are located far from populated places, therefore additional monitoring for noise and vibration effects in populated places is not necessary. Monthly readings taken on noise and vibration were not exceeding the norms.
- **Water quality** – There four rivers that crosses the road construction site. They are Shu, Shorgo, Aksu, and Karabalta Rivers. Accordingly, bridges are being constructed as required by the project. Since April 2012, water quality readings were done in these rivers. Generally, the readings indicated that the changes in water quality were non-threatening and can be due to seasonal usage of water from the downstream regions.
- **Air quality** – Air quality is controlled along the whole road construction sections by obtaining readings in every 10 km specifically at 261+500, 271+500, 281+500, 291+500, 300+500, at 310+500. Readings on atmospheric air quality is compliant with standards and do not exceed maximum permissible concentration.

- **Monitoring of fauna and flora** – Monitoring of fauna and flora is carried out by direct observation. The habitats of rare animals and birds are not disturbed, as the construction progresses along the project section. Flora along the vicinity of the road is largely affected by dust and traffic emissions.

In addition, a number of pertinent sites are also monitored by the Contractor for any impacts of the construction activities. Such impacts will be recorded and mitigated in accordance to the EMP. Such sites are as follows:

- **Quarries and Borrow areas** – The environmental monitoring on the career areas has not been performed yet, since these areas are located far from populated places and do not pose any impact. In September the monitoring was carried out on water quality in Shu River, which receives silted water from sand-gravel washing equipment. Results of this monitoring will be submitted as a separate report
- **Bypass Roads** – Bypass road monitoring is carried out constantly and frequent watering is being done to minimize dust production. In September to improve watering activities, the Contractor required water truck owners to report their watering activities.
- **Bridge sites** – Subcontractors who implement works on bridges across the rivers Shu, Shorgo, Aksu, Karabalta were given memos on waste oil to soil. Water quality in the rivers of bridge construction should conform to the specifications.
- **Contractor Camp Subcontractors temporary camps** – The conditions of these camps were inspected. Water quality analyses were made on domestic water from the camps revealing certain violations but were promptly corrected.
- **Concrete plant, crusher plant, asphalt plant** – Concrete and crusher plants were inspected twice revealing that noise and vibration were within acceptable limits. However problems on dust pervade requiring corrective measures.
- **The villages (along the bypass)** – Sarybulak village is located along the bypass through which vehicles transports constructional materials 24 hours a day and thus aggravating the dusty conditions. Dust mitigation is constantly carried out. It is important to note that the receptors such as schools, administrative buildings and hospitals are far from the bypass roads.
- **Crossing roads** – In order to reduce impacts at road crossing, all the entrances and exits of the road to the areas are filled with surface granular materials (SGM) and compacted in order to reduce dust generation.

A map showing these monitoring points is shown in the next page.

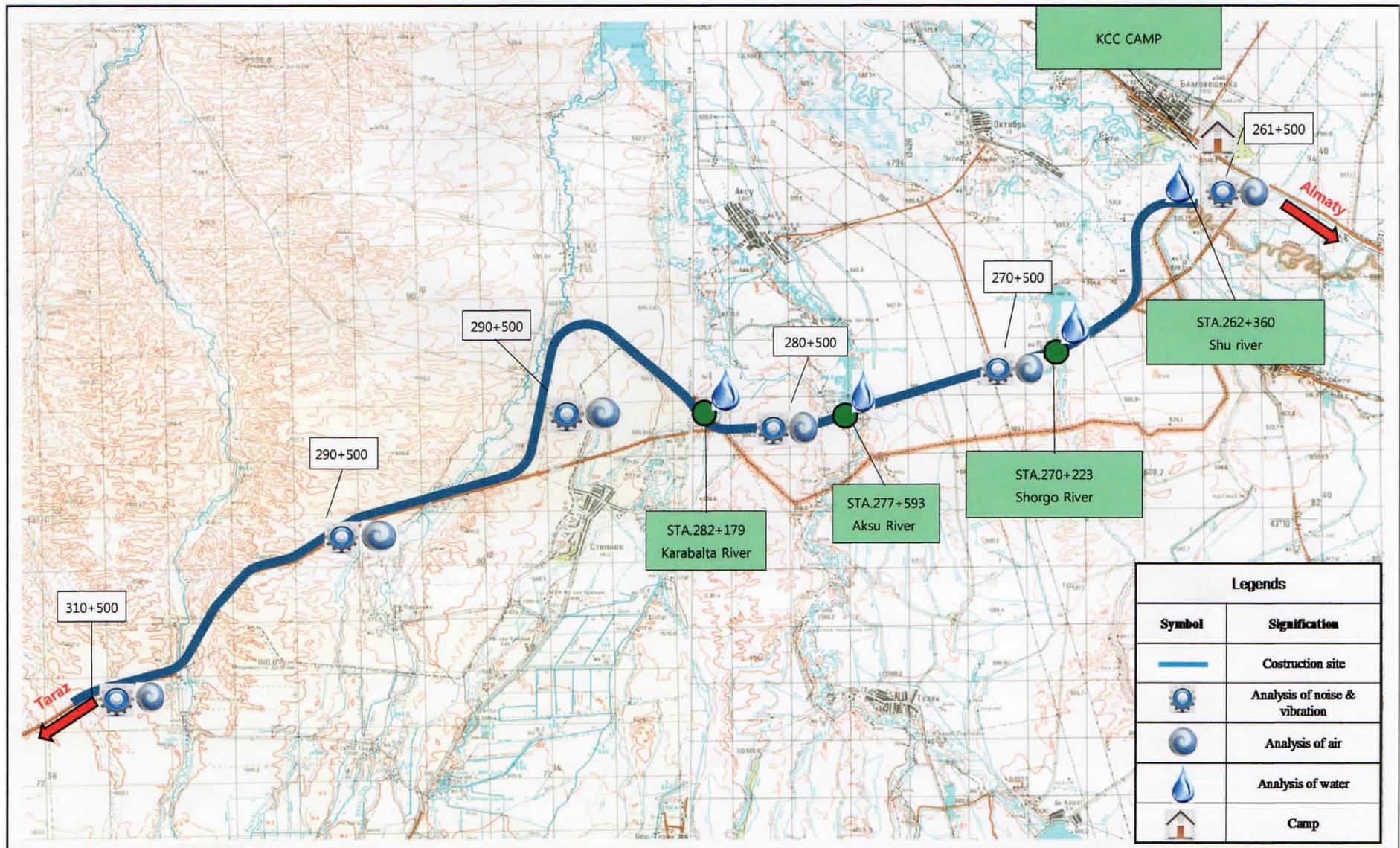


Figure 3: Environmental Parameter Sampling Locations

4.4. Contractor's Health and Safety Management

In the aspect of health and safety the main Contractor requires all subcontractors to assign personnel to be:

1. "responsible person for performance of construction and assembly works "
2. "responsible person for fire protection"
3. "responsible person for safety work performance of an erecting crane"
4. "responsible person for gas supply"
5. "responsible person for electricity supply"
6. "responsible person for provision special cloths and other facilities for individual protection of workers"

In case of accident, the Contractor is to submit brief summary about the accidents as part of the monitoring activities for the previous month.

Since the commencement of the work three accidents have occurred at the site. One of which was fatal. The fatal accident occurred on September 12, 2012, at around 8:40 am at the bridge construction across Aksu River. At such time a small hook of an expansion crane fell on the head of a worker of the Subcontractor LLP "MO-1", fatally injuring the person and causing death, although he was wearing a head protector. Investigations showed that the victim received safety instructions and PPE. Accordingly, further investigations are being carried out by the State controller of safety and PPE, and controller of department Emergency situation.

The other three accidents involved truck drivers who have not been injured seriously. As a consequence, the monitoring of observance of traffic rules became more stringent consisting of the following:

1. Mitigation of dust especially at bypass road
2. Installation of road signs on speed limit.
3. Regular checking of journals of mechanics and medics of subcontractors on the control of alcohol and drugs by drivers before going to the site.

In addition the following safety issues need to be monitored:

- **Use of PPE (including replacement, according to climatic conditions)** - Summer personal protective equipment (PPE) has been provided, while Winter PPE is under purchase. Chiefs must control strictly watch the worker's security with certified special clothes and PPE, which includes the usage, and wear-out date of clothes. Violations on PPE non-usage, alcohol and drug intoxication would result to immediate dismissal of worker.
- **Dust and noise exposure** - The additional water-carriers were engaged to reduce the dust. Prolonged exposure to harmful conditions should be minimized consisting of poor air quality, mechanical vibrations (noise, vibration, ultra-sound and others) and emissions (ionizing, electromagnetic, laser, ultra-violate and others) on work places.
- **Operations of Equipment and trucks** - All equipment of the site should have necessary copies of documents and testing certificates. Working dump trucks

should have their vehicle registration certificate and drivers should have driving license. Every day drivers are to be checked on alcohol drinking and blood pressure levels. The Contractor checks technical status of vehicles that transport people and carries out systematic trainings to drivers for Road traffic regulations and safety road.

- **Construction Hazards (heights, electric shocks, etc.)** - The subcontractor's chief is given instructions or orders on safety compliance. Protection to workers should be provided such as for electrical protection, electric tool, gas protection, harnesses and safety belts.
- **Emergency procedures / Coordination with outside Medical Facilities** – During emergency an action plan for first aid and delivery of injured person to Korday's hospital is to be operationalized. In case of fire the evacuation action plan is to be carried out. Telephone numbers of the Emergency department and ambulance service should be readily available.

A listing of the previous job-related accident on the Contractor's side is shown below:

Table 2: List of Previous Job-related Accidents

Occurrence Date/Time	Description
21.08.2012 / 9:30 AM	A "KHOVO" truck with plate number A256DKP, which belongs to the Subcontractor, FMR JSC "AlmatyInzStroi" and was being driven by Afanasiyev B.C., along the western direction km278+600 km had a vehicular accident. The said driver lost control over the vehicle and overturned in a ditch. First aid has been rendered to the driver, but no major injury resulted from the accident
17.09.2012 / 4:30 PM	Traffic accident involving two vehicles, which belonged to subcontracting organizations JSC "MTS" and JSC "Baiterek". The regional police was informed and accordingly conducted investigation and determined the culpability of the drivers. No injury was reported that required any medical help
28.09.2012 / 3:30 AM	A "SHASIMAN" truck with plate number H803106 which belongs to the Subcontractor, JSC "DSG" was being driven by Auyelova D.R. along the southern direction at km 274. As reported, the driver got distracted and drove into a pit. At the moment of the accident all the traffic signs were installed. First aid was rendered to the driver and was taken to Korday's regional hospital. After doctor examination it was determined that the driver did not have any bone fracture
12.09.2012 / 8.40 AM	At the construction site at Aksu Bridge a small hook of an expansion crane fell on the head of a worker of the Subcontractor LLP "MO-1", fatally injuring the person and causing death, although he was wearing a head protector. Investigations showed that the victim received safety instructions and PPE. Accordingly, further investigations are being

Occurrence Date/Time	Description
	carried out by the State controller of safety and PPE, and controller of department Emergency situation.
25.09.2012 / 12:20 AM	Security personnel, OziyevYa. P., who worked for LLP "AlkasBeton, was tying his shoelaces when his left hand touched an electrified wire and sustained injury. Accordingly, first aid procedure was rendered to the victim and was taken to Korday Hospital. After further examination, the chief physician of Korday hospital directed the transfer of the injured person to Bishkek's (the Republic of Kyrgyzstan) hospital, where the injured is being medically treated. The Department of labor protection was informed about the case.

5. PERFORMED ENVIRONMENTAL MONITORING ACTIVITIES

In early September 2012, the International Environmental Specialist of the CSC was mobilized to the site. Joint inspection was done by the specialist with the environment and health & safety staff of the Contractor. Construction sites, material sites, and plants were inspected.

5.1. Monitoring Activities of the Contractor

The Contractor, JSC "KCC Engineering & Construction Co. Ltd" mobilized their environmental staff and health & safety staff in February 2012. More active monitoring in the form obtaining parameter readings on air quality, noise and vibration, water quality and observations on flora and fauna started in April 2012. Monthly parameter readings and observation with summary report were compiled. The results of the previous monitoring activities are shown below:

Air Quality: Measurements were done monthly and at 6 sampling stations. The results show that air quality is below the limit but some close to the limits in the month of April as observed in the Table below.

Table 3: Air Quality Measurements

Parameter		NO2	SO2	CO	Dust
MPC Values		0.085	0.5	5	0.3
April	310+500	0.061	0.018	0	0.026
	300+500	0.057	0.003	0	0.128
	290+500	0.08	0.012	0.007	0.293
	280+500	0.072	0.073	0.098	0.104
	270+500	0.083	0.032	0.032	0.194
	261+500	0.084	0.446	1.512	0.299
May	310+500	0.014	0	0	0.022
	300+500	0.07	0.012	0.03	0.28
	290+500	0.037	0.107	0.197	0.233
	280+500	0.059	0.154	0.022	0.282
	270+500	0.074	0.107	0.266	0.274

Parameter		NO2	SO2	CO	Dust
MPC Values		0.085	0.5	5	0.3
	261+500	0.079	0.483	2.223	0.227
June	310+500	0.028	0.007	0	0.103
	300+500	0.06	0.03	0.103	0.136
	290+500	0.02	0.033	0.088	0.19
	280+500	0.031	0.088	0.009	0.265
	270+500	-	-	-	-
	261+500	0.082	0.247	0.753	0.294
July	310+500	0.032	0.007	0.001	0.075
	300+500	0.036	0.019	0.047	0.022
	290+500	0.032	0.019	0.035	0.02
	280+500	0.012	0.004	0.003	0.095
	270+500	0.007	0.004	0.001	0.04
	261+500	0.012	0.015	0.008	0.21
August	310+500	0.03	0.011	0.006	0.12
	300+500	0.035	0.009	0.023	0.114
	290+500	0.047	0.103	0.061	0.123
	280+500	0.031	0.009	0.015	0.14
	270+500	0.009	0.007	0.009	0.116
	261+500	0.027	0.021	0.027	0.225

Noise: Noise measured at the sites is **below** the limit. Elevated noise was measured in the month of May.

Table 4: Noise Measurements

Sampling Point (km)	Max. Allowable value	April	May	June	July	August
261.5	75	41.5	66.8	52.5	47.9	46.2
270.5	75	35.3	57.4	-	42	49.6
280.5	75	35.1	61.8	53.7	43.7	48.9
290.5	75	35.9	61.9	-	54.1	49.8
300.5	75	38.4	61.9	51.6	45.7	52.2
310.5	75	38.4	38.4	55.6	45.8	47

Water Quality: Measurements results for water quality are generally acceptable with the 22 parameters for each sample from the four rivers. However, exceedance of the limits was more pronounced in the month of August for Karabalta River. This may be due to the low volumetric flow of Karabalta River during the summer months.

Table 5: Water Quality Measurements

No.	Parameter	MPC Values	April				May				June				July				August			
			Karabalta	Aksu	Shorgo	Shu	Karabalta	Aksu	Shorgo	Shu	Karabalta	Aksu	Shorgo	Shu	Karabalta	Aksu	Shorgo	Shu	Karabalta	Aksu	Shorgo	Shu
1	pH	6.5-8.5	6.7	6.84	6.71	6.5	6.9	7	6.9	6.7	7	7.2	6.95	6.9	6.88	6.95	-	7.05	7.2	7.7	-	7.8
2	Na+K	200	110.7	50.45	144.07	80.57	123.3	61.3	137.2	87.9	108.8	56.9	110.1	85.4	120.8	67.9	-	100.3	200	11.15	-	66.89
3	K		4.9	4.55	4.37	0	4	3.1	2.8	1	3.7	3.8	3	2.2	4.2	3.5	-	1.8	8.5	0.98	-	2.99
4	Ca	180	170.3	168	111.8	168.9	151.8	145.2	108.6	171.2	166.4	151	122.8	155.9	156.7	160.2	-	192.6	350.5	73.8	-	172.6
5	Mg	50	50	38.5	45.1	44.37	42	46.7	37.9	39.9	47.6	40.9	39.6	37.4	45.3	45.9	-	42.8	210.8	22.9	-	44.3
6	Cu	1	0	0.03	0.05	0	0	0.0008	0.007	0	0.005	0.007	0.006	0	0.007	0.005	-	0.008	0.005	0.005	-	0.0075
7	Zn	5	0.05	0.05	0.03	0.01	0.08	0.09	0.08	0.05	0.06	0.06	0.07	0.07	0.08	0.06	-	0.09	0.07	0.05	-	0.09
8	Pb	0.03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	-	0
9	Mn	0.5	0.07	0.05	0.03	0.06	0.01	0.08	0.07	0.08	0.03	0.09	0.05	0.07	0.05	0.07	-	0.011	0.177	0.173	-	0.142
10	As	0.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	-	0
11	P	5	3.6	1.8	3.9	2.6	4	3.2	2	3	2.8	2.4	3	2.8	4.2	3.2	-	3.8	19.5	3	-	29
12	Cr	0.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	-	0
13	Fe	0.3	0.76	0.92	0.75	0.63	0.3	0.29	0.201	0.42	0.281	0.44	0.315	0.325	0.277	0.29	-	0.306	0.6	0.3	-	0.4
14	Cl	350.5	20.6	14.16	40.2	17.12	17.6	15.8	25.5	19.21	15.2	13.7	20.8	16.8	14.8	15.6	-	17.6	50.8	19.79	-	26.7
15	S	500	336.8	212	212.8	244.49	180.1	204.2	175.6	208.2	202.2	184.3	186.1	196.7	196.9	210.1	-	222.6	1205.8	282.5	-	168.19
16	Ammonia nitrogen	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0.63	4.05	-	0.36
17	Nitrates	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	5.7	-	7.79
18	F	1.2	52	0.54	1.2	0	0.48	0.8	1	0.3	0.61	0.73	0.8	0.41	0.72	0.55	-	0.35	1	1	-	1.29
19	Oil	0.1	0.07	0.1	0.1	0.08	0.05	0.08	0.07	0.1	0.09	0.05	0.09	0.1	0.1	0.1	-	0.08	0.05	0.1	-	0.1
20	Suspended solids	0.25	0.11	0.08	0.2	0.16	0.08	0.1	0.13	0.12	0.08	0.11	0.15	0.2	0.21	0.18	-	0.15	2	0.16	-	0.11
21	COD	30	10.4	12.4	10.8	11.1	12.1	14.1	9.7	10.5	12.8	9.55	11.7	9.67	9.68	10.6	-	11.4	23.3	7.6	-	15.8
22	BOD	6	4.8	5.8	4.9	5.2	5.8	6	4.3	2.35	6	5.2	5.6	4.96	5.1	4.9	-	5.8	11.4	3.3	-	7

5.2. Environmental Audit of the Engineer

The International Environmental Specialist of the Engineer conducted audit on the required documents from the Contractor. The submitted project EMP was found to be too generic and lacking pertinent focused on the requirements of the project. The specialist advised the environmental staff of the Contractor to improve the EMP for subsequent submission. The project EMP should be based on the project EIA and should respond to the requirements of the Contract and the Technical Specifications. Accordingly, the specialist provided guidance for the revision of the EMP. A well written EMP ensures clear understanding on the part of the Contractor and consequently better management of the environment.

Periodic environmental audits will be undertaken by the Engineer's environmental specialist and necessary guidance shall be provided. Bi-annual Environmental Reports shall be compiled by the Engineer to be submitted within one month after each six-month period. Violations to the EMP and shall be considered non-conformance situation necessitating writing Non-conformance letter by the Engineer to the Contractor. Frequent violations can lead to serious repercussions and sanctions by the Engineer to the Contractor.

In addition, method statements should also contain elaboration of needed mitigation measures for impacts perceived by either the Contractor and/or the Engineer. This shall be checked by the Engineer under advisement of the Environmental Specialist prior to execution of sensitive or critical portions of the project.

The Environmental Specialist has inspected the construction sites including other sites such as Contractor's camp, borrow pits and river quarry. Environmental issues were noted and discussed with the Contractor's environmental staff. A compilation of these issues was prepared in a power point and presented in brief seminar with the Engineer and Contractor's staff on 11 September 2012.

PART III: ENVIRONMENTAL MANAGEMENT

6. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The primary objective of the Environmental Management Plan (EMP) is to avoid, reduce, or at least minimize the adverse environmental impacts that could result from the activities during the implementation and operation of the project. Accordingly, the EMP considered all phases of the Project cycle, namely the detailed design, construction and operational phases of the Project. It consists of various mitigation measures needed to be undertaken in the course of the Project cycle

During the construction phase, certain situations would have come up which may not have been anticipated by the Contractor. It is for this reason that the project EMP is considered as a dynamic document which need to be revised by the Contractor as the need arises.

7. OBSERVED ENVIRONMENTAL IMPACTS

During the mobilization of the International Environmental Specialist a joint inspection with the Contractor's staff was conducted to various sites. The areas inspected were the construction sites along the project road Contractor's camp, borrow pits and river quarry. The observed environmental issues were noted and discussed with the Contractor's environmental staff for clarification within the framework of the EIA, Contractual provisions and technical specifications. These issues on the environment, including health and safety, were then compiled for a power point presentation (See Annex) and presented in brief seminar with the Engineer and Contractor's staff on 11 September 2012. The issues gathered with corresponding measures are summarized in the Table below:

Table 6: Observed Issues During the Environmental Inspections

No.	Description of EHS Issue	Description of Proposed Measures
1	<u>Improper Management of Topsoil and plant materials</u> – Masses of topsoil cleared from the road are stockpiled at road sides. In addition, some native vegetation were cleared from the road right of way and put aside to wither and die.	The Contractor should inventory these masses of topsoil and determine where they can be used in the project for the purpose of regenerating the affected areas of the project. The affected vegetation should be replaced where necessary and these replanting areas should be identified by the Contractor.
2	<u>Water Quality Contamination</u> – A machine for washing river sand and stone was installed at the vicinity of the Shu River. The Contractor diverts some river water to wash the materials and allows it to flow back to the Shu river at the downstream portion. The wash-water is laden with silt and clay and this particle contaminates the clear water of the Shu River.	Series of sedimentation ponds should be installed with filters to trap silt and sediments and clarify the water prior to discharge into the Shu River. Affected vegetations should be fixed or replanted and banks of canals improved.
3	<u>Workers' Safety Issue at Shu River Bridge Construction Site</u> – (i) protected railings were not installed for people working at certain heights; (ii) One worker was not wearing helmet.	When working at certain risky heights, protective railing should be installed by the Contractor while work is still on-going. The Contractor should check that PPE's should be used at all times by the workers.
4	<u>Oil Contamination at Aksu River Bridge</u>	The Contractor should remove contaminated

No.	Description of EHS Issue	Description of Proposed Measures
	<u>Construction Site</u> – marks of oil droppings were found on the ground at the bridge construction site.	soil and instruct workmen to prevent oil droppings at the site.
5	<u>Workers' Safety Issue at Aksu River Bridge Construction Site</u> – pile driving produces loud noise and exhaust emissions and exposure to such impacts can be detrimental to workers.	The Contractor should provide workers at the site with gas masks and ear protection.
6	<u>Silt Contamination at Box Culvert at km 296+400</u> – construction operations at the site result in making murky water and affect downstream uses such as making the water unfit for livestock.	The Contractor should ensure that temporary diversion canal be kept undisturbed, and the water be free of silt and clean for the livestock. The Contractor should avoid contaminating the water at all times
7	<u>Unplanned Access Routes at km 283+93</u> – The meadows between the existing access road and the project road is criss-crossed by trucks and equipment at many points, destroying existing vegetal cover and disfiguring the landscape	The Contractor should instruct truck drivers and equipment operators to use only approved access roads and affected areas should be leveled to allow for natural re-vegetation
8	<u>Borrow Pit Operations and Reinstatement at km 296+500</u> – deep excavations with vertical cuts and such condition will make it difficult for natural re-vegetation and can be risky to people and livestock	The Contractor should produce Reinstatement Plan
9	<u>Borrow Pit Operations and Reinstatement at Shumak Han</u> – deep excavations with vertical cuts and such condition will make it difficult for natural re-vegetation and can be risky to people and livestock. Also oil contamination was found in the area.	The Contractor should produce Reinstatement Plan
10	<u>Rock/Gravel Quarry Operations and Reinstatement at Yermek</u> – deep excavations with vertical cuts and such condition will make it difficult for natural re-vegetation and can be risky to people and livestock.	The Contractor should produce Reinstatement Plan
11	<u>Cleared away vegetation at km 272-6</u> – Vegetation at the road side were cleared as part of the construction works and a lot of trees were cut	The Contractor should show plan for replanting or replacement of affected trees
12	<u>Sanitary Condition at the Camp site</u> – Garbage at the camp were mis-managed and rubbish were scattered at the back of the camp	The Contractor should maintain sanitary condition and produce Waste Management Plan
13	<u>Absence of Impervious base for fuel truck parking</u> – The fuel truck is park in an area without impervious base and fuel droppings can contaminate the ground	The Contractor should construct impervious slab at a spot dedicated for the fuel truck.
14	<u>Safety provisions at the Camp</u> – power	The Contractor should provide/install buffer

No.	Description of EHS Issue	Description of Proposed Measures
	generator and transformer area has to have extra buffer and signs alerting people to keep out	barriers, e.g. concrete blocks, around the power generator and alert and warning signs (against electric shock) at the fence.
15	<u>Safety provisions and accident prevention</u> – vehicular accidents happened in the past due to driver's judgment error, road condition and poor visibility due to dust. This resulted to vehicular accidents and injury to some people	The Contractor should provide regular safety training to truck drivers.

8. NOTICES AND LETTERS TO THE CONTRACTOR

During the previous period, the CS Consultant had been actively monitoring the Contractor's performance in the environmental and social aspects. Issues were identified and communicated formally to the Contractor in the form of official letters. A listing of such letters on the environmental aspects and their status is shown below:

Table 7: Letters to Contractor on Environmental and Social Issues

Letter No.	Dated	Ref.	Content	Status/Remarks
020	07/28	Clause 4.18 GC, Section 106 TS, Protection of the Environment, Instruction	Burning of bushes and trees adjacent to the road for road widening at km 281+000 to km 293+200, which the engineer termed as unacceptable	Ref: KOCKS / 032 / 2012: Contractor reported the occurrence of wildfire in that strip
023	07/27	Clause 4.18 GC TS Section 106, Environmental Management Plan	Directing the Contractor to submit their EMP	Ref: KOCKS / 022 / 2012: A plan entitled "Plan on Monitoring and reducing of Influence on Environment" was submitted for approval. After review by the Engineer's Environmental Specialist, the Contractor's EMP was rejected since it was too generic and more like statements of policies and not detailed implementation of plans
024	07/27	Clause 4.8 GC TS Section 105, Health and Safety	Directing the Contractor to submit their H&S Plan	Ref: KOCKS / 023 / 2012: A plan entitled "Plan on Monitoring and reducing of Influence on Environment" was submitted for approval. After review by the Engineer's Environmental Specialist, document does not conform to the requirement of the project – too generic and a mere statement of policy.

047	08/04	Unsuitable components in the subbase material	(Russian only). Organic materials found in the subbase materials being installed.	No reply as of now
049	08/04	The installation of Traffic Sign	(Russian only) Traffic signs required	No reply as of now
087		Records of Contractor's Personnel. GCC Clauses 6.10 & 6.22, Instruction	Required the Contractor to submit: Monthly Data of Contractor's Personnel: Names, Ages, Genders, Hours Worked, Wages Paid What were provided were table of staff employed Needed record of staff employed by groups of qualifications, sex, origin, average salary of each group (e.g. unskilled labourers, skilled labourers, drivers, heavy machinery operators, etc.)	Ref: KOCKS / 071 / 2012: A list of Staff with names, sex, birthday, work designations, wages, hours worked and nationality was submitted on 24 Aug 2012. This has to be done every month. As of now, the September 2012 list is required.
090	08/24	Road Safety, SCC 4.1, Health & Safety, GCC 6.7 & TS 105, Suspension of Works, GCC 8.8	Calling attention of the Contractor to improve traffic safety, report accidents promptly (within 24 hrs.) All safety measures should be installed in the site; maintain all access roads by reshaping, compaction, watering, etc.	No reply as of now
122	09/05	Traffic Safety on Detour and Access Roads	All traffic signs should be installed, controlled and maintained. This is a report on the traffic signs along the project road	Ref: KOCKS / 117 / 2012: Some signs were already installed. However, there is no Traffic Management Plan to verify if the installation of signs is already adequate.
127	09/04	Staff and Labour, GCC Clause 6	The department is asking the Engineer to evaluate the following: 6.2 Rates of Wages 6.4 Labour Laws 6.5 Working Hours 6.6 Facilities for Staff and Labour 6.7 Health & Safety 6.12 Foreign Personnel	No reply as of now

			6.13 Supply and Foodstuff 6.14 Supply of Water	
147	09/09	EHS Seminar	Invitation for Contractor Staff to attend EHS seminar	No reply needed
175	09/27	Safety on Access	Confirmation that traffic situation has improved Additional fencing required at bridge no. 3	No reply needed
190	09/30	Environmental Issues	Directing the Contractor to address and report updates during the mission date of the International Environmental Specialist	Awaiting Reply

9. CORRECTIVE ACTION PLANS

The issues identified above need to be responded by the Contractor in a timely manner. Some of the issues are easy to resolve and few were indeed corrected promptly by the Contractor. The critical issue raised is the silt contamination of the sand and aggregate washing at the bank of the Shu River. This has to be properly planned by the contractor in order to properly resolve. Certain schemes were already developed by need to be finalized at the soonest possible time. The Engineer has formally notified the Contractor regarding these issues and actions is expected on the part of the Contractor².

In addition, the project EMP has also to be revised. Guidance was already provided by the International Environmental Specialist and the Contractor's Environmental staff has initiated the revision. Also the Contractor's monthly environmental reports require technical discussions for more clarity in presenting how the issues were resolved by the Contractor.

² As an update, on 5 Oct. 2012, the Contractor has already initiated the construction of a series of siltation ponds for the effluent of the gravel-sand washing equipment. It is hoped that this will be completed in a few days and thus prevent further contamination of the Shu River

ANNEX









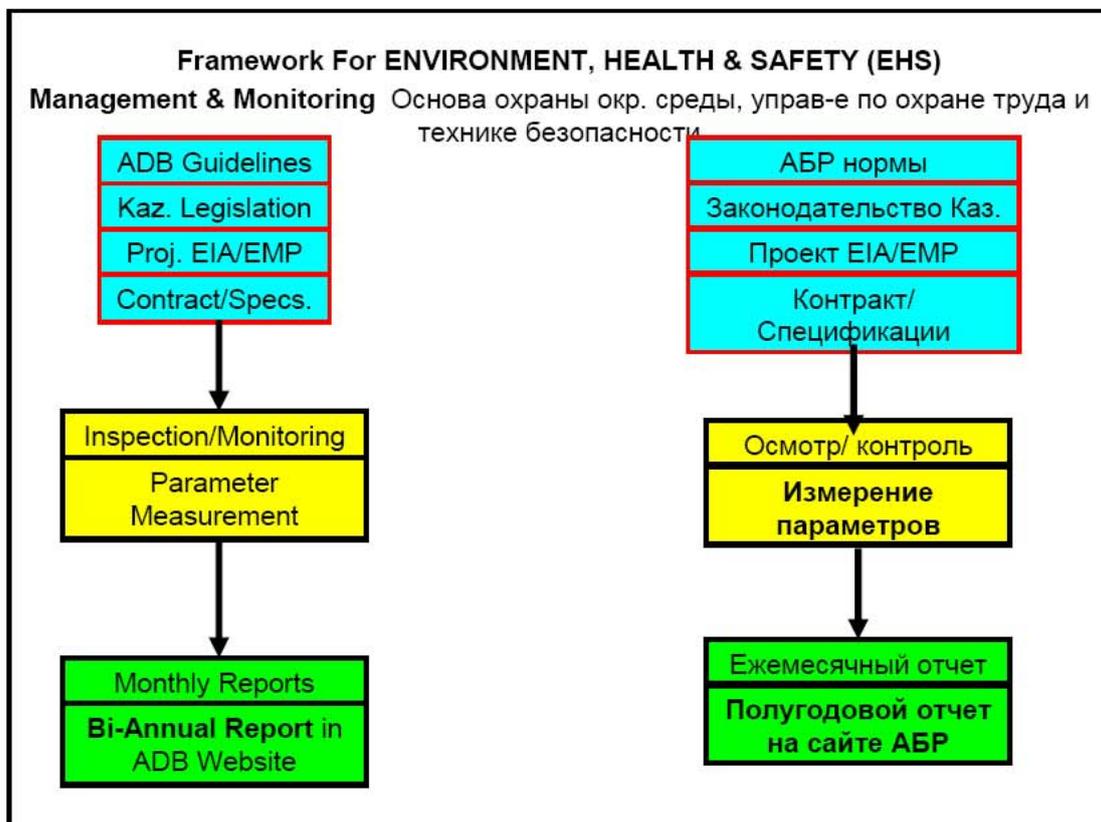
(ADB 2735 KZ)
Seminar No. 1 on
Environmental, Health and
Safety Management &
Monitoring
For Aspara – Blagoveshenka
Section

АБР (2735 KZ)
Семинар № 1 по окр.
среде, охране труда,
технике безопасности
и контролю на
участке Аспара-
Благовещенка

아시아 개발 은행 (2735 KZ) 아스바라 블라가베션가 공사
환경 및 안전 기술 회의

Environmental Seminar and Workshop

1



Specific Provisions for ENVIRONMENT, HEALTH & SAFETY (EHS) Management & Monitoring

Спец. обеспечение по охране окружающей среды, управлению по охране труда и технике безопасности

FIDIC-GCC:

- 4.8 – Safety Procedure
- 4.18 – Protection of Environment
- 4.15 – Access Route
- 4.24 - Fossils
- 6.7 – Health & Safety

Technical Specs:

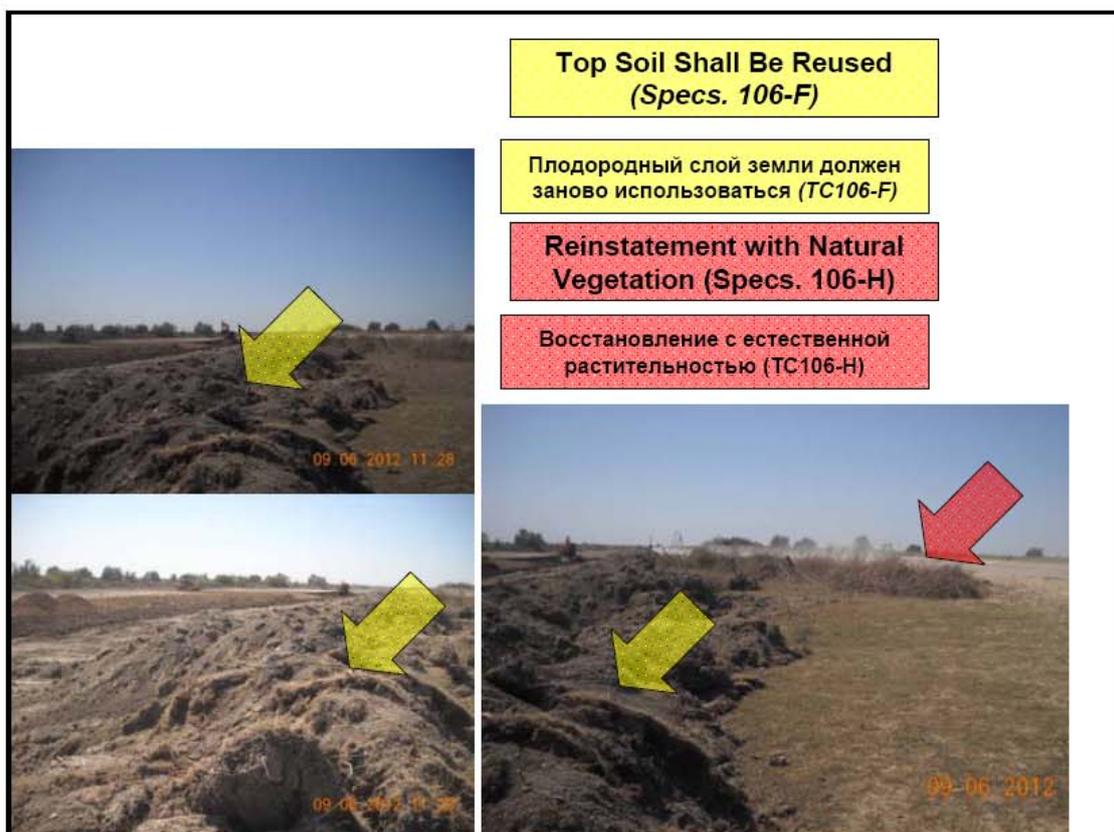
- 106 – Protection of Environment**
(Fuel & Chemical Storage, Water Quality, Air Quality, Noise, Earthwork, Preservation of Antiquities, Environmental Enhancement)
- 113 – Diversion and Traffic Control Measures** (Traffic Management Plan, etc.)

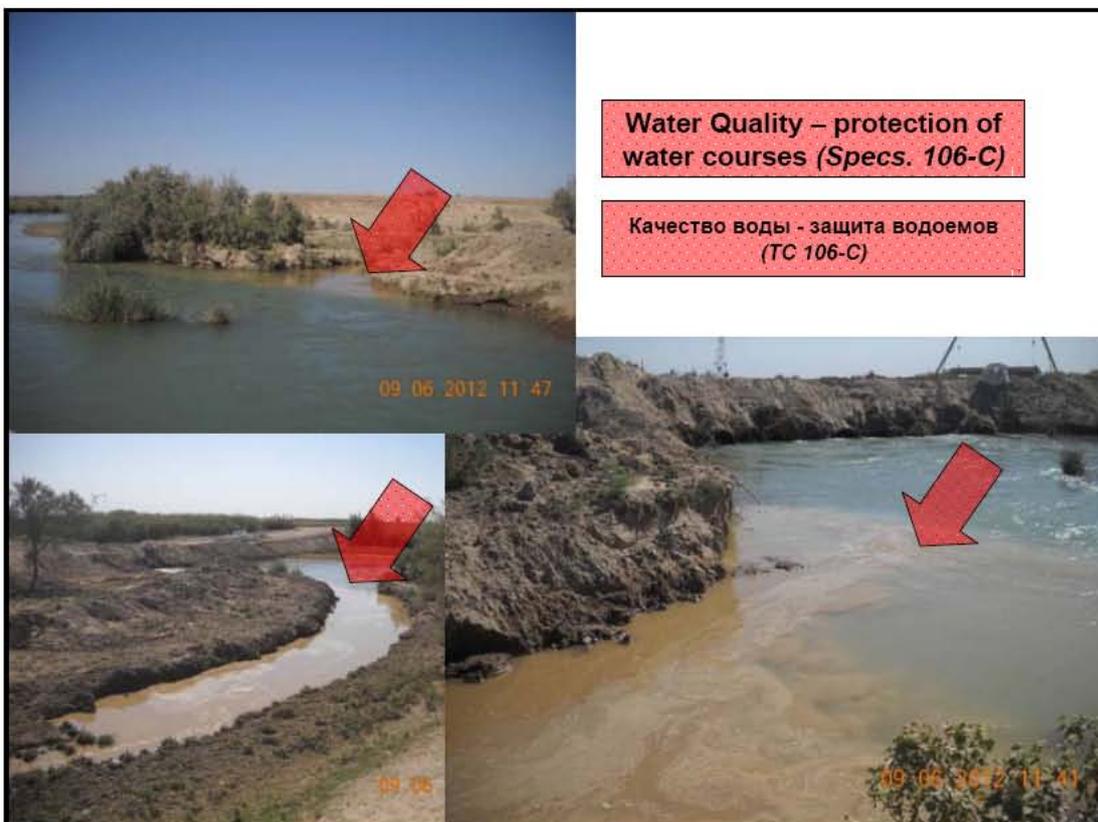
FIDIC-GCC:

- 4.8 – процесс безопасности
- 4.18 – Охрана окружающей среды
- 4.15 – доступ маршрута
- 4.24 - Ископаемые
- 6.7 – охрана здоровья и техника безопасности

Технические спецификации:

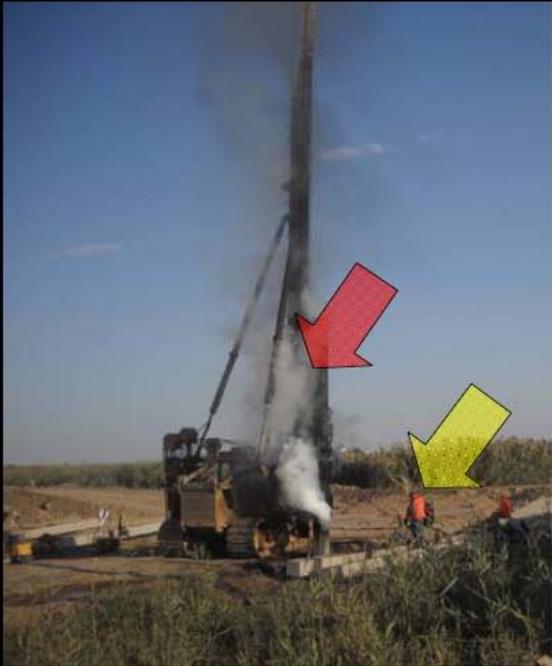
- 106 – Охрана окр. среды**
(Топливо и хранения химических веществ, качество воды, качество воздуха, шум, Земляные работы, сохранения древностей, оздоровления окружающей среды)
- 113 – Объездные дороги и меры по регулированию движения** (план регулирования дороги, и.т.д.)











**Air Quality (Specs. 106-D)
Noise (Specs. 106-E)**

**Качество воздуха (TC106-D)
Шум (TC106-E)**

Health & Safety (Specs. 105)

**Охрана труда и техника
безопасности(TC105)**

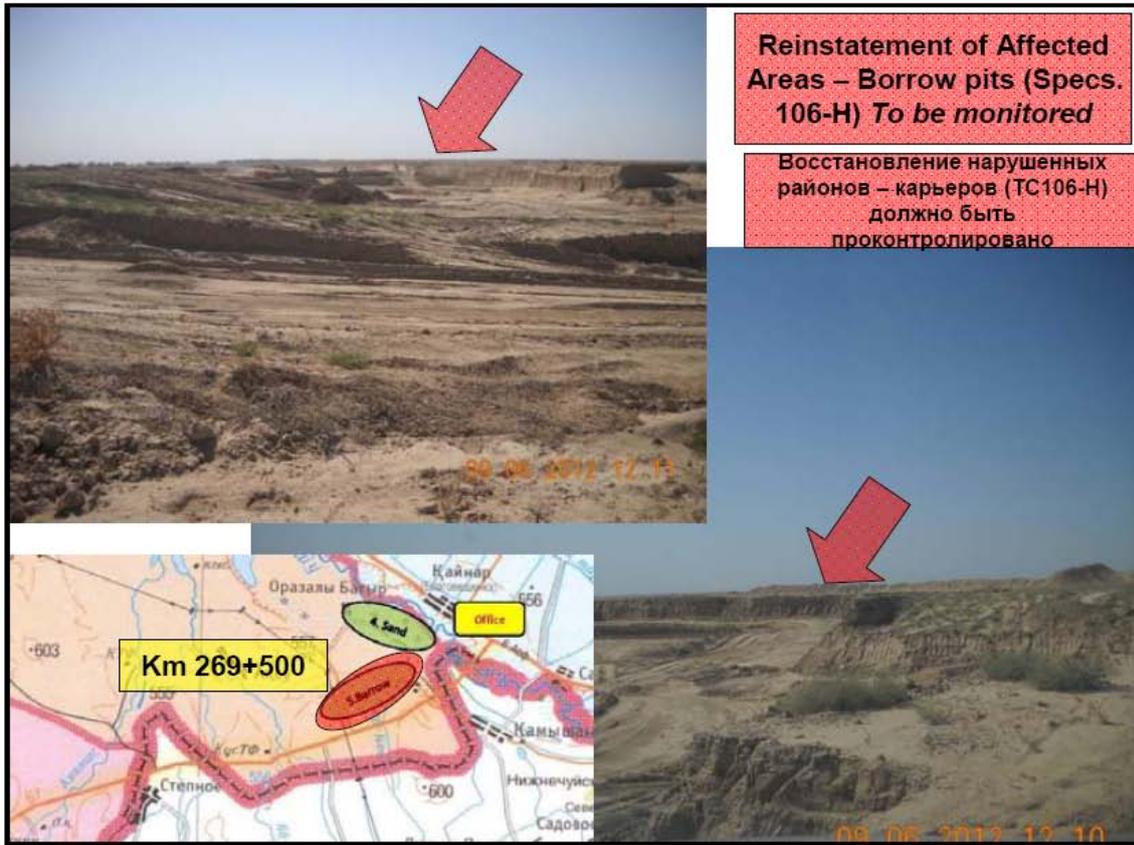


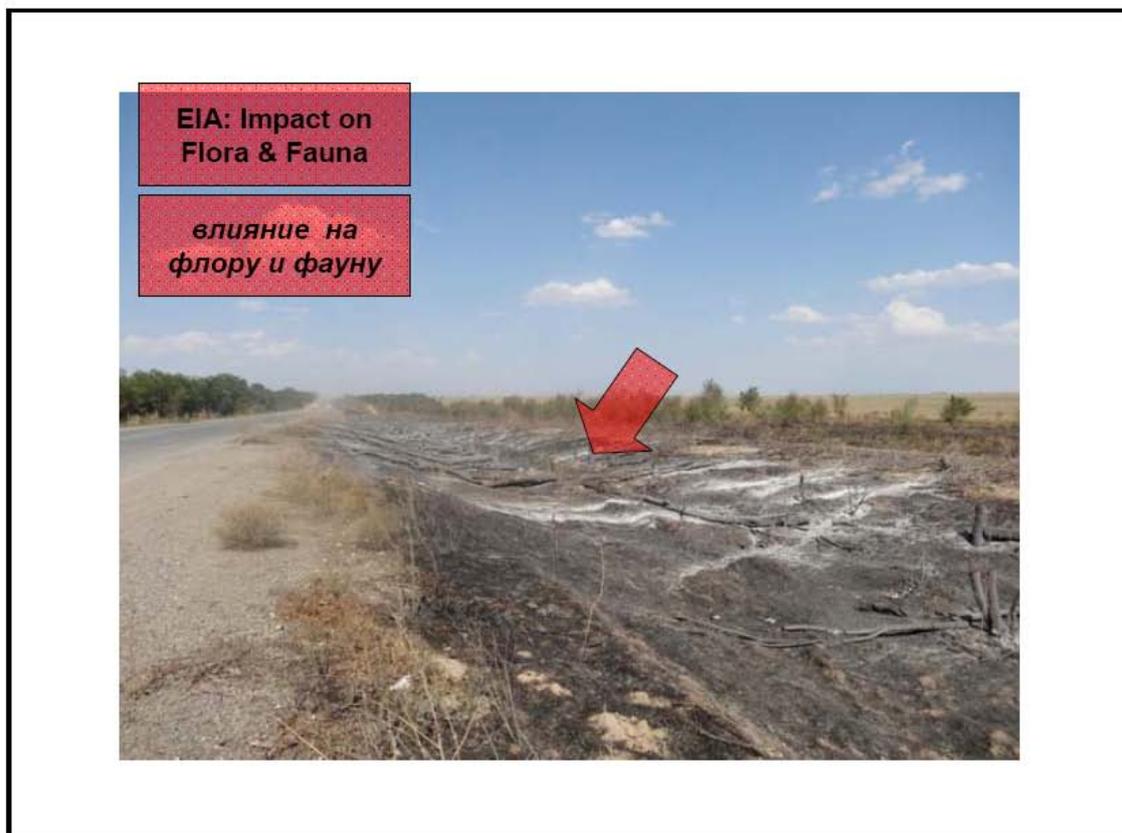
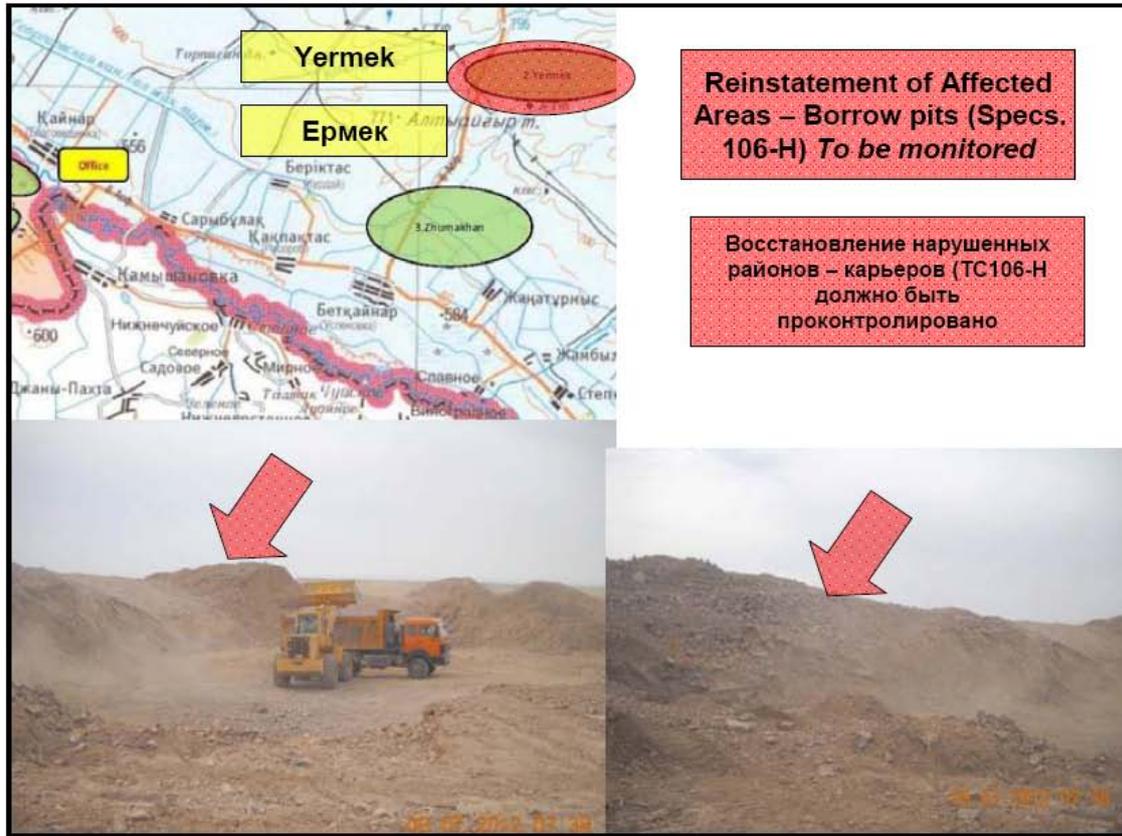
**Water Quality – Silt
Contamination
(Specs. 106-H)**

**Качество воды -
загрязнение ила
(TC106-H)**













General Provisions (Specs. 106-A) buffer area needed
Общее положение (Спец. 106-А) необходима буферная зона



General Provisions (Specs. 106-A) Fix tanks – Safety
Общее положение (спец.100-А) Исправить безопасность генератора



Traffic (Specs. 113) Safety on the Road
Дорога (Спец. 113) Тех. Безопасности



Obstruction Removed
Препятствие удалено





**Traffic (Specs. 113) Safety
on the Road**

Дорога (Спец. 113)

**Тех. Безопасности на
дороге**

**Determine the Cause and
prevent from happening again**

**Определить случай и
предотвратить очередное
происшествие**

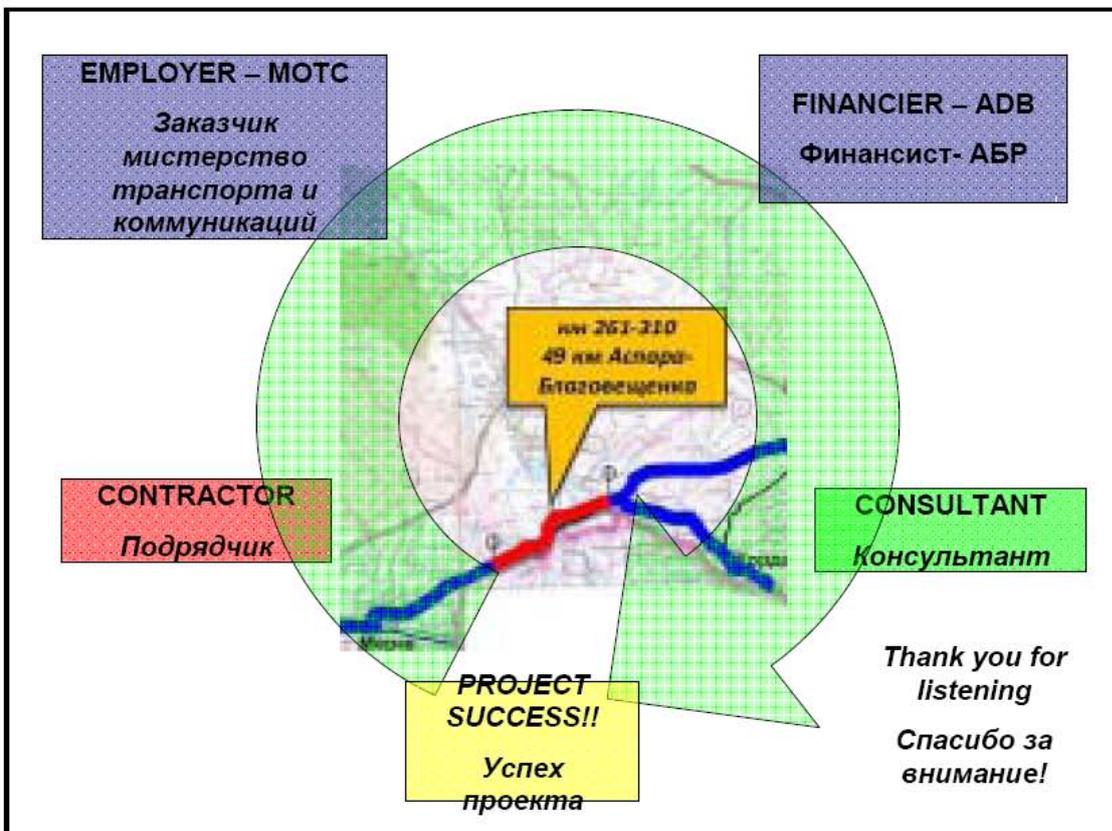




Photo 1: Environmental Seminar on 11 Sept. 2012



Photo 2: Environmental Seminar on 11 Sept. 2012