



REPUBLIC of KAZAKHSTAN  
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)



# THREE-MONTH ENVIRONMENTAL MONITORING REPORT - DECEMBER 2012



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# Three-Month Environmental Monitoring Report

Project Number: 41121-053  
{December 2012}

## 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  
Republic of Kazakhstan)

Prepared by Kocks Consult GmbH for the Asian Development Bank (ADB).

## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>i</b>
<b>PART I: INTRODUCTION.....</b>	<b>2</b>
<b>1. PRELIMINARY INFORMATION.....</b>	<b>2</b>
1.1. Project Background and Objective of the Environmental Monitoring .....	2
1.2. The Project Area.....	2
1.3. Technical Description of the Road Project.....	3
1.4. Environmental Characteristics of the Project Area .....	4
<b>PART II: ENVIRONMENTAL MONITORING.....</b>	<b>6</b>
<b>2. ENVIRONMENTAL MONITORING FRAMEWORK .....</b>	<b>6</b>
2.1. Methodology for Environmental Monitoring in Construction Supervision.....	6
2.2. CS Consultant (The Engineer) Environmental Monitoring Work Protocol.....	9
2.3. Contractor's Environmental Monitoring Procedures Health and Safety Management	11
2.4. Required Environmental Reporting.....	12
<b>3. PERFORMED ENVIRONMENTAL MONITORING ACTIVITIES.....</b>	<b>12</b>
3.1. Environmental Monitoring Procedures of the Contractor .....	12
3.2. Monitoring Activities of the Contractor .....	15
3.3. Environmental Audit of the Engineer .....	18
<b>PART III: ENVIRONMENTAL MANAGEMENT .....</b>	<b>19</b>
<b>4. ENVIRONMENTAL MANAGEMENT PLAN (EMP).....</b>	<b>19</b>
<b>5. OBSERVED ENVIRONMENTAL IMPACTS .....</b>	<b>19</b>
<b>6. NOTICES AND LETTERS TO THE CONTRACTOR .....</b>	<b>23</b>
<b>7. CORRECTIVE ACTION PLANS .....</b>	<b>24</b>
<b>ANNEX.....</b>	<b>a</b>

## List of Figures

Figure 1: Location of the Project Road .....	3
Figure 2: Work Coordination Arrangement .....	8
Figure 3: Environmental Monitoring Work Protocol .....	10
Figure 4: Environmental Parameter Sampling Locations (Oct.-Dec. 2012) .....	14

## List of Tables

Table 1: Project Bridge Description .....	3
Table 2: Air Quality Measurements .....	15
Table 3: Noise Measurements .....	16
Table 4: Water Quality Measurements (Oct-Dec 2012) .....	17
Table 5: Observed Issues During the Environmental Inspections.....	20
Table 6: Letters on Environmental Issues and Concerns (Oct-Dec. 2012) .....	23

## List of Photos

Photo No. 1 : Pond's silt holding capacity near spilling condition.....	a
Photo No. 2 : Filter berm is too low and needs to be increased in height.....	a
Photo No. 3 : Contractor starting to increase the elevation of filter berm .....	b
Photo No. 4 : Suspension of material washing work due to bad weather.....	b
Photo No. 5 : Workers not wearing helmets .....	c
Photo No. 6 : Improper protection by wearing rubber shoes in the work site .....	c
Photo No. 7 : Improper solid waste management.....	d
Photo No. 8 : Improper hazardous waste management (spills and drums) at bridge no. 1 Subcontractor camp .....	d
Photo No. 9 : Too narrow diversion crossing at bridge no. 2 .....	e
Photo No. 10 : Still the same condition of the narrow crossing at bridge no. 2 .....	e
Photo No. 11 : Narrow crossing at bridge no. 3 .....	f
Photo No. 12 : Unchanged situation at bridge no. 3 .....	f
Photo No. 13 : Vertical Cuts at borrow pit at km 269+500 .....	g
Photo No. 14 : Recent situation of the borrow pit at km 269+500 .....	g
Photo No. 15 : Absence of delineation for safety and absence of warning sign.....	h

Photo No. 16 : Similar situation prevailed (no safety delineation and signs) in previous inspection..... h

Photo No. 17 : Parametric measurements in October 2012..... i

Photo No. 18 : Parametric measurements in November 2012..... i

Photo No. 19 : Parametric measurements in December 2012..... i

Photo No. 20: PowerPoint Presentation during the Environmental Seminar on 17 Nov. 2012..... j

Photo No. 21: Environmental Seminar and discussions on 17 Nov. 2012 ..... j

## EXECUTIVE SUMMARY

The Asian Development Bank has provided a loan (L2735-KAZ) to the Government of Kazakhstan for the re-construction of CAREC Transport Corridor I within the country's territory. Part of this road 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 Engineer (Kocks-KECC-Almaty Joba-Quality Plan Joint Venture) for this Blagoveshenka-Aspara Section has compiled this Periodic Environmental Monitoring Report on the recently encountered environmental issues along the road sections under construction contract with KCC Engineering & Construction Co., Ltd (Korea), the Contractor. The environmental issues consisted of water quality issues and soil contamination at the plant sites, and material sources and processing sites. These were encountered during inspection at road construction areas, bridge sites, contractor's material sources and processing plants, etc. Measures to mitigate impacts were recommended accordingly and discussed within this report.

This three (3) month environmental monitoring report covers the period from October 2012 to December 2012. Within this period a number of field inspections were undertaken by the International Environmental Specialist and by the local environmental specialist. During the field inspection, a number of issues were identified and discussed in a brief seminar on November 17, 2012. Corresponding measures were hereby presented and expected to be implemented promptly by the Contractor. The Contractor also submitted their update EMP on 30 November 2012 which was duly commented by the Engineer's international environmental specialist.

## PART I: INTRODUCTION

### 1. PRELIMINARY INFORMATION

#### 1.1. Project Background and Objective of the Environmental Monitoring

Project 4 is a segment of the CAREC Transport Corridor I and within Kazakhstan territory which is being financed by the Asian Development Bank under loan agreement with the Government of Kazakhstan. This project is being executed by the Ministry of Transportation and Communication with the Committee for Roads overseeing the entire program project. The Engineer supervising this Project 4 component is Kocks-KECC-Almaty Joba-Quality Plan Joint Venture, as while the Contractor undertaking the construction is JSC “KCC Engineering & Construction Co. Ltd”.

Project 4, consisting of two project road sections, is 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 first component involves upgradation of a 49 km section from category-II (existing two-lane) to four lane category-IB from km 261.5 to km 310.5 within the existing right-of-way. The construction of this component started in February 2012 which was supervised by the Employer<sup>1</sup>. The second road project component is expected to commence in the early part of 2013.

This environmental monitoring of the Project 4 - 49km Blagoveshenka-Aspara Section (km261+500 to km 310+500) by the International Environmental Specialist<sup>2</sup> covers the period from October 2012 to December 2012 in compliance with the environmental scope of the construction supervision, 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.

#### 1.2. The Project Area

The two project road sections namely the (i) 49km Blagoveshenka-Aspara Section (km261+500 to km 310+500) and the (ii) 65km Taraz Bypass (km 483-km536) - are part of the “Almaty-Korday-Blagoveshenka-Merke-Taskent-Termez” Road. The Blagoveshenka-Aspara Section 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:

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

<sup>2</sup> Mr. Samuel E. Sapuay, International Environmental Specialist – Kocks Consult



Figure 1: Location of the Project Road

### 1.3. Technical Description of the Road Project

This Blagoveshenka-Aspara Section is 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=3410m <sup>2</sup> 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=1048m2, 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=1340m2, 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=1048m2, W=9.5+5+9.5 Sidewalks 2*0.75	Demolition of bridge and building a new one

In addition to the above water crossings, a number of pipe culverts have been installed for the project road. 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. Hence, all of these have been replaced to conform to the required specifications.

#### 1.4. 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 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.

## PART II: ENVIRONMENTAL MONITORING

### 2. ENVIRONMENTAL MONITORING FRAMEWORK

The environmental monitoring framework was based on the construction supervision ToR, GCC/PCC, Technical specifications, project IEE for Category B<sup>3</sup> and ADB guidelines.

#### 2.1. 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

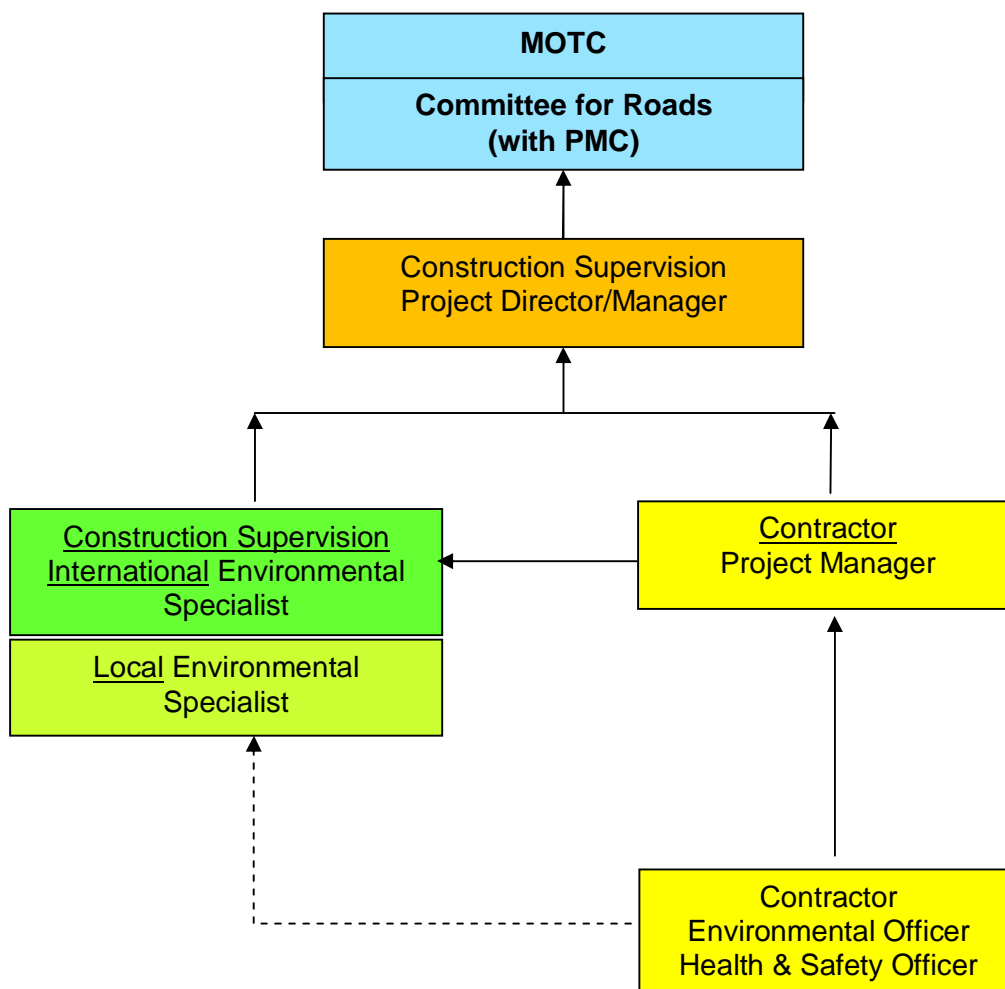
The initial obligation of the Contractor is to formulate a project Environmental Management Plan (EMP) based on the findings contained in the 2008 Environmental Impact Assessment (EIA) Report. The Contractor submitted such document but was found to be too generic for the project. Hence, the Contractor 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

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<sup>3</sup> ADB's Safe Guard Category – Category B The proposed project's potential adverse environmental impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination (IEE), including an EMP, is required

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.
- "Advise 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.

## **2.2. CS Consultant (The Engineer) Environmental Monitoring Work Protocol**

Under the guidance of the International Environment Specialist, inspectors of the Engineer regularly conduct environmental monitoring on the Project. Findings and results of their monitoring activities are incorporated in the monthly and quarterly reports as well as in the Periodic Environmental Monitoring Reports for The Project.

During actual site visits of the International Environment Specialist, on-the-spot field inspections to various impact sites such as borrow pit, asphalt plant, quarry areas as well as contractor's campsite and population centers along the project road are conducted. Environmental issues are noted down and presented to the Contractor as part of the consultation process, whereby issues will be resolved. The effectiveness of the mitigation measures is assessed after site implementation to determine if such measures were effective. In cases when they were ineffective, other measures will be implemented and further reassessed and when they are determined to be successful, the Contractor's measures are deemed compliant with the environmental requirements. This Environmental Monitoring Work Protocol is outlined below.

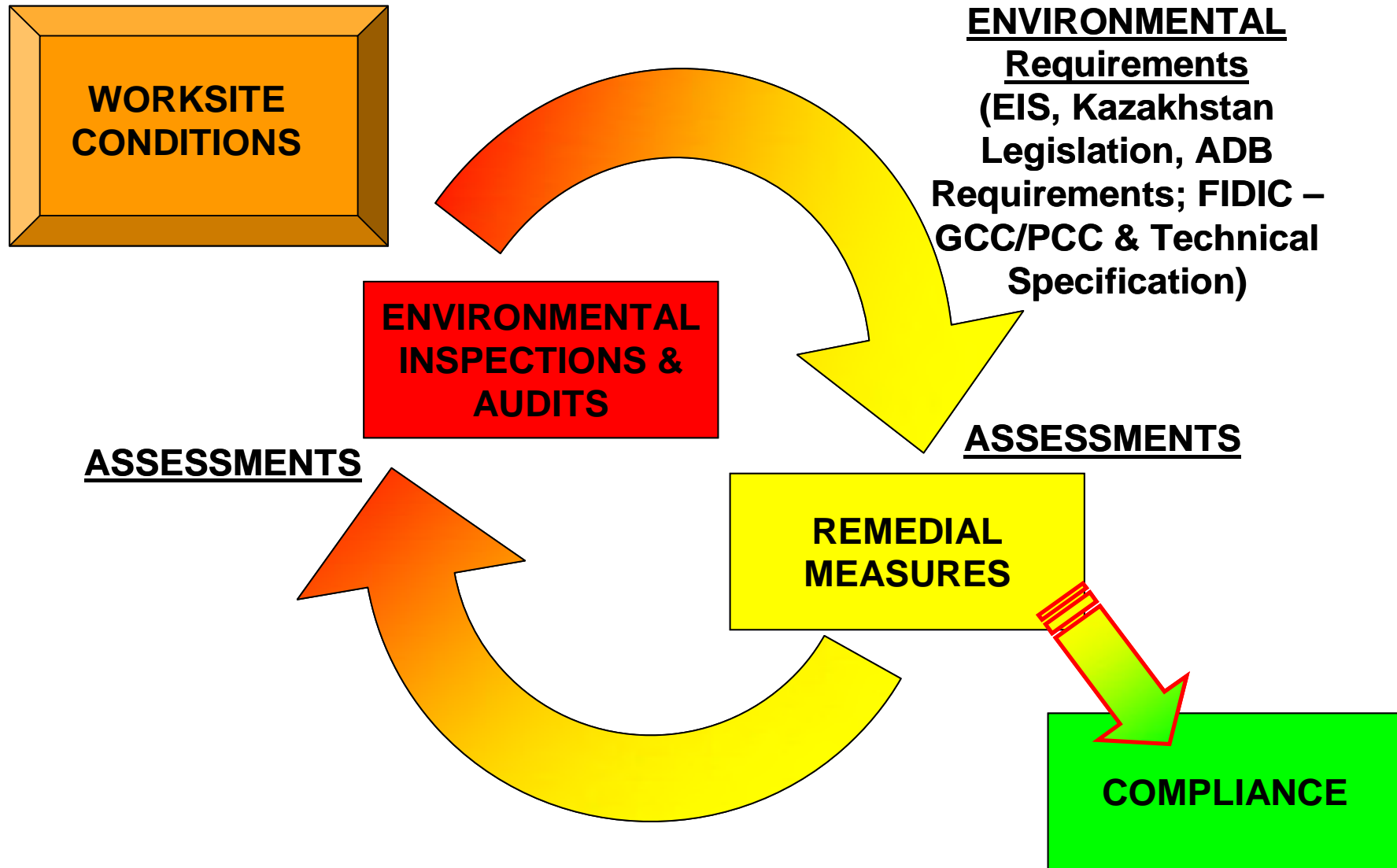


Figure 3: Environmental Monitoring Work Protocol

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**
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- 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

### **2.3. Contractor’s Environmental Monitoring Procedures Health and Safety Management**

As mentioned in the previous Bi-annual Environmental Report, the Contractor started monitoring the physical environment at the vicinity of the project road in April 2012. The parameters being monitored with instrument measurements 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. In addition, a number of pertinent sites are also monitored by the Contractor for any impacts of the construction activities such as quarries and borrow areas, bypass roads, bridge sites, contractor camp subcontractors temporary camps, concrete plant, crusher plant, asphalt plant, the villages (along the bypass) and crossing roads. Impacts will be recorded and mitigated in accordance to the EMP.

A staff was designated as health and safety officer for the project with duties to deal with safety on: (i) performance of construction and assembly works; (ii) for fire protection; (iii) work performance of an erecting crane; (iv) gas supply; (v) electricity supply; and (vi) 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.



## 2.4. Required Environmental Reporting

As mentioned in the Appendix 2 (item **2.3 Reporting Procedures**) of the IEE document, the Contractor's Environmental Action Plan (CEAP) or Contractor's EMP should provide description and explanation communication procedures between construction personnel and environmental protection, safety and traffic control staff, including (i) Communication facilities and Routine communication and reporting systems.

It is also mentioned in 2.3.2 Environmental and Safety Reports of Appendix 2, that Initial Environmental Baseline Report should be submitted in accordance with Section 2.4. Based on this Section, a Baseline monitoring program should be presented consisting of Environmental Baseline Survey (EBS) on (i) air quality; (ii) water quality; and (iii) noise. In addition, Environmental Safety Reports should be submitted which summarizes weekly updates and compiled for monthly reporting to the Engineer. The Engineer should also be notified promptly of any accident and effective communication should be established with all Subcontractors. Summaries of these items should be part of the Contractor's Monthly Progress Reports.

As stated in the Particular Conditions of Contract, the Contractor should also submit a Bi-annual environmental report, which is a compilation of monthly report with appropriate summaries of the issues, activities and measures undertaken within the period.

## 3. PERFORMED ENVIRONMENTAL MONITORING ACTIVITIES

Within the three month period the Contractor undertook monthly monitoring of air, noise and water quality at specified locations. The Engineer likewise, as part of his tasks, monitors the environmental aspects of the project as well and reviews the environmental monitoring activities of the Contractor. Within the period, the international environmental specialist visited the site in early October as well as in early November. The local environmental specialist under the direction of the international environmental specialist performed environmental audit in the middle part of November. Joint inspection was done by the specialists with the environment and health & safety staff of the Contractor. Construction sites, material sites, and plants were also inspected.

### 3.1. 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. Previously, the Contractor was conducting air and noise measurements every 10 km along the project. However, in October 2012, the international environmental specialist advised the Contractor to measure at locations where impacts to people are more appreciable. Hence the measurement locations were changed accordingly. For the measurement for water quality, to monitor the impact of the construction activities at bridge sites, upstream and downstream measurements were done along the rivers. The basic procedures are described below:

- **Noise and vibration** – Measurements for noise and vibration were performed monthly (Oct.-Dec. 2012) at the following locations as shown in the map below: (i) Camp1; (ii) Camp2; (ii) BSU; (iii) DSU; (iv) Saryb1; and (v) Saryb2. 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. To monitor the impact of the bridge construction in Oct.-Dec. 2012 upstream and downstream of the bridge sites were measured.
- **Air quality** – Air quality is controlled at relevant sites and along the road construction sections by obtaining readings monthly (Oct.-Dec. 2012) at the following locations as shown in the map: (i) Camp1; (ii) Camp2; (iii) BSU1; (iv) BSU2; (v) DSU1; (vi) DSU2; (vii) Sarybulak1; and (vii) Sarybulak2.
- **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.

A map showing these monitoring points for Oct-Dec. 2012 is shown in the next page.

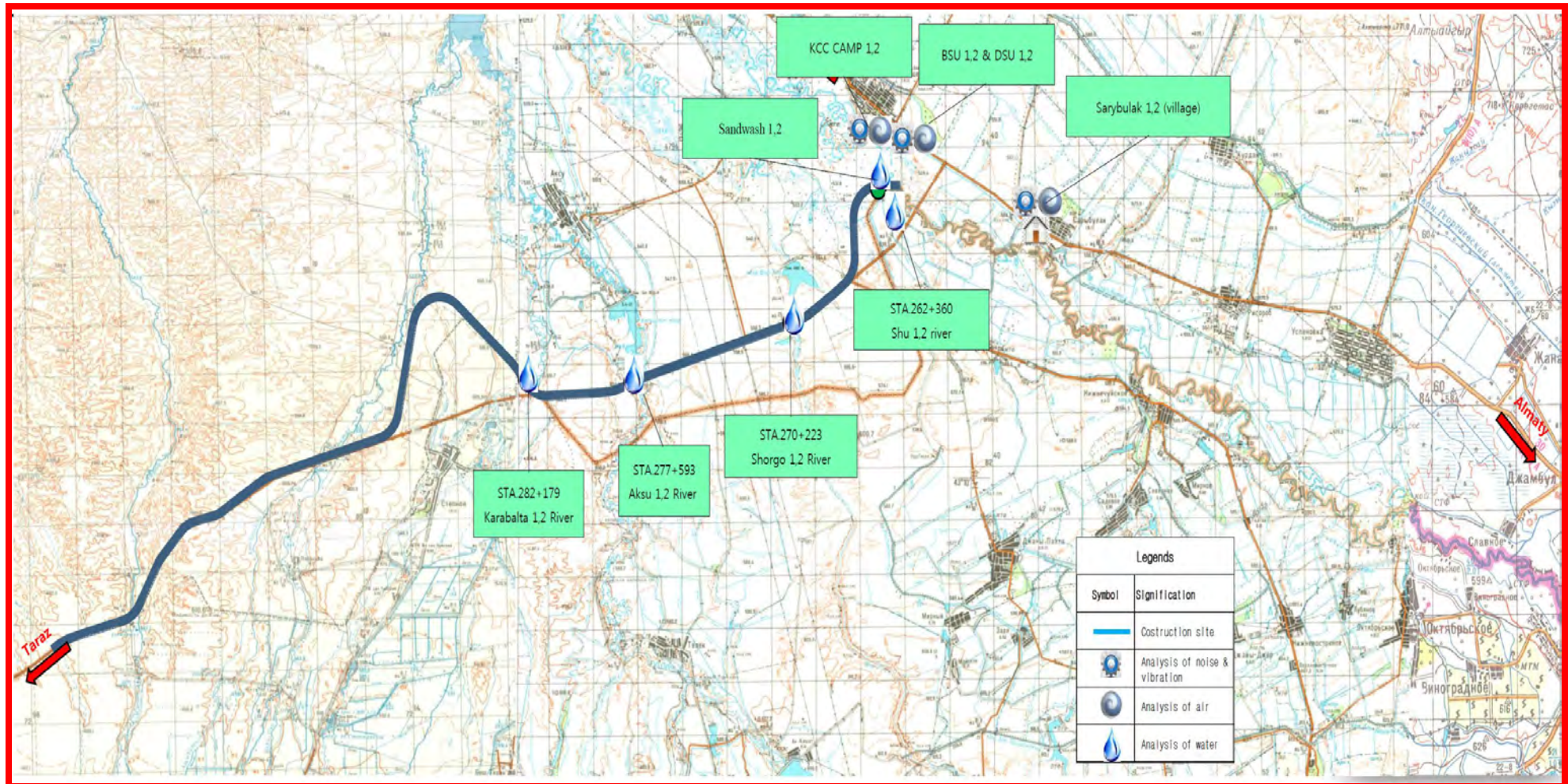


Figure 4: Environmental Parameter Sampling Locations (Oct.-Dec. 2012)

### 3.2. Monitoring Activities of the Contractor

For the previous three months, the Contractor, JSC “KCC Engineering & Construction Co. Ltd” undertook monthly parameter readings and observation with compiled summary report. The results of the previous monitoring activities are shown below:

**Air Quality:** Measurements were done monthly and at 8 sampling stations. The results show that air quality is below the limit as observed in the Table below.

**Table 2: Air Quality Measurements**

Parameter		NO2	SO2	CO	Dust
<b>MPC Values</b>		<b>0.085</b>	<b>0.5</b>	<b>5</b>	<b>0.3</b>
Oct.	Camp1	0.009	0.020	0.043	0.005
	Camp2	0.013	0.030	0.119	0.005
	BSU1	0.013	0.018	0.039	0.005
	BSU2	0.019	0.013	0.119	0.008
	DSU1	0.012	0.017	0.071	0.004
	DSU2	0.010	0.008	0.038	0.007
	Sarybulak1	0.006	0.014	0.072	0.002
	Sarybulak2	0.008	0.015	0.125	0.005
Nov.	Camp1	0.010	0.022	0.074	0.014
	Camp2	0.018	0.034	0.086	0.019
	BSU1	0.016	0.012	0.063	0.019
	BSU2	0.019	0.013	0.119	0.022
	DSU1	0.017	0.011	0.035	0.008
	DSU2	0.022	0.007	0.038	0.016
	Sarybulak1	0.003	0.012	0.093	0.009
	Sarybulak2	0.007	0.017	0.123	0.013
Dec	Camp1	0.009	0.020	0.043	0.005
	Camp2	0.013	0.030	0.119	0.005
	BSU1	0.013	0.018	0.039	0.005
	BSU2	0.019	0.013	0.119	0.008
	DSU1	0.012	0.017	0.071	0.004
	DSU2	0.010	0.008	0.038	0.007
	Sarybulak1	0.006	0.014	0.072	0.002
	Sarybulak2	0.008	0.015	0.125	0.005

**Noise:** Noise measured at the 6 sites is **below** the limit as shown in the Table below.

**Table 3: Noise Measurements**

Sampling Point (km)	Max. Allowable value	Oct	Nov	Dec
Camp1	75	41.5	41.7	43.1
Camp2	75	-	41.8	43.1
BSU	75	44.4	52.5	45.9
DSU	75	44.5	48.8	46.7
Saryb1	75	43.1	44	45.3
Saryb2	75	43.6	44.5	-

**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 October and November in the parameters of suspended solids and BOD. In December 2012, minimal work was done due to the winter season and less exceedance was noted. The most critical concern was the discharge of the sand-washing equipment due to the discharge of silty water back to Shu River. This was mitigated by placing gravel filter at the discharge point, thus retaining the silt within the siltation pond. In November, an improved status was recorded. The Table below shows the parameter test results for water quality.

**Table 4: Water Quality Measurements (Oct-Dec 2012)**

No.	Substance	MPC	OCTOBER 2012										NOVEMBER 2012										DECEMBER 2012									
			Karabalta1	Karabalta2	Aksu1	Aksu2	Shorgo 1	Shorgo 2	Shu 1	Shu 2	Sandwash 1	Sandwash 2	Karabalta1	Karabalta2	Aksu1	Aksu2	Shorgo 1	Shorgo 2	Shu 1	Shu 2	Sandwash 1	Sandwash 2	Karabalta1	Karabalta2	Aksu1	Aksu2	Shorgo 1	Shorgo 2	Shu 1	Shu 2	Sandwash 1	Sandwash 2
1	pH	6.5-8.5	8.1	8	8.2	6.8	8.2	7.3	6.8	7.1	7.8	8	6.7	6.8	7.2	7.2	7	8.3	6.8	7.5	7.2	6.9	-	-	7.8	7.8	-	-	7.35	8.1	7.4	7.2
2	Na+K	200	156.3	149.2	51.88	50.66	126.4	131.54	40.3	41.29	35.86	35.44	155	152.1	41.12	40.88	98.72	114.1	38	42.1	2.08	1.63	-	-	40.6	40.2	-	-	35.22	36.1	1.99	1.97
3	K		8.5	8	6.02	5.95	9.07	9.84	3.1	3.12	2.7	2.66	5.76	5.91	4.89	4.77	3.57	3.74	2.4	2.6	0.55	0.31	-	-	3.44	2.88	-	-	2.8	2.77	0.44	0.44
4	Ca	180	144.3	140.6	154.3	138.8	130.4	135.7	155.6	152.2	158.4	147.6	138.7	133.6	148.7	144.5	125.7	136.4	152.4	157.6	131.6	128.2	-	-	132.3	133	-	-	144.6	140.6	120.4	116.3
5	Mg	50	80.5	77.8	36.49	35.5	41.4	42.1	19.9	21.2	28	15.8	72.9	71.8	34.7	33.9	39.2	44.3	17.05	18.4	3.5	1.79	-	-	25.4	25	-	-	18.6	18.5	3	2.05
6	Cu	1	0.07	0.08	0.101	0.11	0.07	0.08	0.08	0.077	0.1	0.09	0.05	0.05	0.08	0.08	0.11	0.12	0.1	0.12	0.08	0.07	-	-	0.101	0.1	-	-	0.08	0.08	0.06	0.04
7	Zn	5	0.1	0.122	0.07	0.08	0.12	0.117	0.08	0.11	0.15	0.11	0.112	0.107	0.11	0.09	0.108	0.113	0.11	0.13	0.11	0.103	-	-	0.14	0.11	-	-	0.09	0.1	0.15	0.106
8	Pb	0.03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	0	-	-	0	0	0	0
9	Mn	0.5	0.14	0.11	0.135	0.13	0.104	0.113	0.108	0.134	0.122	0.108	0.108	0.106	0.104	0.102	0.114	0.122	0.124	0.142	0.08	0.07	-	-	0.112	0.106	-	-	0.124	0.105	0.1	0.11
10	As	0.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	0	-	-	0	0	0	0
11	P	5	7	6.2	7.7	7.9	8.5	9	6.8	7	6.2	5.8	5.4	5	5.3	5.1	6.8	6.5	4.9	5	4.6	4.6	-	-	3.6	3.3	-	-	4.9	3.5	3.6	3.55
12	Cr	0.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	0	-	-	0	0	0	0
13	Fe	0.3	0.307	0.288	0.244	0.237	0.3	0.303	0.293	0.3	0.3	0.266	0.278	0.266	0.255	0.248	0.267	0.282	0.276	0.288	0.244	0.231	-	-	0.137	0.135	-	-	0.276	0.23	0.222	0.218
14	Cl	350.5	17.5	17.3	11.5	11.7	37.9	38.2	14.3	14.1	14.8	14.9	15.3	15	12.4	12	25.9	26.4	12.4	12.2	10.4	10.2	-	-	11.2	11	-	-	12.4	10.6	10.3	10.3
15	S	500	461	493	172.8	155.6	339.7	346.5	74.9	72.5	73.7	73.3	322	316.1	164.6	165.2	227.3	351.3	69.3	77.8	56.1	55.2	-	-	122.4	120.8	-	-	69.3	58.8	58.6	55.4
16	Ammonia nitrogen	2	0.14	0.11	0.54	0.57	0.74	0.66	0.54	0.54	0.55	0.35	0.63	0.67	0.56	0.61	0.47	0.52	0.232	0.25	0	0	-	-	0.32	0.3	-	-	0.232	0.11	0	0
17	Nitrates	45	2.17	2.11	3.88	3.9	0	0	6.52	6.45	6.71	6.99	1.86	1.9	3.21	3.11	0.5	0.4	5.5	5.6	4.7	4.7	-	-	3.04	3.02	-	-	5.5	3.3	3	3
18	F	1.2	0.66	0.59	0.72	0.74	1.4	1.2	0.39	0.34	0.35	0.34	0.54	0.55	0.66	0.68	1	1.05	0.33	0.33	0.28	0.27	-	-	0.53	0.47	-	-	0.33	0.28	0.26	0.26
19	Oil	0.1	0.103	0.11	0.07	0.09	0.098	0.1	0.09	0.095	0.1	0.09	0.08	0.1	0.104	0.1	0.11	0.103	0.11	0.12	0.07	0.05	-	-	0.08	0.09	-	-	0.11	0.08	0.08	0.05
20	Suspended solids	0.25	0.55	0.52	0.44	0.47	0.38	0.41	0.68	0.66	0.4	0.31	0.68	0.72	0.52	0.55	0.46	0.51	0.57	0.59	0.56	0.49	-	-	0.38	0.36	-	-	0.57	0.45	0.5	0.38
21	COD	30	11.1	10.5	13.6	12.2	30	27.5	10	27.2	45.5	72.1	10.5	10	11.8	11.5	18.6	15.2	11.9	15	39.7	32.2	-	-	10.9	10.6	-	-	11.9	10.5	20.3	25.7
	BOD	6	5.3	5.2	6	5.8	14.3	13.3	4.8	10	22.2	35.2	4.9	4.8	5.6	5.3	8.9	7.2	5.6	7.4	18.8	15.4	-	-	5.1	5	-	-	5.6	5	10	13.4

### 3.3. Environmental Audit of the Engineer

Environmental Monitoring is among the major tasks of the construction supervision team. Likewise, under the construction contract, the Contractor is obligated to ensure that construction has no or minimal adverse impact to the environment and the communities. The Engineer and the Contractor should have a close collaborative coordination in performing environmental monitoring of activities to be effective in the minimization and avoidance of impacts.

The CSC Environmental Specialist undertook inspection intermittently at the project site in October and November 2012 and came up with a number of observable situations where the Contractor can improve in providing added environmental mitigation measures and precautionary measures to improve safety at the workplace.

In addition, these identified issues were presented to the Contractor and his concerned staff on 17 November 2012. A copy of the presentation materials is shown in the Annex B. Subsequently, the national environmentalist<sup>4</sup> was mobilized in the site on 20 November 2012 and continued monitoring of the identified issues. The output of the environmental inspection of the local environmental specialist is included in the Table below entitled “**Observed Issues During the Environmental Inspections**”.

During the reporting period, the Contractor (KCC) also submitted their updated project Environmental Management Plan on 30 November 2012. This plan was much improved from the initial submission was approved with the following comments/remarks to the Contractor by the international environmental specialist:

*“You are herewith requested to submit additional project specific supplemental information to the environmental management plan (EMP) based on Technical Specifications Section 106 “Protection of the Environment”*

*These additional inputs shall be treated as SUPPLEMENTAL ENVIRONMENTAL PLANS which can serve as Annex to the Contractors EMP as follows:*

- *Water Quality Management Plan*
- *Dust Management Plan Noise Management Plan Borrow Pit Management & Re-instatement Plan*
- *Campsite/s Management Plan*
- *Solid Waste Management Plan*
- *Hazardous Waste Management Plan*
- *Soil Management Plan*
- *Traffic & Safety Management Plan*
- *Health (HIV/AIDS) & Safety Mgnt. Program*

*The bases of your formulation of the Supplemental Plan are the EIA document (with focus on the EMP), the Technical Specifications, GCC, PCC and prevailing Kazakhstan laws, norms and regulations. These supplemental plans shall serve as guides in the Contractor’s overall execution of works in the environmental aspects as well as in the environmental self-monitoring reports.”*

Base on the above mentioned, the Contractor was hereby expected to provide the supplemental plans which would be check in the succeeding bi-annual environmental audit.

<sup>4</sup> Ms. Ms.Gauhar Tastanova, (JV Quality Plan), national environmental Specialist.

## **PART III: ENVIRONMENTAL MANAGEMENT**

### **4. ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

The main objective of the Environmental Management Plan (EMP) during the implementation and operation of the project to avoid, reduce, or at least minimize the adverse environmental impacts that could result from the activities. Accordingly, the EMP considers 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 can arise 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. The EMP will be continuously updated to include issues unforeseen during the formulation of the IEE.

### **5. OBSERVED ENVIRONMENTAL IMPACTS**

During the periodic field mobilization and inspection of the International Environmental Specialist<sup>5</sup> in November 2012 as part of the CSC (the Engineer) Team, the work scope undertaken in coordination with Contractor (KCC) for the project road consisted of the following:

- Field inspection of the worksites in including facilities and ancillary work areas. Field investigation included worksites along the project road sections, borrow pit area, access roads, bridges and canals, and Contractor's work camp.
- Joint field assessment on the current situation of the material sources activities at the following: (i) Yermek – boulder and gravel source; (ii) Zhumakhan – subbase borrow pit; (iii) Grave-Sand Quarry with washing equipment at (km) 262+300; (iv) Embankment Borrow pit at km 269+500 (Right Hand Side)
- Detailed inspection was done on the sand-gravel set-up near bridge no. 1 (Shu River).
- Discussion on road safety and status of the required Contractor's Environmental Action Plan (CEAP) or EMP and supplemental plans.

Presented below are the environmental, health and safety issues observed at the vicinity of project worksites during the actual monitoring of the CSC personnel, field reconnaissance of the CS international environmental consultant and national environmental specialist.

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<sup>5</sup> Mr. Samuel E. Sapuay, Kocks Consult International Environmental Specialist was at the project site in November 2012 to perform Environmental Monitoring



**Table 5: Observed Issues During the Environmental Inspections**

No.	Description of EHS Issue <sup>6</sup>	Description of Proposed Measures	Updates on the Resolution by the Contractor	Follow-through Inspection <sup>7</sup>
1	<u>Water Quality Contamination</u> – (The siltation pond that retains wash-water from the sand-gravel washing equipment is nearly full with silt. During the heavy silty water can escape and result in contamination of the Shu River. TWO CRITICAL ISSUES EXIST: (1) Pond silt holding capacity has already been reached (Photo No. 1); (2) the filter berm is too low and has to be increased in elevation (Photo No. 2).	<u>Necessary Response from the Contractor:</u> (1) Periodically de-silt the pond and bring the dry silt in appropriate places such as borrow pits, etc.; (2) the gravel filter berm should have height increase to add more to its capacity and reinforced to prevent collapse from the turbulent flow of the Shu River	(1) On 19 November 2012, the Contractor has started adding some more gravel to increase the height of the berm (Photo No. 3)  No de-silting has been done yet.	During site inspection it was found out that material washing works have been suspended due to weather conditions (Photo No. 4).
2	<u>Workers' Safety Issue<sup>8</sup> at Bridge Construction Sites</u> – (1) Workers were not wearing helmets (Photo No. 5); (2) One worker was wearing rubber shoes instead of prescribed working boots (Photo No 6).	<u>Necessary Response from the Contractor:</u> (i) the Contractor should instruct every worker at the site to wear the prescribed helmets and work boots; (ii) the Contractor should report compliance as soon as possible	For compliance by the Contractor	Information on provision of PPE will be submitted on November 27, 2012. (Health & Safety Officer was on leave)
3	<u>Improper Solid Waste Management at the Subcontractor's Site</u> – Rubbish scattered at the Campsite of the Subcontractor (Photo No. 7); Also contamination at the Subcontractor's Camp (Photo No. 8)	The Contractor should regularly inspect sites of subcontractors and instruct them to comply with EMP and all prevailing regulations	For compliance by the Contractor	This issue was discussed directly with the Subcontractor "MO-1" LLP
4	<u>Diversion road at Bridge No. 2 is too</u>	The contractor should put additional	For compliance by the	No action from the

<sup>6</sup> Observed Issues prior to November 17, 2012

<sup>7</sup> Observed after November 25, 2012

<sup>8</sup> Such issue was also mentioned in Road Safety Report, October 2012. Kocks Consult GmbH

No.	Description of EHS Issue <sup>6</sup>	Description of Proposed Measures	Updates on the Resolution by the Contractor	Follow-through Inspection <sup>7</sup>
	<u>narrow</u> – The diversion road is too narrow over the temporary pipe crossing. This is risky to truck and vehicular traffic (Photo No. 9).	steel pipes and widen the road	Contractor	Contractor as of to date (Photo No. 10)
5	<u>Temporary road over culvert is too narrow and the old concrete girder is misaligned at Bridge No. 3</u> – The temporary road is too narrow and risky to truck and vehicular traffic. The misaligned concrete beam is at the verge of falling into the water. (Photo No. 11)	The contractor should stabilize the concrete beam and widen the road	For compliance by the Contractor	No action from the Contractor as to date (Photo No. 12)
6	<u>Additional Plans required for the EMP</u> – The submitted EMP should have the following detailed SPECIFIC SUPPLEMENTAL ENVIRONMENTAL PLANS: <ul style="list-style-type: none"> <li>• Water Quality Management Plan</li> <li>• Dust Management Plan</li> <li>• Noise Management Plan</li> <li>• Borrow Pit Management &amp; Re-instatement Plan</li> <li>• Campsite/s Management Plan</li> <li>• Solid Waste Management Plan</li> <li>• Hazardous Waste Management Plan</li> <li>• Soil Management Plan</li> <li>• Traffic &amp; Safety Management Plan</li> <li>• Health (HIV/AIDS) &amp; Safety Mgnt. Program</li> </ul>	The contractor provide additional plans as soon as possible	For compliance by the Contractor	The official letter (121124-PD-338) has been transmitted to the Contractor regarding additional information to EMP reflecting above mentioned issues. Another Letter (121124-PD-338) was sent to Contractor subsequently for immediate actions.
7	<u>Borrow Pit Operations and Reinstatement at km 296+500, Shumak Han and Rock/Gravel Quarry Operations and</u>	The Contractor should produce Reinstatement Plans which shall be the basis of environmental	For compliance by the Contractor	The quarry works were being continued as before. Letter

No.	Description of EHS Issue <sup>6</sup>	Description of Proposed Measures	Updates on the Resolution by the Contractor	Follow-through Inspection <sup>7</sup>
	<p><u>Reinstatement at Yermek</u> – (1) deep excavations with vertical cuts and such condition will make it difficult for natural re-vegetation and pose danger to people and livestock (Photo No. 13); (2) the stream from irrigation canal runs alongside the Shumak Han borrow area and the borrow operation can alter the path of the stream (Photo No. 12); (3) the Yermek rock/gravel quarry should be visited by Contractor’s Environmental Staff to advise operators for proper operation (Photo No. 13)</p>	<p>monitoring and compliance</p>		<p>regarding reinstatement of quarries has been sent to the Contractor. (121124-PD-338) (Photo No. 14)</p>
8	<p><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</p>	<p>The Contractor should construct impervious slab at a spot dedicated for the fuel truck.</p>	<p>For compliance by the Contractor</p>	<p>The instruction was given on elimination of violations. 121124-PD-339.</p>
9	<p><u>Safety provisions at the Camp</u> – power generator and transformer area has to have extra buffer and signs alerting people to keep out (Photo No. 15)</p>	<p>The Contractor should provide/install buffer barriers, e.g. concrete blocks, around the power generator and alert and warning signs (against electric shock) at the fence.</p>	<p>For compliance by the Contractor</p>	<p>Signs were still not installed and part of written instruction in letter 121124-PD-339. (Photo No. 16)</p>
10	<p><u>Safety provisions and accident prevention</u> – with the entry of the winter season the worksite becomes risky. The Contractor has to provide safety seminar to all his staff along with his Subcontractors</p>	<p>The Contractor should provide regular safety training to truck drivers and staff, including to those of the subcontractors.</p>	<p>For compliance by the Contractor</p>	

## 6. NOTICES AND LETTERS TO THE CONTRACTOR

During the three-month 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 6: Letters on Environmental Issues and Concerns (Oct-Dec. 2012)**

Letter No.	Dated	Ref.	Content	To/From
1	30.09.2012	120930-PD-190	Environmental issues	to KCC
2	02.10.2012	121002-PD-203	Environmental and social issues raised during 1 <sup>st</sup> October 2012 ADB Mission	to KCC
3	13.10.2012	121013-PD-229	Submission of Bi-Annual Environmental monitoring report	to KCC
4	18.10.2012	121018-PD-249	Submission of EMP	to KCC
5	30.10.2012	121030-PD-269	Preliminary approval and comments on the most recent Contractor's EMP	to KCC
6	08.11.2012	121108-PD-286	Environmental permit	to KCC
7	24.11.2012	121124-PD-338	Ecological auditing	to KCC
8	29.11.2012	121129-PD-354	Submission of information on environmental protection	to KCC
9	18.10.2012	KOCKS/148/2012	Extend submission EMP	from KCC
10	23.10.2012	KOCKS/156/2012	Confirmation of EMP	from KCC
11	03.12.2012	KOCKS/217/2012	Elimination of violations mentioned in Engineers letter 121124-PD-338.	from KCC
12	21.12.2012	TL/DC/General/92 3/2012	Bi-annual Environmental monitoring	from PMC

## 7. CORRECTIVE ACTION PLANS

Within October - December 2012 environmental monitoring was performed on the road under construction contract of Kocks Consult GmbH, namely the **Aspara-Blagoveshenka Section in Zhambyl Oblast: Investment Program Project 4**. This yielded a number of observable issues which the Contractor had to mitigate. This report also presents recommended mitigation measures which can be implemented by the Contractor to mitigate the observed situation and should be inspected by CSC Inspectors.

Most of the issues encountered in this periodic inspection were in the aspect of Shu River silt contamination, safety issues, environmental documentary issues, and campsite contamination issues. The measures to mitigate impacts were recommended accordingly and discussed within this report. Intensive inspection was undertaken by the International Environmental Specialist in the early part of November and the result of which was presented and discussed in a seminar at the Engineer's office on November 17, 2012. A follow-through inspection was done by national environmental specialist sometime in later part of the month and incorporated in this report.

The Descriptions of Proposed Measures included in Table 5: Observed Issues During the Environmental Inspections has to be complied with by the Contractor as soon as possible. A number of relevant letters have already been sent to the Contractor as official notice. The CSC inspectors will include these items in their scope of regular supervision of the site.

# **ANNEX**

## **Annex A: Environmental Monitoring PHOTOS**



**Photo No. 1 : Pond's silt holding capacity near spilling condition**



**Photo No. 2 : Filter berm is too low and needs to be increased in height**



**Photo No. 3 : Contractor starting to increase the elevation of filter berm**



**Photo No. 4 : Suspension of material washing work due to bad weather**





**Photo No. 5 : Workers not wearing helmets**



**Photo No. 6 : Improper protection by wearing rubber shoes in the work site**



**Photo No. 7 : Improper solid waste management**



**Photo No. 8 : Improper hazardous waste management (spills and drums) at bridge no. 1 Subcontractor camp**



**Photo No. 9 : Too narrow diversion crossing at bridge no. 2**



**Photo No. 10 : Still the same condition of the narrow crossing at bridge no. 2**



**Photo No. 11 : Narrow crossing at bridge no. 3**



**Photo No. 12 : Unchanged situation at bridge no. 3**



**Photo No. 13 : Vertical Cuts at borrow pit at km 269+500**



**Photo No. 14 : Recent situation of the borrow pit at km 269+500**



**Photo No. 15 : Absence of delineation for safety and absence of warning sign**



**Photo No. 16 : Similar situation prevailed (no safety delineation and signs) in previous inspection**



**Photo No. 17 : Parametric measurements in October 2012**



**Photo No. 18 : Parametric measurements in November 2012**



**Photo No. 19 : Parametric measurements in December 2012**




**Photo No. 20: PowerPoint Presentation during the Environmental Seminar on 17 Nov. 2012**




**Photo No. 21: Environmental Seminar and discussions on 17 Nov. 2012**




## **Annex B: Slides in the Second Environmental Seminar**









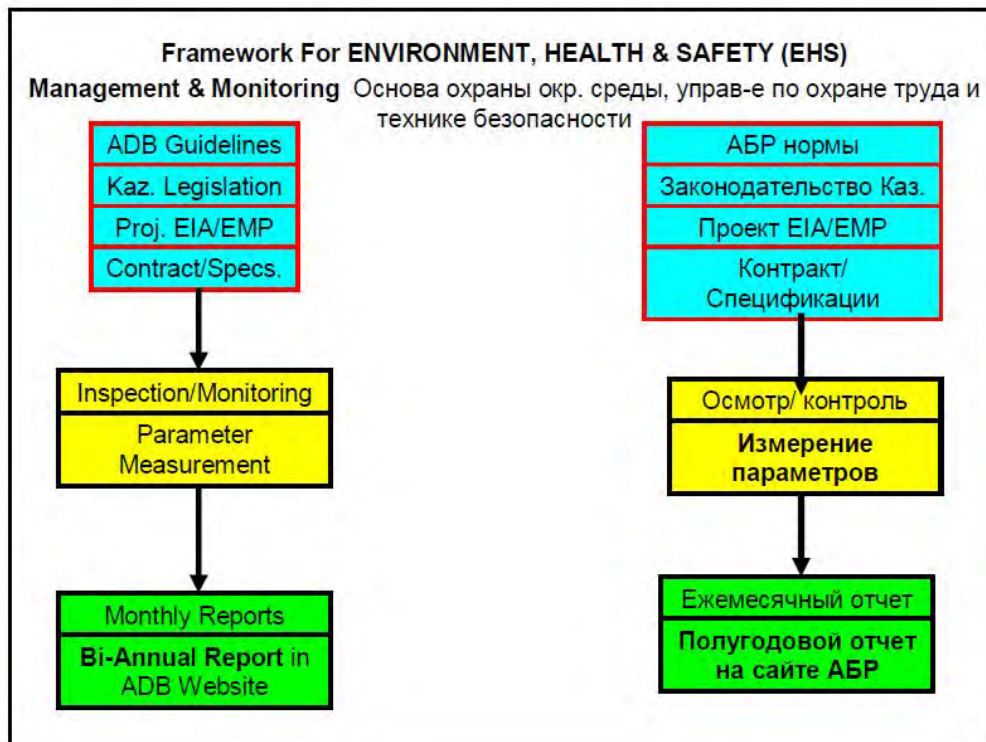
**(ADB 2735 KZ)**  
***Seminar No. 2 on***  
**Environmental, Health and**  
**Safety Management &**  
**Monitoring**  
**For Aspara – Blagoveshenka**  
**Section**

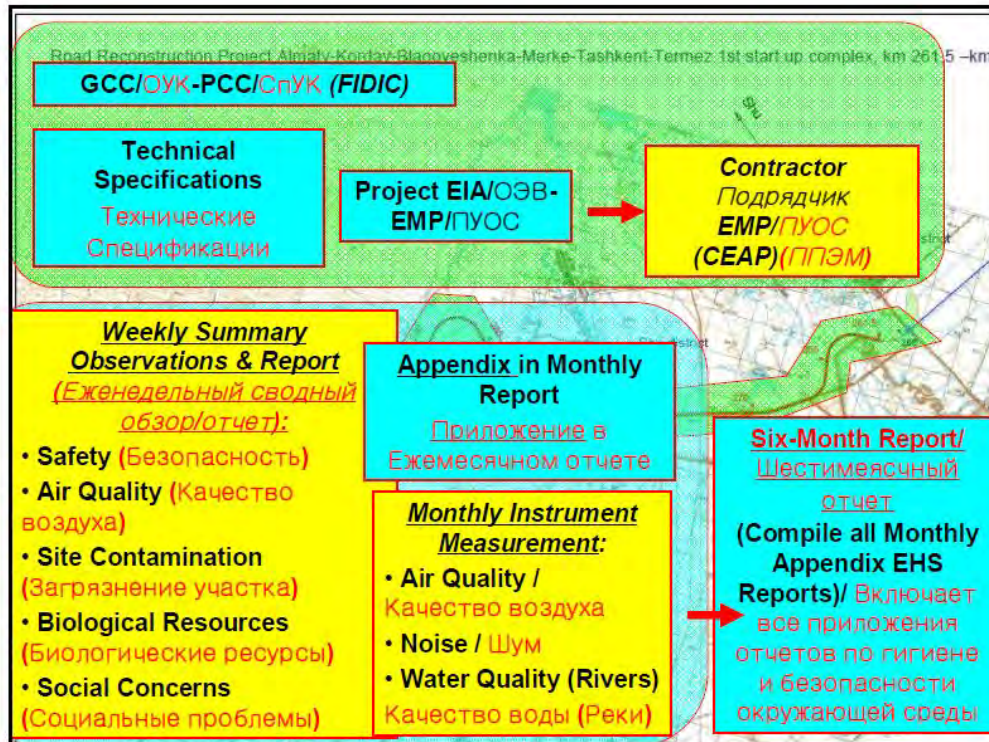
**АБР (2735 KZ)**  
**Семинар № 2 по окр.**  
**среде, охране труда,**  
**технике безопасности**  
**и контролю на**  
**участке Аспара-**  
**Благовещенка**

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	
<b>Спец. обеспечение по охране окружающей среды, управлению по охране труда и технике безопасности</b>	
<b>FIDIC-GCC-PCC:</b>	<b>FIDIC-GCC-PCC:</b>
4.8 – Safety Procedure	4.8 – процесс безопасности
4.18 – Protection of Environment	4.18 – Охрана окружающей среды
4.15 – Access Route	4.15 – доступ маршрута
4.24 - Fossils	4.24 - Ископаемые
6.7 – Health & Safety	6.7 – охрана здоровья и техника безопасности
<b>Technical Specs:</b>	<b>Технические спецификации:</b>
<b>106 – Protection of Environment</b> (Fuel & Chemical Storage, Water Quality, Air Quality, Noise, Earthwork, Preservation of Antiquities, Environmental Enhancement)	<b>106 – Охрана окр. среды</b> (Топливо и хранения химических веществ, качество воды, качество воздуха, шум, Земляные работы, сохранения древностей, оздоровления окружающей среды)
<b>113 – Diversion and Traffic Control Measures</b> (Traffic Management Plan, etc.)	<b>113 – Объездные дороги и меры по регулированию движения</b> (план регулирования дороги, и.т.д.)

**Weekly Monitoring Form**

Name of Inspector : _____	Date : _____	Time : _____
Signature : _____		
Location : _____		
Description of Environmental Concern : _____ _____ _____ _____ _____		
Succeeding Protocols / Steps : <input type="checkbox"/> For Immediate Action by Contractor <input type="checkbox"/> For Discussion with Contractor <input type="checkbox"/> For Discussion with CSC Team		
Photos : 		

Форма  
еженедельного  
мониторинга

**Status of KCC EMP**

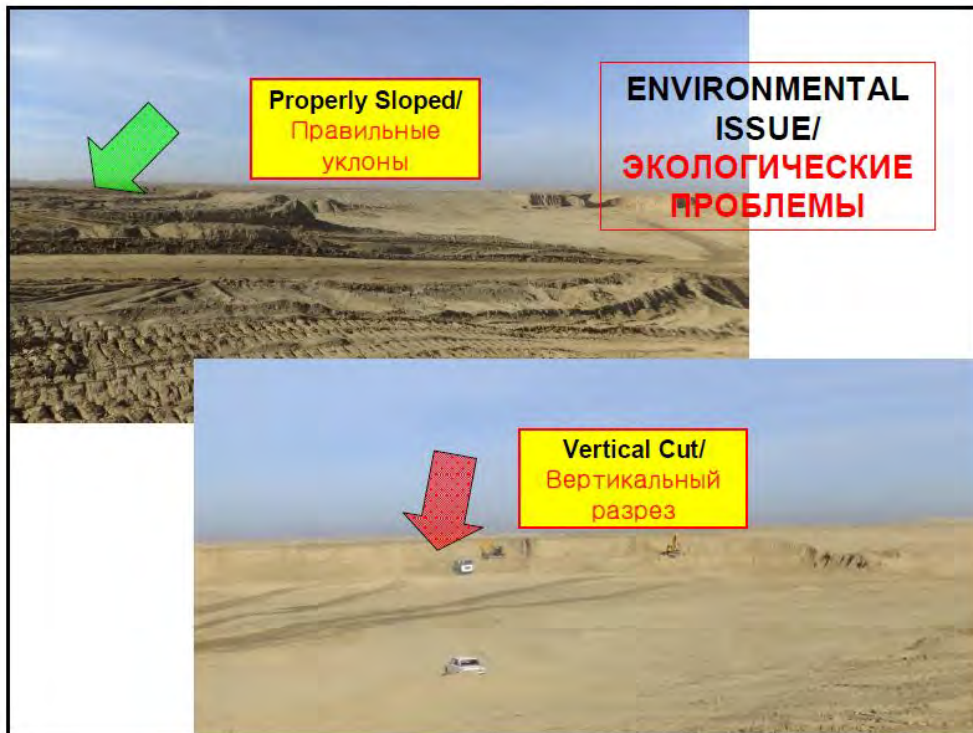
**MAIN REPORT – Completed; Approved Subject to Updating/  
ОСНОВНОЙ ОТЧЕТ – Завершен; Одобрен и подлежит обновлению**

**SPECIFIC SUPPLEMENTAL ENVIRONMENTAL PLANS:  
СПЕЦИАЛЬНЫЕ ДОПОЛНИТЕЛЬНЫЕ ПЛАНЫ ПО ЭКОЛОГИИ:**

- **Water Quality Management Plan/ План по управлению качеством воздуха**
- **Dust Management Plan/ План по управлению уровнем пыли**
- **Noise Management Plan/ План по управлению шумом**
- **Borrow Pit Management & Re-instatement Plan/ Управление карьерами и План по восстановлению**
- **Campsite/s Management Plan/ План по управлению местом размещения лагеря**
- **Solid Waste Management Plan/ План по управлению твердыми отходами**
- **Hazardous Waste Management Plan/ План по управлению вредными отходами**
- **Soil Management Plan/ План по управлению почвенными ресурсами**
- **Traffic & Safety Management Plan/ План по управлению безопасности на дороге**
- **Health (HIV/AIDS) & Safety Mgmt. Program/ План по управлению охраной труда**





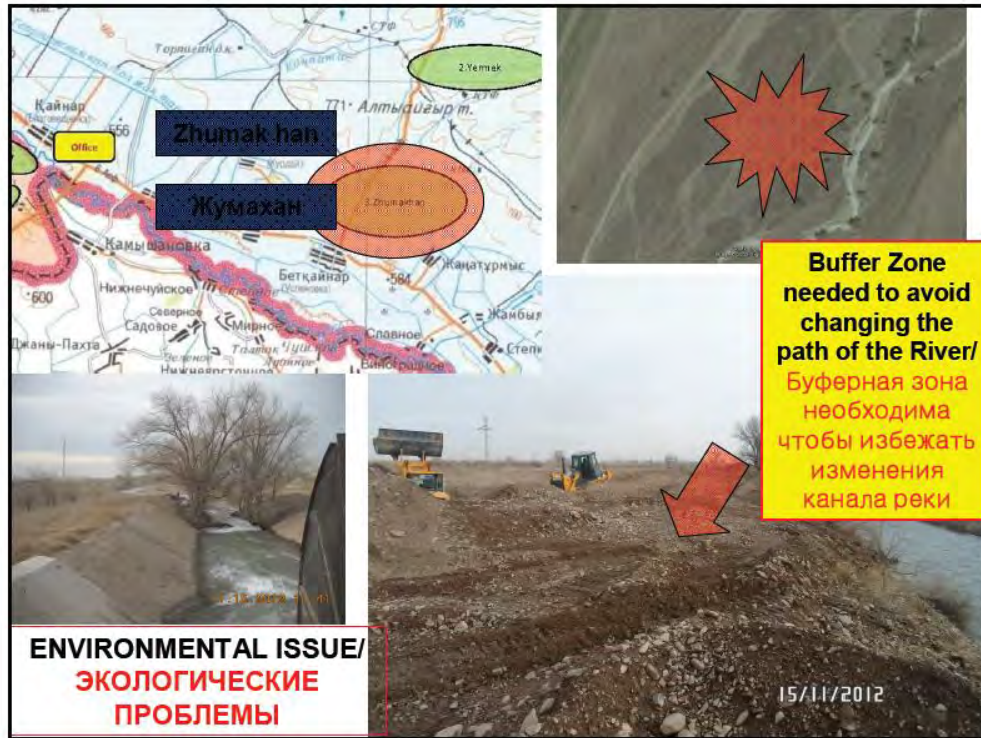












**Fuel and Chemical Storage (Specs. 106-B)**  
*To be inside impervious base with a bund!*

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

**Топливо и хранения химических веществ (Спец. 106-В) Хранить топливо на жестком непроницаемом фундаменте**

**ENVIRONMENTAL ISSUE/  
ЭКОЛОГИЧЕСКИЕ ПРОБЛЕМЫ**

