



This project is funded by  
The European Union

## Environmental Protection of International River Basins Project



A project implemented by a Consortium  
led by Hulla & Co. Human Dynamics KG

### TERMS OF REFERENCE

#### Refurbishment of Gazakh Regional Laboratory of MENR of Azerbaijan Republic

##### 1. Background and Objectives

The EU funded project Environmental Protection of International River Basins Project (EPRIB) focuses on seven Pilot River Basins in the Black Sea and Caspian basins, improving the monitoring programmes and systems and River Basin Management Planning In Azerbaijan, the selected pilot river basin is the 'Central Kura' – comprising the tributaries of the Kura River: Ganjachay, Shamkirchay, Tovuzchay and Agstafachay. Gazakh Regional laboratory is located in the region and is to be the main facility for implementation of the water quality monitoring of the pilot basin and the wider region.

The EPIRB project is supporting the refurbishment of Gazakh Regional Laboratory of Ministry of Ecology and Natural Resources of Azerbaijan Republic, in order to equip it to conduct chemical and biological analyses of water in compliance with the European Union's (EU) Directive 2000/60 *establishing a framework for Community action in the field of water policy* (better known as the Water Framework Directive, WFD).

In the first stage the Gazakh Regional Laboratory of the MENR needs to be equipped for analysing the 'more traditional' parameters, including:

- pH in water, 'in situ'.
- Dissolved oxygen ( $O_2$ ) and oxygen saturation in water, 'in situ'.
- BOD<sub>5</sub> (biochemical oxygen demand, five days).
- $NH_4^+$  (total ammonium).
- $NO_3^-$  (nitrate).
- $NO_2^-$  (nitrite).
- $PO_4^{3-}$  (phosphate).
- $P_{total}$  (total phosphorus).

The Gazakh laboratory currently uses an old spectrometer for analysis of the nitrogen compounds and phosphate. Total N and P isn't determined because of lack of methodology. In the second stage of the rehabilitation program new equipment will be needed to determine total N.

Main objective of this pilot project is to help the laboratory to purchase new equipment to conduct water quality analyze for the abovementioned parameters.

## 2. Scope of work

The list of equipment to be procured in the first stage of refurbishment of Gazakh regional laboratory of MENR of Azerbaijan Republic is specified below:

*Table 1. List of laboratory equipment to be procured for Gazakh Regional Laboratory of MENR*

N	Equipment	Quantity	Use
1	Equipment for analysis of common nutrients ( $\text{NH}_4^+$ , $\text{NO}_3^-$ , $\text{NO}_2^-$ , $\text{PO}_4^{3-}$ , $\text{P}_{\text{total}}$ )	1 unit	Determination of nitrate, nitrite, total ammonium, phosphate ions and total phosphorus in water and soil samples
2	Incubator for analysis of $\text{BOD}_5$ (requires temperature of 20 °C)	1 unit	Determination of $\text{BOD}_5$ in water samples
3	Portable oxygen meter	1 unit	Measuring dissolved oxygen ( $\text{O}_2$ ) and oxygen saturation in water 'in situ'
4	Portable pH-meter	1 unit	Measuring pH in water 'in situ'

More detailed technical specifications are included in Annex 1.

The tasks under these Terms of Reference are to:

- Procure and deliver the abovementioned equipment to the Gazakh Regional Laboratory of MENR.
- Install the equipment and make it operational.
- Provide hands-on training to the staff on:
  - how to use the equipment;
  - how to calibrate the equipment;
  - how to maintain the equipment.
- Provide aftersales maintenance

## 3. Duration , schedule and implementation modality

Installation of laboratory equipment will start after selection of the supplier company to purchase and deliver the equipment to the Gazakh Regional Laboratory. It is planned to finalise installation of equipment, training and maintenance and aftersales guidance by end of May 2016.

Duration of this contract will be **4 months**. The expected commencement date of the assignment is February **01, 2016** and the completion date - **May 31, 2016**.

The assignment is divided into three consecutive phases with the following schedule and deliverables:

Task				
	Feb	Mar	Apr	May
<b>Phase 1.</b> Delivery of the equipment and its installation				
<b>Phase 2.</b> Hands-on on-site training				
<b>Phase 3.</b> Maintenance and aftersales guidance /if necessary, a field check and adjustment of purchased equipment/				

#### 4. Remuneration and payment schedule

A contractor will be paid in two tranches. Payment will be subject to approval the EPIRB Project Management Team consisting of the Project Team Leader and the Consortium Project Director on the base of the written and signed Certificate of Completion, issued by direct beneficiary - Gazakh regional laboratory of MENR of Azerbaijan Republic.

The Gazakh regional laboratory of MENR of Azerbaijan Republic will be responsible for providing a good space in the laboratory for installation of the equipment and ensuring a day-to-day management and inspection of the procured goods. After completion of the delivery and final field check, the contractor shall pass *legal ownership* for all the purchased and installed equipment, as well as aftersales service and warranty to the main beneficiary of these works through a memorandum of Understanding.

The payment is divided into the following two (2) tranches:

- |                         |  |
|-------------------------|--|
| <b><u>Tranche 1</u></b> | 70% of the total contract value after acceptance of Phase 1 and 2 deliverables                               |
| <b><u>Tranche 2</u></b> | 30% of the total contract value after acceptance of Phase 3 deliverables and issue of completion certificate |

**ANNEX 1. GENERAL TECHNICAL SPECIFICATIONS****1] Equipment for Analysis of Common Nutrients: UV-VIS Spectrophotometer**

Wavelength range	190 – 1100 nm or better
Wavelength accuracy	1 nm or better
Photometric system	double beam
Cuvettes	
Consumables (standards) for $\text{NO}_3^-$ , $\text{NO}_2^-$ , $\text{NH}_4^+$ , $\text{PO}_4^{3-}$ , $\text{P}_{\text{total}}$	
Software routines: methods, profiles, modes, etc.; installed <i>and/or</i> for PC	<i>to be itemised by the tenderer</i>
PC connectivity	USB and/or Ethernet
Power supply	220/230 V, 50/60 Hz

**2] Incubator for analysis of BOD<sub>5</sub>**

Temperature range	5.0 – 40.0 °C or better
Accuracy	± 0.1 °C or better
Number of trays	5 or better
Programmable timer	
Power supply	220/230 V, 50/60 Hz

**3] Portable oxygen meter**

Measurement range	concentration	0.0 – 40.0 mg/l or better
	saturation	0.0 – 200.0% or better
	temperature	0.0 – 50.0 °C or better
Accuracy	concentration	0 – 20 mg/l: 2 decimal digits; ± 1.5% or better >20 mg/l: min. 1 decimal digit; ± 1.5% or better
	saturation	0 – 200%: 1 decimal digit; ± 1.5% or better >200%: ± 1.5% or better
	temperature	0.0 – 50.0 °C; ± 1.5% or better
Operation conditions	outside temperature -5 – 50 °C or better	
Salinity correction		
Altitude <i>and/or</i> Air pressure correction		
Items and consumables for calibration, cleaning and maintenance		
Carry case		

**4] Portable pH meter**

Measurement range	concentration	-2.00 – 16.00 pH or better
	temperature	-5.0 – 100.0 °C or better
Accuracy	concentration	± 0.01 pH or better
	temperature	± 0.1 °C or better
Operation conditions	outside temperature -5 – 50 °C or better	
Automatic temperature correction		
Buffers for calibration		
Items and consumables for cleaning and maintenance		
Carry case		