

REPORT

On Wastewaters Condition and Environment Monitoring Arrangements for the Azerbaijan Area of the Caspian Sea

The Caspian Sea, as the largest reliction-locked water basin enjoying unique flora and fauna, is situated on the very strip separating the continents of Asia and Europe.

Thus being surrounded by five countries, this reliction-innermost water basin is a distinctive one with its economic potentials and large population.

955.08 km of its coastline falls on Azerbaijan. The salinity on the Azerbaijan coast ranges between между 10-12 per mille. The salinity of the area between the mouths of Samur and Sugaitchai rivers comes up to 10 per mille and that of around Apsheron area – to 11 per mille; on the Baku archipelago, in particular, where the Kura River flows in, the salinity is considerably less.

Water temperature is being affected by the atmosphere, and increases north to south. Depending on depth, the temperature fluctuations are insignificant. Maximal water temperature in the Azerbaijan coastal falls on July-August period, and minimal one – on December and February.

There is a number of islands in the Caspian Sea; and the largest of them are in the Apsheron and Baku archipelagoes, namely the Pirallahi, Chilov, Hara-Zira, Sangi-Mugan, Ghil, Ghum, Zira, Dash Zira, Duvanni, etc. The total area of these islands comes up to 92.7 km².

Evidently, the main pollution contributor in the Caspian Sea is the inobservance of the environmental requirements and standards during hydrocarbon deposits industrial development. In the 18th -19th centuries, the times of seafaring fishery developments in the Sea, oil pollution was being observed by fishermen. In the 40-s of the 20th century, over the noted fishery activity places (natural oil and gas discharges over water surface) near the Apsheron peninsula, the Sea pollution had been noted. It was discovered that these areas hold rich hydrocarbon resources, and the oil industrial extraction started. In the area called the «Neftyanije Kamni» (Russian for «Oil Rocks») the oil extraction volumes were increasing annually, flyovers were erected and living areas were built up. Till the beginning of the 1980-s the length of flyovers between oil-extraction sites was extended up to 250 km.

Thus, being the largest lake on earth, enjoying rare flora and fauna species, the Caspian Sea with its rich natural resources attracted local and foreign businessmen. The spontaneous sites operation has raised a range of urgent environmental issues.

Irresponsibility towards the Caspian Sea environment in the times of the planned centralized economy of the former Soviet Union coupled with wastewater flows from the big cities, industrial enterprises, agriculture activity and developments, etc. have strongly contributed to its pollution. After the breaking-down of the former Soviet Union, the Caspian Sea, as a holder of the quality hydrocarbon deposits, fell into the spotlight for foreign investors. All this unreasonable natural resources management in the Caspian Sea area along with not properly treated wastewater flows of rivers, from industrial enterprises, public utilities, agricultural activity, oil-extraction, transports, etc. have led to pollutions by biogenic, organic, non-organic substances, some kinds of heavy and active metals, pesticides, oil hydrocarbon, heavy active metals and other stuff ingredients. Naturally enough, all that has strongly affected the flora and fauna of the Caspian Sea Каспийского моря.

The social and economic troubles of the transition period did not allow handling and solving environmental issues for a number of years. To cut a long story short, to prevent the Sea pollution, there was no means at all for improvement, maintenance, overhaul of the existing treatment works. For many years there was no financial support available for removing and taking out the sunk ships and vessels, dilapidated flyovers, other hydro- and technological structures and works not fit any more for proper purposes; all these issues being unresolved till last years.

For treatment of communal wastewaters on the Pirallahi and Chilov islands and also in the «Neftyanije Kamni» area, the cutting-edge treatment works meeting all environmental requirements and standards have been built up and put into operation.

For treatment of communal wastewaters in the «28 May» and the «Neftyanije Kamni» NGDU-chi, the treatment works meeting all environmental requirements and standards have been built up and put into operation on the «Neftyanije Kamni» site. One of two bio-treatment works on the Chilov Island has been built, and the building of another is going on.

For the last time, due to economic development of the Republic, the matters of studies, handling and solving of all environmental issues have been vested as official functions in the Environment and Natural Resources Ministry of the Azerbaijan Republic. Thus, the following priorities have been laid upon this Ministry: to define quality and quantity values for deleterious substances getting into all wastewaters flowing down into the Caspian Sea in the Azerbaijan area. To perform these functions, first of all the financial support and facilities for the labs have been provided, professional skills and experiences of the staff have been improved.

A target team from the Ministry regularly arranges for wastewaters monitoring over the sites having access to the Sea, such as industry, communal services, agriculture, rivers, ships, vessels, etc. This target team shall define quality and quantity values for natural and anthropogenic effects upon the Sea, study these effects on the Sea environment from physical, chemical, biological, microbiological aspects; provide for creation database and geographical information system. According to the data collected during studies of the Sea water and its bottom sedimentations in the Azerbaijan area, the pollution expansion has reduced for the last years. Thus, as compared with the 80-s of the last century the pollution percentage has reduced up to 60-70%.

Samples are being taken from sea water and bottom sedimentations in the Azerbaijan area for carrying out analyses for surface synthetic active and biogenic substances (ions of ammonium, nitrates, nitrites, phosphates, silicates), chemical oxygen demand, oil products, phenol, suspended substances, sulphates, chlorides and heavy metals (zinc, copper, lead, nickel, manganese, cobalt, cadmium, chrome, iron, silver, etc); eco-toxicological and microbiological studies are also being carried out. The studies of ecological standard, establishing interrelations between departments and offices have been very important for handling and solving the existing environmental issues. The main purposes of this activity are to establish ecological education, simultaneous development of economy and ecology, waste products management meeting the requirements and regulations of the current legislation of the Republic and International Conventions. We believe that without all the above-mentioned the further development of industrial and ecological ethics.

In that way, on the basis of the Report a Comprehensive Arrangements Program has been elaborated on the following issues: studies of environmental problems and issues negatively affecting the Caspian Sea, carrying out proper environment protection activities in view to render harmless or fully eliminate of waste discharges. These reports, as designated to solve environmental issues, were submitted to the Government of Azerbaijan. To solve these issues, the President of Azerbaijan signed a Decree as of September 28, 2006 "On Comprehensive Arrangements Program For Environment Improvement in Azerbaijan Republic for 2006-2010". The principal arrangements and measures concerning the Azerbaijan area of the Caspian Sea have been scheduled in this Decree. The following arrangements and measures of the Program have been scheduled the Baku Bay:

- To prevent waste and faecal discharges by means of separation of the city industrial and communal wastewater disposal system from the rainwater disposal system;

- To build up local treatment works meeting the nowadays requirements and standards in view of treating wastewaters flowing from industrial enterprises (ship repair docks, oil-refineries, etc.) on the Bay coastline;

- To purify the Bay and the neighbouring beaches from a range of contaminants, such as sunk or half-sunk ships and vessels, various metal and concrete structures, etc .

- To repeatedly carry out works meeting the nowadays requirements and standards for environment protection and cutting-edge technologies on the wharves on the Bay coastline;

- To create a centralized management system meeting the nowadays requirements and standards to carry out works on elimination of waste discharges got into wastewaters and above the sea level;

- Preparation and implementation of measures and activities designated for transferring the enterprises and businesses operating on the Bay coastline and affecting negatively on the environment beyond the city limits;

In view of the Caspian Sea environment improvement in the Bibi-Geibat area the Comprehensive Arrangements Program has put forward the following measures and activities to be implemented:

- In view of the environment improvement in the Bibi-Geibat area both at sea and on the land, all building sites and structures shall be dismantled, and the polluted areas shall be reclaimed;

- Treatment works, industrial and communal wastewater and rainwater disposal systems shall be built in the Bibi-Geibat area.

At present, in view of environment improvement over the area of the Geidar Aliev International Airport a range of the following developments and activities concerning the Caspian Sea pollution is under implementation:

- Preparation and study of the dendrologic project on the repeated roads building towards the Geidar Aliev International Airport;

- Comprehensive measures and activities shall be implemented in view of the environment improvement over the area of the Airport, an environment rehabilitation project elaboration and implementation;

- in view to provide for the environment safety and the natural landscape rehabilitation, the not appropriate enterprises and businesses shall be transferred beyond the Airport limits;

In view of providing for the environment improvement over the area of the Apsheron peninsula the following measures and activities shall be implemented:

- To set up recreation facilities and to carry out rehabilitation works around the Beyuk-Shora Lake affecting the Caspian Sea environment;

- Recycling of the wastewaters and other waters treated on the Govsan Aeration Station, the Gaji-Hasan and Maradakan-Shuvelyani mechanical treatment works, the Buzovnin bio-treatment works meeting all requirements and standards;

- Renewal of the Zykhs mechanical treatment works;

- Renewal of the mechanical treatment works on the Pirallahi, Chilov and Ghum islands and also on the «Neftyaniye Kamni» area in accordance with the nowadays requirements and standards;

- Providing for transportation of the solid wastes from the sites of villages and settlements of the littoral area over to utilization stations;

- Renewal of the Govsan canal in closed in view of preventing polluting discharges into the Caspian Sea and their negative effects on the littoral area;

- Building up appropriate treatment works to provide treatment for wastewaters originating from over Baku city, districts, villages and the Apsheron peninsula area, including building an additional wastewater disposal system;

According to the Comprehensive Arrangements Program, a number of environment protection measures and activities were implemented since the third quarter 2006 till 2007. In that way, water strata management over littoral area was established, particularly on the sites of Bibi-Geybat and Balakhni oil fields. A number of rehabilitation works was carried out on these oil fields to the purpose of drying-out. These works and activities are continuing the same way at present. Rehabilitation works are also being carried out on the treatment works operating in this area. The works and activities on purifying the Sea from the sunk and half-sunk ships and vessels, dilapidated flyovers, abandoned reinforced concrete structures are also continuing, especially in the areas of the Baku Bay the Chilov island.

With a view to improve the Caspian Sea environment, seven local treatment works were built up in the exposed coastline beach areas in 2007, and till present time the installation works are continuing. The mini-treatment works were also installed on northern and southern strips of Azerbaijan area of the Caspian Sea coastline where there are the close-spaced recreation centers and rest homes situated.

The continuation of the above-mentioned activities and measures in the years to come will ensure yet more purification of the Caspian Sea and the Apsheron peninsula what in its turn will enable to eliminate the list of pollution sources.

Technical Specifications on the local treatment works are submitted below for example:

The Caspian Sea Environment Protection Scheme:

The Bilgyakh Works #1

On the works: The bio-treatment plant of 500 m³ per 24 hrs capacity has been installed.

Place of installation: Beside the Heart Center in Bilgyakh.

Purpose: To treat 500 m³ of wastewater in 24 hours up to the values established by the Concentration Limits what will ensure the elimination of one seawater pollution source in the Bilgakh-Zagulba beach area, and the microbiological balance of the Sea will be stabilized.

The Mardakyani Works #2

On the works: The bio-treatment plant of 500 m³ per 24 hrs capacity has been installed.

Place of installation: Two lakes of 24 thousand m² and 40 thousand m³ volumes respectively created by wastewater flows in the Mardakyani area near the «Zolotiye Peski» Recreation Center.

Purpose: The purification of the lake and its source up to the established Concentration Limits values what will prevent the wastewater discharges onto the Mardakyani beach areas, and the Sea water condition in the area will be stabilized.

The Mardakyani Works # №3

On the works: The bio-treatment plant of 500 m³ per 24 hrs capacity and two disintegrators of 240 m³ per 24 hrs capacity have been installed.

Place of installation: The reedy area of 12 hectare between the Buzovna and Shagan villages with wastewater of an average volume of flow 40 m³ per hour.

Purpose: The purification of the reedy and swamped areas and their sources up to the established Concentration Limits values what will prevent the wastewater flow onto the beach areas, and the Sea water condition in the area will be stabilized.

The Buzovna Works # №4

On the works: The Disinfector of 240 m³ capacity has been installed

Place of installation: The swampy lake, with approximate volume of around 144 thousand m³. It was created due to the wastewater flows between the Marian Beach Recreation Center and the living area built-up by Mardakyani country-cottages (dachas).

Purpose: The purification of the lake and its sources up to the established Concentration Limits values what will prevent the waste discharges onto the beach areas of Mardakyani, and the Sea water condition in the area will be stabilized.

The Buzovna Works # №5

On the works: The bio-treatment plant of 100 m³ per 24 hrs capacity has been installed.

Place of installation: The swampy lake, with approximate volume of around 52 thousand m³. It was created due to the wastewater flows over behind the Ali Ayagchi Sanctuary compound in northern part of the Buzovna settlement.

Purpose: The purification of the swampy lakes and their sources up to the established Concentration Limits values what will prevent the waste discharges onto the beach areas of the Buzovna, and the Sea water condition in the area will be stabilized.