



TECHNICAL ENQUIRY

SEARCH FOR TECHNOLOGIES AND DESIGN DECISIONS FOR CREATION OF WASTEWATER PURIFICATION SYSTEMS ON OLKHON ISLAND OF LAKE BAIKAL

**The project is implemented within the 'Energy Efficiency.
Housing and Public Utilities' exhibition
Terms: May 21-24, 2019
Irkutsk, Russia.**

Energy Centre

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PURPOSES AND OBJECTIVES



The Ministry of Housing Policy, Energy and Transport of Irkutsk Region:

Objective: search for technologies and design decisions for creation of wastewater purification systems on Olkhon Island of Lake Baikal and Elantsy village in the Olkhon area of Irkutsk Region, keeping a unique ecosystem of the lake.

- ▶ **Ground conditions:** presence of spawning streams, the increasing loading from visits of tourists on these territories;
- ▶ **Special conditions:** implementation of statutory documents of the environmental legislation and state standards.
- ▶ **The presentation of technological projects, discussion of the proposed solutions and preliminary negotiations will be held within the 'Energy Efficiency. Housing and Public Utilities-2019' exhibition.**

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DESCRIPTION OF THE PROBLEM

- 1** Lack of project documentation with affirmative statements of environmental and design expertise for construction of wastewater disposal facilities.
- 2** Design and exploration work on the construction of new and reconstruction of existing sewage treatment facilities requires significant financial expenses.
- 3** Choice of sewage treatment technology taking into account restrictions regarding enforcement procedure of utilization of the effluents treated to standard quality of maximum allowable concentration (MAC) of harmful substances (according to the Order of the Ministry of Natural Resources and Environmental Protection of the Russian Federation of March 5, 2010 No. 63) and restrictions at the construction of sewage treatment facilities inside the Olkhon area;

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STEPS TAKEN

- ▶ The Scientific Advisory Board on Water Supply and Disposal (hereinafter - SAB) was established at the Government of Irkutsk Region with the involvement of representatives of scientific and specialized organizations.
- ▶ There were two meetings of SAB, where proposals and justifications for the development of a unified wastewater disposal system in the central ecological zone of the Baikal natural territory (hereinafter - the unified wastewater disposal system) were considered.
- ▶ The initiatives for the development of the unified wastewater disposal system is added to the state programme of Irkutsk Region 'Development of housing and communal services of Irkutsk Region' for 2014-2020.
- ▶ The development of the regional Concept for the development of the wastewater disposal system in the central ecological area of the Baikal natural territory is begun. Its purpose is development of the technical and technology solutions aimed at preventing (reducing) pollution of the water area and coastal area of Lake Baikal.



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OLKHON AREA. FEATURES OF THE TERRITORY.

- ▶ **Olkhon Island on Baikal as well as the deepest lake of the world is a unique hiding place of nature. Island size: length - 73.5 km, width - up to 15 km., the population - 9589 people.**
- ▶ **Olkhon is considered the sacred centre of the northern shamanic world.**
- ▶ **Collective accommodation facilities for 7050 people.**
- ▶ **On the territory there are no facilities which discharge wastewater into Lake Baikal, liquid municipal wastes (LMW) are transported to the disposal site.**

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LOAD FROM TOURISTS ON LAKE ECOLOGY

- ▶ For the summer period the number of tourists reaches 651.5 thousand people.
- ▶ A flow of tourists during the winter period grows.
- ▶ Increase in the number of holiday villages.
- ▶ Tourists are host in the private residences.

Volumes of municipal waste on the disposal site are presented in the table:

Year	Municipal solid waste, м ³	Municipal liquid waste, м ³
2014	6728	3922,9
2015	8468,6	4431,7
2016 (by the date of 01.11.2016)	6757,1	4665,1

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LOAD FROM TOURISTS ON LAKE ECOLOGY

The disposal facility in Imel-Kutul area does not meet modern requirements.

Also, there are disposal facilities in Olkhon area municipal entity:

- ▶ **'Eco-B-8'** in the kindergarten (capacity of 8 cubic metres per day), treated wastewater is taken out to the disposal site in Imel-Kutul area;
- ▶ **'Ecolos'** in the school (4.5 cubic metres per day), treated wastewater is channeled into the infiltration field;
- ▶ **'Ecolos'** in the kindergarten (capacity of 4.5 cubic metres per day), treated wastewater is channeled into the infiltration field;
- ▶ The disposal facility with waste water drainage to the infiltration fields established on the territory of the Zapovednoye Pribaikalye FSBI island forestry
- ▶ Local disposal facilities at tourist camps.

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DECISIONS:

Inside the Olkhon area it is necessary to build:

- 1** sewage treatment facilities for deep biological treatment in Khuzhir settlement taking into account an increase in capacity during summer seasons up to 600 cu. m per day;
- 2** sewage treatment facilities for deep biological treatment in Elantsy village with the capacity of 200 cu. m per day;
- 3** sewage treatment facilities for deep biological treatment in Imel-Kutul area taking into account an increase in capacity during summer seasons of 750 cu. m per day.

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