



VODSTROI
*Joint – Stock
Company*

RUSSIA, Moscow, 107803
Novaya Basmannaya street, 10
Tel: (095) 265-90-95
Fax: (095) 261-93-64
Fax: (095) 976-83-09
E-mail: vodstroi@gigrovata.ru

ВОДСТРОЙ
*Открытое
Акционерное общество*

РОССИЯ, Москва, 107803
ул. Новая Басманная, 10
Тел: (095) 265-90-95
Факс: (095) 261-93-64
Факс: (095) 976-83-09

Whoever it may concern:

This is to certify that in a period from 1988 through 1990 by virtue of the assignment from the Ministry of Water Management of the USSR, following Resolution No. 434 dated 13.04.1987 of the CPSU Central Committee and the Council of Ministers of the USSR, the Sovintervod PA carried out the Feasibility Study and developed the Design for the construction of disposal works for the discharge of treated effluents from the Baikal pulp-and-paper mill (BPPM) in the Irkut River.

The technical and civil engineering conceptions suggested for execution of the Project were supported with a full complex of topographic/geodetic, engineering-geological, hydrogeological and hydrological surveys, laboratory studies, socio-economic and environmental studies also carried out by the Sovintervod PA.

The technical and economic feasibility studies, the results of which were presented in the Feasibility Report and in the Final Design, mainly concerned the following aspects:

- the choice of the water conduit route;
- pipe-laying technology;
- the types of pipes recommended for use.

The Design also included all the water conduit-related structures.

Due consideration was given to the pipeline protection against water hammers and corrosion, including electrochemical protection.

The Design included the issues of the Project power supply, automation, communication and remote control, as well as construction organization, the Project operation-and-maintenance, and construction cost estimates.

The Design included the assessment of the expected influence of the water conduit construction on the environment, namely:

- the impact to be caused on the Irkut R. water quality by the discharge of treated effluents from the BPPM;
- the impact of treated effluents discharge on subsurface water;
- the influence of the water conduit route, depending on the alternative to be implemented, on the local flora and fauna;
- the influence of the water conduit construction on the natural landscape as well as monuments of architecture and archeological monuments.

The Sovintervod designers put forward 7 alternatives of the sewage conduit route. The alternative that was finally suggested for construction based on the results of technical and economic comparison had the following characteristics:

- the water conduit was to start from the BPPM sewage treatment works, then go in the westward direction along the East-Siberian Railway Line, at the 17th kilometer cross a mountain pass at El. 1,000 m (whereas the Baikal Lake El. is 456.40 m), and end at the 72nd kilometer with discharge works;
- water conduit length – 72 km;
- design discharge – 3.0 cu m/sec.;
- pipe diameter – 1,200 mm; at places of crossing of natural or man-made obstacles the design provided for 2 lines of pipes, each one 1,000 mm in diameter.

The water conduit-related structures:

- river crossings – 7;
- railway crossings – 6;
- motor road crossings – 4;
- crossings over small water courses and creek valleys – 43;
- rectification and regulating works – 7;
- tailway water outlet – 1;
- emergency collecting tank – 1;
- pumping stations- 2, incl.: PS-1 (head – 95 m, discharge – 3.0 cu m/sec.); PS-2 (head 600 m, discharge – 3.0 cu m/sec.);
- annual electric energy consumption – 311,600,000 kWh;
- basic construction work quantities:
 - excavation – 1,612,000 cu m;
 - fill and backfill – 1,322,000 cu m;
 - rockfill – 24,300 cu m;
 - concrete and reinforced concrete – 29,100 cu m;
 - high-pressure steel pipes – 36,900 t;
 - hydromechanical equipment – 2,800 t;
 - metalworks – 1,130 t.

The total construction cost was estimated at US \$ 77,000,000.

The Sovintervod PA elaborated the said Feasibility Report and the Final Design at high engineering level and submitted them within the time terms stipulated by the Contract.

P. A. Polad-Zade
President
Vodstroj Concern

