

SUE "VODOKANAL  
OF ST. PETERSBURG"

# SUSTAINABILITY REPORT /ANNUAL REPORT/

2011

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## DIRECTOR GENERAL'S ADDRESS

Dear Ladies and Gentlemen,

One basic principle followed by Vodokanal St. Petersburg is not to rest at its laurels. And the year 2011 was no exception for us.

We made a notable step towards environmental safety of the city and the region in general. The automated chemical dosing station for chemical phosphorus removal from wastewater was put into operation at Northern Wastewater Treatment Plant in the presence of the President of Finland. Since June 2011, St. Petersburg has fully met the recommendation of the Baltic Marine Environment Protection Commission: phosphorus concentrations in the total volume of wastewater discharge do not exceed 0.5 mg/l.

Another important indicator is the percentage of treated wastewater. In 2011, we could already treat 94% of municipal sewage. It became possible due to the ongoing construction of the Northern Tunnel Collector (in 2011 we successfully passed the scoured zone and eliminated five more direct discharges) and the close down of seven small-capacity wastewater treatment plants—the sewage formerly collected by them was channeled to Northern WWTP to be treated in compliance with the Russian and international requirements.

Likewise, much has been done in the field of water supply. In 2011, the Kronstadt community got a new water conduit to receive spring water from the town of Lomonosov. Moreover, K-6 treatment block—one of the Russia's cutting-edge facilities—has reached its full capacity since last year enabling us to rise to an utterly new level of potable water production.

We are proud that the work of Vodokanal St. Petersburg is highly appreciated at the international level. In 2011, our company became a finalist for the prestigious award of the European Foundation for Quality Management (EFQM)—Excellence Award-2011. We are the first European water company to achieve such result.

In 2011, we paid close attention to the customer service function. Scrutinizing the customers' needs and expectations we aim to have an open dialogue with each customer, and such dialogue should be built on mutual respect and understanding.

We carry on our awareness-building activities because implementation of new technologies alone can not ensure sustainable city development and environmental protection. We should change the consciousness of people and guide them to responsible attitude towards the nature.

Our priority task is to build solicitous attitude to water and natural resources. In 2011, we undertook a large-scale reconstruction of Vodokanal's Youth Environmental Centre. Now they offer different programmes, some of them designed for little children, while the unique multimedia "stuffing" of the Centre and the interactive technologies used by the YEC personnel help us present to the children even the most complex issues in an interesting and enjoyable way.

Traditionally, our museum complex The Universe of Water enjoys high popularity: it was visited by nearly 216,000 people in 2011.

There are new challenges facing us. The year 2012 will be no less important in the history of Vodokanal. In many respects, it is connected with the adoption of the new federal law "On Water Supply and Wastewater Disposal" which was elaborated with direct involvement of Vodokanal specialists and clearly defined the industry development vector.

Felix V. Karmazinov,  
Director General  
SUE "Vodokanal of St. Petersburg"

# CALENDAR OF EVENTS 2011

JANUARY	MARCH	APRIL	MAY	JUNE	JULY
<ul style="list-style-type: none"><li>● The new block at South Water Treatment Plant began to provide St. Petersburg with drinking water.</li><li>● The new biomonitoring system was implemented at South-West Wastewater Treatment Plant: African snails monitor the flue gas composition from the sludge incineration plant.</li><li>● The International Advanced Water Technologies Centre started its operation. It had been created together with Lahti Science and Business Park (Finland).</li></ul>	<ul style="list-style-type: none"><li>● The technique phase began at one of the major facilities of the Northern Tunnel Collector extension—at the pumping station (URS).</li><li>● "The Universe of Water" museum complex web-site (Vodokanal Petersburg)—www.vodokanal-museum.ru—won the all-Russia corporate media contest "The best corporate media 2011" in nomination "Corporate Media. Internet-portal".</li><li>● Vodokanal became the general partner of St. Petersburg Environmental Week.</li><li>● On 22 March, the World Water Day, the meeting of the youth committee on the environment was held within the framework of the 15th Conference based on the UN model in the Information and Training Centre of Vodokanal. The Youth Environmental Centre was the partner of the youth conference.</li><li>● The Youth Environmental Centre launched environmental and educational project designed specially for school children: Water + Myself = Friends!</li></ul>	<ul style="list-style-type: none"><li>● K-6 Block at South Water Treatment Plant started operations at full capacity.</li><li>● The tunneling of the most difficult collector section was successfully completed at the depth of 70 m, in the scoured zone, from Arsenalnaya str. to Lenin Square.</li><li>● Vodokanal opened the fountain season: the fountain "Ball" at 56 Nevsky pr. and the fountain in Manezhnaya Square were the first to start working in the city.</li><li>● A new phase of the city charity program "Duty" began, under which Vodokanal installs domestic water meters in apartments of veterans of World War II.</li><li>● Information and Training Centre of Vodokanal hosted the VI Parade of Children's underwater movies "Aquafilm".</li></ul>	<ul style="list-style-type: none"><li>● Parts of the tunneling machine, which had been used to construct the missing NTC section, were transported to a storage place.</li><li>● The interactive program for schoolchildren "Living Water" was held at "The Universe of Water" museum complex on the days of Great Victory celebration.</li><li>● The Youth Environmental Centre of Vodokanal completed the project "One Drop Saves Another". Hundreds of guests—children, their parents and teachers—gathered at the festive summary in the Information and Training Centre.</li><li>● Vodokanal received the 100th hydrodynamic machine to wash networks.</li><li>● "The Universe of Water" museum complex took part in the international event "Museums at Night 2011". Over 10,500 people visited the museum in a night.</li><li>● The regional program "Clean Water of St. Petersburg" for 2011-2025 was approved at a meeting of the Government of St. Petersburg.</li><li>● Vodokanal was recognized as the best taxpayer according to results of 2010.</li></ul>	<ul style="list-style-type: none"><li>● On 1 June, International Children's Day, the celebration for children and their parents was held in Vodokanal.</li><li>● Two renovated fountains started working in Rumyantsevsky Garden on Vasilievsky Island.</li><li>● With support of the Internet-portal da-voda.com the clean city event was held on the Morskaya Embankment waterline at Admiralsky proezd.</li><li>● The conference dedicated to the 10th anniversary of the Northern Dimension Environment Partnership (NDEP) was held in Vodokanal.</li><li>● OOO "Vodokanal-Finans" made the first bond coupon payment.</li><li>● Petersburg began to fulfil entirely the Helsinki Commission recommendations on the Baltic Sea protection: phosphorus content in the total wastewater discharge doesn't exceed 0.5 mg/l. At Northern Wastewater Treatment Plant the inauguration ceremony was held dedicated to this event with participation of the President of Finland Tarja Halonen.</li><li>● Vodokanal St. Petersburg was one of the winners of the international quality award European Standard.</li></ul>	<ul style="list-style-type: none"><li>● The photo exhibition "The Underwater World of the Baltic Sea" by the famous Finnish photographer and diver Yukka Nurminen was held in "The Universe of Water" museum complex.</li><li>● Vodokanal extended the bio-monitoring system: Australian red-clawed crayfish estimate the quality of wastewater treatment at South-West Wastewater Treatment Plant.</li><li>● SUE "Vodokanal of St. Petersburg" was among the finalists of the prestigious prize of European Foundation for Quality Management (EFQM)—Excellence Award-2011. Vodokanal of St. Petersburg is the first European water company to achieve such a result.</li></ul>



AUGUST

- The fourth International Festival of Tea and Coffee was held in St. Petersburg with the support of Vodokanal.
- The main work on the Youth Environmental Centre renovation was completed.

SEPTEMBER

- Vodokanal celebrated the Day of Knowledge. Festive events for schoolchildren and first-year students of the Vocational School No. 89 were held in the Information and Training Centre.
- A new fountain on the occasion of the tercentenary of Oranienbaum-Lomonosov was opened in Lomonosov.
- A new water conduit (inverted siphon) was laid along the bottom of the Gulf of Finland, through which spring water is supplied from Lomonosov to Kronstadt. This water conduit replaced the old one, which had served over thirty years.
- Vodokanal participated in the traditional parade of vehicles owned by companies of engineering and energy complex and housing and utility sector in St. Petersburg.
- Video installation "The Neva River Banks" created by the German artist Filipp Geist was opened in the Information and Training Centre.
- The presentation of the students' project NEGA-Resources Approach: Minimum Efforts for the Maximum Result was held within the framework of the IX International Congress on Sustain-

able Production in Vodokanal. It combined the students' works on sustainable development and energy from Russia, Germany, Mexico and China.

OCTOBER

- The Governor of St. Petersburg Georgy Poltavchenko visited the construction of the NTC extension.
- The exhibition of creative works by Company employees "The power of life" was opened in Vodokanal.
- The environmental and educational project for primary school children "The Baltic Regatta" started in the Youth Environmental Centre.
- "The Universe of Water" took part in the city program "Children's Days in St. Petersburg", having developed special exhibition routes for kids of different ages.
- A group of volunteers from the St. Petersburg branch of Greenpeace visited South-West Wastewater Treatment Plant.

- 94% of wastewater is treated in St. Petersburg. It was provided by connecting five direct discharges to the Northern Tunnel Collector and closing seven small-capacity wastewater treatment plants (the sewage formerly collected by them was channeled to Northern WWTP).
- Vodokanal got A.N. Kosygin Prize from the Russian Union of Manufactures.
- Vodokanal took part in the International exhibition of green technologies Cleantech Expo-2011 in Lahti (Finland).

NOVEMBER

- The State Duma approved in the third reading the federal law "On Water Supply and Sanitation" developed with direct participation of experts from Vodokanal of St. Petersburg.
- Animals-bioindicators monitoring the quality of treated wastewater were replaced at South-West Wastewater Treatment Plant. The slender clawed crayfish started to work instead of Australian red-clawed crayfish in winter time.
- The Governor of St. Petersburg held a working meeting at South Water Treatment Plant.
- Summit of UNESCO Associated Schools was held in the Youth Environmental Centre of Vodokanal.
- Results of the educational project for schoolchildren "Water + Myself = Friends" were summed up and the book of children's works "Letters to Waterdrop" was represented.

DECEMBER

- Petersburg scientists' innovative project for creating the biomonitoring system at South-West Wastewater Treatment Plant won the prize of the Government of St. Petersburg.
- Internet-portal Da-Voda (da-voda.com) working with support of Vodokanal of St. Petersburg won the prestigious international contest in public relations PROBA-IPRA Golden World Awards-2011 in the nomination The Best Social PR-Project.
- Vodokanal's sports team won the sports contest FSO "Russia".
- Vodokanal participated in the charity action "Fir of Wishes" dedicated to the Power Engineers' Day.

# ABOUT THE COMPANY

## VODOKANAL HISTORY

The history of the city's centralized water supply goes back to 10 October, 1858, when the Charter of "St. Petersburg Water Pipelines Joint-Stock Company" was approved by the Russian Emperor Alexander II.

Among the founders of the Joint-Stock Company were engineers, such as A.N. Erakov, P.I. Palibin, E.I. Okel, A.A. Peretz, and prominent businessmen—I.I. Glazunov, M.I. Yakunchikov, I.N. Kushinnikov.

### 1858–1917

The JSC faced huge financial and technical problems at the initial stage. In early 1863, the construction of water networks was, practically, suspended. By then, the water tower in Shpalernaya st. (architects I.A. Merz and E. Shubersky) has been built and several kilometers of water distribution networks have been laid. The JSC's registered capital was spent, the shares sold badly, and even the government subsidy could not alter the situation. In March 1863, the 1 Guild merchant A.I. Kron from St. Petersburg joined the JSC, contributed the lacking sum (approximately, 900,000 Rubles) and took up completion of the long-drawn works.

### WATER SUPPLY TO THE FIRST CUSTOMERS STARTED BY THE END OF 1863.

Some modifications were made to the initial design during the construction period. At first, it was decided to take water from a sort of a "ladle"—the artificial water body near Tavrichesky Palace connected with the Neva. However, the

"ladle" proved to be unsuitable for this purpose, and the JSC had to arrange water intake from the Neva.

Before mid-1870es, the water network was only used by the citizens on the left-bank side. The new joint-stock company (Partnership) was established in 1873 (to be managed by English contractors) to supply water to Peterburgskaya (Petrogradskaya) and Vyborgskaya areas.

In 1890 the State Duma took a decision to buy out the assets owned by the St. Petersburg Water Pipelines Joint-Stock Company, and in 1892—to buy out also the assets of the New Water Networks Partnership. The City Executive Commission for water supply of St. Petersburg was established to manage the water networks and was subordinated to the city administration. The manager of city water networks was appointed on a submission from the chairman of the Executive Commission.

During the first decades of the centralized water supply operation in St. Petersburg all customers received water which passed only coarse mechanical treatment. In 1889 sand filters were put into operation at the Main Waterworks (the filters had been built by the St. Petersburg Water Pipelines Joint-Stock Company as strongly demanded by the city authorities).

In 1911 the filtration station with water ozonation was built in Peterburgskaya (Petrogradskaya) area. Chlorine disinfection of drinking water was implemented at the Main Waterworks (the



OVER THE PERIOD BETWEEN 1950 AND 1970 THE ANNUAL AVERAGE WATER SUPPLY TO THE CITY HAD GROWN MORE THAN TWICE.

first chlorination experiments were made in Kronstadt in 1909). The Executive Commission for sewerage construction and water supply rehabilitation in St. Petersburg established by the City Duma had worked since 1911 and took over most of the functions in relation to water supply development.

THE SOVIET PERIOD

World War I and the Civil War had a negative impact on the technical condition of the city's water supply system, including its plants, equipment and networks. In 1920s-early 1930s wood pipes were sometimes used for construction of water networks due to the lack of more suitable materials. It was only by 1935 that the pre-revolution level of water supply to the city network had been reached.

However, there were also some achievements at that time. First of all, construction of the Southern Waterworks (stage I was put into operation in 1933, a part of stage II—in 1940)

and modernization of the Main Waterworks treatment facilities should be mentioned. In 1923-1924 construction of sewer networks was resumed. In 1925 the city authorities approved the major sewerage plans for Leningrad (separate system with four independent sewer basins). Vasilyevsky Island was selected as experimental district for the construction of a new sewerage system. Construction of sewers in Vasilyevsky Island (total length of street networks—153.3 km) had lasted for 10 years. Vasileostrovskaya sewage pumping station was completed by 1930. Wastewater was discharged to the Neva Bay without any treatment.

In the 1930s more and more sewers were built in other city districts. The length of sewer networks in Leningrad reached 1130 km which exceeded twice the pre-revolutionary level. In 1940 a new sewerage scheme of Leningrad was adopted. It was also based on a separate sewerage system. The scheme envisaged mechanical treatment and precipitation fol-



lowed by discharge to four channels of the Neva Bay. Stormwater was to be discharged to all watercourses in the city. It was planned to use the tunneling method to build the main sewers.

A special page in Vodokanal's history is related to World War II and the blockade of Leningrad. The waterworks and facilities, clean water tanks, treatment plants, water networks and sewers were subject to intensive bombings and shelling. As many as 955 shells exploded within the area of the Southern WTP alone. The personnel of the most important facilities were put on a war footing. Destruction of networks caused the flooding of basements, streets and squares and sometimes even the whole city districts. Nevertheless, both the city water networks and the sewerage system were working without interruption except 25-26 January 1942 when the electricity supply was cut off.

Over the period between 1950 and 1970 the annual average water supply to the city had grown more than twice—from 912,800 m<sup>3</sup> to 2,057,600 m<sup>3</sup>. The Southern WTP stage II was put into operation in 1948, Volkovskaya WTP—in 1964, and the Northern WTP stage I—in 1971. Wide-scale construction of water pumping stations was underway too. In 1952 the State Committee of the Council of Ministers of the USSR approved the project of sewerage construction in the central part of Leningrad where a combined sewerage system was proposed instead of separate sewerage. The first stage of sewerage in the

city centre including the Main Pumping Station was put into operation in 1958.

In 1966 the General Scheme of Leningrad Sewerage was approved which included, among other things, three big complexes of wastewater treatment facilities. The first one—Central WWTP—was put into operation in 1978 (stage I). Before that, all city wastewater was discharged to the water bodies almost without any treatment. The Central WWTP, stage II, was put into operation in 1984, and the Northern WWTP, stage I,—in 1987. The construction of the South-West WWTP started in 1986.

CONTEMPORARY HISTORY

In the 1990s, SUE «Vodokanal of St. Petersburg» developed and implemented a novel-for-Russia concept of strategic planning of the public utilities' financial operations and business. Creation of a management system based on the corporate development planning was a crucial step to implementation of this concept in the company.

It is the implementation of the strategic planning concept that ensured sustainable development of SUE "Vodokanal of St. Petersburg". In 1992 the company was able to become self-sufficient and raise the necessary investments for reconstruction and development. In 2004, the St. Petersburg Water and Wastewater Systems Reconstruction and Development Programme for 2004-2011 was worked out. The South-West WWTP was inaugurated on 22 September 2005 in the presence of the



President of the Russian Federation V.V. Putin, the President of Finland Tarja Halonen and the Swedish Prime-Minister Göran Persson.

Alongside with the construction of new facilities using the best advanced technologies, wide-scale reconstruction of the existing WWTPs was implemented. By 2006, three “hot spots” in the Baltic Sea catchment basin have been eliminated. The reconstruction of the Central WWTP in 2007 made it possible to meet, and even surpass the HELCOM standards of nutrient concentrations. By commissioning two sludge incineration plants—at the Northern WWTP and South-West WWTP—in 2007, St. Petersburg became the first megalopolis to fully solve the problem of sewage sludge utilization.

In 2008, Vodokanal St. Petersburg celebrated its 150th anniversary. One of the biggest events

of the jubilee year was the commissioning of the first section of Northern Tunnel Collector extension.

The year 2009 was marked by the 20th anniversary of cooperation with the Ministry of the Environment of Finland. “The Baltic. Common Sea, Common Concern” Conference was dedicated to this date.

In June 2009, the official ceremony of the last chlorine container removal from Northern Water Treatment Plant symbolized that Vodokanal stopped using liquid chlorine for water disinfection replacing it with hazard-free sodium hypochlorite. In December 2009, the second stage of Northern Tunnel Collector Extension was completed which enabled to reach 91% of wastewater treatment.

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SUE “VODOKANAL OF ST. PETERSBURG” // SUSTAINABILITY REPORT 2011



## N 2011, ST. PETERSBURG WAS FINALLY CROSSED OUT FROM THE LIST OF BALTIC SEA POLLUTERS.

In June 2010, one of the biggest plants—Southern WTP started pre-commissioning of its new water treatment block designed for 350,000 m<sup>3</sup>/day of potable water production (water supply to the city from this block began in January 2011).

In 2010, Vodokanal summarized the results of the pilot project aimed to create a water supply management system and started to implement the system in the southern districts of the city.

By the end of 2010, the next stage of Northern Tunnel Collector Extension has been completed, and the official ceremony of connecting 12 more direct discharges to the Collector was held in January 2011. As a result, the wastewater treatment level in the city reached 93%.

In 2011, Vodokanal could already treat 94% of all wastewater having re-channeled five direct discharges to Northern Tunnel Collector and closed down seven small WWTPs (the wastewater formerly collected by them was re-channeled to Northern WWTP). The ceremony dedicated to this event was attended by the Governor of St. Petersburg G.S. Poltavchenko.

In 2011, St. Petersburg was finally crossed out from the list of Baltic Sea polluters. Since

then the city has fully met the HELCOM recommendations on wastewater treatment quality: phosphorus concentrations in the total wastewater volume discharged in St. Petersburg do not exceed 0.5 mg/l. The official ceremony marking the completion of the Clean Baltic Sea Project was held at Northern WWTP in June in the presence of the President of Finland Tarja Halonen.

In 2011, Vodokanal expanded its biomonitoring system by implementing it at wastewater treatment plants: since the beginning of the year the composition of flue gases at the South-West incineration plant has been monitored by African snails, and since July the effluent quality at South-West treatment plant has been checked by Australian red-claw crayfish.

In 2011, Vodokanal St. Petersburg became one of the finalists for the prestigious award of the European Foundation for Quality Management (EFQM)—Excellence Award-2011.

In November 2011, the State Duma adopted in the third reading the federal law “On Water Supply and Wastewater Disposal” which was elaborated with direct involvement of Vodokanal specialists.

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ABOUT THE COMPANY // VODOKANAL HISTORY





# MISSION AND VALUES

## MISSION

Provision of high-quality water and sanitation services ensuring good quality of life for customers, sustainable development of the megapolis, creation of water consumption culture and conservation of the Baltic Sea water environment.

## VISION

We see Vodokanal among the world's best providers of water and sanitation services due to the quality of its services and environmental awareness.

## VALUES

### RESPONSIBILITY BEFORE FUTURE GENERATIONS

Careful and efficient use of natural resources including water, energy, forests, etc.

### RESPONSIBILITY BEFORE THE CUSTOMERS

Continuous studies of the customers' expectations and requirements, improvement of customer interaction procedures to raise the level of satisfaction with the water and sanitation services.

### RESPONSIBILITY BEFORE THE STAFF

Continuous improvement of labour safety, good salaries and wages, social security for the company employees and their families, and for the retired employees.

### INNOVATIVE APPROACH

Incorporation of international best practice in the company management, the use of advanced technologies and creation of know-how in different fields of activities—that is the only way to reach success and to be a leading company.

### OPENNESS TO THE PUBLIC AND RESPONSIBILITY BEFORE THE SOCIETY

Transparency of the company activities, access to reliable information on the company work and history, close contacts with the mass media, educational institutions and public and environmental organizations—all that constitutes the basis of our information policy.





# CORPORATE MANAGEMENT SYSTEM

## CORPORATE MANAGEMENT SYSTEM BUILDING PHILOSOPHY

CORPORATE MANAGEMENT OF SUE “VODOKANAL  
OF ST. PETERSBURG” IS BASED ON THE FOLLOW-  
ING PRINCIPLES:

**ACCOUNTABILITY** The company’s executive body shall be account-  
able to the owner (City of St. Petersburg), the  
state authorities and control bodies in compliance  
with the applicable law.

The company shall ensure timely disclosure of re-  
liable information on any material facts in relation  
to its activities, including its financial standing, so-  
cial and environmental performance and operat-  
ing results, as well as provide free access to such  
information for all stakeholders in compliance with  
the law of the Russian Federation.

**TRANSPARENCY**

**RESPONSIBILITY** The company shall acknowledge the rights of all  
stakeholders as provided by the applicable law  
and seek collaboration with the stakeholders to  
reach the company goals and to maintain financial  
sustainability and social stability.

The company will only reach its goal provided that  
each employee—from director general to ordinary  
officer—works efficiently.

**EFFICIENCY**



ACCORDING TO THE RESULTS OF 2011, VODOKANAL WAS AMONG FINALISTS OF THE PRESTIGIOUS AWARD BY THE EUROPEAN FOUNDATION FOR QUALITY MANAGEMENT (EFQM)—EXCELLENCE AWARD-2011.

In accordance with the Charter of the Company the Director General is the sole executive body of the company. The Director General ensures the implementation of principles of corporate company governance and the further development of the corporate governance practice.

The Company has its scientific technical council being an advisory body. The council scrutinizes various matters in relation to the development of water and sanitation systems in St. Petersburg, issues relevant recommendations and reviews the results of research and development. In 2011, in the company structure a new branch appeared, the main task of which is to develop and implement the common policy of water and wastewater development.

The system of corporate company governance is built relying on principles and approaches set in the international standards: ISO 9001 Quality Management System, ISO 14001 Environmental Management System and OHSAS-18001 Occupational Health and Safety System. In 2011, active attention was paid to the development of Information Security Sys-

tem ISO-27001 and Energy Management System ISO-50001.

Vodokanal’s corporate governance system is continuously developing and improving due to strategic initiatives of the company management and the owner—City of St. Petersburg. In 2011, the ideology of EFQM (European Foundation for Quality Management) model had a significant impact on the development and improvement of the company’s management.

According to the results of the corporate governance assessment of SUE “Vodokanal of St. Petersburg” updated in 2011 by EXPERT RA Rating Agency, the rating level 7+ was confirmed. That is a high ranking in the class “Developed practice of corporate governance”. SUE “Vodokanal of St. Petersburg” meets the requirements of Russian legislation on corporate governance, follows the majority of recommendations of the Russian Corporate Conduct Code and separate recommendations of international corporate governance best practice. The Company is characterized by low risks of owner losses related to the governance quality.

## OVERVIEW OF MANAGEMENT APPROACHES

THE FOLLOWING MANAGEMENT APPROACHES ARE USED BY SUE “VODOKANAL OF ST. PETERSBURG” TO IMPROVE ITS OPERATIONS:

- strategic planning;
- process approach to the Company management;
- self-assessment according to the EFQM (European Foundation for Quality Management) Excellence Model;
- assessment of customer and personnel satisfaction, the operation of management systems under the standards MC ISO 9001, 14001 and OHSAS 18001;
- benchmarking and comparison with the best European water companies;
- sociological studies of public awareness and expectations;
- annual public reports.

Since 2005, Vodokanal has been making self-assessment of its activities under the regional model of Business Excellence, which is harmonized with the EFQM model. According to the results of 2006, Vodokanal became the winner of the Russian Government’s Quality prize contest in quality. Since 2009, the Company has been using the EFQM criteria for self-assessment. Vodokanal of St. Petersburg has got a certificate acknowledging that its corporate management system complies with the Recognized for Excellence level according to the EFQM criteria.

In 2010, SUE “Vodokanal of St. Petersburg” won the International Quality Contest of Central and Eastern Europe.

According to the results of 2011, Vodokanal was among finalists of the prestigious award by the European Foundation for Quality Management (EFQM)—Excellence Award-2011.

Self-assessment and assessors’ recommendations specified in the feedback report enabled to analyze attentively the company management. Most of assessors’ recommendations were included into the Management Improvement Program for the coming years.

Relying on its own experience, the experience of foreign and domestic companies that operate in water supply and sanitation, SUE “Vodokanal of St. Petersburg” is developing the concept of Ideal Water Company. Today it is formulated in the Company Strategic Plan and deals with all areas of activity: interaction with the consumer, development and management of water supply and wastewater, environment and society, financial stability and investments, development and social support of the personnel. The content and form of the concept of Ideal Water Company is reviewed according to the results of self-assessment over the previ-



ous year taking into account external factors, including new legislation, metropolitan city development prospects and consumer expectations.

The Total Quality Management (TQM) approaches are used by Vodokanal to improve its management of business-processes (TQM).

Since 2009, the significant attention has been paid to the issues of system benchmarking implementation with the best water companies in Europe and development of corporate social responsibility.

In parallel with the process improvement Vodokanal is upgrading its set of indicators for strategic and on-line monitoring of processes. The assessment tools are: internal and external audit of management systems; self-assessment according to excellence models and corporate management rating criteria. Performance indicators are monitored by means of special indicator sets. The process performance monitoring by (strategic, tactical and real-time) indicators is implemented at different management levels.

#### THE KEY PERFORMANCE INDICATORS OF THE WATER SUPPLY SERVICE PROCESS ARE:

- compliance of potable water quality in the water distribution networks with the

physical and chemical parameters set out in the current regulatory documents;

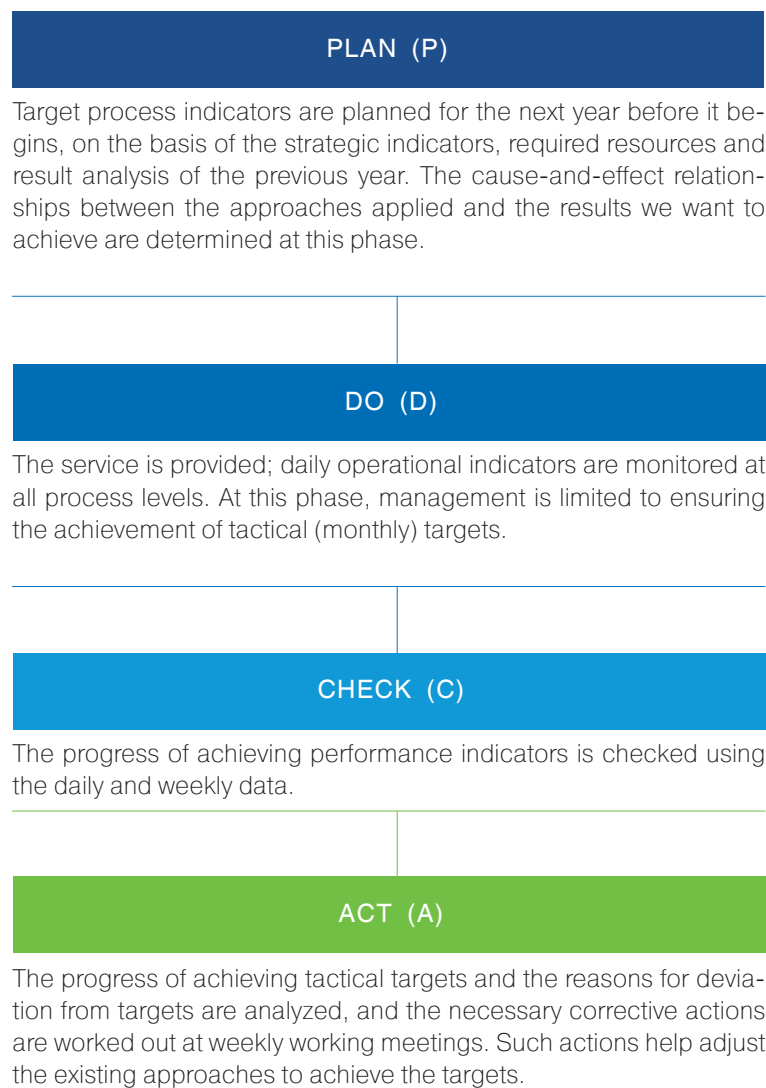
- the limiting number of breakdowns in water distribution networks per 10 km of networks per year;
- the limiting number of registered complaints about low water head at water supply facilities;
- percentage of reducing water distribution losses;
- the limiting duration of the consumer disconnection from water supply services.

Improvement of the maintenance system, reconstruction activities allowed to increase the reliability of the distribution network and decrease the incident rates.

#### THE KEY PERFORMANCE INDICATORS OF THE SANITATION SERVICE PROCESS ARE:

- compliance of wastewater treatment quality with the regulatory target values;
- the limiting number of sewer blockages (clogging) per 10 km of sewer networks per year.

## THE PERFORMANCE MANAGEMENT PROCESS FOR WATER SUPPLY AND SANITATION SERVICES IS BASED ON DEMING-SHEWHART-TAILOR CYCLE (PDCA):





This performance management process is carried out by process owners both at the company and branch levels.

Following the results of internal audits under EMS and QMS, the areas for process management improvement are identified. Annually, the EMS and QMS manager issues an analytical report about the functioning of EMS and QMS for the top management, this report being one of the tools to analyze the performance of pro-

cesses by the Vodokanal management. Moreover, the analysis of process performance is on the agenda of quarterly Board meetings where the progress towards the achievement of targets is scrutinized.

The results of analysis are used to identify areas for improvement, work out the necessary corrective measures and actions to improve the existing approaches for the purpose of achieving strategic targets.

## CORPORATE CULTURE

### THE MAIN PROVISIONS OF CORPORATE CULTURE ADOPTED BY SUE "VODOKANAL OF ST. PETERSBURG" ARE SET OUT IN THE COMPANY STANDARD STO VODOKANAL SPB 1.4-2010 MANAGEMENT SYSTEM. CODE OF CORPORATE ETHICS.

The company employees follow the corporate values (see Mission and Value), support and develop the corporate culture necessary to achieve the highest activity level.

Company values are mandatory for all Vodokanal employees and are offered to everybody who cooperates with Vodokanal.

Company ethical principles are based on the corporate values, observation of laws, employees' and Vodokanal partners' rights. They are the basis for regulation of relations within the company and business relations with partners and consumers, including the conduct in situations related to the potential conflict of interests.

#### AMONG THESE PRINCIPLES:

**1. FOCUS ON VALUE CREATION**  
Vodokanal's employees in their activities are guided by the company strategy and try to fulfill the key strategic objectives. By fulfilling the actions, Vodokanal employees realize the value they bring to customers, the company and society in general.

**2. PROFESSIONALISM AND TEAMWORK**  
Vodokanal's employees are professionals. They build their relations with colleagues on the basis of thrust, cooperation, corporate solidarity, mutual assistance. Employees take a proactive position in teamwork focusing on the joint activity result. Those employees who are capable to improve the company performance are provided career progress and confidence in important project implementation.

**3. STRATEGIC FLEXIBILITY**  
Vodokanal operates in conditions of state regulated tariffs and price volatility for suppliers' products that has a significant influence on activities to implement the company strategy.

**4. SOCIAL RESPONSIBILITY**  
The company is responsible for the social well-being of its employees. The value created by Vodokanal's employees significantly contributes to improving the living standards of St. Petersburg citizens, the Baltic Sea region and society in general.



# IMPROVEMENT OF BUSINESS PROCESSES IN 2011

To create an effective management system, in 2007 the detailed analysis of Vodokanal's business processes was carried out with their further optimization based on the process management approach and principles of the quality management system.

As a result of reengineering, two 1st level business processes were defined—Water Supply in St. Petersburg and Wastewater Disposal in St. Petersburg that have the basic management elements: process owners, processing chain, monitoring points and cost structure. The results obtained allowed to see the company, as well as its strengths and weaknesses in a new way.

It the years 2008-2010 that followed, the implementation of activities related to the business process reengineering became comprehensive and system-defined. Managers of all levels studied the functional of business units and every single employee, identified information flows, revised objectives and main tasks.

By the end of 2010, a number of supporting business processes had been reengineered. As a result, a separate Transport and Logistics Branch and a fundamentally new structure for customer service, including administrative and branch organization units, were established.

Vodokanal continued to optimize the main production processes. It was decided to improve the production branches by organizing within them separate business units—water supply (wastewater disposal) districts. Today, the

functions of each District are generation and management of its water balance; responsibility levels from administration to Districts are clearly defined that allows to say about the next level of corporate governance system development.

In 2011, the formation of the water supply and wastewater disposal system in St. Petersburg continued. Changes were made in the company administration—in the top management level, where the development strategy is generated and interaction with the external environment is made, target and technical-and-economic company indicators, revenue and expenditure budgets, tariff policy are defined. Separate water supply and wastewater disposal structures were organized in the company financial and economical administration block.

The separate branch "Engineering Innovation Centre" was created on the basis of existing administration units as well.

Its activities are aimed at achieving the following objectives:

- the development and implementation of the common policy of water supply and wastewater disposal systems of the Company;
- the development of consulting activities, establishment of the single information space of the Company.

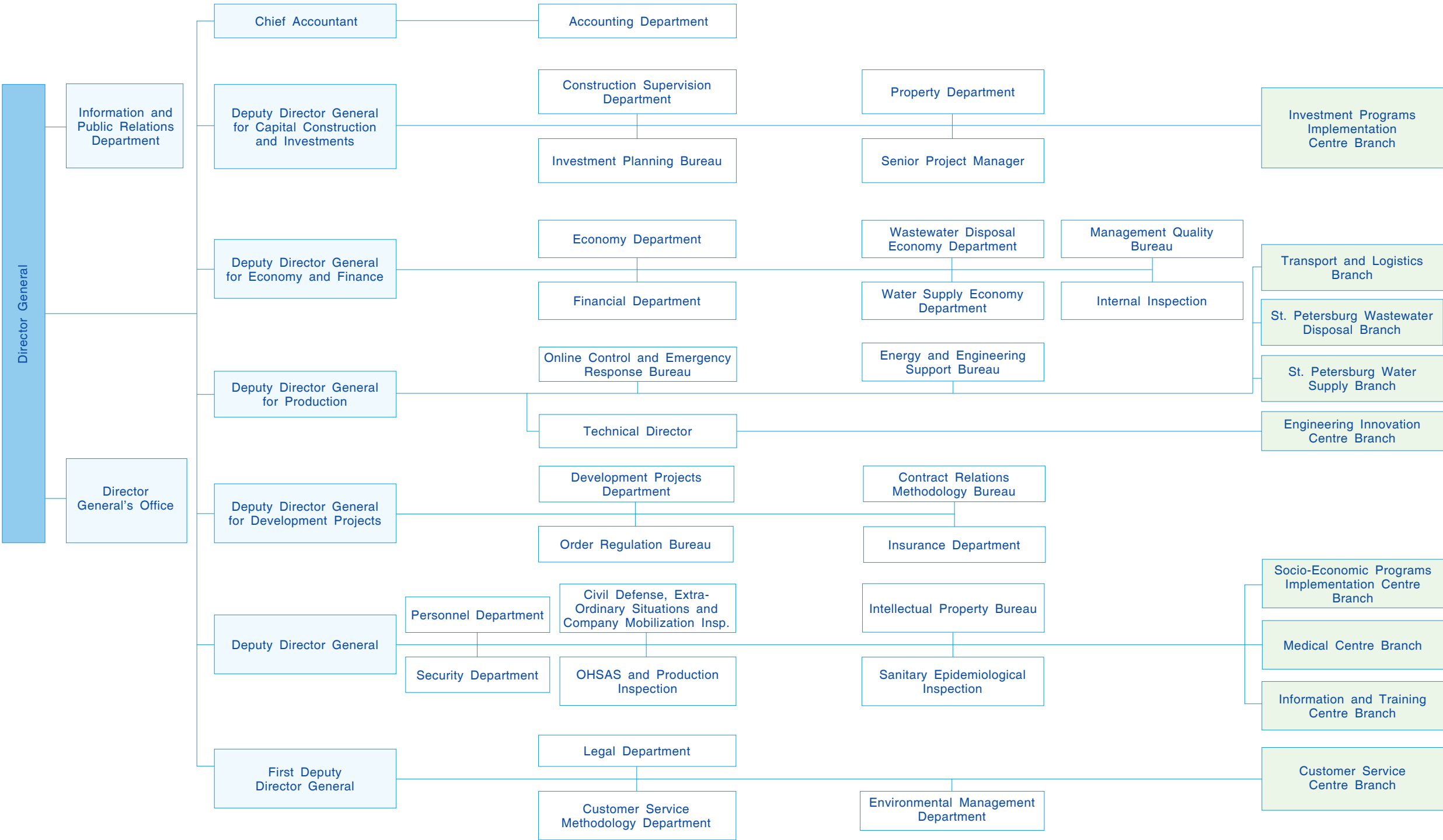
# COMPANY STRUCTURE

SUE "Vodokanal of St. Petersburg" is headed by its Director General—Felix V. Karmazinov.

IN 2011, SUE "VODOKANAL OF ST. PETERSBURG" COMPRISED 9 BRANCHES:

- ST. PETERSBURG WATER SUPPLY
- ST. PETERSBURG WASTEWATER DISPOSAL
- TRANSPORT AND LOGISTICS
- ENGINEERING AND INNOVATION CENTRE
- CUSTOMER SERVICE CENTRE
- INVESTMENT PROGRAMS IMPLEMENTATION CENTRE
- SOCIO-ECONOMIC PROGRAMS IMPLEMENTATION CENTRE
- INFORMATION AND TRAINING CENTRE
- MEDICAL CENTRE

SUE "VODOKANAL OF ST. PETERSBURG" ORGANIZATIONAL CHART  
(as of 01.01.2012)







# VODOKANAL TODAY

## COMPANY PROFILE

The State Unitary Enterprise (SUE) “Vodokanal of St. Petersburg” provides water and sanitation services to the City of St. Petersburg. It is the country’s biggest public utility and one of the key municipal companies in St. Petersburg.

Vodokanal’s assets are owned by the City of St. Petersburg represented by the authorized public authorities.

Vodokanal provides its services to the city inhabitants (approx. 4.8 Mio. people) and many thousands of companies and organizations in St. Petersburg.

As of 31.12.2011, the staff of SUE “Vodokanal of St. Petersburg” numbered 9,173 people.

### THE WATER SUPPLY SYSTEM COMPRISES:

- 6,665.2 km of water networks;
- 200 boosting pumping stations;
- 9 water treatment plants (the biggest are Southern WTP, Northern WTP and Main WTP);
- 2 sodium hypochlorite production plants.

### THE WASTEWATER DISPOSAL SYSTEM COMPRISES:

- 8,245.6 km of sewer networks;
- 232.17 km of tunnel collectors;
- 131 sewage pumping stations;
- 14 wastewater treatment plants (the biggest are Central WWTP, Northern WWTP and South-West WWTP);
- 3 sludge incineration plants.





Vodokanal has an effective customer feedback system. Since 2004, a round-the-clock Hot Line has been in operation where one can get any information about the company activities.

CALL THE HOT LINE: +7 (812) 305-09-09

MAIN ACHIEVEMENTS OF SUE “VODOKANAL OF ST. PETERSBURG” IN THE FIELD OF WATER TREATMENT:

- all potable water supplied to the city is UV-treated to ensure epidemiologic safety;
- liquid chlorine is not used for water disinfection, it is replaced by hazard-free, non-toxic sodium hypochlorite;
- hazard-free and non-toxic ammonia sulfate is used for water ammoniation instead of ammonia solutions;
- water condition in the Neva is checked by means of a biomonitoring system where crayfish act as chief inspectors;
- PAC (powdered activated carbon) dosing is implemented to remove odors and oil;
- the pilot project on the establishment of water supply management system is implemented in the catchment area of the Uritskaya pumping station (the Southern Water Supply Zone).

Vodokanal has charge of the city fountains and public toilets.

Moreover, Vodokanal gives much attention to education. It has its Information and Training Centre which comprises “The Universe of Water” museum complex and the Youth Environmental Centre.

MAIN ACHIEVEMENTS OF SUE “VODOKANAL OF ST. PETERSBURG” IN THE FIELD OF WASTEWATER TREATMENT:

- around 94% of all wastewater is treated in St. Petersburg; the percentage will be 98% by 2016;
- Petersburg has solved the sludge disposal problem: three sludge incineration plants are in operation in the city;
- Petersburg fulfils the HELCOM recommendations; phosphorus concentrations in the total volume of the city wastewater discharge do not exceed 0.5 mg/l;
- biomonitoring systems are implemented to control the effluent quality (by means of crayfish) and the quality of flue gas from the sludge incineration plant (by means of snails).

THE MOST IMPORTANT EVENTS IN 2011

1. PETERSBURG WAS TAKEN OUT FROM THE LIST OF THE BALTIC SEA POLLUTERS. THE CITY TO THE FULLEST EXTENT COMPLIES WITH THE RECOMMENDATIONS OF THE HELSINKI COMMISSION ON THE BALTIC MARINE ENVIRONMENT PROTECTION (HELCOM).

The Clean Baltic Sea Project started in 2005. It was targeted to the introduction of the enhanced phosphorus removal from wastewater at the largest wastewater treatment plants of St. Petersburg. Commissioning of the stationary automated chemical dosing system at the Northern Wastewater Treatment Plant on June 28, 2011 was the last stage of the said project. The President of Finland Tarja Halonen partici-

pated in the official ceremony on the start-up of the chemical dosing system.

Since June 2011, St. Petersburg to the full extent has complied with the new recommendations of the Helsinki Commission on the Baltic Marine Environment Protection and phosphorus concentrations in the total volume of city wastewater discharge do not exceed 0.5 mg/l.

2. THE NEXT STAGE UNDER THE PROGRAMME FOR THE CLOSURE OF THE UNTREATED WASTEWATER DISCHARGES WAS COMPLETED. IT GAVE AN OPPORTUNITY TO TREAT 94% OF WASTEWATER IN ST. PETERSBURG.

On October 29, 2011 wastewater from small-capacity wastewater treatment plants was connected to the sewer network of the Northern Wastewater Treatment Plant (the Northern WWTP). Seven small wastewater treatment plants were closed. Five untreated wastewater discharges located along the Arsenalnaya and Vyborgskaya Embankments were liquidated.

Today, wastewater from the closed discharges is transported by the sewer collector for treatment at Northern WWTP.

At Northern WWTP all wastewater undergoes efficient treatment in line with all current requirement, including the HELCOM recommendations.

3. SINCE JANUARY 2011, THE NEW WATER TREATMENT BLOCK AT THE SOUTHERN WTP BEGAN TO SUPPLY WATER TO THE CITY. K-6 BLOCK REACHED ITS FULL CAPACITY IN APRIL.

It is one of the Russia’s most advanced treatment blocks. Technological solutions that were used during design and construction enable coping with any changes of water quality in the

Neva River, which is the water source. It means that it can provide absolutely safe and harmless potable water in accordance with all Russian and international regulations.

The block was commissioned in June 2010. In January 2011 it began to supply water to the municipal customers—with gradual increase of

supplied volumes. Since April 2011, the block reached its design capacity 350,000 cubic meters per day.

## 4. THE NEW (INVERTED SIPHON) PIPELINE WAS LAID AT THE BOTTOM OF THE GULF OF FINLAND, BY WHICH POTABLE WATER IS SUPPLIED BY GRAVITY FROM LOMONOSOV TO KRONSTADT. THIS PIPELINE REPLACED THE OLD ONE THAT HAD BEEN IN OPERATION FOR MORE THAN THIRTY YEARS.

Standard operation time of the previous inverted siphon was exhausted during the thirty-year period. As the result, the reliability of water supply in Kronstadt reduced significantly. To solve the problem a new pipeline construction for supply of spring water from Lomonosov to Kronstadt began. This pipeline formed a part

of the South Water Supply Zone Control Complex. The new inverted siphon consists of two lines (7.5 km each). It is laid at the depth of 23 meters. The horizontal directional drilling technology was used and it was the first experience of its use in Russia.

## 5. THE TUNNELING OF THE MOST COMPLICATED SECTION OF THE NORTHERN TUNNEL COLLECTOR IN THE SCoured ZONE, FROM ARSENALNAYA STREET TO LENIN SQUARE, WAS SUCCESSFULLY COMPLETED.

On 14 April 2011, the tunneling of the extension of the Northern Tunnel Collector was completed, and the tunneling machine passed the last section of the second line located in the scoured zone. The tunnel section from Arsenalnaya Street to Lenin Square, 1.2 km long, was the most complicated because of the scoured zone. To tunnel the missing section a unique Herrenknecht (Germany) shield was

used, which is able to operate in two modes. In order to complete the most complicated tunnel section the shield operated in the hydraulic counterweight mode. This technology with water injection and 7 atm. pressure creation in the bottomhole enables to withstand the ground water pressure.

## 6. BIOMONITORING SYSTEM WAS IMPLEMENTED AT THE SOUTH-WEST WASTEWATER TREATMENT PLANT. AUSTRALIAN RED-CLAW CRAYFISH MONITOR WASTEWATER TREATMENT QUALITY, AND AFRICAN SNAILS MONITOR FLUE GASES COMPOSITION FROM THE SLUDGE INCINERATION PLANT.

In 2011, Vodokanal enlarged significantly the biomonitoring system and implemented it at wastewater treatment plants. Since January 2011, the composition of flue gases from SWTP SIP has been monitored by the African snails. Since July 2011, the quality of wastewater treatment at SWTP has been monitored by the Australian red-clawed crayfish. Scien-

tists of St. Petersburg were awarded with the prize of the Government of St. Petersburg for the development of the innovative wastewater treatment quality monitoring project. Furthermore, the wastewater is "guarded" by two types of crayfish; in autumn thermophilous Australian red-clawed crayfish are replaced by slender-clawed river crayfish.

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## 7. THE RUSSIAN STATE DUMA APPROVED THE FEDERAL LAW "ON WATER SUPPLY AND SANITATION".

The new Federal Law was developed with the active participation of the experts of Vodokanal of St. Petersburg. Until now water companies have not had their own industry-based

law. The adoption of the Federal Law "On Water Supply and Sanitation" gives a new urge for the water sector development.

## 8. VODOKANAL BECAME A FINALIST OF THE PRESTIGIOUS EUROPEAN FOUNDATION FOR QUALITY MANAGEMENT (EFQM) AWARD—EXCELLENCE AWARD-2011.

Vodokanal of St. Petersburg is the first European company of the water sector to become the award finalist. The award finalist status

indicates the high level of the company management confirmed by European experts.

## 9. INTERNATIONAL ADVANCED WATER TECHNOLOGIES CENTRE, A JOINT PROJECT OF SUE "VODOKANAL OF ST. PETERSBURG" AND LAHTI SCIENCE AND BUSINESS PARK (FINLAND), BEGAN ITS WORK.

The main objective of the International Advanced Water Technologies Centre is the organization of international cooperation in the sphere of sustainable development and water resource management. The Centre provides the ground for sharing experience in advanced

technologies implementation in the sphere of water supply and sanitation, environment protection and sustainable water use. The Centre promotes innovations in the area of applied technologies, as well as in the water management.



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ABOUT THE COMPANY // VODOKANAL TODAY

# INVESTMENTS IN 2011

## INVESTMENT ACTIVITY OF VODOKANAL IS PERFORMED IN ACCORDANCE WITH THE INVESTMENT PROGRAM DEVELOPED AND APPROVED FOR THE THREE-YEAR PERIOD UNDER THE CURRENT LAWS.

Investment program objectives are divided in accordance with the core production activities of Vodokanal.

In water supply sector they are as follows:

- provision of safe potable water to St. Petersburg customers;
- provision of reliable water services to the customers;
- improvement of energy efficiency of water supply facilities;
- provision of access to the centralized water supply services.

In wastewater disposal sector they are as follows:

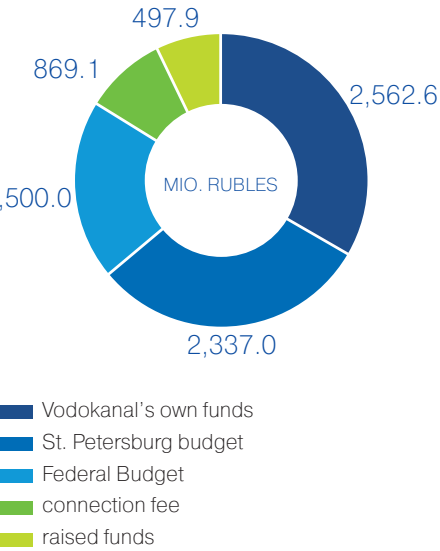
- reduction of wastewater disposal system negative impact on the environment;
- provision of reliable wastewater disposal services;
- improvement of energy efficiency of wastewater disposal facilities;
- provision of access to the centralized wastewater disposal services.

THE AMOUNT OF RUR 12,550.4 MIO. WAS INVESTED IN THE DEVELOPMENT AND REHABILITATION OF WATER SUPPLY AND SANITATION SYSTEMS IN ST. PETERSBURG IN 2011.

This amount is made up of Vodokanal's investment program and budget investments in facilities ordered by the Employer's Office for Construction and Capital Repairs of Engineering and Energy Complex (hereinafter—the Employer's Office).

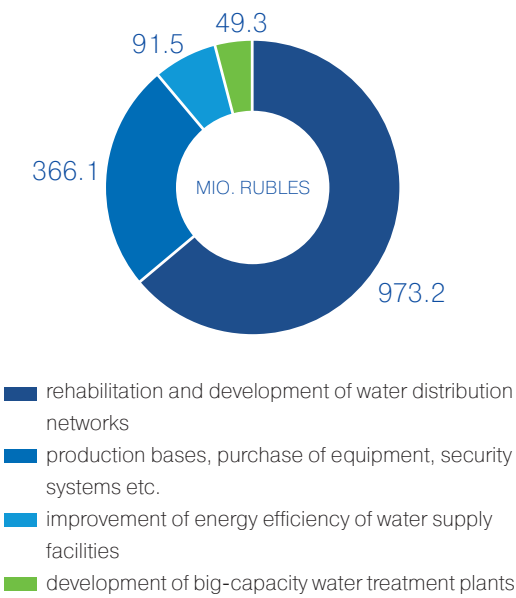
IN 2011, SUE VODOKANAL OF ST. PETERSBURG INVESTMENT PROGRAM AMOUNTED TO RUR 7,766.6 MIO.

INVESTMENTS FROM DIFFERENT SOURCES, MIO. RUBLES



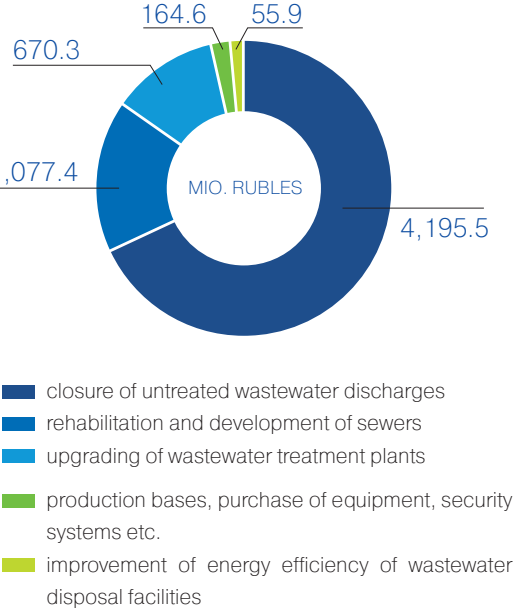
UNDER THE INVESTMENT PROGRAM, VODOKANAL INVESTED RUR 1,480.1 MIO. IN THE WATER SUPPLY SYSTEM.

INVESTMENTS IN THE WATER SUPPLY SYSTEM, MIO. RUBLES



THE AMOUNT OF RUR 6,100.6 MIO. HAS BEEN INVESTED IN THE WASTEWATER DISPOSAL AND TREATMENT SYSTEM.

INVESTMENTS IN THE WASTEWATER DISPOSAL AND TREATMENT SYSTEM MIO. RUBLES



THE AMOUNT OF RUR 185.8 MIO. HAS BEEN INVESTED IN THE DEVELOPMENT OF THE CITY INFRASTRUCTURE (PUBLIC TOILETS AND FOUNTAINS) AND FOR THE SOCIAL NEEDS.

The cost of work carried out in water and wastewater systems of St. Petersburg in 2011 by the order of Employer's Office amounted to 4,783.8 Mio. Rubles and was financed from the St. Petersburg budget. Vodokanal personnel inspected the quality of construction and installation throughout the year.

## IMPLEMENTATION OF THE SUE «VODOKANAL OF ST. PETERSBURG» INVESTMENT PROGRAM, APPROVED FOR 2009-2011, WAS FINISHED IN 2011.

The main attention during this period was paid to the following programs:

- Neva Untreated Wastewater Discharge Closure Project;
- Upgrading and construction of wastewater treatment plants to reduce nutrients load on water bodies;
- Construction and rehabilitation of water treatment plants for water supply from the surface source;
- Improvement of energy efficiency and energy saving;
- Engineering infrastructure development for new housing and industrial areas.



THE TOTAL INVESTMENTS IN 2009-2011

Investment Field	Total in 2009-2011	2009	2010	2011
<b>Vodokanal's Investment Program</b>	<b>24,013.1</b>	<b>7,376.2</b>	<b>8,870.3</b>	<b>7,766.6</b>
water supply	5,068.7	1,574.9	2,013.7	1,480.1
wastewater disposal and treatment	18,516.7	5,617.6	6,798.5	6,100.6
social sphere	427.5	183.7	58.0	185.8
<b>Investments by the Employer's Office</b>	<b>14,987.3</b>	<b>4,821.1</b>	<b>5,382.4</b>	<b>4,783.8</b>
water supply	8,274.0	2,530.9	3,254.6	2,488.5
wastewater disposal	6,713.3	2,290.2	2,127.8	2,295.3
<b>TOTAL Investment</b>	<b>39,000.4</b>	<b>12,197.3</b>	<b>14,252.7</b>	<b>12,550.4</b>

It is worth noting that Vodokanal's investment activity depends on water consumption. In view of specific water consumption level reduction in St. Petersburg during the last years, it became possible to adjust the Company long-term development plan in 2009. Such a document for Vodokanal is the Program of the integrated development of St. Petersburg public utilities systems, including heat supply, water supply, wastewater disposal and treatment, up to 2015 (approved by St. Petersburg Government Decree no. 1270 dated 21.10.2008).

As the result of the made adjustment, the design capacity of big water and wastewater treatment plants as well as the needs in new water mains were decreased.

It enabled to reach almost two-times reduction (from RUR 269.2 bln. to RUR 137.7 bln.) in water and wastewater investments to be made up to 2015. Implementation of this long-term plan will be continued by Vodokanal within the framework of the Investment Program for 2012-2014.

AWARDS IN 2011

Achievements of SUE "Vodokanal of St. Petersburg" regularly receive recognition of Russian and foreign experts.

In 2011, Vodokanal was awarded with the following national and international prizes:

- Gold medals "Innovation for investments to the future" of the American-Russian Business Union for innovations—useful models "Automated Water Quality Control System at Water Treatment Plant" and "Water Intake Column Dosing Device"
- Best Taxpayer-2010
- International Quality Award European Standard

- EFQM Excellence Award-2011 Finalist
- A.N. Kosygin Award for achievements in solving Russia's economic problems.

In 2011, Felix V. Karmazinov, Director General of SUE "Vodokanal of St. Petersburg", was awarded with the European Environmental Center Award for services in practical implementation of scientific standards, as well as honorable certificate of the Ministry for Regional Development—for great personal contribution to the Baltic Sea condition improvement and active role in the implementation of the "Clean Baltic Sea" international environmental project. In addition, Felix V. Karmazinov became the prize-winner of Top 100 rating that includes best top-managers of St. Petersburg.







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# RISK MANAGEMENT

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## FINANCIAL RISK MANAGEMENT ORGANIZATION

VODOKANAL FOLLOWS A BALANCED FINANCIAL POLICY BASED ON THE STRATEGIC PLAN AND LONG-TERM PERSPECTIVE.

The basis of the forecast is unconditional compliance with the key financial ratios, calculated according to both Russian and International Financial Reporting Standards, maintaining the values as recommended by International Financial Institutes.

TO MAKE A LONG-TERM FORECAST, THE COMPANY USED ITS FINANCIAL MODEL CALCULATED FOR THE PERIOD UP TO 2030.

It helps to evaluate Vodokanal's financial capabilities taking into account the implementation of big investment projects using its own or borrowed funds. The model enables consideration of macroeconomic factors and company development factors to identify potential sources of investments and to project development options under different scenarios.

The model provides instruments for comparative analysis and monitoring of Vodokanal's dynamically changing results. Using the results

of the monitoring and analysis made by means of the financial model, Vodokanal management promptly make necessary amendments to the Company's production and investment programs.

Risk management is integrated into the management system via strategic management and budgeting processes. Internal control procedures are implemented by the company in order to decrease all risks. Company internal audit is performed by the separate department within the Vodokanal's administration. Scenario approach, industry analysis and SWOT analysis are used by SUE "Vodokanal of St. Petersburg" as risk identification and assessment methods.

Currency and interest rate risks hedging, property insurance, and social responsibility insurance of Vodokanal as owner of large production sites are used as the most important risk decrease tools.



# FINANCIAL RISK MANAGEMENT IN 2011

In 2011, Vodokanal continued using long-term forecasting and financial modeling to minimize financial risks. Continuous monitoring of the financial situation and assessing potential impacts of the current financial situation on the key financial indicators provided prompt update of financial policy and maintenance of the key financial ratios describing the Company's financial stability and solvency at the proper level.

In 2011, SUE "Vodokanal of St. Petersburg" continued improving its financial model. The output of the model's latest version is a package of financial statements prepared in compliance with the International Financial Reporting Standards (IFRS). The improved model corresponds to the European level and allows to predict and analyze Vodokanal's key financial indicators in accordance with IFRS. In addition, the model enables forecasting of impact of large investment projects imple-

**VODOKANAL POLICY IN THE FIELD OF FINANCIAL MANAGEMENT AND MINIMIZATION OF POTENTIAL RISKS WAS APPRECIATED BY THE LEADING INTERNATIONAL RATING AGENCIES STANDARD&POOR'S AND MOODY'S, WHICH GAVE VODOKANAL THE FOLLOWING INVESTMENT-GRADE CREDIT RATINGS:**

- S&P—BB+ . Stable outlook.
- Moody's—Baa2. Stable outlook.

mentation options on basic indicators of the Company financial and economic activity in the long-term perspective. As the result the Company can choose the most effective large development projects implementation options taking into account minimization of financial risks.

Vodokanal used a hedging mechanism to reduce potential financial risks. The counterpart under the agreement for currency and interest rate risks hedging was one of the biggest western banks—BNP Paribas. Under the agreements, Vodokanal until the end of 2011 made payments of agreed amounts in Russian Rubles to the counterpart in accordance with the approved time schedule, which coincides with the international loan payment schedule. In return, BNP Paribas transferred to Vodokanal the payments in Euro at a fixed exchange rate throughout the effective period of the hedging agreements.

# NON-FINANCIAL RISK MANAGEMENT

**WITHIN THE INTERNAL CONTROL SYSTEM VODOKANAL HAS A SPECIAL STRUCTURAL DEPARTMENT, WHICH TASK IS PREVENTIVE IDENTIFICATION OF THE COMPANY RISKS AND IMPLEMENTATION OF RISK MINIMIZATION ACTIVITIES.**



Internal control department activity aim is the achievement of the following tasks:

- provision of financial and management information reliability;
- provision of assets safekeeping and effective use of the Company resources;
- assistance in establishing the Company optimal corporate structure;
- compliance with the current legislation of the Russian Federation, St. Petersburg and internal regulations of the Company;
- fulfillment of the Company financial and economic plans.

Internal control department provides the management of Vodokanal with the information obtained:

- during the Company structural department inspections,
- upon the analysis of range and price of goods and services purchased by the Company for its activity implementation,
- during examination of the Company basic and supporting processes.

General procedure for internal control of the structural departments and internal auditing was formed and regulated. Rules for composition, description and formatting of the audit report were defined. Methods for different type of activity inspections and examinations are under development.

SEGMENTATION OF NON-FINANCIAL RISKS WAS MADE BY VODOKANAL WITHIN THE FRAMEWORK OF THE COMPANY SELF-ASSESSMENT IN ACCORDANCE WITH THE EFQM BUSINESS EXCELLENCE MODEL. THE KEY ASPECTS OF THE COMPANY ACTIVITIES WHICH MAY LEAD TO RISKS WERE IDENTIFIED.

They include:

- 01. Risks associated with the customer dissatisfaction with water and wastewater service quality.
- 02. Risks associated with the environmental negative impact.
- 03. Risks associated with changes in legislation.
- 04. Risks associated with the general decline in the culture of water use.
- 05. Risks associated with the potable water source contamination.
- 06. Risks of industrial accidents.
- 07. Risks associated with potential diseases in hazardous working conditions.

THE ABOVE RISKS ARE MANAGED BY THE COMPANY SYSTEMATICALLY, USING A PROCESS-BASED APPROACH.

01. To minimize the risks associated with the customer dissatisfaction with water and wastewater services, the quality management system based on the International Standard ISO-9001 is improved continuously. Regular interaction with customers through the Hot Line in combination with the Company's information disclosure policy (including active communication with mass media) as well as questionnaires and customer satisfaction surveys, helps to mitigate this risk too.

Internal and external audits as a part of the Quality Management System (EMS) enable quick identification of the management areas which need to be improved and help improve the processes at all stages of the service life cycle. This enables to improve the Company activity quality and increase the customer satisfaction level.

02. Management the environmental negative impact risks is performed on the basis of environmental management system ISO 14001, which is used by the Company. Vodokanal enhances the reliability of water supply and sewerage systems, improves wastewater treatment and sludge utilization technologies, stops discharge of flush water from water treatment plants by treating it and using it as process water, and raises the issues of environmental friendliness of the existing motor transport. Energy management system on the basis of ISO 50001 is implemented within the Company since 2011 in order to create a system approach for energy performance increase.

Improvement of the occupational health and safety management system on the basis of OHSAS-18001 leads to mitigation of the risks associated with emergency situations and consequently, to the improvement of service quality and mitigation of the environment pollution risks. Currently the professional risks assessment is not only the important part of occupational health and safety management but also the part of the Company general management. Implementation of this activity can be provided on the basis of OHSAS-18001 international standard and range of national regulations.

03. To alleviate the risks associated with undesirable changes in legislation, Vodokanal actively participates in development of regulations, makes suggestions and argues its position. This way sectorial Federal Law "On water supply and wastewater disposal" was published in the end of 2011. Vodokanal experts actively participated in its development.

04. To prevent the risks associated with a decline in the culture of water use, Vodokanal actively implements environmental awareness-building educational programs.

05. The management of the risks associated with potable water source contamination is based on early prevention of such contaminations. In particular, Vodokanal has implemented the biomonitoring of river water by crayfish at all its water intakes. And oil spills in the river are detected by the monitoring system installed on one of the bridges across the Neva, upstream of the first city water intake.

06. In order to minimize the risks associated with accidents and hazardous working conditions Vodokanal continuously performs activity for working conditions improvement, accident frequency rate reduction

and accident risk control at hazardous production sites.

The following directions for improving the non-financial risks management are of current importance for Vodokanal:

- establishment of informational security management system in accordance with ISO 27001;
- establishment of energy management system in accordance with ISO 50001;
- development of well-defined risk management system;
- external and internal benchmarking expansion;
- wide use of such tools as 20 keys, 6 sigma, Lean Production, etc.

Efficient use of natural resources, system approach use for the Company management, active participation in regulations development, environmental educational activity, use of technological innovations, and implementation of benchmarking became the part of the Company management culture and help to alleviate risks.

STATUS OF THE NON-FINANCIAL RISK MANAGEMENT PROCESS IN 2011

In 2011, the non-financial risk management process was under constant control based on ISO European Standards and EFQM Business Excellence Model.

Annual self-assessment of the Company activity in accordance with the EFQM Business Excellence Model enabled successful intro-

duction of the applied approaches for non-financial risks management into the integral system. Strategic planning, activity key results, customers and personnel satisfaction, partnership, corporate social responsibility development—all these elements are the part of the Company management culture and help to alleviate risks.





# PARTICIPATION IN EXTERNAL INITIATIVES

## COMPLIANCE WITH HELCOM RECOMMENDATIONS

IN COMPLIANCE WITH THE COMMITMENTS TAKEN BY THE RUSSIAN FEDERATION UNDER THE HELSINKI CONVENTION ON THE BALTIC MARINE ENVIRONMENT PROTECTION, VODOKANAL ST. PETERSBURG STRIVES TO REDUCE UN-TREATED WASTEWATER DISCHARGE AND REMOVE NUTRIENTS (NITROGEN AND PHOSPHORUS) FROM WASTEWATER.

The Convention on the Protection of the Marine Environment of the Baltic Sea (Helsinki Convention) was signed by all Baltic Sea countries in 1974. The Convention for the first time dealt with all polluters located in the catchment area of the Baltic Sea. Then, due to the political changes caused by the collapse of the USSR, establishment of new independent states, unification of Germany and development of the international environmental law, a new Helsinki Convention was signed in 1992 by the states located along the coast of the Baltic Sea and the European Community. It was put into effect upon the ratification on January 17, 2000. The Russian Federation approved 1992 Helsinki Convention in October 1998.

The main purpose of the Convention is to protect the marine environment of the Baltic Sea, restore and preserve the environmental balance in the region and ensure sustainable use of its resources. Member-countries committed themselves to take all necessary legislative, administrative and other measures to prevent the Baltic Sea pollution and eliminate the existing pollution sources for the purpose of the Baltic Sea ecosystem restoration. Preventing pollution in the Baltic Sea by nitrogen and phosphorus is an urgent task for all countries in the Baltic Sea Region.

The governing body of the Convention is the Helsinki Commission, the Baltic Marine Environment Protection Commission (HELCOM), which in particular issues recommendations (regulations) for municipal wastewater treatment.

It was in the 90-ies when the Helsinki Commission for the first time issued recommendations for nutrients (nitrogen and phosphorus) removal from municipal wastewater. Such recommendations were common for all countries of the Baltic Sea Region and become more stringent all-time. With the adoption of new recommendations for municipal wastewater treatment on 15 November 2007, the requirements to wastewater treatment were tighten. When discharging municipal effluents into water bodies it became necessary to achieve the following values: total nitrogen—not more than 10 mg/l, total phosphorus—not more than 0.5 mg/l.

Vodokanal St. Petersburg is actively working to upgrade the biological wastewater treatment process and, in particular, to meet stringent requirement for the removal of phosphorus compounds.



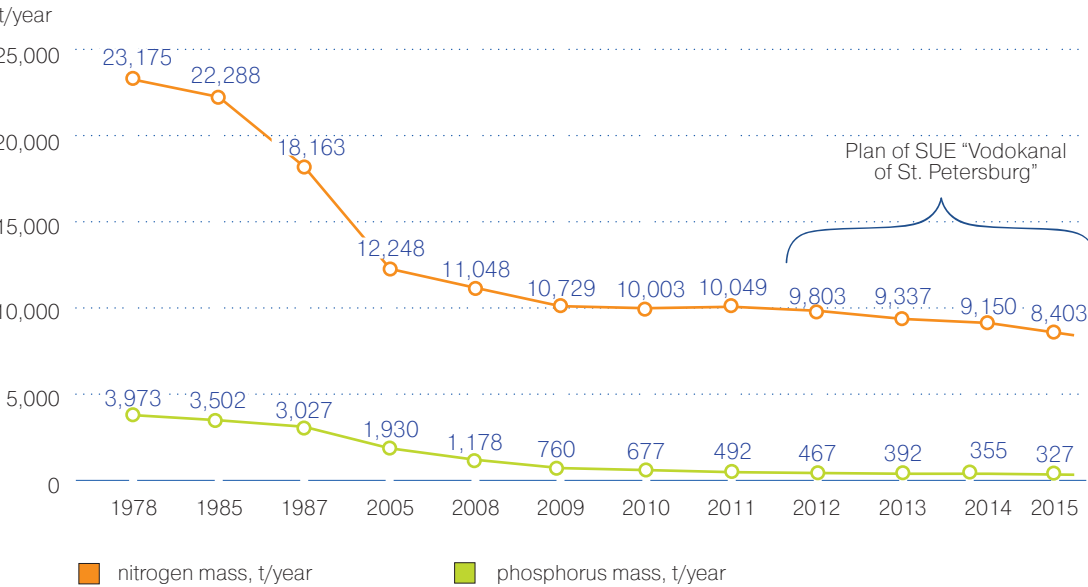
To meet new requirements and reach stable nutrient removal performance of wastewater treatment plants in St. Petersburg, the enhanced biological treatment and chemical phosphorus precipitation processes have been used since 2005.

Today, the enhanced biological treatment process is introduced at all wastewater treatment plants of St. Petersburg.

The President of Finland Tarja Halonen participated in the ceremony devoted to this event.

IN JUNE 2011, PETERSBURG MET TO FULL EXTENT NEW RECOMMENDATIONS OF THE HELSINKI COMMISSION, SO THAT TOTAL PHOSPHORUS IN THE EFFLUENT DOES NOT EXCEED 0.5 MG/L.

REDUCTION OF NITROGEN AND PHOSPHORUS LOAD ON ST. PETERSBURG WATER BODIES



Continuous reconstruction of existing wastewater treatment plants contributes to the achievement of stable performance parameters. For instance, 50,000 m<sup>3</sup>/d wastewater treatment plant in Petrodvorets was set into operation in 1976. Following the growth of housing construction the hydraulic load on the plant increased.

In 2011, Petrodvorets wastewater treatment plant was commissioned after the reconstruction. The capacity of the reconstructed plant is 65,000 m<sup>3</sup>/d in dry weather and 72,000 m<sup>3</sup>/d in rainy weather. A special feature of the plant is the tertiary treatment (post-treatment) incorporated into the process chain. At the final treatment stage the effluent undergoes UV-disinfection.

THE IMPORTANT MILESTONE IN FULFILLMENT OF HELCOM RECOMMENDATIONS AND EXCLUSION OF ST. PETERSBURG FROM THE LIST OF HOT SPOTS IS THE COMPLETION OF THE EXTENSION OF THE NORTHERN TUNNEL COLLECTOR.

In the second half of 2011, 6 untreated wastewater discharges along Arsenalnaya and Vyborgskaya Embankments with the total volume of 30,000 cubic meters per day were connected to the collector and channeled to the Northern Wastewater Treatment Plant for treatment. As a result, the level of wastewater treatment in St. Petersburg reached 94%.

The northern tunnel collector will be completed in 2012. Connection of the remaining untreated wastewater discharges to the collector will enable to channel for treatment 95% of all municipal wastewater.

In 2011, the following suburban wastewater treatment plants were closed down: Lesnye WWTP and Rechnye WWTP in Pesochny settlement, Torfyanye WWTP, Prigorodnye WWTP,

Zavodskie WWTP, Pargolovo WWTP and WWTP in Osinovaya Roshchya. Each of seven local wastewater treatment plants had rather small capacity, 300-700 cubic meters per day. All plants were built long ago, in the 70-ies and 80-ies of the last century. In the course of time, these local plants stopped coping with the load and could not ensure the required quality of wastewater treatment. Outdated processes, for example, biological filters were used at the plants, which could not ensure fulfilment of the Helsinki Commission recommendations. When the local wastewater treatment plants were closed down, wastewater with the total flow of 1,600,00 cubic meters per year was channeled to the Northern Wastewater Treatment Plant for treatment in compliance with all current requirements.





# PARTICIPATION IN THE UN GLOBAL COMPACT

SINCE MARCH 2007, SUE “VODOKANAL OF ST. PETERSBURG” HAS BEEN A MEMBER OF THE UNITED NATIONS GLOBAL COMPACT.

The UN Global Compact is an initiative to enable the company to ensure compliance of its activities and strategy with ten general principles in the field of human rights, labour, environment and anti-corruption.

The key principles of the Global Compact are as follows:

- observance and protection of human rights declared by the international community;
- provision of the right to conclude labour contracts;
- elimination of discrimination in the sphere of labour and employment;
- prevention of negative environmental impacts;
- assistance in the development and distribution of green technologies;
- support of anti-corruption activities.

One of the Global Compact special features is that involvement in its initiative set an obligation not only on the Company but also on the Company’s management. Personal involvement of Vodokanal’s top management in the Global Compact is a striking illustration for Vodokanal employees and other stakeholders of the fact

that corporate responsibility commitment is a valid strategic priority task of the Company. SUE “Vodokanal of St. Petersburg” takes an active part in summits, sessions and conferences organized by the Global Compact. This initiative is a platform for discussions in the light of the accumulated positive experience and search of solutions to introduce principals of the Global Compact into business strategy and practice.

After joining the Global Compact, SUE “Vodokanal of St. Petersburg” submits annual sustainability reports. On the national level Vodokanal interacts with the Russian companies that participate in the Global Compact. They develop new joint projects and actively exchange the experiences.

In 2011, several seminars were organized under the United Nations Development Programme in the Russian Federation together with the Russian Union of Industrialists and Entrepreneurs. SUE “Vodokanal of St. Petersburg” took active part in advisory panels, in the exhibition of non-financial reports under the UN Global Compact regional networking within the framework of the UN Global Compact annual meeting, in the Russian Business Week related to the work of the Management Committee for promoting ISO 26000 Social Responsibility Guidance.

Vodokanal has built up a long experience in developing and implementation of environmental and social projects, partnership programmes, labour relations and observance of human rights.

# PARTICIPATION OF SUE “VODOKANAL OF ST. PETERSBURG” IN THE UN GLOBAL COMPACT IS AN IMPORTANT ELEMENT IN PROMOTING THE SIGNIFICANCE OF HIGH STANDARDS IN THE COMPANY’S OPERATIONS.

SUE “Vodokanal of St. Petersburg” business principle is to be independent from ideology and preferences of any public and political institutions.

Relations with the personnel, being the most important asset of the Company, are built on the grounds of social partnership, common goals, respect of mutual interests, feasibility of obligations undertaken by the parties and fulfilment of such obligations in good faith. SUE “Vodokanal of St. Petersburg” ensures for all employees equal opportunities to unlock their potential in labour activity, unbiased and fair assessment of their work, selection and promotion of employees based solely on professional abilities, knowledge and skills.

To follow the strategy of socially-responsible business, Vodokanal performs purposeful work of solving socially important tasks. SUE “Vodokanal of St. Petersburg” has developed and operates the system of social programmes

oriented towards attracting and retaining of the personnel as well as ensuring a long-term involvement of the personnel through the provision of social services and targeted financial assistance.

Targeted financial assistance under the Company’s social programmes is a voluntary undertaking to enhance the social protection and insure against risks. Such assistance is an integral part of the social package for the employees.

SUE “Vodokanal of St. Petersburg” considers its customers as partners and builds its relations on the grounds of confidence and cooperation.

Participation of SUE “Vodokanal of St. Petersburg” in the UN Global Compact is an important element in promoting the significance of high standards in the Company’s operations.



# ADOPTION OF THE FEDERAL LAW ON WATER SUPPLY AND WASTEWATER DISPOSAL AND INVOLVEMENT IN THE DEVELOPMENT OF OTHER LEGISLATIVE ACTS



In 2011, experts of Vodokanal St. Petersburg took an active part in the development of the Federal Laws “On Water Supply and Wastewater Disposal” and “On amending separate legislative acts of the Russian Federation in connection with the adoption of the Federal Law “On Water Supply and Wastewater Disposal”.

Along with drafting the law content, work with text, comments and clarifications, Vodokanal performed tremendous and efficient work on initiating discussions of the laws on all levels and raising the awareness of the need to adopt such laws as well as of the substance of specific legal norms.

Vodokanal developed motivated proposals that were taken into consideration on the final drafting stage.

New water and wastewater regulations proposed by Vodokanal included provisions related to environmental protection in water supply and wastewater disposal, operation of ownerless facilities of the centralized cold water supply and wastewater disposal systems as well as conclusion of the agreement on governing water and wastewater operations.

Discussion about the legal nature of the agreement on governing water and wastewater operations was initiated in scientific community. Vodokanal St. Petersburg position with regard to this issue was presented at the international conference on public-private partnerships held in the premises of the law faculty of St. Petersburg State University.

On 7 December 2011, the President of the Russian Federation Dmitry A. Medvedev sig-

ned the Federal Laws “On Water Supply and Wastewater Disposal” (no.416-FZ dated 07.12.2011) and “On amending separate legislative acts of the Russian Federation in connection with the adoption of the Federal Law “On Water Supply and Wastewater Disposal” (no.417-FZ dated 07.12.2011). These laws shall form the base for legislative acts regulating all operations in water and wastewater sector.

The Law “On Water Supply and Wastewater Disposal” will come into force on 1 January 2013, except for the provisions limiting the privatization, which will come into force on 1 January 2012. Some articles of the Law will come into force in 2014.

During 2011 experts of Vodokanal St. Petersburg took part in the development and drafting of other legislative acts of the Russian Federation and St. Petersburg, namely:

- the federal law “On amending the Federal Law “On supporting competitiveness” and some other legislative acts of the Russian Federation”;

- the federal law “On protection of the Ladoga Lake”;
- the federal law “On amending separate legislative acts of the Russian Federation on principles of public utilities tariffs regulation and improvement of the procedure for connecting to public-service infrastructure”;
- the decree of the Russian Federation Government “On amending separate legislative acts of the Russian Federation with regard to permitting the use of water bodies and keeping the state register”;
- the law of St. Petersburg “On amending St. Petersburg law “On delineation of powers between the public authorities of St. Petersburg in the field of public health protection and sanitary-and-epidemiologic safety of St. Petersburg population”;
- the decree of St. Petersburg “On the procedure of imposing fees for the discharge of wastewater and contaminants into municipal sewerage system of St. Petersburg”.



# INVOLVEMENT INTO THE REACH EUROPEAN REGULATION

REACH (REGISTRATION, EVALUATION, AUTHORIZATION AND RESTRICTION OF CHEMICALS) IS THE EUROPEAN UNION REGULATION GOVERNING PRODUCTION AND TURNOVER OF ALL CHEMICALS INCLUDING THEIR COMPULSORY REGISTRATION.

In 2010, within the framework of the Baltic Sea Action Summit in compliance with the status of a subsequent customer Vodokanal St. Petersburg undertook the Commitment in respect of the Baltic Sea: "Introduction of improved measures to provide environment-friendly selection and use of chemicals in Vodokanal St. Petersburg in accordance with the REACH standards".

The Commitment was undertaken to protect the Baltic Sea from the effects of hazardous substances by way of selecting environment-friendly chemicals to be applied in production processes and laboratories of Vodokanal St. Petersburg and ensure safe chemical handling. In 2011, SUE "Vodokanal of St. Petersburg" proceeded with its work under the Commit-

ment with regard to informing potential suppliers (importers) about Vodokanal's methods of using chemicals; collection and review of existing safety data sheets; informing suppliers about the requirement to submit safety data sheets in accordance with the REACH standards. A mandatory and integral part of Vodokanal's cooperation with external suppliers is the submittal of existing safety data sheets for chemicals and substances by suppliers.

Within the framework of the undertaken Commitment Vodokanal St. Petersburg cooperates on continuing basis with the Baltic Sea Action Group (BSAG) to improve the condition of water resources in the Baltic Sea. Vodokanal plans to develop its cooperation with BSAG further on.

# PARTICIPATION IN UNIDO PROGRAMMES

UNIDO IS THE UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION. IT MOBILIZES KNOWLEDGE, EXPERIENCE, INFORMATION AND TECHNOLOGIES, THEREBY CONTRIBUTING TO THE PRODUCTIVE EMPLOYMENT, DEVELOPMENT OF A COMPETITIVE ECONOMY AND PROVIDING ENVIRONMENTAL SUSTAINABILITY.

In May 2011, a number of international events were organized in the premises of SUE "Vodokanal of St. Petersburg" within the framework of St. Petersburg IV Neva International Environment Congress and the theme line of these events was a new UNIDO Green Industry strategy.

Thus, in cooperation with the UNIDO Environmental Management Department Vodokanal held:

- the international meeting of the national clean production centers under the Joint UNIDO-UNEP Programme on Resource Efficiency and Cleaner Production;
- the round-table on water consumption and water quality;
- the international meeting under the UNIDO Global Chemical Leasing Programme with participation of representatives from 12 ministries and directors of national clean production centers.

Vodokanal was also involved in making the 2nd issue of the UNIDO in Russia Magazine. The UNIDO North-Western International Centre of Clean Production acted as a consultant in this work.

In 2011, it became clear through the contacts with UNIDO representatives that new water and wastewater technologies applied in St. Petersburg as well as high proficiency of Vodokanal's experts can be useful for the cities and towns of the UNIDO member countries.

Extensive cooperation of SUE "Vodokanal of St. Petersburg", acting as a water and wastewater operator, with national clean production centers of the UNIDO international network is in line with the UNIDO partnership and Green Production strategy, develops the ideas of St. Petersburg Environment Protection Declaration adopted by the participant of IV Neva International Environment Congress.

SUE "Vodokanal of St. Petersburg" is prepared under the UNIDO technical assistance to make further technological contribution to achieve objectives of various projects as well as to use its expertise in UNIDO projects for EurAsEC.

# ESTABLISHMENT OF THE INTERNATIONAL ADVANCED WATER TECHNOLOGIES CENTRE

INTERNATIONAL ADVANCED WATER TECHNOLOGIES CENTRE WAS ESTABLISHED IN 2010 UNDER THE AEGIS OF THE ECOLOGY AND NATURE CONSERVATION WORKING GROUP OF THE NORTHERN DIMENSION BUSINESS COUNCIL IN COLLABORATION WITH THE NORTHERN DIMENSION ENVIRONMENTAL PARTNERSHIP.

The relevant decision was made in April 2010 in the course of the Northern Dimension Business Council meeting co-chaired by the Director General of SUE "Vodokanal of St. Petersburg" and the Director of Lahti Science and Business Park.

On 21 October 2010, under the International Clean Water Forum 2010 top-managers of SUE "Vodokanal of St. Petersburg" and Lahti Science and Business Park signed the memorandum of Cooperation that declares to join efforts for establishing in St. Petersburg the Training Centre on Environment Protection and Rational Use of Natural Resources.

International Advanced Water Technologies Centre became the place for meetings of expert from Russia, Finland and other NDEP countries, training of managers and experts from Russian water and wastewater companies, fostering an attitude of care towards water and promotion of water technologies and solutions.

SUE "Vodokanal of St. Petersburg" and Lahti Science and Business Park were co-organizers of the Centre. The Ministry of the Environment of Finland, Northern Dimension Business Council, Ecovod, Ramboll, Kemira, Onninen and other research institutions became its partners.

On 26 January 2011, SUE "Vodokanal of St. Petersburg" hosted the NDEP Sustainability and Water Resource Management Confer-

ence with the participation of leading water and wastewater companies from Russia and foreign countries, representatives of the European Commission, foreign diplomats. At this conference it was officially announced about the establishment of International Advanced Water Technologies Centre.

In February 2011, the Centre proceeded to implement its activities in line with the relevant programme, which included seminars, conferences, audits, fact-finding visits, international exhibitions, interactive activities for schoolchildren and lectures for students.

In May 2011, a separate webpage of the Centre was open in the official web-portal of SUE "Vodokanal of St. Petersburg" (<http://www.vodokanal.spb.ru>). The information on the web-portal is published in two languages (Russian and English) and includes programmes and time schedules of the Centre activities.

International Advanced Water Technologies Centre participated in Cleantech Expo 2011, the international clean technology exhibition organized in Lahti in autumn 2011, and World Water Forum in Marseille in March 2012.

In 2011, the Centre organized about 30 events with the participation of more than one thousand experts.

# JOINING THE EUROPEAN FOUNDATION FOR QUALITY MANAGEMENT

SINCE 1 DECEMBER 2011, VODOKANAL ST. PETERSBURG HAS BEEN A FULL MEMBER OF THE EUROPEAN FOUNDATION FOR QUALITY MANAGEMENT (EFQM).

The European Foundation for Quality Management (EFQM) is a not-for-profit membership organization. It was established in 1987 by 14 leading European companies with the support of the European Commission to increase the competitiveness of the European economy by promoting new management approaches, stimulating the learning of management basics and creating opportunities for recognition of success in this field.

EFQM members number over 800 European organizations having several million of employees.

EFQM was established to assist organizations in achieving sustainable success by giving them relevant recommendations.

The European Foundation for Quality Management has its representatives—national partner organizations (NPO) in different countries. Their task is to promote the Excellence Model and provide relevant tutorial support in their countries.

In Russia, EFQM is represented by the All-Russian Quality Organization working to promote effective management methods as a tool of sustainable development of Russia.

There are a set of key principles upon which the EFQM's fundamental concept of Excellence is based:

- achieving balanced results;
- adding value for customers;
- leading with vision, inspiration and integrity;
- managing by processes;
- succeeding through people;
- nurturing creativity and innovation;
- building partnerships;
- taking responsibility for a sustainable future.



Vodokanal St. Petersburg believes that the improvement of the Company management framework with the focus on responsibility for sustainable future is one of its prioritized tasks:

- sustainable use of natural resources;
- provision of affordable services;
- justified, well-balanced expenditures and income;
- raising of investments;
- financial soundness;
- technical, economic, process, energy and management efficiency;

- development and improvement of our work as a continuous, natural process in the changing external and internal environment.

All the above will guarantee the quality of services, customer confidence in the safety of tap water and customer rights for favorable environment today and in the next years.

The organization showing a maximum compliance with the Excellence Model becomes the Winner of the prestigious EFQM Excellence Award (there are also nominations “Prize Winner” and “Finalist”). However, before the contenders begin to compete for the Award, they usually must pass several levels: “Committed to Excellence” and “Recognised for Excellence” (on a regional scale) and receive



corresponding EFQM Certificates, and, moreover, win the Tournament of CEE countries. This multilevel scheme supports step-by-step implementation of the Excellence Model.

Since 2005, Vodokanal has started self-assessment of its activities on the basis of the Business Excellence Model to improve its management framework. At first the Company used the RF Government Regional Quality Model harmonized with the EFQM Model. Following to the results of 2006 Vodokanal became the winner of the competition for the RF Government Quality Award.

Since 2009, Vodokanal has conducted the self-assessment on the basis of the EFQM Model and participated in the EFQM competition.

Stages of participation in the EFQM Model competition:

- 2009—Vodokanal received the certificate confirming compliance of the Company management with the “Recognised for Excellence” level of the EFQM Model;
- 2010—Vodokanal won the International Quality Tournament of Central and Eastern Europe.

In 2011, Vodokanal St. Petersburg competed for the EFQM Excellence Award and became the Finalist,—it is the first European water company to achieve such result.





# INTERACTION WITH STAKEHOLDERS

## PARTNERSHIP CONCEPT

Vodokanal St. Petersburg maintains lasting relations with its partners on the basis of mutual trust, respect and openness in line with the EFQM Model concepts, knowing that in the dynamic environment of the modern world the company success and satisfaction of all stakeholders strongly depend on the development of effective partnership.

Vodokanal St. Petersburg divides its partners into segments—by types of activities or services and by significance and importance of the partnership in terms of creating value for the stakeholders.

Vodokanal adheres to the multilateral partnership concept including the interaction with its partners and suppliers on technical, process-related, financial, organizational and tutorial aspects of activities.

As for its international partners, in 2011 Vodokanal continued to cooperate successfully with such organizations as:

- the Ministry of the Environment of Finland;
- the John Nurminen Foundation;
- Nordic Environment Finance Corporation (NEFCO);
- Swedish International Development Cooperation Agency;
- Northern Dimension Environmental Partnership;

- foreign partners—suppliers of equipment and technologies.

To share experience, Vodokanal St. Petersburg has built good partnership relations with water companies in Russia and the Baltic Sea Region.

The partnership with the Russian and European banking community, as well as with different investors is successfully implemented in Vodokanal. Investments through the public-private partnership scheme are an example of sound and coherent concept of Company partnership. This scheme was used for the construction of South-West Wastewater Treatment Plant some years ago, for the ongoing construction of the Northern Tunnel Collector.

THE BASIC PRINCIPLE OF THE PARTNERSHIP CONCEPT EMBRACED BY VODOKANAL: EACH PARTNER FULFILS ITS OBLIGATIONS IN DUE TIME AND AT A GOOD QUALITY LEVEL UNDERSTANDING THAT PARTNERSHIP IMPLIES JOINT WORK AIMED AT LONG-TERM, SUSTAINABLE CREATION OF VALUE FOR BOTH PARTIES.

Over decades of cooperation with foreign and domestic partners, Vodokanal has never failed to fulfil its obligations, and this fact is highly appreciated by its partners. Well-defined partnership concept and mutually beneficial cooperation with the partners help us implement innovative technologies, modernize plants, improve the company management and, eventually, raise the stakeholders' satisfaction with our services.



# MEMBERSHIP IN ASSOCIATIONS, UNIONS AND OTHER ORGANIZATIONS

Vodokanal St. Petersburg gives much attention to participation in professional associations and unions.

In 2009, Vodokanal became a co-founder of the non-commercial partnership National Union of Vodokanals (NUV) uniting companies of different ownership which account for almost two-thirds of the total water supply in Russia. The main activity of NUV is the improvement of interaction between water companies and governmental authorities for the purpose of introducing new operational standards and technical regulations and improving investment prospects of the sector. The strategic goal of NUV is to create conditions for implementation of the self-regulation mechanism as the most effective tool for the water supply and sanitation sector management.

Felix V. Karmazinov, Director General of Vodokanal St. Petersburg, was elected President of the National Union of Vodokanals.

Moreover, Vodokanal St. Petersburg maintains partner relations with Russian water companies in the framework of other professional associations. The Company is a member of the Russian Association of Water Supply and Wastewater Disposal. Vodokanal's initiative—Baltvod Association of North-Western Water Companies—celebrated its 20th anniversary in April 2011.

Furthermore, Vodokanal St. Petersburg participates in the activities of the Non-Commercial Partnership "The Russian Water Society".

Vodokanal St. Petersburg is a member of the Non-Commercial Partnership "Association of Builders of St. Petersburg" which got the status of a self-regulatory organization in 2009. In the same year, this partnership issued to Vodo-

kanal permits for the works which might affect the safety of permanent facilities.

During 2010, Vodokanal changed twice its permit for the performance of works which might affect the safety of permanent facilities in order to bring the list of works in compliance with the amendments to the current legislation.

In December 2011, Vodokanal joined the Not-For-Profit Partnership "Interregional Union of Design Engineers" (NP MRSP) and obtained the competency certificate for the planning works which might affect the safety of permanent facilities.

Since 2001, Vodokanal has been involved in extensive cooperation with the Russian Tunnel Association. Currently, there is only one Tunnel Association in Russia; it unites over 80 organizations dealing with design, construction and operation of underground structures in 28 Russian cities, in Belarus, Ukraine, Azerbaijan and Kazakhstan, and involves the leading companies from France, Germany and Canada. Over 400 specialists are members of the Russian Tunnel Association. It is a huge engineering and technical force capable of accelerating the scientific and technical progress in the field of tunneling and underground building in Russia.

The materials provided by the Russian Tunnel Association under the contract help Vodokanal use the Russian and foreign experience of underground works to build municipal infrastructure in St. Petersburg and promote application of advanced technologies for the design and construction of Vodokanal's tunnels and underground structures.

# INTERACTION WITH CUSTOMERS

ONE OF THE MOST IMPORTANT ASPECTS OF VODOKANAL ACTIVITIES IS MAINTAINING EVERYDAY CONTACTS WITH CUSTOMERS.

The Company communicates with customers in several ways: in the course of services provision, in the course of interaction initiated by Vodokanal (interviews, focus groups), by discussing various problems in the mass media and by organizing different meetings with citizens.

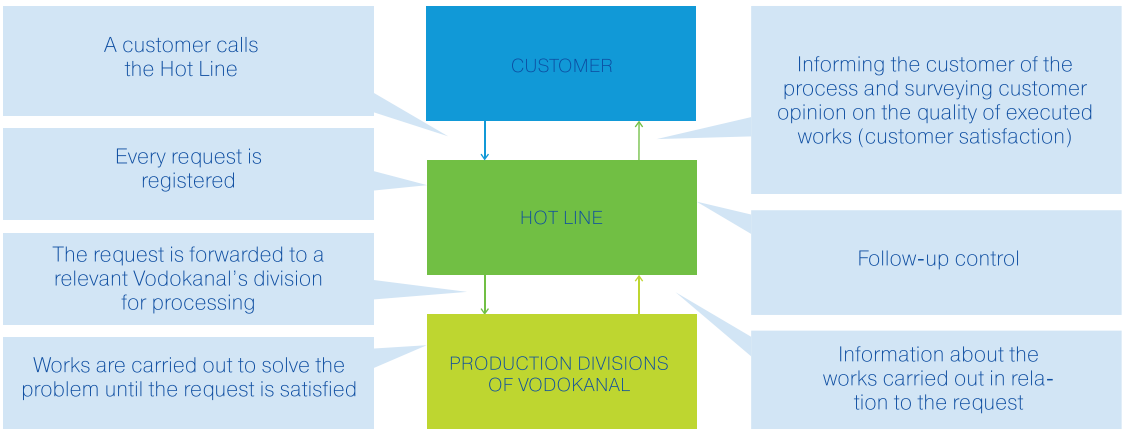
Customers come to SUE "Vodokanal of St. Petersburg" with different questions about the issuance of authorizations for connection to water and sewerage networks, conclusion of contracts, payments under contracts. Since water is a product and sewage collection—a service, Vodokanal is implementing a new contract policy to formalize contractual relations with its customers. For this purpose, special customer service units are set up at Vodokanal's production branches to communicate with customers within their respective service areas in each administrative district of the city. The reception rooms provide the necessary information and document forms; a box to collect customers' wishes and complaints is always there.

**QUICK RESPONSE TO THE CUSTOMERS' COMPLAINTS OF DEFICIENCIES IN WATER AND SEWAGE NETWORKS OPERATION IS AN IMPORTANT ASPECT. SINCE 2003, SUE "VODOKANAL OF ST. PETERSBURG" HAS BEEN OPERATING THE HOT LINE WHICH RECEIVES CUSTOMER CALLS ROUND THE CLOCK (TEL.: +7 (812) 305-09-09).**

Besides, SUE "Vodokanal of St. Petersburg" receives requests via the Internet (there is a separate section "Feedback" on the corporate website [www.vodokanal.spb.ru](http://www.vodokanal.spb.ru)).

All incoming requests are recorded in the information system and forwarded to the production division responsible for remediation of relevant section of network and informing the customers of the works performed. All the call processing stages—from the call to remediation—are under the control of a body independent from the production division which performs works. The monitoring of the request processing may only be stopped after the customer confirms that the works are completed. Thus, it is a customer that evaluates the final results of works in relation to every call.

VODOKANAL—CUSTOMERS INTERACTION  
THROUGH CALLS



Moreover, the above system enabled citizens, customers and clients to receive information and consulting services from the Hot Line operators.

To develop the call reception system, the time distribution of calls during 24 hours was analysed. The results of the analyses ensured efficient arrangement of work process with a sufficient number of skilled operators available at any time of day or night.

The customer call management process includes computer registration of all incoming calls. Codification of calls supports efficient evaluation of service quality and helps de-

termine the areas for improvement in order to eliminate the causes of complains preventively.

Processing of customer calls is based on the information obtained by means of up-to-date technologies, in particular, the Call-Centre—automated call recording and distribution system.

The information obtained through this system enables us to ensure reception of all incoming calls and to optimize both the call processing time and the waiting time required for the caller to get the operator's answer.

All these factors contribute to the improvement of the customer service quality.

# INTERACTION WITH SUPPLIERS

VODOKANAL ST. PETERSBURG IS STRIVING TO BUILD LONG-TERM MUTUALLY  
BENEFICIAL RELATIONS WITH SUPPLIERS.

To use the Company's own funds in an effective way, Vodokanal makes procurements using regulated procedures, including:

**01.** Tender—is a competition, the winner of which is a person who has offered the best terms and conditions for contract execution in compliance with criteria and the procedure of assessment and comparison of bids specified in the tender documentation.

**02.** Auction (open or closed)—a bid process where the winner is a person bidding the lowest price or, if the contract price is reduced to zero in the course of the auction and the auction participants compete for the right to make the contract,—a person bidding the highest price for the contract.

**03.** Request for quotation (open procedure only)—a method of order placement where the information about the purchase of goods, works or services is made available to unlimited range of persons by posting the call for quotations on the Company website; the participant which offers the lowest contract price becomes the winner.

The maximum contract price in this procedure is 1,000,000 Roubles, and the procedure may only be launched by the Company (including its branches) once in three months for the same product.

**04.** Single source (supplier, contractor) procurement—a procedure other than tender where the purchaser sends an offer of contract to one supplier (contractor) only. The use of this procedure is limited to strictly defined cases where other procurement procedures are not feasible or reasonable.

The most preferred procurement method is bidding (tender, auction).

The published information on bidding and requests for quotations includes customer's contact persons for inquiries regarding the tendering / technical issues. Those who wish to submit their tenders (requests for quotations) can receive clarifications on various issues in the course of preparing their tender proposals either orally, by addressing the contact person specified in the documentation or in a written form by sending an inquiry. The Order Regulations Bureau is responsible for clarification of issues concerning preparation of bids while the initiator department is responsible for clarification of issues related to the Terms of Reference and draft contract provisions.

To select suppliers (contractors) in an effective way, the use of the bidders' qualification evaluation criteria plays a significant role in the procurement procedures, and rather stringent qualifications requirements have to be set for the bidders in the event of procuring very complex goods (works, services).





For the purpose of improving the existing procurement system, it was decided in 2011 to recommend that Vodokanal's subdivisions should introduce the prequalification procedure when procuring certain types of goods, works or services.

Prequalification means selection of contenders for participation in the procurement procedure in compliance with the requirements and criteria set by the procurement initiator.

The following selection criteria are used for prequalification:

- bidder's experience in the area relevant to the subject of the tender;

- availability of production facilities;
- qualifications of managers and specialists;
- company ratings;
- availability of certificates, diplomas, self-regulating organization documents;
- other criteria.

With such approach, goods and services can be procured on optimal terms and conditions.

# INTERACTION WITH FINANCIAL INSTITUTIONS

## IN 2011, IMPLEMENTATION OF THE NEVA UNTREATED WASTEWATER DISCHARGE CLOSURE PROGRAM WAS GOING ON.

The Program is co-financed with the loans provided by the European Bank for Reconstruction and Development (EBRD), Nordic Investment Bank and European Investment Bank, and the non-refundable assistance of the Northern Dimension Environmental Partnership (NDEP), Swedish International Development Cooperation Agency (SIDA), the Ministry of the Environment of Finland (FMoE), EBRD Shareholder Special Fund and the John Nurminen Foundation.

In addition to the provision of funds, Vodokanal's lenders and donors monitor the performance of financial obligations by Vodokanal, compliance with environmental requirements, conformity of tender procedures for procurement of goods, works and services with the international standards.

Furthermore, activities under the Small Treatment Plants Reconstruction Project began in 2011. The Loan Agreement with Nordic Environment Finance Corporation (NEFCO) and associated agreements with each of NEFCO

and FMoE on providing non-refundable assistance for this Project were signed in 2010.

## IN 2011, VODOKANAL CONTINUED TO PERFORM ITS OBLIGATIONS OF DEBT REPAYMENT AND SERVICING UNDER THE LOAN AGREEMENTS.

LLC Vodokanal-Finance (subsidiary of Vodokanal St. Petersburg) was paying, in a timely manner and in full, the accumulated coupon yield to the holders of Series 01 non-convertible interest-bearing documentary bearer bonds of LLC Vodokanal-Finance, with obligatory centralized care (state registration number 4-01-36398-R dated 16 November 2010). The coupon yield on the first coupon in the amount of 87,760,000.00 Roubles was paid out on 15.06.2011, the coupon yield on the second coupon in the amount of 87,760,000.00 Roubles was paid out on 14.12.2011. The series 01 bond's first and second coupons rate was set at 8,8% per annum.

# INTERACTION WITH OTHER WATER COMPANIES

In 2011, Vodokanal St. Petersburg provided consulting and information services to water companies. The cooperation with water companies is regulated by the existing cooperation agreements and contracts with the support and assistance of municipal authorities.

In 2011, Vodokanal partnered with the following companies in the sphere of development projects promotion:

- MUP Novgorodsky Vodokanal in Velikiy Novgorod
- MUP Astrvodokanal in Astrakhan
- ZAO Karelvodokanal in Sortavala
- ZAO Tchelnyvodokanal in Naberezhniye Tchelny
- Leningrad Region Administration in Priozersk
- MUP Gorodskoy Vodokanal in Volgograd
- Kaluga Region Administration, Kalugaoblvodokanal in Kaluga
- OAO Gatchinskiye Municipal Systems
- LLC Intelligent Houses
- OAO Tambovskiy Municipal Systems and OAO TKS Tambovodokanal
- LLC DelUM Business Training Centre

Vodokanal St. Petersburg actively promotes its positive experience to solve water sector problems in the Russian regions and to support the water companies wishing to improve the quality of their services.

On 1 October 2011, Vodokanal St. Petersburg established its new branch—the Engineering Innovation Centre comprising the Solutions Promotion Office. The latter provides consultancy and information as required to optimize the clients' operating costs and the quality of services.

Vodokanal interacts with other water companies in all fields of activities:

- Production (implementation of new water and sewage treatment technologies, operation of networks and plants, automated process control systems, energy efficiency, hydraulic modelling of water supply and sanitation systems and GIS deployment);
- Customer/client service;
- Economy and finance (financial and economic activities, investments). Special attention is given to staff education and training.

The following algorithm is used by the Solutions Promotion Office which represents Vodokanal St. Petersburg in the context of cooperation with Russian water companies.

Workers from different departments of Vodokanal visit the clients' facilities to obtain input data for further assessment of the Company operations. Samples of potable water and sewage are taken.

By analysing the results we can build risk maps where the danger level of any event entailing social, economic or environmental consequences can be identified.

Following the results of work, we draw up targeted lists of short- and long-term actions aimed to develop and modernize water supply and sanitation systems. The tentative cost of actions is calculated and a financial model is built on the basis of similar projects implemented by Vodokanal St. Petersburg.

The consultancy and recommendations on water supply and sanitation development provided to the clients enable us to build our investment programme and the concept of Company development aimed at continuous improvement of target performance indicators and reduction of operating costs.



# INTERACTION WITH PERSONNEL

PERSONNEL IS A STRATEGIC POTENTIAL OF THE COMPANY SUSTAINABLE DEVELOPMENT. INTERACTION WITH PERSONNEL AND SOCIAL RESPONSIBILITY BEFORE PERSONNEL ARE INCLUDED INTO THE COMPANY DEVELOPMENT STRATEGY AND FORMULATED IN THE VODOKANAL PERSONNEL MANAGEMENT POLICY.

Interaction with employees who are the most important asset of the company is built on the basis of social partnership, common goals, respect of mutual interests, feasibility of obligations undertaken by the parties and fulfilment of such obligations in good faith.

The main principles of the personnel management policy are systemacity, adaptability and practical orientation of personnel management systems, universality, competent approach.

SUE "Vodokanal of St. Petersburg" declares its commitment to human rights observation in accordance with the Constitution of the Russian Federation, legislative acts of Russia, generally recognized principles and norms of the international law specified in declarations, conventions and recommendations of the International Labour Organization and other international organizations.

Vodokanal's well-being is impossible without its employees' well-being. For this reason, in 2011 the company continued implementation of social programs related to recruiting and retaining personnel, young specialists and qualified workers, employees motivation, improving their labor and rest conditions.

Company employees are constantly informed about the most important achievements and problems of the Company and the feedback is received from them.

Work with Company employees is organized, the Youth Board operates, Welcome to Vodokanal events are quarterly organized.

In 2011, the program "Meeting with the Youth" was put into practice, where young company specialists could ask the Director General all questions of interest.

The Company regularly conducts personnel satisfaction surveys with regard to key employment conditions.

The next satisfaction survey is planned for 2012 and will be made with regard to organizational and technical conditions, labor safety, remuneration of labor, opportunities for professional growth and development, informing on important questions, attention to employees' proposals and complaints, general atmosphere at workplace, satisfaction with work on different management levels, employees' attitude to their work, commitment to the company, potential employee turnover and social wellbeing of different employee groups.

Based on the results of the conducted surveys, the Company develops action plans targeted to the personnel satisfaction and adjusts basic personnel management plans.

For example, in 2011 Vodokanal developed a new training application form and questionnaire to evaluate training results.

# INTERACTION WITH TRADE UNIONS

SUE "VODOKANAL OF ST. PETERSBURG" AS A SOCIALLY RESPONSIBLE EMPLOYER ACTIVELY INTERACTS WITH THE COMPANY EMPLOYEE TRADE UNION.

This interaction is directed to develop a social partnership with employees to improve their living standards, guarantee labor remuneration, ensure compliance with occupational health and safety requirements and provide employees with a full-benefits social package.

A new Collective Employment Agreement for 2011-2013 developed with the active participation of the trade union was effective in Vodokanal during 2011. No violations of the Collective Employment Agreement or worsening of its conditions was identified in 2011. The Collective Employment Agreement was ex-

ecuted in full and often in a bigger scope. For example, the number of cases and amounts of material assistance to employees caught in difficult life situations proved to be significantly higher than the planned ones.

Vodokanal together with the trade union is involved in organizing the rest for its employees and their families as well as in planning and conducting sports events, cultural and leisure activities, work with war veterans and citizens of the besieged Leningrad, Vodokanal labor veterans and the youth.



# INTERACTION WITH EDUCATIONAL INSTITUTIONS

IN 2011, IT WAS FIVE YEARS SINCE SUE “VODOKANAL OF ST. PETERSBURG” AND PROFESSIONAL COLLEGE NO. 89 HAD STARTED THEIR PARTNERSHIP. IN THE COLLEGE THE EDUCATIONAL AND PRODUCTION DEPARTMENT TO TRAIN WATER AND WASTEWATER EXPERTS IS ESTABLISHED.

Over all these years, the modern material and technical facilities for students created together with Vodokanal have been operating in the College:

- the training set to simulate emergency recovery work (at water and sewer networks) and a training ground;
- the training simulators for welding, sanitary, ventilation and electrical works, small-size mechanical equipment, laboratory and stand equipment;
- all equipment for PC-89 classrooms to provide training and educational process.

Teachers and students from PC-89 study modern production with the help of SUE “Vodokanal of St. Petersburg”. The following activities are regularly conducted:

- trainings of PC-89 teachers and masters at the production facilities of Vodokanal;
- consultations and assessment of educational programs of the water and

- wastewater department by Vodokanal experts;
- on-the-job training of students of the water and sewer department at Vodokanal facilities.

PC-89 students actively participate in workmanship contests held in Vodokanal (many of them are organized at the PC premises).

In 2011, Vodokanal continued its partnership with the following specialized institutions of higher education: St. Petersburg State University of Water Communications, State University of Architecture and Civil Engineering, St. Petersburg State Transport University and other institutes of higher education.

The important field of Vodokanal’s work is the active interaction with schools of St. Petersburg, Leningrad Region and other Russian cities within the framework of different programs and projects of the Youth Environmental Centre and museum complex “The Universe of Water».

# INTERACTION WITH ENVIRONMENTAL ORGANIZATIONS

ENVIRONMENTAL AREA IS ONE OF THE MOST IMPORTANT ACTIVITIES OF VODOKANAL ST. PETERSBURG, AND THE COMPANY IS CLOSELY COOPERATING WITH RUSSIAN AND INTERNATIONAL ENVIRONMENTAL ORGANIZATIONS IN THIS SPHERE.

In particular, representatives of Vodokanal take part in the activities, organized by the department for Russia of the Baltic Sea Protection Commission (HELCOM), the John Nurminen Foundation (Finland), the Baltic Sea Action Group (Finland).

In 2011, the partnership of Vodokanal with the environmental organization Green Peace continued. In particular, working meetings with representatives of Vodokanal Wastewater Disposal Branch were held. In February 2011, the round table “Neva: how to make the River clean” was held with participation of Vodokanal and Green Peace management. A new draft law “On Water Supply and Wastewater Disposal” was also on the agenda.

In October 2011, a group of volunteers from St. Petersburg Branch of Green Peace visited the South-West Wastewater Treatment Plant.

The excursion was organized at the request of the head of the Green Peace Branch Dmitry Artamonov. Two dozens of Green Peace representatives had an opportunity to learn about all wastewater and sludge treatment phases. An active dialog between Vodokanal and the St. Petersburg Branch of Green Peace began in late 2008.

To implement projects and programs of the Youth Environmental Centre, Vodokanal interacts with environmental organizations. Among the partner organizations Vodokanal cooperates with Lahti Environmental Service (Finland), Association for Co-operation with Nordic Countries (NORDEN), European Association of Underwater Images Festivals, the interregional children’s club of cultural, ecological and patriotic activities “Neposeda” and others.



# INTERACTION WITH FEDERAL AND REGIONAL AUTHORITIES

## SUE “VODOKANAL OF ST. PETERSBURG” WORKS IN CLOSE INTERACTION WITH THE FEDERAL AND REGIONAL AUTHORITIES.

In 2011, the most important direction of these activities was participation of Vodokanal’s specialists in the development of the key law for the sector—“On Water Supply and Wastewater Disposal”. The State Duma passed this law in late 2011.

Besides, representatives of Vodokanal were involved in preparation of notes, comments and proposals on regulatory acts submitted for approval to federal and regional authorities including the Regional Program “Clean Water of St. Petersburg” for 2011-2025, Rules of rendering public services to citizens, the federal law “On amending the federal law “On natural monopolies” and others.

Company specialists were involved in activities held on the aegis of the State Duma, the Federation Council, the Ministry of Regional Development of the Russian Federation, the Ministry of Natural Resources of the Russian Federation, the Ministry of Finance of the Russian Federation, the Ministry of Economic Development of the Russian Federation as well as the St. Petersburg Government, committees of the city administration and the Legislative Assembly of St. Petersburg.

Vodokanal employees were involved in organization and proceedings of different conferences, meetings, panel discussions, workshops, forums and other activities held by state authorities of the Russian Federation

and St. Petersburg (the State Duma, federal executive authorities, St. Petersburg environmental prosecutor’s office, committees of the St. Petersburg Government and other organizations).

In particular, in 2011 with the active participation of Vodokanal employees such events as IV Neva International Environment Congress (the organizer was the Committee for Natural Resources and Environment Protection of the Federation Council), the Conference “Providing the compliance with environmental laws in wastewater in St. Petersburg and the Leningrad Region” (the organizer was St. Petersburg Environmental Prosecutor’s Office), the interagency meeting on compliance with laws targeted to the protection of water bodies (the organizers were St. Petersburg Environmental Prosecutor’s Office, Department of Rosprirodnadzor in Northwest Federal District) were organized and held.

In May 2011, the Ministry of Regional Development of the Russian Federation and SUE “Vodokanal of St. Petersburg” participated in the International Exhibition Berlin Wasser 2011 and had a joint exhibition stand.

In June 2011, the final conference dedicated to the 10th anniversary of the Northern Dimension Environmental Partnership (NDEP) activities in Russia was held together with the Ministry of Finance, the Ministry of Economic

Development, the Ministry of Natural Resources, the Foreign Ministry of Russia as well as the European Bank for Reconstruction and Development.

During 2011, Vodokanal effectively interacted with St. Petersburg Environmental Prosecutor’s Office. On the basis of the documents and materials provided by the Company and to protect interests of the general public, St. Petersburg Environmental Prosecutor’s Office brought claims to St. Petersburg district courts against Vodokanal’s customers obliging them to install local wastewater treatment units at

discharge points of the municipal sewerage system of St. Petersburg or conduct inspection of those units.

In 2011, all 32 court judgments on claims brought by St. Petersburg Environmental Prosecutor’s Office against Vodokanal’s customers were made in favor of the Environmental Prosecutor’s Office, i.e. the position of Vodokanal regarding the necessity to install, by the customers, local wastewater treatment units at discharge points of the municipal sewerage system was supported, all arguments and evidences of the Company were accepted.



# INTERACTION WITH THE MASS MEDIA

INTERACTION WITH THE MASS MEDIA IS A MAJOR PART OF VODOKANAL'S INFORMATION POLICY, AND DISCLOSURE OF INFORMATION—ONE OF THE COMPANY VALUES.

Vodokanal's relations with the mass media are based on the principles of fairness in reporting, reliability of information and efficient response. Vodokanal's information policy aims to create a positive company image, improve mutual understanding between the company, its customers and the society, and to foster the culture of water use and responsible attitude towards the environment.

The forms of interaction with the mass media are as follows:

- preparation and distribution of press-releases and information reports about the Company activities;
- response to the mass media's inquiries;
- arrangement of interviews of Vodokanal's representatives in the mass media;
- press conferences, briefings, round tables;
- press-tours for journalists to Vodokanal's facilities;
- initiating publications in printed and electronic media, and TV/radio items;
- design and maintenance of websites describing the Company activities.

The mass media's interest in Vodokanal activities is growing every year. Over 8,000 materials about the Company activities were publicized (in printed media, Internet, radio and TV) in 2011. To put this in perspective, in 2010, the number of such materials was a little over 6,000.

The digests of Vodokanal activities-related materials are presented to the Company management on a daily basis. It helps to give a quick response to publications, provide necessary comments and clarifications and pinpoint new themes for interaction with the mass media.

Development of the Internet sphere was in Vodokanal's special focus in 2011.

The information about the Company activities was regularly placed on the current websites (Vodokanal's official website [www.vodokanal.spb.ru](http://www.vodokanal.spb.ru) and museum complex's website [www.vodokanal-museum.ru](http://www.vodokanal-museum.ru)).

In March 2011, the website of "The Universe of Water" museum complex won the All-Russia contest "Best Corporate Media 2011" in the nomination "Corporate Media. Internet-Portal".

In May 2011, the Company launched its Intranet-portal [vodokanal-info](http://vodokanal-info). Any employee of Vodokanal, even those who do not have access to Internet, may read recent news about operations and achievements of the Company, learn about special proposals, discounts and activities for the Company employees, go through photo albums and video-films of various corporate activities, exchange views with colleagues and etc.

In 2011, Vodokanal also continued to develop the awareness-raising Internet-portal about water [da-voda.com](http://da-voda.com) created with the support of Vodokanal. In December 2011, this Internet-portal became the prize-winner of the prestigious international public relations contest PROBA-IPRA Golden World Awards 2011 in the nomination "Best Social PR-Project".

# PARTICIPATION IN EXHIBITIONS AND CONFERENCES

One of the tools of Vodokanal's interaction with the stakeholders is the participation in Russian and international exhibitions and conferences.

In January 2011, Vodokanal acted as one of the organizers of the NDEP Sustainability and Water Resource Management Conference. At this very conference it was officially announced about the establishment of International Advanced Water Technologies Centre. In March 2011, Vodokanal took part in St. Petersburg Ecology Week and in XI International Forum "Ecology of the Big City".

In May 2011, Vodokanal participated in Wasser Berlin International 2011 (Germany). Vodokanal together with the Ministry for Regional Development of the Russian Federation had an

exhibition stand that represented modern water and wastewater technologies applied in St. Petersburg as well as achievements of Vodokanal in the field of environmental education. Also in May 2011, Vodokanal was actively involved in IV Neva Environment Forum.

In autumn 2011, Vodokanal had its exhibition stands representing the operation of the Company at XV International Forum "Russian Industrialist" and at VIII Exhibition and Conference "Housing and Public Utilities of Russia".

In October 2011, Vodokanal St. Petersburg represented its achievements at Cleantech Expo 2011, the international clean technology exhibition organized in Lahti (Finland).







# RESULTS OF ACTIVITIES IN 2011

## WATER SUPPLY

### WATER SUPPLY SYSTEM

SUE “VODOKANAL OF ST. PETERSBURG” PROVIDES POTABLE WATER TO THE POPULATION OF 4,800,000 PEOPLE, AS WELL AS TO DOZENS THOUSANDS OF COMPANIES AND ORGANIZATIONS IN THE CITY.

VODOKANAL ACTIVITIES RELATED TO PROVISION OF WATER SUPPLY SERVICES INCLUDE THE FOLLOWING:

- water intake and water treatment;
- water transportation.

St. Petersburg takes water from surface and underground sources. The main water source is the Neva River; Vodokanal takes more than 98% of water from it.

Pipeline diameters of the municipal water network in St. Petersburg range from 50 mm (house connections) to 1.4 m (water pipelines).

The bigger part (60%) of networks in the St. Petersburg water supply system is made of cast

iron. Recently, polyethylene pipes began to gain in popularity, they are especially widely used for major repairs and reconstruction of networks.

About 60% of water networks in St. Petersburg have been in operation for 20-50 years. The operating time of 23% of all networks is over 50 years, and such networks need reconstruction or replacement.

ST. PETERSBURG WATER SUPPLY SYSTEM INCLUDES:

- 9 waterworks;
- 200 boosting pumping stations;
- 6,665.22 km of water networks;
- 2 sodium hypochlorite plants.

ADJUSTED CAPACITY OF WATER TREATMENT PLANTS:

Plant	Capacity
Southern WTP	900,000 m <sup>3</sup> /day
Northern WTP	608,000 m <sup>3</sup> /day
Main WTP	422,000 m <sup>3</sup> /day
Volkovskaya WTP	211,000 m <sup>3</sup> /day
Kolpino WTP	151,000 m <sup>3</sup> /day
Zelenogorsk WTP	7,000 m <sup>3</sup> /day
Kronstadt WTP	18,000 m <sup>3</sup> /day

Adjusted capacity of WTPs means capacity of waterworks calculated in consideration of raw water quality deterioration, technical condition of water facilities and more stringent requirements to potable water quality in compliance with the Resolution of the Government of St. Petersburg No. 1270 dated October 21, 2008.



DAILY AVERAGE SUPPLY OF POTABLE WATER TO THE CITY

Year	Water supply volume
2009 year	2,028,290 m³
2010 year	1,994,690 m³
2011 year	1,922,900 m³

Water losses on the networks amounted to 12.5% in 2011; the breakdown rate of water networks (number of damages per 10 km)—3.62. St. Petersburg water supply system is based on the area zoning principle. Water supply zones are the parts of the general system within which the technical possibility for water balance monitoring and water supply modes control exists.

There are 3 developing water supply zones with five big water treatment plants in St. Petersburg.

01. THE SOUTHERN WATER SUPPLY ZONE INCLUDES:

- the Southern Water Treatment Plant (SWTP) consists of the first-lift pumping station, water treatment facilities, clean water reservoirs and second-lift pumping station;
- Dudergofskaya WTP uses ground water (first-lift pumping station, clean water reservoirs and second-lift pumping station);

- Kolpino WTP (first-lift pumping station, water treatment facilities, clean water reservoirs and second-lift pumping station);
- Kronstadt WTP uses water from the Gulf of Finland (first-lift pumping station, water treatment facilities, clean water reservoirs and second-lift pumping station);
- ground water sources in Lomonosov district of the Leningrad Region;
- named boosting pumping stations of the third and fourth lift (Moskovskaya, Frunzenskaya, Uritskaya, South-Western, Rybatskaya, Kupchinskaya, Strel'ninskaya, Lomonosovskaya, LGU Petrodvortsovaya Waterworks, Petrodvortsovaya Waterworks, Pulkovskaya, Orlovskaya);
- boosting pumping stations of the third and fourth lift;
- water supply and distribution networks.

The South-West suburbs subzone can be segregated within the Southern water supply zone, which is located far from the City center and has its own water supply sources.

The system supplies water to Moskovsky, Frunzensky, Krasnoselsky, Pushkinsky, Petrodvortsovy, Kolpinsky districts, the town of Kronstadt and partially Nevsky and Kirovsky districts.

02. THE NORTHERN WATER SUPPLY ZONE INCLUDES:

- the Northern WTP (first-lift pumping station, water treatment facilities, clean water reservoirs and second-lift pumping station);
- Zelenogorsk WTP uses ground water (first-lift pumping station, water treatment facilities, clean water reservoirs and second-lift pumping station);
- underground water sources of Kurortny district;
- named boosting pumping stations of the third and fourth lift (Murinskaya, Kushlevskaya, Primorskaya, Severo-Primorskaya, Kolomyazhskaya, Ozero Dolgoe, Martynovskaya, Parnasskaya, Osinovaya Roshcha, Gorskaya, Pesochenskaya, Novoselovskaya, Shuvalovskaya);
- boosting pumping stations of the third and fourth lift;
- water supply and distribution networks.

Since November 2006 Sestroretsk WTP has been operating as a tertiary treatment facility treating water from Northern WTP.

The Northern suburbs subzone can be segregated within the Northern water supply zone, which is located far from the City center and has its own water supply sources.

The Northern water supply zone supplies water to major part of Krasnogvardeisky, Kalininsky, Vyborgsky districts and the half of Primorsky and the right-bank part of Nevsky districts.

03. THE CENTRAL WATER SUPPLY ZONE INCLUDES:

- Main WTP (first-lift pumping station, water treatment facilities, clean water reservoirs and second-lift pumping station);
- Volkovskaya WTP (first-lift pumping station, water treatment facilities, clean water reservoirs and second-lift pumping station);
- named boosting pumping stations of the third and fourth lift (Vasileostrovskaya, Gavanskaya, Petrogradskaya);
- boosting pumping stations of the third and fourth lift;
- water supply and distribution networks.

The Central water supply zone supplies water to Central, Admiralteisky, Vasileostrovsky and Petrogradsky districts, part of Moskovsky and Kirovsky districts, and the southern parts of Primorsky, Vyborgsky, Kalininsky and Krasnogvardeisky districts on the right bank of the Neva River.



# WATER TREATMENT TECHNOLOGIES

## TREATMENT OF WATER FROM SURFACE SOURCES

The water treatment process at the key WTPs taking water from St. Petersburg surface sources (the Neva River and the Gulf of Finland) includes the following stages:

- a two-stage water disinfection system,
- coagulation of pollutants (aluminium sulfate is used),
- flocculation (polyacrylamide-based cationic flocculant is used),
- sand filtration in the contact clarifiers (one-stage treatment scheme),
- sedimentation and sand filtration in rapid filters (two-stage treatment scheme)
- when necessary (if water quality in the Neva becomes worse or for odour and oil removal), the powdered activated carbon dosing system is used.

The two-stage integrated process of potable water disinfection guarantees epidemiological safety of water supply in St. Petersburg and full compliance of the microbiological parameters with the current regulations.

The integrated disinfection process includes, first of all, the chemical method using hazard-free chemicals—sodium hypochlorite (since 2009 Vodokanal stopped using liquid chlorine,

which is hazardous in storage and transportation) and ammonium sulfate. The chloramines produced in the treated water maintain the disinfecting effect not only in the process of water treatment at waterworks, but also in the course of water transportation in the city water distribution networks.

At the second stage of water disinfection the physical method (UV disinfection) is used. St. Petersburg is the world's first megapolis to treat all potable water with ultraviolet. UV disinfection kills viruses effectively, while chemical disinfection suppresses microbes. According to Rospotrebnadzor data viral Hepatitis A sickness rate reduced almost 38 times during 2004-2011.

In the beginning of 2011, a new water treatment block at the Southern WTP (K-6 block), with the capacity of 350,000 m<sup>3</sup>/day, began to supply water to St. Petersburg.

The water treatment technology used at this block includes the following stages:

- preliminary ozonation;
- clarification: coagulation, flocculation, sedimentation in lamella sedimentation tank, sludge thickening, sludge recirculation and removal;
- filtration through dual media rapid gravity filters (sand/activated granular carbon);
- air-water system of filter backwashing;

- system of the used backwash water equalization, treatment and utilization;
- sludge treatment;
- storage, preparation and dosing of chemicals;
- disinfection with sodium hypochlorite and ammonium sulfate.
- Potable water is also UV treated before it goes to customers.

## POTABLE WATER TREATMENT AT ZELENOGORSK WTP (GROUNDWATER)

Zelenogorsk WTP takes raw water from underground sources. The groundwater treatment process in Zelenogorsk aims at removing excessive concentrations of iron and manganese and consists of:

- aeration;
- removal of the sludge resulting from air oxidation of ferric hydroxide (III) by means of filtration through the gravel-sand media of the first-stage rapid filters;
- catalytic oxidation of manganese and its separation as dioxide on second-stage pressure filters.

Water is disinfected by sodium hypochlorite solution.

Oxidation of dissolved ferrous iron and blow-up of dissolved carbonic acid is performed in the aerator. To provide more enhanced oxidation of iron and manganese compounds, sodium hypochlorite solution is injected into water.

The first-stage rapid filters have TRITON drainage system which represents the hemispheric channels located on the bottom and covered by slotted elements. These elements are formed by stainless steel wire winding and welding to a guide frame of the element. The wire is profiled in such a way that slots widening inwards are formed between its rows. Such a solution ensures high reliability of the drainage structure, and the widening form of the slots decreases potential clogging of filtering elements and simplifies the backwashing. After the reconstruction of open filters, TRITON drainage system allowed the use of dual-media bed without increasing its overall height. The bottom filter bed is made of quartz sand; the upper filter bed—of anthracite.

The second stage of Zelenogorsk WTP is designed for further water treatment in terms of iron and manganese removal and includes six Culligan pressure filters, Grundfos network pumps, flushing pumps for pressure filters, damper tanks, sodium hypochlorite dosing equipment, flow meters and chlorine analyzers.

The water treatment process management is fully automated. The plant operation data is displayed on the monitors of the plant dispatcher.

TERTIARY WATER TREATMENT TECHNOLOGIES USED AT PETRODVORETS AND SESTRORETSK WTP

As a result of electrochemical corrosion of steel water pipelines of St. Petersburg water distribution system, secondary pollution of potable water with iron may occur.

Previously, both Petrodvorets and Sestroretsk WTPs used own surface water sources—Nikolsky pond and the Razliv Lake. Because of excessive pollution of these water bodies, both plants started to operate in the tertiary treatment mode to treat potable water supplied by the city waterworks. The tertiary treatment is performed by means of existing water treatment units, i.e. sand filters (one-stage treatment scheme).

To prevent corrosion of steel pipes and reduce iron content in the water undergoing tertiary treatment at Petrodvorets and Sestroretsk WTPs, anticorrosion treatment is performed including addition of calcium chloride and soda ash to the treated water.

Both plants have equipment for reception, dilution and dosing of 32% calcium chloride solutions, and systems of 10% soda ash (so-

dium carbonate) preparation and dosing. Injection of calcium salts and carbonic acid to the treated water which results in pH increase, allows to slow down the corrosion process, and in some cases — to stop oxidation of iron in steel pipes thanks to formation of calcium carbonate film which isolates steel from water and dissolved oxygen contained in it.

The taken measures resulted in 2-5 times reduction of iron concentrations at Petrodvorets and Sestroretsk reference points.

TERTIARY WATER TREATMENT TECHNOLOGIES USED AT BOOSTING WATER PUMPING STATIONS

To improve potable water quality at remote sections of the network, tertiary treatment systems are constructed at the boosting water pumping stations. Special filter medium such as calcite, calcinated dolomite and etc. is used at these stations to ensure removal of iron and reduction of water corrosion aggressiveness.

By using these systems we can simplify the operation of the tertiary treatment facilities, since no chemicals are used.

WATER QUALITY CONTROL

WATER QUALITY CONTROL AT SUE "VODOKANAL OF ST. PETERSBURG" IS CARRIED OUT AT ALL STAGES—FROM RAW WATER INTAKE TO A WATER METER AT THE HOUSE INLET.

Water quality control at SUE "Vodokanal of St. Petersburg" is implemented in accordance with the approved programs.

The Working Program for Production Control of Potable Water Quality in St. Petersburg was developed in accordance with SanPiN 2.1.4.1074-01 "Potable water. Hygiene requirements to potable water supplied by centralized water supply systems. Quality control". In 2006, this program was approved by St. Petersburg Department of Rospotrebnadzor and adopted by the Chairman of the Committee for Energy and Engineering Support.

The program includes 174 reference points. The water quality at these reference points is monitored by 83 parameters.

Water quality is controlled by the following groups of parameters:

- composite;
- organoleptic;
- chemical (organic and non-organic);
- microbiological;
- parasitological (Lamblia cysts);
- virological (presence of hepatitis A virus antigen and rotavirus antigen);
- hydro-biological (phyto- and zooplankton);
- radiation safety.

The table of the main water quality parameters for 2011 is placed on the corporate website in the section "Water supply. Water quality".

The Program for Production Control of Potable Water Quality covers 306 additional reference points and enables to perform more detailed assessment of the water supply system. The control is performed according to the short-list of 12 parameters of primary importance.

The reference points to be included into the Program for Production Control were selected based on epy systematic approach according to the following principle: waterworks — water mains—city quarter network—customer.

The monitoring results enable us to:

- trace the dynamics of changes in qualitative characteristics of potable water at all stages of water production and transportation;
- identify hot spots and problem sections of water network;
- prioritize investments into implementation of technologies (selection of water treatment technologies, reconstruction of the existing facilities and capital repair of water networks, change of hydraulic modes of water system);
- evaluate the efficiency of corrective actions.



THE MONITORING RESULTS SHOW THAT POTABLE WATER IN ST. PETERSBURG IS HARMLESS IN TERMS OF ITS CHEMICAL COMPOSITION AND SAFE IN TERMS OF EPIDEMIOLOGICAL AND RADIATION CONDITIONS.

Levels of water quality control

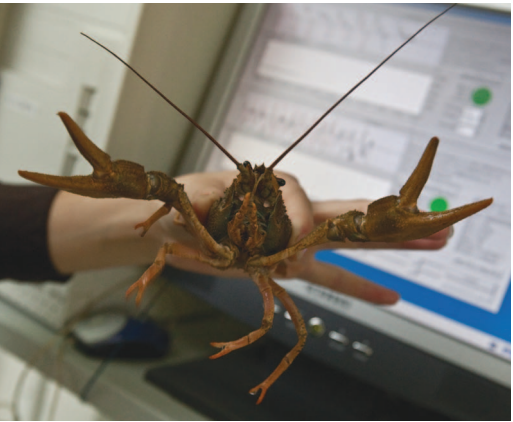
- on-line process control with use of automatic analyzers and systems of automated continuous monitoring;
- laboratory control;
- control by an independent organization—Water Research and Control Center;
- control by Rospotrebnadzor.

The automated analyzers are installed on all stages of water treatment. Signals from the equipment are sent to the control room and process engineers, thus providing for the real-time control of the process.

In 2011, 23,217 water samples were analyzed by 83 parameters. Minor deviations from regulatory requirements with regard to total iron

were identified in the distribution water network. The monitoring results show that potable water in St. Petersburg is harmless in terms of its chemical composition and safe in terms of epidemiological and radiation conditions.

Along with control devices, biomonitoring system developed by scientists of St. Petersburg Research Center of the Russian Academy of Sciences is used at all city water intakes to control quality of water in the water source, the Neva River. Prior to the treatment process, water from the Neva River is monitored by crayfish. Special sensors that register on-line crayfish cardiac rhythm are attached to their shells. If there are toxic substances in water, crayfish cardiac rhythm changes and a relevant signal is transmitted to the control room. This biomonitoring system is improved continuously.



ACHIEVEMENTS OF 2011

1. COMMISSIONING OF A NEW WATER TREATMENT BLOCK (K-6) AT THE SOUTHERN WTP

In the beginning of 2011, a new 350,000 m<sup>3</sup>/day water treatment block was put into operation at the Southern WTP.

Advanced technological solutions used at this block can handle any changes of raw water quality. The block applies preliminary ozonation of water—ozone is added to water before the treatment process to improve it considerably. The treatment process comprises two stages: first is clarification, coagulation and sedimentation in lamella tanks; then filtration

through rapid dual media (sand/activated granular carbon) gravity filters.

Sodium hypochlorite with the addition of ammonia sulfate is used for water disinfection; then the water is UV treated. The water used for filter backwashing is not discharged into the Neva River, but treated here again. Thus, the negative environmental impact is reduced considerably. Treatment of the resulting sludge is also provided.

2. PILOT OPERATION OF THE NETWORKS MAINTENANCE AND REPAIRS MANAGEMENT INFORMATION SYSTEM

In 2011, the Networks Maintenance and Repairs Management Information System was put into pilot operation.

Networks Maintenance and Repairs Management Information System supports:

- automatic preparation of Vodokanal's Production Program for all departments and types of work;
- preparation of a company-wide electronic register of passports for Vodokanal's facilities which includes information about each facility; keeping standard maintenance charts and maintenance specification charts, production history;

- automatic planning of resource requirements for execution of works;
- automatic preparation of purchase orders for spare parts and supplementary materials taking into account the available stock of inventories, inventories ordered from the suppliers, minimum balance and delivery cycle;
- automatic preparation of work tasks including lists of operations and appointment of skilled personnel for each operation, lists of required materials, spare parts and special vehicles; control of work progress;

- online control of the Production Program performance by each team;
  - online control of availability of required materials, spare parts, special vehicles and personnel for each team;
  - accounting of tangible costs, labour inputs and operating time of special vehicles used for each assignment;
  - online control of compliance with norms of the Production Program performance;
  - analysis of performance indicators and criteria of production activities.
- In 2012, we will work to put the Networks Maintenance and Repairs Management Information System into full-scale operation.

## 3. WATER SUPPLY FROM UNDERGROUND SOURCES

### 3.1. RESERVE WATER SUPPLY

A new reserve water supply facility was put into operation in the area of Pulkovskaya water supply substation (3 wells). The design works for the reserve water supply in the area of Kolpino WTP are completed.

The construction and installation works for the reserve water supply in 59-b area of Primorsky district (18 Turistskaya str.) and Vyborgsky district ("Parkhomenko" sector) have begun.

### 3.2. CENTRALIZED WATER SUPPLY TO HOUSEHOLDS

Currently the designing of Molodezhnoye and Dyuny ("Rzhavaya kanava") water treatment plants is performed. Its purpose is local ground water sources effective use for the water supply of the Kurortny district and St. Petersburg suburbs development.

Well water intakes and water supply networks are being designed to ensure reliable water supply to the villages of Krasavitsa and Reshetnikovo (1st stage of new water intake construction in v. Krasavitsa).

## 4. MODERNIZATION AND RECONSTRUCTION OF WATER PIPELINES AND NETWORKS

In 2011, the following actions for modernization and reconstruction of pipelines and networks were performed:

- A new pipeline laid at the bottom of the Gulf of Finland to Kronstadt was put into operation on August 12, 2011. This inverted siphon ensures required reliability of Kronstadt district water supply.
- Water supply pipeline construction works on the Martynova quay and Severnaya Doroga in the western part of Krestovsky island are completed.
- Construction of water supply pipelines system with the total length of 25 km from Kolpino WTP to Pulkovo water supply system is at the final stage. This pipeline

system will provide water to the new developments in the south-eastern part of St. Petersburg. The boosting pumping station "Moskovskaya Slavyanka" will be built in 2012.

The following actions for construction, reconstruction and modernization of pipelines and networks are performed to supply water to new housing development areas:

- The construction of water supply system for the western part of Vasilyevsky Island is underway. The purpose is to supply water for the new hydraulic fill areas and to improve the reliability of water supply to Vasilyevsky Island. Water supply pipelines along Robespiera and Petrovskaya embankments are completed.
- Construction of the third outlet from the Northern WTP to Murinskaya pumping station is 70% complete. The 12.5 km long outlet pipeline from the NWTP will ensure stable water supply to the future developments in the northern part of the city. In addition, it will be possible to rehabilitate two existing pipelines from the Northern WTP to Murinskaya pumping station.
- Construction of water supply networks to "Severnaya Dolina" and 25-A "Shuvalovo-Ozerki" city areas is ongoing.
- Construction, reconstruction and modernization of water supply pipelines to the northern-seaside part of St. Petersburg are near completion.
- Construction of pipelines to ensure reliable water supply to the existing customers and new developments in Krasnoe Selo has begun. Construction of water supply pipelines from Narodnogo Opol-

cheniya ave. to Volkhonskoye highway is completed.

The following construction, reconstruction and modernization projects are being implemented to supply water to new industrial areas:

- Construction and rehabilitation of the water supply network in the industrial zone "Mar'ino".
- Construction of water networks in Metallostroy.
- Water supply network along Gorskoe highway from Pesochny pumping station to the traffic interchange at the cross of Western High-Speed Diameter and the ring-road is built. It will provide water supply to the industrial zone south-east of the crossroad, including "Kamenka" non-residential area. The construction works are performed from the cross of Savushkina st. and Primorsky ave. to Gorskoe highway via Lahta, Olgino and Konnaya Lahta.
- Construction, reconstruction and modernization of water supply system of 6 and 6A city quarters north of Novoselov Street.
- Construction of water pipeline from Southern WTP to Southern CHP has begun.

Water networks are being built in Olgino and Volodarskiy communities to provide centralized water supply to households.

All in all, the volume of completed works under the water network rehabilitation, repairs and construction projects in 2011 exceeded 90 km (excluding the works performed by Employer's Office for Construction and Capital Repairs of Engineering and Energy Complex).



## 5. IMPLEMENTATION OF THE ST. PETERSBURG LONG-TERM TARGET PROGRAM "ON ENERGY SAVING AND ENERGY PERFORMANCE IMPROVEMENT OF WATER SUPPLY SYSTEMS IN THE SOUTHERN ZONE OF ST. PETERSBURG TILL 2012".

Implementation of water supply management system with remote reading of water meters of Vodokanal customers in the Southern water supply zone continued in 2011 under the St. Petersburg long-term target program "On Energy Saving and Energy Performance Improvement of Water Supply Systems in the Southern Zone of St. Petersburg till 2012".

Reliable and effective water supply system, water networks monitoring, efficient use of resources and cost saving are the main objectives of the project.

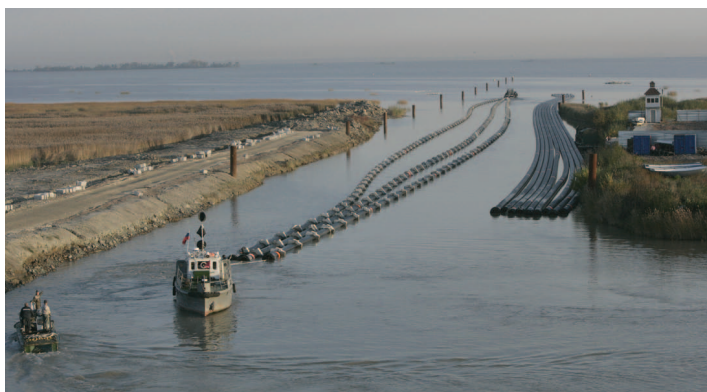
The Southern zone water supply management system comprises the hydraulics monitoring system, hydraulic control improvement tools, automated calculation of water balance, new

advanced energy-efficient pumping equipment and optimal water supply performance control. The project will lead to significant reduction of energy consumption, breakdown rates and water losses.

In 2011, the management system was implemented at South-West, Rybatskaya, Kupchinskaya, and some numbered boosting pumping stations.

Re-laying of internal pipelines and rehabilitation of one second-lift pumping station are underway at Southern WTP.

It is planned to complete all works under the management system project for the Southern water supply zone in 2012.



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## PROSPECTS OF WATER SUPPLY DEVELOPMENT

THE REGIONAL PROGRAM "CLEAN WATER OF ST. PETERSBURG IN 2011-2025" APPROVED BY THE ST. PETERSBURG GOVERNMENT DECREE NO. 625 DATED 24.05.2011 WAS LAUNCHED IN ST. PETERSBURG IN 2011.

The St. Petersburg water supply development projects are aimed at:

- overall transition to more effective, advanced water treatment technologies at the WTPs;
- development of suburban water supply systems using local underground water sources;
- renovation of water networks including replacement of reinforced-concrete pipes;
- anti-corrosion protection of steel pipelines;
- completion of the St. Petersburg water supply management system;
- building of networks and facilities to supply water to new development areas and private households in the suburbs of St. Petersburg.

With the transition to advanced water treatment technologies and abandonment of single-stage water treatment process, the inhabitants of St. Petersburg will get safe and harmless potable water meeting the sanitary-epidemiologic regulations and the requirements of the World Health Organization.

NEW WATER TREATMENT BLOCKS AT MAIN, NORTHERN AND KOLPINO WTPS WILL BE BUILT BY 2016.

A new 800,000 m<sup>3</sup>/day water treatment block will be built under the Northern WTP reconstruction project. Moreover, construction of other facilities (in particular, chemical production and storage facilities, new flush water/sludge treatment plants), rehabilitation of the existing, and construction of new clean water tanks is planned.

Two new water treatment plants using local groundwater sources and a water supply and distribution system will be constructed by 2015 to supply water to customers in Kurortny district of St. Petersburg.

Future capacity requirements of the water supply system including those of WTPs are determined in consideration of the St. Petersburg development plans, on the one hand, and the existing water consumption trends and the citizens' more careful attitude towards potable water and environment, on the other hand.

Over the last decade, water consumption has been decreasing steadily and, accordingly, the water flow rates and distribution losses reduced more than three times.

By 2025, the water consumption per capita and distribution losses in St. Petersburg will reach the level of the leading European countries.

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RESULTS OF ACTIVITIES IN 2011 // WATER SUPPLY

Re-arrangement of the WTPs' water supply zones is planned to provide customers with safe potable water and to improve the efficiency of the water supply system. For example, Volkovskaya WTP in the historical centre of the City will be transformed into a third-lift pumping station where water will be supplied from Main WTP via the newly-built pipeline along Sinopskaya emb. and from Southern WTP via the rehabilitated pipeline along Sofiyskaya Street.

In the western part of Vasilevsky Island the new hydraulic fill areas are under development. Vasileostrovskaya CHP-7 will use potable water. A water supply system for the western part of Vasilevsky Island is being built. It will supply water to the new areas and improve reliability of water supply to Vasilevsky Island.

Construction and rehabilitation of water pipelines along Gorskoe highway from the road interchange at the cross of Western High-Speed Diameter and ring-road to Gorskaya pumping station, and rehabilitation of Gorskaya pumping station and water pipelines in Sestroretsk are planned to ensure reliable water supply to the customers in Kurortny dis-

trict and to the hydraulic fill areas north of Lisiy Nos community.

It is also planned to supply water to the developing south-eastern part of St. Petersburg from Kolpino WTP. Construction of water pipelines from Kolpino WTP to Pulkovo water networks with the Moskovskaya Slavyanka pumping station, and rehabilitation of Kolpino WTP will enable supply of good-quality potable water to the existing and future customers. Such scheme will also reduce water distribution costs and improve the reliability of water supply.

The rearrangement of WTPs' water supply zones has entailed significant changes in the layout of water mains. Integrated water transport systems from the main sources to intermediate boosting pumping stations, large consumers and big development areas, were singled out.

The water transport systems improve the unclear and complicated layout of the existing networks. Wherever possible, the existing mains are reconstructed (sometimes using no-dig technologies). With such approach,



capital costs can be reduced and the need for new transport corridors in the established city environment is not so big.

The plan is to accelerate the water network reconstruction process reaching the 200 km/year level to overcome the pipe aging problem and to reduce the breakdown rate.

Through these efforts, the network breakdown rate will be reduced to the level of the front-rank European cities.

The first-priority task is to replace reinforced-concrete pipelines having the diameter over 700mm because, generally, any breakdown of such pipeline leads to big water leakage (in many cases the neighboring area gets flooded and both the municipal and private property is damaged). It is planned to replace all 276.6 km of reinforced-concrete pipelines by 2016.

The water supply management system project is ongoing. The pilot project of the pumping station modernization including sustainable use of resources was implemented in 2008 in the Uritskaya pumping station zone. As a result, energy consumption reduced by 42%, water losses reduced by 39% and the breakdown rate — by 32%. The modernization of pumping stations in the Southern water supply zone will be completed in 2012. Design works for the Central and Northern water supply zones are underway.

Each of the water supply zones will have its water metering system, moreover, all commercial water meters on the consumer side will be upgraded to support automatic transfer of measurement results. Having such system, it will be possible to receive real-time data on water consumption and the quantity of water supplied to a relevant zone. The operators will be able to monitor online any failures of measurement instruments or potential customer

intervention in the meter operation, to evaluate automatically the condition of networks and changes of flow rates, and to identify leaks in the water supply networks.

The project will comprise large-scale modernization of the boosting pumping stations including the replacement of pumps, installation of frequency converters to control pressure in the network, and implementation of a pump control system to control pump operation using the pressure measurement data from the network checkpoints. To ensure reliable water supply in the event of power outage, the pumping stations will be ranked as power consumers of the special I Category Reliability Group which means that the third independent (reserve) power supply unit (diesel power plant) will be installed for them.

Among the unsolved problems is water supply of private households in St. Petersburg. Now they take water from nearby hydrants or drawwells in their estates. By 2025, water pipelines to 71 communities in the St. Petersburg territory will be constructed so that private households will be able to connect to them and have access to the centralized water supply. At present, construction of water networks is underway in Volodarskiy and Olgino communities. Water supply systems for Molodezhnoye, Lisiy Nos, Lahta, Toriki and Martyshkino will be designed in 2012.

The above actions are aimed at:

- Provision of safe potable water to the customers in St. Petersburg;
- Reliability of water supply services;
- Improved energy efficiency and implementation of the energy saving policy;
- 100% access to centralized water supply.





# WASTEWATER DISPOSAL

## WASTEWATER DISPOSAL SYSTEM

ST.PETERSBURG SYSTEM OF WASTEWATER DISPOSAL AND TREATMENT IS A COMPLEX OF INTERCONNECTED ENGINEERING FACILITIES WHICH PROVIDE COLLECTION OF WASTEWATER FROM CUSTOMERS, ITS TRANSPORTATION AND TREATMENT AT WASTEWATER TREATMENT PLANTS.

St.Petersburg has a combined sanitation system:

- 70% of the territory is connected to the combined sewerage system which collects domestic and industrial wastewater as well as surface (rainfall, snowmelt) runoffs;
- 30% of the territory (Vasilievsky Island, as well as new construction areas and suburbs) is sewered according to a separate scheme (surface runoff is collected separately from other wastewater).

As of 01.01.2012, 94% of wastewater is treated in St. Petersburg. Around 6% of wastewater is still discharged directly into the water bodies untreated. Wastewater is discharged through direct discharge points managed by Vodokanal and industrial organizations.

As of 31.03.2012, SUE "Vodokanal of St. Petersburg" has the following discharge points:

- 116 direct discharge pipes for combined and domestic wastewater; and 1,082 rainwater discharge points and storm-water tanks;
- 13 discharge points for backwash water from the waterworks;

The main cause of partial discharges of untreated wastewater into St.Petersburg water bodies is the insufficient length of intercepting pipelines and sewers.

Annually, Vodokanal reduces the amount of untreated wastewater discharges, eliminating direct discharge pipes and delivering wastewater to wastewater treatment plants.

Collection, transportation and treatment of wastewater generated in the city are performed by a complicated system:

- Length of sewerage networks—8,245.6 km,
- Length of tunnel collectors—232.17 km,
- Number of pumping stations—131 pcs,
- Number of wastewater treatment plants—14 pcs,
- Number of sludge incineration plants—3 pcs.

Sewerage (courtyard, district, street) networks perform disposal of domestic, industrial and surface (rainfall, snowmelt) wastewater to the system of tunnel collectors and further to the wastewater treatment plants.



Pipeline diameters of the municipal sewerage network range from 100 mm (courtyard networks) to 1.5 m. Pipelines with diameters of up to 500 mm make up 85% of the total length of all the sewerage networks.

The main material of sewerage pipes is reinforced concrete (79.34% of all the networks). Polyvinylchloride and polyethylene pipes are widely used in recent years. They are used mainly for network rehabilitation.

ADJUSTED CAPACITY OF WASTEWATER TREATMENT PLANTS

Adjusted capacity of wastewater treatment plants, m³/day*	´000 m³/day*
Central Wastewater Treatment Plant	800.0
Northern Wastewater Treatment Plant	600.0
South-West Wastewater Treatment Plant	290.0
Petrodvorets Wastewater Treatment Plant	65.0
Pushkin Wastewater Treatment Plant	65.0
Kolpino Wastewater Treatment Plant	60.0
Kronstadt Wastewater Treatment Plant	22.0
Sestroretsk Wastewater Treatment Plant	17.0
Repino Wastewater Treatment Plant	10.0
Pontonny Wastewater Treatment Plant	10.0
Zelenogorsk Wastewater Treatment Plant	9.0
Metallostroi Wastewater Treatment Plant	7.6
Molodezhnoe Wastewater Treatment Plant (2 WWTPs)	0.7

\* Adjusted capacity of wastewater treatment plants is calculated for dry weather conditions taking into account wastewater quality requirements in accordance with the Resolution of St.Petersburg Government No. 1270 dated October 21, 2008 (as amended by the Resolution of St. Petersburg Government No. 1384 dated 30.11.2009).

The results of the year 2011 showed that the daily average amount of treated wastewater was 2.2 Mio. m³/day.

Tunnel sewers are the basic mains for collecting and transporting wastewater to wastewater treatment plants. These collectors (1.5 m-4.8 m diameter) were installed by shield method at the depth of 7-90 m.

The design capacity of sewerage pumping stations at the sewerage networks ranges from 300 m³/day to 1 Mio. m³/day.

THREE CATCHMENT AREAS – “NORTH”, “CENTER” AND “SOUTH”—ARE ESTABLISHED IN ST. PETERSBURG; EACH INCLUDES SEVERAL SEWERAGE DISTRICTS.

The catchment area “North” includes the following wastewater treatment complexes: the Northern WWTP, Sestroretsk WWTP, Zelenogorsk WWTP, Repino WWTP, Molodezhnoe WWTP. The Northern WWTP (village of Olgino) collects wastewater from the Neva right-bank territories: Nevsky (the right-bank), Krasnogvardeisky, Kalininsky, Vyborgsky and Primorsky districts. Sestroretsk WWTP accepts wastewater from the population and customers of Sestroretsk and neighboring towns of Gorskaya, Alexandrovskaya, Razliv, Tarkhovka, Kurort and industrial zones of Beloostrov. Zelenogorsk WWTP accepts wastewater from the residential areas, recreation centers and organizations of the towns of Zelenogorsk and Ushkovo. Repino WWTP accepts wastewater from the towns of Solnechnoe, Komarovo and Repino of Kurortny district of St.Petersburg.

The catchment area “Center” includes the Central Wastewater Treatment Plant complex (the Bely Island). The Central Wastewater Treatment Plant (CW-WTP) collects wastewater from the left bank of the Neva River: Vasileostrovsky, Centralny, Admiralteisky, Frunzensky, Moskovsky and part of Kirovsky and Nevsky districts.

The catchment area “South” includes the South-West Wastewater Treatment Plant, Kolpino WWTP, Metallostroi WWTP, Pontonny WWTP, Petrodvorets WWTP, Kronstadt WWTP, Pushkin WWTP. SWTP collects wastewater from a part of Kirovsky and Krasnoselsky districts, as well as from the town of Strelna.

Petrodvorets WWTP accepts wastewater from the town of Petrodvorets, partially, from the town of Lomonosov. Wastewater treatment plants of the towns of Kolpino, Metallostroi and Pontonny provide complete wastewater disposal services to Kolpinsky district. Wastewater from Kronstadt is treated at Kronstadt WWTP. Wastewater from the towns of Pushkin and Pavlovsk and communities of Pushkinsky district is treated at Pushkin WWTP.

ST.PETERSBURG IS THE FIRST MEGAPOLIS IN THE WORLD TO SOLVE THE PROBLEM OF WASTEWATER SLUDGE UTILIZATION.

Before the commissioning of the sludge incineration plants, dewatered sludge was disposed in full to landfills for storage. Sludge incineration allowed to dispose 68,815.7 tons of dry solids (t DS) in 2008; 92,236.3 t DS in 2009; 100,512.7 t DS in 2010; and 104,369.6 t DS in 2011.

Advantages of incineration:

- 10-times reduction of generated waste amount;
- no pathogenic microflora and unpleasant odor in ash;
- concentration of harmful compounds in treated gases generated in the course of sludge incineration meets the requirements of the Russian Federation and the European Union;
- use of heat for hot water supply and heating of buildings;
- energy production by means of steam utilization at SWTP and CWWTP.



## FLUE GASES OF ALL SIPS GO THROUGH A THREE-STAGE PURIFICATION PROCESS

The incineration process is going on in fluidized-bed incinerators at the temperature of 870°C.

The heat generated in the process of incineration is used for technical purposes, namely, for space heating and electric energy production, thus enabling SUE "Vodokanal of St.Petersburg" to achieve significant savings of energy resources.

In 2011, 6.2% (8,198 kW.\*h.) of electrical energy consumed at the Northern WWTP was produced by the steam generator of the sludge incineration plant; 6.6% (2,328 kW.\*h.) of energy consumed at SWTP was produced by the steam generator.

The Central WWTP used the heat generated in the incineration process for the heating of buildings and other production needs, thus enabling the Company to cover over 50% (8,175 Gcal) of the total heat demand.

Flue gases of all SIPS go through a three-stage purification process. Treated gases emitted into the atmosphere at all the SIPS meet the requirements of the European Committee Directive 2000/76.

Gross emission of pollutants from all the SIPS is within the limits of maximum permissible emission stated by Rosprirodnadzor. On-line control instruments are used at all the plants to analyze the composition of emitted flue gases. Besides, ZAO "Tsikv" (Water Quality Control Center) performs expanded monitoring of gas composition.

Moreover, the SIP at SWTP applies a unique biomonitoring system. The indicators of flue gas quality are the giant African snails which react not only to one-time emissions, but also to minimal amounts of concentrated hazardous substances, as well as to synergistic effect of various pollutants.

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SUE "VODOKANAL OF ST. PETERSBURG" // SUSTAINABILITY REPORT 2011



## WASTEWATER TREATMENT TECHNOLOGIES

### VODOKANAL'S WASTEWATER TREATMENT PLANTS ARE IMPLEMENTING THE TECHNOLOGIES ENSURING WASTEWATER TREATMENT IN COMPLIANCE WITH THE RUSSIAN NORMS AND THE REQUIREMENTS OF THE BALTIC MARINE ENVIRONMENT PROTECTION COMMISSION (HELCOM) IN TERMS OF NUTRIENTS REMOVAL.

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The main wastewater treatment methods applied by SUE "Vodokanal of St.Petersburg" are as follows:

- mechanical treatment;
- chemical and biological treatment;
- wastewater disinfection;
- sludge treatment and utilization.

The mechanical treatment is designed for wastewater clarification. This block includes screens, grit removal units, primary sedimentation tanks and scum removal units.

The biological treatment stage is the main wastewater treatment process before wastewater is discharged into the water body. It includes aeration tanks and secondary sedimentation tanks. The biological treatment process is performed by means of activated sludge biocoenosis in the presence of atmospheric oxygen. Activated sludge is a biocoenosis inhabited by different bacteria, protozoa and multicellular organisms which modify contaminants contained in wastewater.

Until recently, only mechanical and biological treatment was implemented at wastewater treatment plants, but it did not ensure the quality of treated effluent stated by HELCOM

requirements for nutrient removal. Therefore, at present the chemical-biological wastewater treatment process is implemented at Vodokanal's wastewater treatment plants to combine enhanced nutrient removal through biological treatment and chemical phosphorus precipitation. Iron sulfate (Ferix) is mainly used as a chemical.

SUE "Vodokanal of St. Petersburg" has been searching for the most effective chemicals to be used in this technology. In November 2011, laboratory tests of aluminum sulfate application were conducted at a number of wastewater treatment plants.

SUE "Vodokanal of St.Petersburg" has been constantly upgrading technologies of biological nutrients removal from wastewater. The modern biological treatment technology UCT (University of Cape Town) has been implemented at SWTP, CWWTP (1 section), Se-stroretsk WWTP, Petrodvorets WWTP, Repino WWTP, Pushkin WWTP.

Works on the reconstruction of the aeration tanks for enhanced nutrients removal by introducing JHB technology (University of Johannesburg) are going on at the Central WWTP. Reconstruction of wastewater treatment units at the CWWTP is performed together with international experts. In 2011, the permanent chemical dosing unit aimed at chemical phosphorus removal was put into operation.

RESULTS OF ACTIVITIES IN 2011 // WASTEWATER DISPOSAL

ADVANTAGES OF MODERN NUTRI-  
ENTS REMOVAL TECHNOLOGIES:

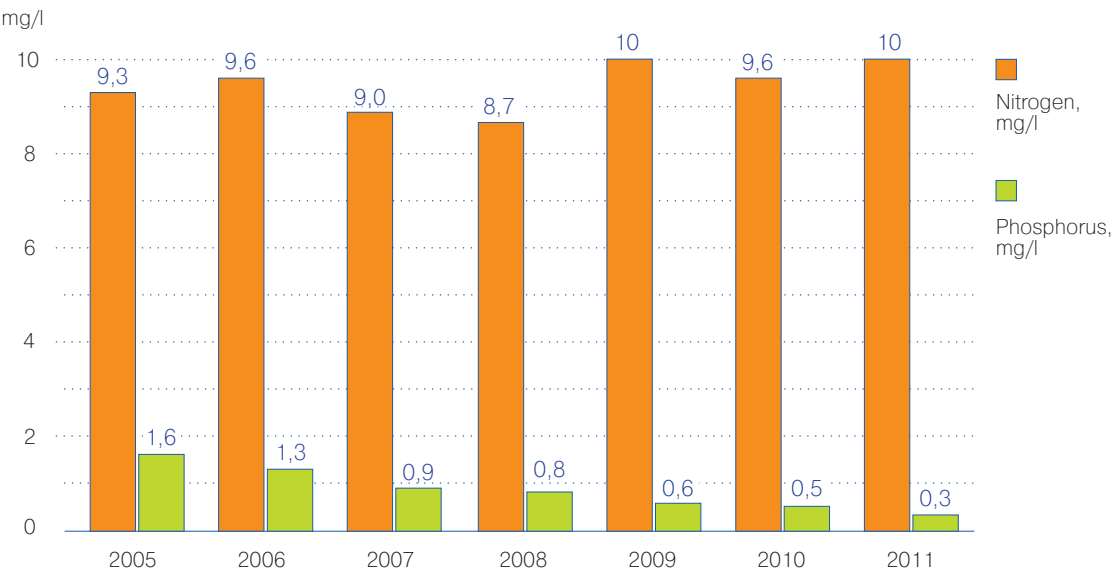
- flexible management of the system—transition zones (anoxic/aerobic) are available;
- optimal operation of anaerobic and anoxic zones—there are mixers and no dissolved oxygen available in the zones;
- possibility to enhance the internal processes—internal recirculation pumps are available;
- possibility to perform on-line process adjustment—on-line control and process automation instruments are available;

- possibility to maintain the required oxygenated condition in aerobic zones by introducing a method of controlled air feed according to oxygen analyzer readings (cascade method).

Efficiency of domestic wastewater treatment at Vodokanal's WWTPs on the average is quite high: suspended solids, BOD—over 90%; total phosphorus—88% and total nitrogen—around 70%.

The 2011 results show that phosphorus and nitrogen concentrations in the effluent of Vodokanal's wastewater treatment plants comply in full with HELCOM requirements: total nitrogen concentration—10 mg/l and phosphorus—0.34 mg/l.

REDUCTION OF NITROGEN AND PHOSPHORUS CONTENT  
IN EFFLUENT (WWTP)



In order to improve the environmental situation of the city's water bodies and in the Gulf of Finland, a certain amount of effluent undergoes disinfection. UV disinfection technology is implemented at the South-West Wastewater Treatment Plant, Sestroretsk WWTP, Repino

WWTP and Petrodvorets WWTP. Full-scale trials focused on assessing the alternative methods of wastewater disinfection (by applying 12% peracetic acid (PACS12) at Kronstadt WWTP) were conducted.

WASTEWATER QUALITY  
CONTROL

WASTEWATER QUALITY CONTROL AT VODOKANAL'S FACILITIES IS CARRIED  
OUT IN ACCORDANCE WITH WASTEWATER QUALITY ASSESSMENT PROGRAMS  
APPROVED BY THE NEVA-LADOGA BASIN WATER AUTHORITY AND RSPOTREB-  
NADZOR AUTHORITY.

Wastewater quality control is performed:

- in the inlet of wastewater treatment plants,
- in the outlet of wastewater treatment plants,
- at untreated wastewater discharge points,
- at WTP backwash water discharge points.

Wastewater quality control is carried out by monitoring physical and chemical parameters, microbiological and parasitological parameters. The monitoring of wastewater flow and discharge is carried out at over 300 points by up to 30 parameters at each point.

Moreover, since 2011, the South-West Wastewater Treatment Plant has been using the system of effluent quality biomonitoring. Crayfish play the role of controllers: it is Australian Red Claw Crayfish in warm seasons, and Native Neva crayfish—in cold seasons. The bioelectronic system used at SWTP to control toxicological safety of the effluent was designed by St. Petersburg Scientific Research Centre for Ecological Safety, Russian Academy of Sciences. In case of water quality deterioration a sensitive crayfish will feel it at once; operators will not only notice the change in crayfish behavior but receive a signal from a special fi-

beroptic sensor attached to its back. Sensors register the crayfish's heart rate in a real-time mode. The bioelectronic control system monitors simultaneous influence of many factors on water—crayfish habitat.

SUE "VODOKANAL OF ST.PETERSBURG" PERFORMS CONTINUOUS MONITORING OF QUALITY OF WASTEWATER DISCHARGED BY THE CUSTOMERS INTO THE MUNICIPAL SEWERAGE SYSTEM.

Around 2,000 on-site sampling tasks are accomplished monthly. In the course of 2011, over 6,000 customers were controlled by Vodokanal. The customers are charged for exceeding regulatory limits. Payments are made to the special Vodokanal's account. Money from this account is spent only for wastewater quality improvement actions and payment, by Vodokanal, of the fee for the negative environmental impact.

The main objective of customers' wastewater quality control is to minimize the pollution of water bodies with industrial wastewater.

Due to the fact that the current system used to control the discharge of pollutants and payment of the negative impact fee is not efficient enough (only 1% of customers meet wastewater quality requirements), SUE "Vodokanal of St.Petersburg" conducts additional work



focused on interaction with customers. Vodokanal together with its customers performs joint inspections of on-site networks and production premises in order to determine the causes of excess concentration of pollutants in the effluent. Vodokanal also provides advisory assistance with regard to developing possible measures to reduce irrational water use, eliminating the sources of excess concentration of pollutants and selecting methods of pollutants removal from wastewater.

In 2011, 145 customers developed water-protective measures and undertook obligations to reduce discharge of pollutants.

In 2013, when the Federal Law "On water supply and wastewater disposal" comes into effect, planning and implementation of actions focused on reaching the regulatory limits for wastewater quality will be obligatory. The law stipulates the customers' obligation to declare wastewater quality; the obligation of certain customer categories to plan and implement water-protective measures; possibility for customers to use money, envisaged for the payment of excess concentration of pollutants in the effluent, for the construction of wastewater treatment plants; as well as other provisions to be elaborated and established in 2012 by a number of by-laws. Implementation of these norms will require to expand Vodokanal's interaction with its customers and join efforts aimed at improving the condition of the city water bodies.

The declaration of wastewater quality will be based on the results of chemical analysis performed through the request of the customer by accredited laboratories. The declaration mechanism increases the customers' attention and responsibility for excess concentration of pollutants in the effluent (performance of laboratory control of wastewater composition, selection of water-protective measures).

At the same time, it will enable Vodokanal to reduce expenses for the overall control of its customers since Vodokanal will need only to check (verify) the customers' declaration of wastewater quality.

SUE "VODOKANAL OF ST.PETERSBURG" DISCHARGES WASTEWATER INTO 77 WATER BODIES OF ST.PETERSBURG AND ITS SUBURBS. THEREFORE, REGULAR MONITORING OF WATER BODIES, WASTEWATER ACCEPTORS, IS NECESSARY TO BE PERFORMED.

In 2011, samples were collected at 83 points of 35 water bodies. About 17,100 chemical element tests are carried out per year.

In addition to this, in view of the limited number of points managed by state water control authorities, in recent years Vodokanal has been conducting intensive researches (including the ones performed together with scientific organizations). During 2010-2011 the pollution in the Neva River from Volodarsky Bridge to Arsenalnaya str. was reduced more than 10-times. Such a substantial pollution reduction was caused by the connection of untreated wastewater discharges to the Northern Tunnel Collector (I and II stages). This fact was also confirmed by the decrease of bacterial pollution at the water intake of the Main Water Treatment Plant.

SUE "Vodokanal of St.Petersburg" intends to continue works on investigating water quality and pollution genesis in the coastal zone of St.Petersburg (in the water area of the Neva, the Malaya Nevka, the Izhory, the Suzdalskoe (Verhnee) Lake, the Neva Bay and the eastern part of the Gulf of Finland) thus assessing the efficiency of current activities focused on elimination of untreated wastewater discharges and phased introduction of new wastewater treatment technologies.

# ACHIEVEMENTS OF 2011

## MODERNIZATION AND REHABILITATION OF SEWERAGE NETWORKS

THE FOLLOWING WORKS WERE COMPLETED UNDER THE NEVA UNTREATED WASTEWATER DISCHARGE CLOSURE PROGRAM:

01. In late October 2011, the next construction stage of the Northern Tunnel Collector extension was completed; 5 untreated wastewater discharges located along Vyborgskaya and Arsenalnaya Embankments (30,000 m³/day) were connected to the sewerage system.

Main works included:

- construction of the second tunnel line—12.3 km long;
- deepening of 10 shafts in the second tunnel line;
- construction of Novoorlovsky tunnel second line;
- construction of URS-422 shaft;
- construction and equipping of 6 NTC shafts located along Pirogovskaya Embankment;
- construction of micro-tunnels located along Pirogovskaya Embankment.

02. The reconstruction of the sewerage pipelines along Primorsky Avenue, Mytninskaya Embankment and Gapsalskaya str. resulted in closing 3 untreated wastewater discharges.

03. 7 discharges at local wastewater treatment plants in the towns of Pesochny (2 discharges), Pargolovo (4 discharges), Osinovaya Roshcha (1 discharges) were eliminated.

04. Design works to channel flush water from Petrodvorets and Kronstadt WTPs to the sewerage system were completed.

THE FOLLOWING WORKS WERE COMPLETED UNDER THE PROGRAMME ON ENHANCING RELIABILITY OF ST. PETERSBURG TUNNEL SEWERAGE SYSTEM:

01. Designs of the following construction works were developed:
- construction of the ring tunnels along Fontanka Embankment;
  - construction on the ring tunnel along Petrovskaya and Petrogradskaya Embankments;
  - construction of the backup tunnel from the shield chamber No. 3 to the main pumping station;
  - reconstruction of the main influent tunnel to the Central WWTP along Gapsalskaya str.
  - construction of the tunnel collector along Grazhdansky Avenue, in the section of shaft 127b/c-127a;
  - reconstruction of the tunnel collector along Rizhsky Avenue.

02. Construction of the 2nd stage of the backup tunnel collector from Vernosti str. to Murinsly Ruchei near Muzhestva Square has begun.

03. Works to introduce new technologies in rehabilitation of wastewater networks and plants have been carried out. For instance, trenchless technologies were used to reconstruct pipelines. Shafts of the tunnel collectors were reconstructed.

04. The project on the reconstruction of the influent collector to Zelenogorsk WWTP has been under development.

05. In 2011, the design and reconstruction works on St. Petersburg sewerage networks were conducted. 22.9 km of pipelines were put into operation—almost 3 times more than in 2010.

06. In 2011, Vodokanal conducted preparatory work for designing stationary snow melting stations to provide comfortable and environmentally safe conditions for the citizens in winter period.

TO PROVIDE WATER SUPPLY TO NEW DEVELOPMENT AREAS, VODOKANAL PERFORMED THE FOLLOWING CONSTRUCTION, RECONSTRUCTION AND MODERNIZATION WORKS:

- The construction of the tunnel collector “Severnaya Dolina” from the shaft 335 to

the shaft 611/2 (length—6,940.7m) was completed.

- The construction and reconstruction works at the facilities of the southern part of St. Petersburg (including the sewer from the sewerage pumping station No.6 to the sewerage pumping station “Slavyanka”, collector from the sewerage pumping station No.7 to Kolpino WWTP) were in process.
- The project on the construction of the sewerage networks from the town of Zelenogorsk to the villages of Reshetnikovo and Krasavitsa was under development.
- Works on the reconstruction and construction of sewerage pipelines to connect the Quarter 25-A of Shuvalovo-Ozerki district to the wastewater system were in process.
- Works on the construction of the wastewater disposal system for the quarters 6.6A SYN were in process.
- Works on the construction of the sewerage networks in the village of Metallostroi were in process.
- Works on the construction of the combined sewerage system for “Konnaya Lakhta” were in process.

phorus removal using ferric sulfate, tertiary treatment using lamellas, UV effluent disinfection.

The project presupposes a high level of automation and introduction of on-line control instruments.

WASTEWATER TREATMENT PLANTS

01. Reconstruction of Petrodvorets Wastewater Treatment Plant was completed. During the reconstruction works the wastewater treatment plant was in operation. In the course of the comprehensive reconstruction the following technologies were introduced: enhanced nutrient removal, chemical phos-

02. The following works were executed at the Northern Wastewater Treatment Plant:

- The permanent ferric sulfate dosing system was implemented to ensure a stable process of chemical phosphate precipitation. The dosing system is functioning in the automatic mode, no operators are needed.
- The modernization of the sections 1-5 of the 1st-stage aeration tank was performed according to the UCT enhanced nutrients removal technology.

03. The upgrading of the 3rd and 4th aeration tanks according to the JHB technology was performed at the Central Wastewater Treatment Plant.

Works on the modernization of the 3rd and 4th aeration tanks at the CWWTP are aimed at improving wastewater treatment quality in compliance with HELCOM requirements. The project is under implementation; the grants have been provided for procurement of equipment. Construction of new cast-in-situ walls, installation of new process equipment (aeration systems) and installation of metal structures are to be performed within the project. Completion of the works is planned for 2012.

In 2011, the works on testing new technologies of measuring the sludge level in primary sedimentation tanks and activated sludge in secondary sedimentation tanks of the CWWTP continued.

In the course of activities focused on introducing energy saving technologies and equipment to the municipal sewerage system, Vodokanal continued the development of the CWWTP modernization project which included the construction of digesters to generate biogas for the transition to the own renewable energy resources.

04. The use of the advanced technology of biological monitoring of flue gas purification with the help of Giant African snails was continued.

This innovative project may be the foundation for practical application of the integrated biological monitoring system to warn the population about the atmospheric air pollution risks. The statistical databank should therefore be expanded by observing the behavior of test-organisms at the biological monitoring station.

05. Activities on improving the reliability of WWTPs’ process equipment were performed:

- At Kolpino WWTP the screen buildings were reconstructed, including installation of new bar screens with a screw conveyor and waste washing press.
- At Sestroretsk WWTP the mechanical wastewater treatment unit was upgraded. Old screens were replaced with new perforated screens equipped with a press to reduce volume of screenings; and grit washing and drying facility was put into operation.
- At Pushkin and Kronstadt WWTPs the reconstruction of wastewater sludge dewatering units (replacement of obsolete dewatering equipment) began.

06. Testing of new tertiary treatment systems continued, including:

- flotofiltration (a combination of flotation and filtration processes) at the South-West Wastewater Treatment Plant.
- two-step filtration through zeolite and activated carbon at Metallostroi WWTP.



SLUDGE LANDFILLS RECLAMATION

To alleviate the negative environmental impact of sludge landfills, since 2010, Vodokanal has been implementing the first phase of the project on reclamation of Severny Landfill near the village of Novoselki. The methods of chemical treatment and stationary dewatering of wastewater sludge in geotubes are used for de-

creasing the hazard class and sludge volume, and removal of odor. As a result of these activities in 2010-2011, 10% of the total sludge stored at this landfill underwent the specified treatment. It is planned to handle all sludge stored at the landfills by 2020.

OTHER PROJECTS

VODOKANAL CONTINUED TO SEARCH FOR TECHNOLOGIES TO REMOVE UNPLEASANT ODOR IN THE SEWERAGE NETWORKS AND PUMPING STATIONS, AS WELL AS IN THE PROCESS OF WASTEWATER TREATMENT.

In 2011, a number of pilot projects of introducing gas treatment systems at problem addresses were executed within the city. The continuous monitoring of gas treatment systems performance was performed during the year; moreover, the opinion of the local popu-

lation was taken into account. The installation of the sorption-plasma-catalyst system of air treatment at sewerage pumping stations could be an example here.

In 2011, the first stage of gathering the input data to establish the integrated automated sewerage management system of St. Petersburg was completed. One of the main objectives of the project is to increase energy efficiency of the whole system.



FUTURE DEVELOPMENT OF THE SEWERAGE SYSTEM

THE IMPLEMENTATION OF THE REGIONAL PROGRAM "CLEAN WATER FOR THE BALTICS" FOR 2011-2025 ADOPTED BY THE DECREE OF ST. PETERSBURG GOVERNMENT NO. 625 DATED 24.05.2011 HAS BEGUN IN ST. PETERSBURG.

The main objective of the Program "Clean Water for the Baltics" is to solve the water environment problems of St.Petersburg and to ensure the environmental safety for all the citizens of the Baltic Sea Region.

St.Petersburg sewerage system development is focused on solving the following tasks:

- elimination of untreated water discharges into St.Petersburg water bodies;
- upgrading and construction of wastewater treatment plants introducing the enhanced nutrient removal and disinfection technologies;
- construction of backup tunnel collectors and rehabilitation of the existing tunnel collectors;
- modernization of the sewerage system;
- establishment of St. Petersburg sewerage management system;
- implementation of the technology that enables to produce electric energy from secondary energy resources generated in the course of wastewater treatment and sludge recovery;
- construction of networks and facilities to provide wastewater disposal for city district.

The program implementation will ensure the improvement of the environmental situation and, consequently, the fulfillment of the international obligations of the Russian Federation connected with the decisions of the Baltic Marine Environment Protection Commission (HELCOM), as well as provide engineering network for new city development areas.

To decrease the negative environmental impact and reach 98% level of wastewater treatment in St.Petersburg, the following major environmental projects are to be implemented:

- completion of the Main Tunnel Collector, including construction of the tunnel sewer along Robespiera Embankment;
- construction of the intercepting collector along the Okhta;
- closure of untreated wastewater discharge in Petrogradsky District by constructing sewerage collectors along Petrogradskaya Embankment, the Karpovka River Embankment, etc.;
- construction of the collector in the town of Molodezhny, Metallostroi, including construction of the influent collector;
- construction of the wastewater disposal system in Lomonosov to be connected to Petrodvorets WWTP;

- reconstruction and modernization of the Northern and Central WWTPs, Zelenogorsk WWTP, Pushkin WWTP, including implementation of the technologies of enhanced nutrient removal, effluent tertiary treatment and disinfection.

TO INCREASE THE RELIABILITY OF THE TUNNEL SEWERAGE SYSTEM, THE CONSTRUCTION OF RING TUNNELS AND BACKUP COLLECTORS IS PLANNED WITH FURTHER REHABILITATION OF THE EXISTING TUNNEL SECTIONS.

The main projects are as follows:

- Construction of the 2nd stage of the back-up collector from Vernosti str. to Murinsky Ruchei near Muzhestva Square;
- Reconstruction of the tunnel collector along Rizhsky Avenue;
- Construction of the back-up collector from the shield chamber No.3 to the main pumping station;
- Construction of the ring tunnels in the central part of the City;
- Reconstruction of the main influent collector connected to the Central WWTP;
- Construction of the collector from Vasil-eostrovskaya pumping station to CWWTP influent collector.

TO ENSURE THE OPTIMAL HYDRAULIC CONTROL OF THE SEWERAGE NETWORK AND THE IMPROVEMENT OF ENERGY EFFICIENCY AND RATIONAL USE OF RESOURCES, THE RELIABLE INTEGRATED WASTEWATER MANAGEMENT SYSTEM SHALL BE ESTABLISHED.

For this purpose, Vodokanal needs to establish the system to measure wastewater flow and water level in sewerage collectors and wet compartments of sewerage pumping stations, as well as the automated system of remote control and the wastewater quality control system.

The establishment of the advanced wastewater system of St. Petersburg is not possible without solving a problem of significant physical deterioration of pipelines. The networks shall be rehabilitated. The replacement of pipelines shall account for 180-200 km per year and restoration, by Vodokanal, of pipeline tightness—700 km per year. It will allow to renovate the sewerage network, ensure continuous and failure-free transportation of wastewater for treatment, as well as eliminate cesspools.

Moreover, Vodokanal plans to upgrade pumps by using up-to-date energy-saving technologies.

IN 2012-2013, STATIONARY SNOW-MELTING STATIONS ARE PLANNED TO BE CONSTRUCTED IN ST. PETERSBURG.

Some of them will have been built by November 2012, and the rest—by November 2013. The estimated capacity of each snow-melting unit is 3,500-7,000 m<sup>3</sup> of snow per day.

THE TECHNOLOGIES OF ENERGY PRODUCTION AND USING OF SECONDARY RESOURCES ARE PLANNED TO BE IMPLEMENTED, INCLUDING THE FOLLOWING:

- Reconstruction of the sludge incinerator and construction of digesters to generate biogas at the Central and Northern WWTPs, thus enabling Vodokanal to reduce expenses for purchased electric energy.
- Ash recycling: development of technologies to use ash produced during sludge incineration for manufacturing building products. It will allow to utilize all ash produced by sludge incinerators and stop sludge disposal to the landfills.
- Improvement of sewerage sludge treatment and utilization technologies to eliminate the negative environmental impact imposed by sludge landfills.

TO ENSURE THE AVAILABILITY OF WASTEWATER DISPOSAL SERVICES TO THE CITIZENS BY 2025,VODOKANAL PLANS TO CONSTRUCT STREET NETWORKS AND WASTEWATER TREATMENT FACILITIES IN 71 COMMUNITIES LOCATED IN THE TERRITORY OF ST. PETERSBURG (PROVIDING THE PRIVATE RESIDENTIAL STRUCTURES WITH THE POSSIBILITY TO BE CONNECTED TO THE SYSTEM).

At the present time, the construction of the sewerage networks in the villages of Volodarsky, Olgino is going on. Works on designing the sewerage systems for the villages of Molo-dezhnoe, Lisyi Nos, Lakhta, Toriki, Martyshkino are planned for 2012.

The planned activities are aimed at meeting the following goals:

- reduction of the negative environmental impact of the sewerage system facilities;
- continuous provision of wastewater disposal services to the customers;
- increase of the energy-efficiency of the sewerage system and introduction of the energy-efficiency policy in the wastewater disposal system;
- availability of the centralized wastewater services to the population of St. Petersburg.





# SPECIALIZED VEHICLES AND EQUIPMENT

AS OF 1 JANUARY 2012, VODOKANAL ST. PETERSBURG HAS 1,137 TRANSPORT UNITS.

The main task for the Transport and Logistics Branch is to provide Vodokanal’s technological and production processes with transportation services.

The Branch is responsible for the following:

- transportation of maintenance and emergency teams, tools and equipment to operation sites;
- transportation of goods (inert and construction materials, chemicals, technical gases, petrol, diesel oil, waste, etc.);
- mechanized loading and unloading works;
- provision of specialized vehicles to clean sewerage networks, etc.

Vodokanal’s vehicle park includes:

- 198 specialized van trucks,
- 135 dump trucks,
- 53 JCB loader-excavator,
- 63 Scania, Mercedes, MAN specialized combined vehicles,
- 31 steam generators (STEAMPATOR MHT700),
- 657 other transport vehicles.

In 2011, Vodokanal purchased 150 transport vehicles, including the following:

- 18 combined hydraulic jet cleaners FLEXLINE 207. The equipment installed on the cleaner allows to clean sewerage pipelines and at the same time to remove sludge from sewer manholes.
- 3 (container type) diesel-electric power stations C1400 D5 with the capacity 1250/1000 kVA/kW in the basic mode, to ensure continuous power supply to Vodokanal’s facilities.
- 18 tank trailers 845415 (8,300l tank volume) to provide potable water to the citizens in case of water supply shutdown during elimination of damages on the networks.
- To eliminate accidents caused by pumping large volumes of water the following units were purchased:
  - 2 independent pumping stations (PRIMAX (Q=650 m³/h));
  - 2 independent pumping stations (PRIMAX (Q=1300 m³/h));
- A drilling machine (ASTEC DD2024) designed for trenchless repair of pipes;



- 2 horizontal directional drilling machines UNIVERSAL HDD, model UNI 60\*70, designed for trenchless repair of pipes;
- An automobile VOLKSWAGEN 2EKE2 CRAFTER—specialized van “Mobile Te-leinspection Laboratory”. The use of the mobile laboratory for network diagnosis and survey, which was equipped with high-technology robotic video facilities, enabled operators to reduce the time of network inspection and increase the precision of defects identification.
- 28 package mobile boilers (STEAMRA-TOR MHT700) used for heating fire hydrants and storm water tanks in winter period.
- 104 vans 575094 on the chassis KAMAZ-4308-HZ with mobile workshops “Mol-niya”. These vehicles are designed for the transportation of emergency teams of up to 6 people and performance of emergency repair and preventive-main-tenance works on water pipelines.
- 2 specialized mobile canteens (NE-FAZ-5299-11-32) designed for the delivery of hot meals and comfortable catering of the teams of up to 60 people (12 people at the same time) on-site.
- 6 sludge suction vehicles (KO-530-01) on the chassis KAMAZ-65115 designed for mechanical removal of wastewater sludge from stormwater tanks, for sludge transportation and unloading.

- 3 sludge suction vehicles (KO-510K) on the chassis KAMAZ-43253 designed for mechanical removal of sludge from stormwater manholes and its transportation for unloading.
- 5 vans 286824 (SILANT 3.3TD) designed for the transportation of emergency teams and performance of emergency repair. The cross-country vehicle allows conducting works in suburban areas.
- 6 cargo trucks Chaika-Service 27842C on the chassis GAZ-33104 with a manip-ulator, designed for the transportation of various cargoes with three-way unload-ing option.

SUE “Vodokanal of St.Petersburg” plans to upgrade and develop its transport facilities, in particular, to start using transport vehicles with EURO-4 class motors and increased technical capability, as well as to apply multi-function transport units thus reducing the number of transport facilities.

- Timely renewal of Vodokanal’s transport facilities allows to:
- increase the operational reliability of the vehicles,
- execute water supply and wastewater disposal production programs,
- establish positive conditions for imple-mentation of infrastructure development projects and provision of engineering support of St.Petersburg.

## ESTABLISHMENT OF A RESERVE POWER SUPPLY SYSTEM AT VODOKANAL’S FACILITIES

Installation of reserve power supply sources at socially significant and life-support facilities of St.Petersburg is envisaged by St. Petersburg Government Decree No.1454 “On the program of installation of reserve power supply sources at socially significant and life-support facilities for 2012-2013” dated 20.10.2011.

As early as in 2010, Vodokanal prepared the program on the development of the reserve power supply system to increase the energy security of water/wastewater facilities. The program fully complies with the requirements of St. Petersburg Government Decree.

For the first time the company as big as Vodo-kanal will ensure, within the framework of the reserve power supply system establishment, that high-voltage pumps (up to 1.5 MW) are powered by reserve power supply sources (diesel-electric power units). Technical solutions used in the course of the system development are unique and unprecedented.

Vodokanal plans to establish 25 sites at its core production facilities to accommodate the high-voltage diesel-electric power units. Stationary high-voltage diesel-electric power units (DEPU) with variable frequency drives will be installed at 13 sites.

Stationary power units will be installed on the following sites:

- Main Water Treatment Plant;
- Volkovskaya Water Treatment Plant;
- Northern Water Treatment Plant (2 sites);
- Southern Water treatment Plant (2 sites);

- Kolpino Water Treatment Plant, 2nd elevation;
- Moskovskaya Pumping Station;
- Central Wastewater Treatment Plant;
- Northern Wastewater Treatment Plant;
- South-West Wastewater Treatment Plant.

A decision to use variable frequency drives in combination with diesel-electric power units allowed to decrease the number of DEPUs (because of reducing the starting current) and will ensure the pumps operation with variable frequency drives in normal mode thus considerably reducing energy consumption.

Under the program on the establishment of the reserve power supply system, Vodokanal, by the beginning of 2012, has performed the following works:

- design works related to 25 sites and electrical units;
- 60%-completion of construction and installation works;
- purchase of three mobile high-voltage DEPUs (1000kW, 6.3kV), commissioning works are in progress;
- conclusion of a supply contract for 13 stationary DEPUs with variable frequency drives;
- design works related to the sites to accommodate low-voltage DEPUs at 36 facilities has begun.





# CUSTOMER SERVICE

## CUSTOMER SERVICE IN 2011

CUSTOMER SERVICE WAS A PRIORITY AREA FOR SUE “VODOKANAL OF ST. PETERSBURG” IN 2011. THE UNDERLYING PRINCIPLE IN THIS FIELD OF ACTIVITIES IS: “VODOKANAL FOR THE CLIENTS (CUSTOMERS), NOT THE CLIENTS (CUSTOMERS) FOR VODOKANAL”.

Vodokanal’s customer service is based on the following principles:

- maximal result for the client (customer) and minimal requirements to the customer;
- search for a solution satisfactory to both parties;
- continuous optimization of the company interaction with its customers.

Vodokanal’s territorial divisions established within the production branches “Water Supply” and “Wastewater Disposal” provide consultation services to customers.

Communication with customers in the serviced territory is a main task of water supply and wastewater disposal areas (which allows Vodokanal to be as close as possible to its customers). It enables Vodokanal to respond promptly to change of the customers’ needs and to their inquiries as well as to provide services taking into account specific features of the customer’s facility and water and wastewater networks located in a certain territory.

DURING 2011 VODOKANAL PROCEEDED WITH ITS WORK ON RESTRUCTURING CONTRACTUAL ARRANGEMENTS WITH CUSTOMERS AND CONCLUDING SEPARATE CONTRACTS FOR POTABLE WATER SUPPLY AND FOR COLLECTION OF WASTEWATER AND POLLUTANTS.

The specialists of water supply and sanitation districts of the relevant service areas are responsible for consulting clients and customers with regard to execution, amendment and termination of water supply contracts and sewage/pollutants collection agreements, receiving applications and documents required for execution of contracts as well as drafting of contracts.

When making new contracts with its customers, Vodokanal takes into account their wishes to a maximum extent and follows an individual approach to each customer.

Vodokanal offers to its customers the right of choice: they may enter into separate contracts for water supply and wastewater disposal either in relation to each facility (if they have a direct connection to Vodokanal’s water distribution and sewerage networks), or in relation to several facilities.



Vodokanal guarantees to its customers that new contracts are made at their maximal convenience:

- the Company officers visit a customer's facility in the agreed time;
- the Company officers examine water supply and sewerage systems on the day of visit;
- when drafting separate contracts, the Company uses, to a maximum extent, the information and documents already submitted to it by the customer;
- drafts of new contracts are submitted to the customer at its location.

The following measures were taken to optimize contractual arrangements between the customers and Vodokanal:

- the number of documents to be submitted by the customer to Vodokanal in order to make contracts for water supply and sewage collection has been reduced;
- the customer is entitled to provide information in the contract application form without its further confirmation by separate documents;
- the customer is not asked to submit the documents issued by Vodokanal (authorizations for connection to centralized water and wastewater systems) and the

documents which have been earlier provided to Vodokanal (unless such documents have been amended);

- the time required for entering into the contracts for potable water supply and sewage/pollutants collection has been shortened.

WHEN COLLECTING PAYMENTS UNDER THE CONCLUDED CONTRACTS FOR POTABLE WATER SUPPLY AND WASTEWATER/POLLUTANTS DISPOSAL, VODOKANAL EXTREMELY CONSIDERS CUSTOMERS WISHES.

In 2011, the payment collection division, that was responsible for managing the accounts receivable, was reorganized. New subdivisions oriented at work with separate groups of customers were established in the payment collection division, including customer service for households, customer service for industries, customer service for budgetary organizations, customer service for other customers and customer service for tenants. Such differentiation allows to meet customers' needs to the fullest extent in the course of accounts receivable reconciliation and recovery as well as during negotiations.

Customers were divided into groups and a responsible person was appointed to each group. This step made Vodokanal close to the customer.

In 2011, Vodokanal implemented advanced technologies into the work with customers:

- proceeded to introduce remote system to transfer meter readings, enabling the customer to have online control of water consumption, timely reveal emergencies in the in-house network and make payments to Vodokanal on the basis of the remote meter readings (without direct contact of the customer with the Company's employees);
- continued to establish the electronic archive of contractual documents in order to ensure prompt access to the documents kept by Vodokanal, provide customers with the copies of documents and have immediate access, by Vodokanal's divisions, to electronic documents required in the course of interaction with customers;
- prepared to introduce the procedure for Internet submittal of applications and documents needed for entering into the contracts for potable water supply and sewage/pollutants collection, which aimed at the reduction of contact preparation periods and minimization of direct application by customers to Vodokanal.

IN 2011, VODOKANAL ACTIVELY DEALT WITH VARIOUS CATEGORIES OF CUSTOMERS WITH REGARD TO THEIR CONNECTION TO PUBLIC WATER AND SEWAGE SYSTEMS, PERFORMANCE OF CONTRACTS FOR POTABLE WATER SUPPLY AND SEWAGE/POLLUTANTS COLLECTION.

The Company is aware of its customers' needs, so it fully considers specific features of each category of customers while making contracts for potable water supply, wastewater/pollutants collection.

The Company has developed and put into practice contract forms tailored with respect to each category of customer.

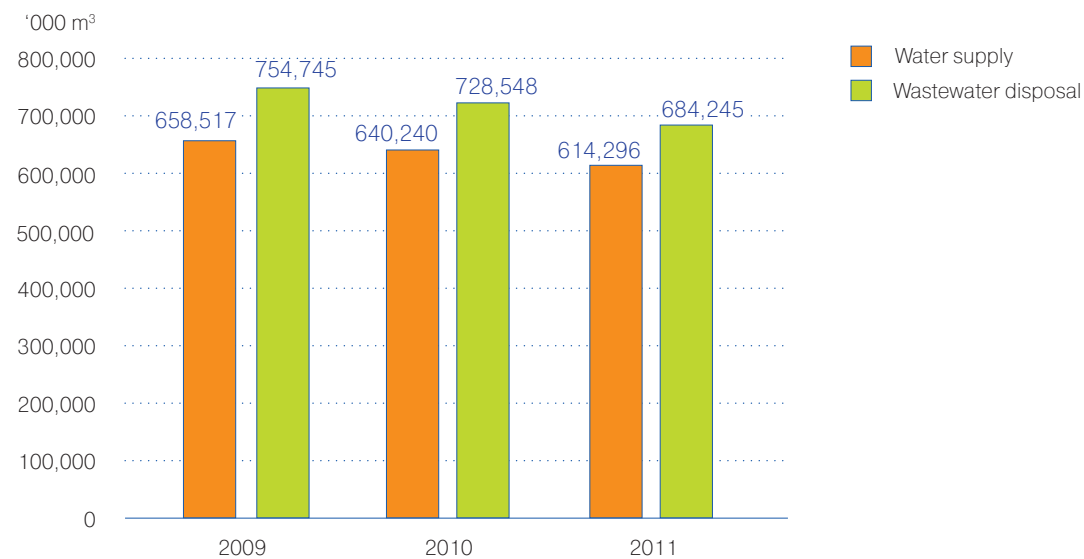
The Company interacts with the Union of Industrialists and Entrepreneurs of St. Petersburg and with public services providers (a working group supported by the newspaper "Concierge"). Over 2011 Vodokanal had working meetings with the St. Petersburg International Business Association (SPIBA) and small business associations. Such interaction allows making decisions acceptable for the parties, exchanging the views and adjusting Vodokanal's documents in order to ensure transparency in the parties' relations.



# GROWTH OF SALES

THE TREND TO LOWER WATER CONSUMPTION CONTINUED IN 2011, WHICH DEMONSTRATES RESPONSIBLE ATTITUDE TO WATER RESOURCES AMONG THE CUSTOMERS.  
IN 2009-2011, WATER CONSUMPTION REDUCED BY 6.7%.

GROWTH OF SALES IN WATER AND SANITATION SERVICES  
FOR 2009-2011, IN PHYSICAL UNITS ('000 M³)



Such reduction of water consumption in St. Petersburg can be explained by:

- transition to the billing for actual consumption measured by individual cold/hot water meters (before the installation of water meters customers paid according to the standard consumption rate);
- water saving actions taken by customers (emergency repairs and elimination

of leaks on local networks, repairs of in-house pipes, etc.);

- water conservation by the citizens;
- actions performed by housing organizations, management companies, condominiums and housing cooperatives to reduce water consumption (improvement of water metering and control over the provided services).

# ACCOUNTS RECEIVABLE

VODOKANAL HAS DEVELOPED A MECHANISM OF INDIVIDUAL WORK WITH CUSTOMERS AIMED TO ENSURE TIMELY PAYMENT FOR POTABLE WATER AND SANITATION SERVICES OR, IN THE EVENT OF INDEBTEDNESS, TO RECOVER THE DEBT.

In 2011, the management of SUE «Vodokanal of St. Petersburg» decided to hold regular meetings to discuss measures against the debtors between Vodokanal's branches: "Customer Service Centre", "Water Supply in St. Petersburg" and "Wastewater Disposal in St. Petersburg", for the purpose of strengthening control over the procedures and results of this activity. All in all, 660 such meetings were held in 2011.

In parallel, the Customer Service Centre Branch provided regular training with regard to the specific nature of this activity, reporting procedures and preparation of analytical materials for all responsible persons in each water supply/sanitation district.

In 2011, the ACCESS database, established by the analytical service of the Customer Service Centre Branch, was updated. That made it possible to combine the data of three information systems in one (LIVS, OM and Vodosbyt) and minimize temporary costs on gathering the information about accounts receivable of customers in different systems. Using the ACCESS data base, one could make each assigned person in the customer service department to be responsible for the planned and actual collection of payments from each customer. In addition, it became possible to register and save customers' history in the database. Tripartite

reconciliation reports were automated in the ACCESS database that significantly reduced the time required for formatting and releasing the reports.  
In 2011, close interaction with the city authorities in charge of the St. Petersburg budget Vodokanal organized:

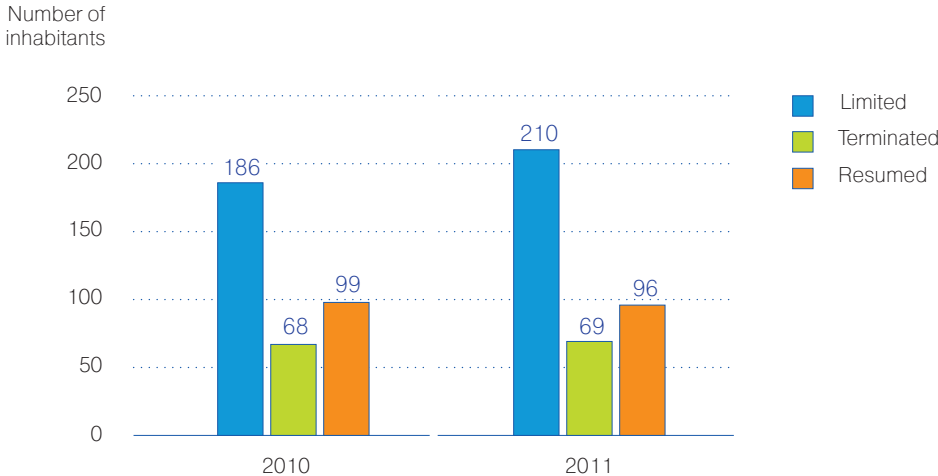
- monthly meetings at District Administrations and the City Administration Committees where the cause of accounts receivable and time of payment were discussed.
- the exchange of information and electronic data about the allocated funds and actual provision of services in physical and money terms and about the status of accounts receivable with the city authorities in charge of the St. Petersburg budget.
- full-scale quarterly comparative checking of settlements with customers of certain categories.
- timely issuance and delivery of bills to relevant customers on a monthly basis.

Due to such efforts, the payments by the "St. Petersburg Budget" Category customers were collected in full in 2011.

In parallel, the management of the Customer Service Centre Branch organized joint working meetings with the defaulters to solve issues related to collection and reconciliation of payments.

The meetings held in 2011 led to the conclusion of 113 debt restructuring agreements with the customers confronted with the lack funds required to pay for Vodokanal services. 155 such agreements were made in 2011.

LIMITATION OR TERMINATION OF SERVICES



Thus, in 2011, the number of customers for which water supply/sanitation services were limited or terminated increased 1.1 times. It led to reduction of overdue accounts receivable with regard to the customer categories "Industries" and "Other".

The customer category "Providers of Services to Households" has the biggest share (55.4% as of 01.01.2012) in the overall structure of accounts receivable. In 2011, this share increased by 10.9%

Recovery of accounts receivable through arbitration and then through enforcement pro-

In 2011, the overdue accounts receivable were monitored more efficiently. The activities aimed to limit or stop the provision of services to certain customers were better coordinated. For example, in 2011, upon the request of the Customer Service Centre the production branches limited water supply/sanitation services for 210 customers, terminated the provision of services to 69 customers and resumed provision of services to 96 customers.

ceedings is one of the instruments to liquidate the accounts receivable.

In 2011, the Enforcement Proceeding Service based on decisions of the Arbitration Court of St. Petersburg and Leningrad Region, courts of general jurisdiction and regulations of the 13th Appeal Court of St. Petersburg received 555 enforcement orders at the total amount of RUB 378,165,733.54.

The total accounts receivable recovered under the enforcement orders amounted to RUB 334,190,424.52, including RUB 79,769,135.92 under the 2010 enforcement orders.

To increase the efficiency of payment collection and decrease the accounts receivable in the categories "Tenants" and "Private Owners", St. Petersburg Water Supply Branch and St. Petersburg Wastewater Disposal Branch made each customer in these categories bore a personified responsibility.

In 2011, Vodokanal continued to publish the information about its main debtors on its corporate website (section "Lists of Debtors"). Such information is updated on a monthly basis.

As of 01.01.2012, Vodokanal's accounts receivable amounted to RUB 3,989,837,200.

STRUCTURE OF ACCOUNTS RECEIVABLE IN 2011

Customer group	Accounts receivable as of 01.01.11	Accounts receivable as of 01.01.12
Providers of services to households	1,365,401.8	2,211,115.0
GP TEK (heat supplier)	154,384.6	159,093.1
TGK-1 (electricity supplier)	194,358.8	268,003.7
St. Petersburg budget	39,152.9	37,772.2
Federal budget	276,430.9	297,742.4
Organizations in Leningrad Region	268,467.1	309,488.9
Other	243,875.3	241,677.7
Industries	524,598.8	464,944.3
TOTAL	3,066,670.3	3,989,837.2

THE SHARE OF DIFFERENT CUSTOMER CATEGORIES IN THE STRUCTURE OF ACCOUNTS RECEIVABLE

Customer group	As of 01.01.2011	As of 01.01.2012	Growth or reduction of share in 2011
Providers of services to households	44.5%	55.4%	10.9%
GP TEK (heat supplier)	5.0%	4.0%	-1.0%
TGK-1 (electricity supplier)	6.3%	6.7%	0.4%
St. Petersburg budget	1.3%	0.9%	-0.3%
Federal budget	9.0%	7.5%	-1.6%
Organizations in Leningrad Region	8.8%	7.8%	-1.0%
Other	8.0%	6.1%	-1.9%
Industries	17.1%	11.7%	-5.5%



# CONNECTION TO WATER DISTRIBUTION AND SEWERAGE NETWORKS

## VODOKANAL PROVIDES SERVICES TO ITS CLIENTS AND CUSTOMERS FOR THE PREPARATION OF AUTHORIZATIONS AND CONNECTION OF FACILITIES TO ENGINEERING NETWORKS ON THE BASIS OF ISSUED AUTHORIZATIONS, INCLUDING:

- preparation of specifications;
- consultancy;
- preparation of connection conditions and conclusion of connection contracts;
- review of design documentation;
- preparation of other authorizations (baseline data, approval of layout, etc.);
- monitoring of connection contract implementation.

## THE NUMBER OF CONSULTATIONS AND DOCUMENTS MADE IS LISTED BELOW IN THE TABLE AND COMPARED TO THE PREVIOUS PERIOD

Work Type	Number of documents prepared					Number of consultations				
	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
Issue of authorizations (incl. specifications, connection conditions, baseline data, etc.)	6,281	7,250	6,987	8,623	11,354	5,150	7,388	5,091	5,552	6,021
Review of design documentation	3,045	3,169	2,950	3,456	3,794	3,654	3,802	3,540	3,840	4,010
Number of connection contracts drafted	-	-	123	311	314	-	-	-	-	-
Number of contracts concluded	-	-	24	181	260	-	-	-	-	-

The average number of requests for authorization preparation per one specialist in 2010 was 616 documents, in 2011—757 documents.

The following regulatory documents were issued and approved in 2011 for the purpose of improving the quality of customer service:

- Instruction on establishing a working group to deal with the connection of the privileged categories of citizens No. 271 dated 12.08.2011;
- Instruction on technical rules of using materials for water and sewerage network at the design stage No. 000284/11 dated 19.08.2011;
- Standard STO Vodokanal St. Petersburg 18.3-2011 "Customer Service. Customer service for connections to water and sewerage networks and providing water supply and sanitation services No. 2 dated 18.01.2012".

In 2011, the preparation of authorizations took not more than 2 days (if additional inspections were not needed). Meanwhile, the period prescribed by law is 14 days.  
The connection conditions preparation period is reduced to 5 days (the period prescribed by law is 30 days).

Collection of requests and consultancy services to customers are provided at the address: *Letter A, 21 Gakkelevskaya Str.*

To improve the quality of customer service, the Customer Service Center is open from 9:00 till 18:00 (without lunch break).

All necessary information about the procedure of issuing the authorizations can be found on website: [www.vodokanal.spb.ru](http://www.vodokanal.spb.ru). It also has a service that allows to apply for technical specifications via the Internet.

Proceeding from the results of the customers' satisfaction survey conducted it was revealed that over 2011 this value has increased by 3.3% in comparison with 2010. It is driven by the improvement of customer service quality (no more queues to specialists to submit documents, periods for authorization preparing and the number of refusals reduced).

Due to the extension of admission hours and opportunity to receive technical specifications via the Internet the queue to submit applications were eliminated (the average waiting time is no longer than 3 minutes). For example, in 2011, 264 applications were received via the Internet and on their basis 208 technical specifications were issued (42 sets of documents were incomplete, 14 refusals).

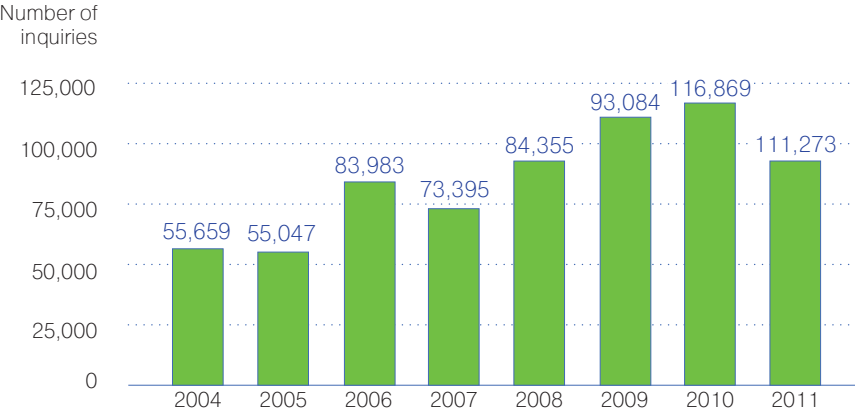
In 2011, the location of 2,426 facilities was agreed at the customer requests.

SUE “VODOKANAL OF ST. PETERSBURG” HAS ITS HOT LINE TO RECEIVE CALLS FROM THE CUSTOMERS (PHONE: +7 (812) 305-09-09, SEE ALSO “INTERACTION WITH CUSTOMERS” FOR MORE DETAILS).

In 2004-2011, the implementation and use of the calls recording and handling system, as well as other improvements of this process, led to reduction of call duration from 12 to 2 minutes with the maximum waiting time of 2 minutes (in peak periods, when up to 200 calls

per hour are received). At present, the average time of waiting for the operator's reply is 8-20 seconds. In 2004-2011, the number of calls (general inquiries or consultations) increased from 55,659 to 111,273.

INQUIRIES

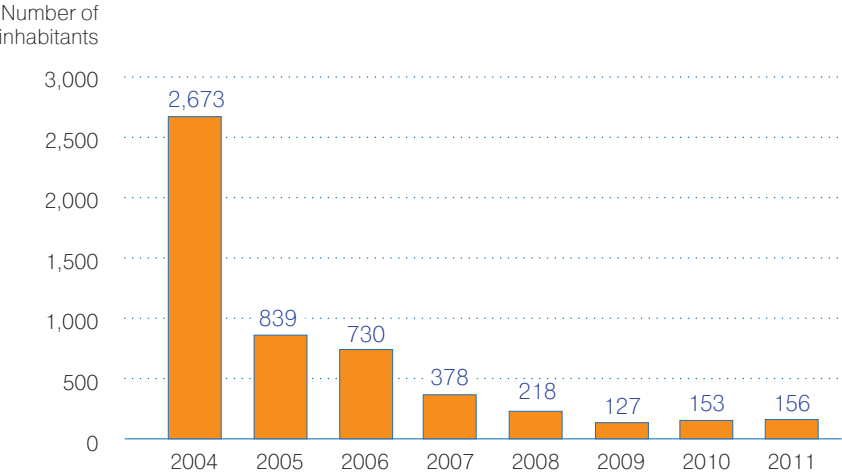


The number of inquiries in relation to Vodokanal activities has increased over these years. It can be explained by the increase of new customers and the growing interest of the citizens in the Company operations.

The number of complaints received by Hot Line reduced from 30,146 to 25,692 in 2004-2011.

The most frequent complaints are those about low cold water head and blockages in the yard sewers. In 2004, the Hot Line received 2,673 complaints about low water head, and in 2011 there were 156 complaints only, i.e. the number of complaints has reduced more than 17 times over 7 years. The number of complaints about blockages of the yard sewers has reduced 1.7 times in 2004-2011.

COMPLAINTS ABOUT LOW COLD WATER HEAD





# CUSTOMERS SATISFACTION SURVEY

IN 2011, SUE “VODOKANAL OF ST. PETERSBURG” CARRIED OUT RANDOM POLLING OF CUSTOMERS (BUDGETARY ORGANIZATIONS, PROVIDERS OF SERVICES TO THE POPULATION, TENANTS AND INDUSTRIAL ENTERPRISES). 286 RESPONDENTS PARTICIPATED IN POLLS.

Analysis of questionnaires revealed that 70% of customers were satisfied in general with the quality of the provided water and wastewater services.

But 16% of customers were not satisfied with regularity of water supply services (those customers made complaints about head loss), 22% of respondents were dissatisfied with the time period needed to conclude contracts for potable water supply and wastewater/pollutants collection.

Vodokanal annually performs opinion surveys among St. Petersburg residents. The objective of such surveys is to define satisfaction of the end-users with the quality of services and social projects of Vodokanal. According to the results of such surveys Vodokanal is enabled

to identify problems, urgent for the population, and improve the quality of its operation.

Procedures for opinion surveys are improved every year. Before 2008 such surveys were carried out by phone. In 2009 Vodokanal arranged telephone polling and outdoor polling. According to the results of the surveys and on the grounds of the opinion given by marketing companies, the decision was taken that outdoor polling was more efficient.

Since 2010, Vodokanal has conducted opinion surveys in the form of outdoor polling. Questionnaires are developed on the basis of a Likert-type scale (an ordinal scale). Mathematic-statistic methods are used to analyze the received data (Guttman scale, in particular).



BY RESULTS OF THE SURVEY, PERFORMED AT THE END OF 2011, THE OVERWHELMING MAJORITY OF RESIDENTS (80%) ANSWERED THAT IN GENERAL THEY WERE SATISFIED WITH COLD WATER QUALITY.

Respondents are divided into groups in terms of age, sex, social status, administrative city areas, etc. to ensure good sampling.

Opinion surveys among St. Petersburg residents witness to a gradual growth of the customers’ satisfaction with the provided services. By results of the survey, performed at the end of 2011, the overwhelming majority of residents (80%) answered that in general they were satisfied with cold water quality.

At the same time, 79% of residents were satisfied with cold water color (in 2010, this factor accounted for 76.2%), 82% of respondents were satisfied with smell (in 2010, this factor accounted for 81.4%), 81% of respondents were satisfied with the water head (in 2010—79%).

City residents give a high estimate to the quality of the services provided by the Company. Thus, 78% of respondents are satisfied with

stormwater drainage in yards and streets, 73% are satisfied with safety measures and comfort provided at repair works.

Satisfaction of city-dwellers with the quality of Vodokanal Hotline Service is growing steadily. 93% of those respondents who used Hotline Service are satisfied with its performance (for reference, in 2010—78%).

More and more city dwellers are also satisfied with social projects of Vodokanal. Particularly, 85% of respondents are satisfied with the Baltic Sea protection activities, which is 12% higher than last year. The overwhelming majority of respondents are pleased with operation of the Universe of Water Museum (98%) and the Youth Environmental Centre of Vodokanal (95%). A share of respondents satisfied with fountains and fountain complexes grew by 17% in 2011 in comparison with 2010 and accounted for 99% of all respondents.



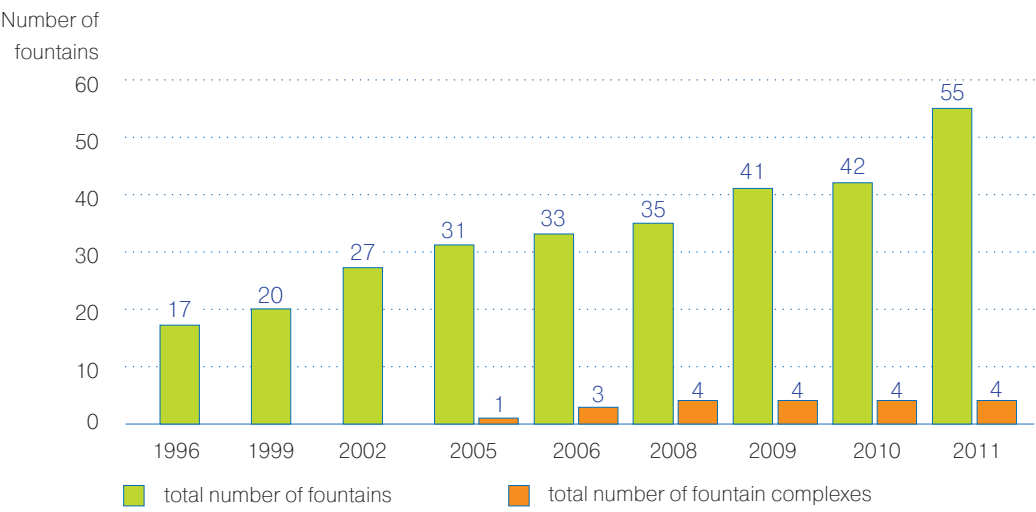


# CITY FOUNTAINS

IN 2011, STATE UNITARY ENTERPRISE “VODOKANAL OF ST. PETERSBURG” OPERATED 59 FOUNTAINS AND FOUNTAIN COMPLEXES.

The history of St. Petersburg fountains goes back to 1705, the fountains have lived through several periods of prosperity and decline. And by the time the decision was taken to pass the city fountains into the economic management of State Unitary Enterprise “Vodokanal of St. Petersburg”, fewer than 20 of 350 fountains

were functioning in the city. Most of them were in a state of failure, maintenance and repairing works have not been performed for a long time. Vodokanal St. Petersburg has been maintaining fountains and fountain complexes since 1996.



Over the period 1996-2011 Vodokanal St. Petersburg has renovated 30 fountains. In addition to the renovation of the existing fountains Vodokanal has constructed new fountains in the most significant locations as well. By 2008, Vodokanal had constructed 15 fountains and fountain complexes using its own

and budgetary funds including the color-music fountain complex at the square in front of Finlyandsky Railway Station (put into operation in 2005) and the fountain complex at the Moskovskaya Square (put into operation in 2006). All city fountains are located in the places which are the most popular among citizens



and guests of the city. All fountains are unique: they differ by the year of construction, size, architecture, and are made of different materials. Fountain complexes are technology-intensive facilities that require a big scope of maintenance works.

The largest and the most modern stationary fountain complex decorates the Moscow Square. It was set into operation in 2006. The total area of the fountain complex at the Moscow Square is 18,000 m<sup>2</sup>; the total volume of bowls is 3,700 m<sup>3</sup>. The ensemble consists of 11 bowls. The pumps of the fountain complex pump about 580,000 m<sup>3</sup> of water per day. The fountain bowls are installed at a depth from one to three meters below the level of Moskovsky prospect.

The fountain complex at the Lenin Square consists of 20 separate granite units with light and music. The total water volume of all bowls is over 2,000 m<sup>3</sup>.

In 2009, SUE "Vodokanal of St. Petersburg" developed the Rules for fountain maintenance, which determined maintenance methods and costs for each fountain. Among the fountains operated by SUE "Vodokanal of St. Petersburg" is the fountain in the garden near the Kazan Cathedral, the fountain in Aleksandrovsky Garden, the fountain in Yuzhno-Primorsky Park, the fountain in the garden near Gostiny Dvor (Kronstadt) and others.

**IN 2011, FOURTEEN NEW FOUNTAINS WERE TAKEN INTO ECONOMIC MANAGEMENT BY VODOKANAL ST. PETERSBURG.**

The fountain at the Manezhnaya Square (the pumping equipment was replaced and hydro insulation of the fountain bowl was improved in the course of capital repair), the "Putti" fountain in Vvedensky Garden and two fountains in Nikolsky Garden were set into operation upon the completion of the capital repair works in 2011.

In 2011, the capital repairs were completed with regard to the "Boy with Duck" fountain and the fountain near Gostiny Dvor in Kronstadt; the capital repairs of the fountain "Bowl" in Zelenogorsk were started.

In 2011, the fountain in the town of Lomonosov was reconstructed. Since 1 July 2011, the fountain was transferred under the supervision of Vodokanal St. Petersburg. A complete fountain reconstruction was performed on a tight schedule, and now it looks more impressive than before.

Outer and inner sides of the large fountain bowl (its diameter is 14.2 meters) are lined up with red granite plates. The bowl itself is made of the in-situ reinforced concrete. There is a bronze monument in the center, a lion who tries to reaching a sour orange tree. Initially, this tree decorated the Oranienbaum city emblem (the German word "Oranienbaum" means "a sour orange tree"). Today, it is used on the emblem of Lomonosov. The monument is 5.8 m high.

Fountain jets are directed parabolically from the bowl to the central monument. Each jet is up to 1.5m height and 5m long. 120 fountain nozzles, set on a radial distribution manifold, provide for creation of these water parabolas. A device, comprising 200 white diode underwater illuminators, is provided for fountain streams lighting. 4 radial illuminators are mounted around the fountain bowl.

In the course of the fountain reconstruction the nearby territory was landscaped as well. There are rest benches, flower beds and lawns near the fountain. Total area of the landscaped territory is 2,870 square meters.

The fountains operated by Vodokanal St. Petersburg are equipped with over 8,000 lamps, over 4,500 nozzles, 860 pumps, 915 electromagnetic valves and almost 320 km of cabling. During the winter period the performance of all fountains and fountain complex equipment is tested; the relevant parts and units are repaired or replaced.

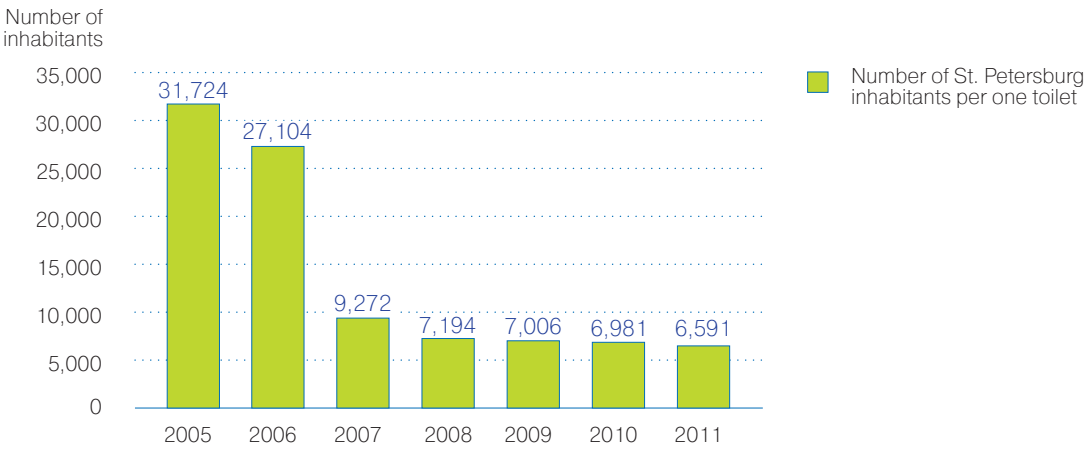
In 2012, it is planned to complete the capital repairs of the fountain "Bowl" in Zelenogorsk and to start the capital repairs of the fountain in Yuzhno-Primorsky Park. Besides, in 2012 the renovation of fountains in Pisarev Garden is planned.

# PUBLIC TOILETS

## IN 2011, SUE "VODOKANAL OF ST. PETERSBURG" OPERATED 698 PUBLIC TOILETS.

- There are 847 public toilets in the economic management of Vodokanal St. Petersburg, including:
- 212 stationary toilets
  - 140 modular toilets
  - 37 modular toilets with storage tanks used in gardens and parks
  - 20 mobile sanitary and hygienic complexes installed on vehicle chassis
  - 403 mobile cabins
  - 35 urinal-type toilets
- Among them, in operation:
- 129 stationary toilets
  - 74 modular toilets
  - 37 modular toilets with storage tanks
  - 403 mobile cabins
  - 20 mobile sanitary and hygienic complexes (installed in buses, semitrailers and Valday-type vehicles)
  - 35 urinal-type toilets

## NUMBER OF INHABITANTS PER ONE VODOKANAL OPERATED TOILET IN 2005-2011



The total number of outdoor public toilets in St. Petersburg in the 1950-70s of XX century reached 700. They were managed by GUP «Zentr-Servis», the municipal authority «Spetssluzba», landscaping companies, housing offices, which operated the toilets.

In early 1990s, the number of public toilets was reduced. As a result of privatization many buildings and facilities were bought out, leased or redesigned as no restrictions were imposed on the use of such buildings and facilities.

According to the inventory made by territorial district authorities of St. Petersburg, at that moment there were about 300 toilets in the city budget, a part of which had already been granted on a long-term lease, and the others were becoming dilapidated and going to ruin. Vodokanal St. Petersburg was assigned with the task to solve this problem.

Vodokanal St. Petersburg has been operating public toilets since 2001. In December 2001, the decree of the Administration of St. Petersburg No.1492-ra «On the development of St. Petersburg public toilet network» was issued. Vodokanal St. Petersburg assumed responsibility for the maintenance and servicing of public toilets owned by the city of St. Petersburg, as well as client's functions in repairs, renovation and development.

Pursuant to the Sanitary Rules for Installation and Maintenance of Public Toilets No.983-72 dated 19.06.1972 approved by the Deputy Chief Sanitary Inspector of the USSR, in the course of construction of shopping centers, Vodokanal St. Petersburg issues technical

conditions for the mandatory construction of public toilet in shopping centers. Today, practically every large shopping center has free public toilets for all categories of visitors.

Since 2006, a lot of work has been done to install a new generation modular toilets next to metro stations, as well as in the places agreed with district administrations. They are equipped with modern sanitary and hygienic facilities. They are more comfortable and look nicer. The first 77 toilets of this kind were installed by Vodokanal in 2007 on the City Birthday. According to the public toilets development programme the final number of such toilets will be 140 units by 2015.

Vodokanal St. Petersburg was the first to acquire mobile sanitary and hygienic toilet complexes installed on the vehicle chassis which allow to provide better services to visitors as compared with portable toilet cabins. Currently, Vodokanal is targeted to purchase the improved versions of such toilets.

Complexes and modular toilets help to solve the task of providing services to inhabitants in central districts.

Specially trained personnel of the sub-contractor works in every public toilet managed by SUE «Vodokanal of St. Petersburg». Vodokanal's personnel controls this work on a frequent basis. Toilets are equipped with security system to ensure the personnel security. Over 500 people are involved in operation and maintenance of toilets.

Toilets are open from 9:00 till 21:00. In public holidays toilets are open according to the special schedule.

In order to increase the number of operated public toilets in St. Petersburg and to improve the quality of services provided by Vodokanal, 10 stationary public toilets were reconstructed and 37 modular toilets with storage tanks, used in gardens and parks, were purchased in 2011.

Works were carried out in accordance with St. Petersburg Government Decree dated October 16, 2007 «On the address programme for the development of public toilets in St. Petersburg for 2007-2011».

During the city festivals—New Year, Christmas, Victory Day and Day of the City, «Scarlet Sails»—Vodokanal set up mobile toilets. In total, in 2011 movable toilets were provided for more than 700 events on requests of different organizations.

**IN 2011, A NEW ADDRESS PROGRAMME FOR THE DEVELOPMENT OF PUBLIC TOILETS FOR 2012-2015 WAS PREPARED.**

By 2015, Vodokanal plans to:

- renovate 40 stationary public toilets;
- make capital repairs of 12 public toilets;
- acquire 14 mobile sanitary and hygienic toilet complexes installed on the vehicle chassis;
- purchase 101 mobile toilet cabins.

As a result of the address programme implementation by 2015, Vodokanal will operate 847 public toilets, including:

- 212 stationary toilets;
- 140 modular toilets without storage tanks;
- 37 modular toilets with storage tanks;
- 20 mobile sanitary and hygienic toilet complexes installed on the vehicle chassis;
- 438 mobile toilet cabins.





# INNOVATIONS

## IMPLEMENTATION OF NEW TECHNOLOGIES IN THE FIELD OF WATER SUPPLY AND WASTEWATER DISPOSAL

SUE “VODOKANAL OF ST. PETERSBURG” ACTIVELY INTRODUCES UP-TO-DATE TECHNOLOGIES TO ENSURE PROVISION OF GOOD-QUALITY WATER AND WASTEWATER SERVICES TO ITS CUSTOMERS AND MINIMIZE THE ENVIRONMENTAL IMPACT.

### WATER SUPPLY

**1.** IN THE DESIGN AND CONSTRUCTION OF A NEW WATER TREATMENT BLOCK AT SOUTH WATER TREATMENT PLANT (K-6 BLOCK), PUT INTO OPERATION IN 2011, ADVANCED PROCESSES WERE USED IN ORDER TO COPE WITH ANY CHANGES IN THE QUALITY OF RAW WATER.

In particular, the inclusion of the ozonation stage in the water treatment process provided the following benefits:

- taste and odour removal;
- removal of color caused by humic substances;
- turbidity reduction;
- suppression of algae growth;
- microflocculation effect (improvement of the colloidal organic matter flocculation process);
- reduction of chemical consumption;
- flocculation time reduction;
- increase of filtration rate;
- extension of filtration time;
- reduction of backwash water volume;
- reduction of sludge volumes after filter backwash;
- organic matter reduction (including chlororganic compounds).
- partial disinfection.

*The use of mechanical agitators provides rapid water mixing before it enters into the first flocculation chamber in every process line, thus fostering floc formation and improving the downstream sedimentation process. The existing scheme of hydraulic chemical mixing at old plants depends on the plant load and is less effective.*



The water sedimentation process uses lamella sedimentation tanks that provides advantages as compared to the conventional water sedimentation scheme:

- higher hydraulic load and larger sedimentation area;
- shorter retention time;
- higher sludge concentration;
- significant reduction of the plant area;
- significant reduction of the volume of sludge to be thickened;
- no supernatant;
- lower investment costs;
- shorter start-up period;
- higher quality of clarified water;
- better performance at low water temperature.

Water is filtered in dual media gravity filters. Dual media filtration combining quartz sand and granulated activated carbon (GAC) provides a number of advantages of treatment:

- the rate of head loss is lower than in sand filters;

- filter cycle is on average 60% longer than in sand filters;
- the required amount of backwash water is less than for sand filters;
- the rate of air flushing is the same, while the rate of backwash in dual media filtration is lower than in sand filters;
- both the GAC layer and sand layer effectively capture solids, and this shows that filtration takes place in all parts of the filter. The effective removal of suspended solids is achieved, and the outlet turbidity may reach the values less than 1 NTU.

One of the main goals of using activated carbon is to remove organic matter. Due to filtration through activated carbon filters, dissolved organic compounds are effectively removed in the adsorption and biological degradation process.

The uniqueness of this new block is that it allows to solve the problem of wash water (i.e. water used for regular filter backwash). Before, this water was discharged directly into the Neva. At the new block it is treated. Thanks to transition to the closed cycle of using wash water, the adverse impact on the environment is significantly reduced.

## 2. IN 2011, VODOKANAL IMPLEMENTED INNOVATIVE IDEAS FOR CREATING AN EFFECTIVE WATER SUPPLY MANAGEMENT SYSTEM IN THE SOUTHERN WATER SUPPLY ZONE.

In 2012, the work will continue to establish the water supply management system in St. Petersburg.

The following main activities, aimed at establishing the integrated water supply management system in St. Petersburg, were implemented:

- The creation of a hydraulic model that allows to determine optimization strategy for water network (elimination of excessive pressure, improvement of velocity, building a modern system of hydraulic mode control).  
The main tool for making decisions on the network reconstruction is its mathematical model that allows to make multivariate hydraulic calculations, particularly to identify the sections with minimal velocity and overloaded sections and select the best activities to eliminate these defects; to calculate various scenarios of water consumption, strategies to repair, modernize and construct water pipelines. An important moment is the hierarchical approach to the network sections: the most important sections, water conduits, street distribution network etc. are singled out.
- The modernization of pumping stations to reduce energy consumption by 30-40% due to efficiency increasing and

implementation of an automated pressure control using "check points" set in networks.

As a result of the pumping equipment modernization, frequency drives will be used for all pumping units that will allow to smoothly start up and stop engines and reduce the load on the power grid. Operating regimes of pumps are selected automatically based on the readings of flow meters, pressure recorders in "check points" and other criteria (for example, water level in clean water reservoirs). As a result, the optimal values of water pressure and water flow are maintained at the outlets. Reduction of excessive pressure in the water pipeline reduces its breakdown rate, distribution losses and increases its life. Due to a smooth start up and stop of pumping units the network loads in transient modes drop manifold that reduces the breakdown rate by preventing water hammers. The opportunity of automated self-start up for pumping units in case of emergency power failure, as well as automated putting into operation standby pumping units minimize water supply interruptions and reduce the number of operating personnel. Work of pumping units in the most energy efficient mode provides power savings and increases the resource of pumping units themselves.



- The installation of modern fittings, which will allow to improve the water supply reliability and provide stable network operation, eliminate hydraulic hammers and air plugs.

Application of modern control valves, which operate off-line according to pre-set parameters, provides the pressure regulation in separate subzones and minimizes excessive pressure that allows to reduce water losses.

Installation of air valves allows to release the air accumulated in water pipelines, thereby increasing the reliability and efficiency of the network, as well as providing high flow measurements accuracy.

- The installation of pulse output meters to make water balance, monitor water consumption and control leaks online. Due to automatic meter readings there is no need for inspectors' visits, that allows

to take readings and issue invoices strictly on required dates, thus improving the collection of payments and minimizing the "human factor". Automatic comparison of meter readings taken at pumping stations, on the networks and on the consumer site allows to diagnose and locate leaks, unauthorized connections, and identify faulty meters. Emergency teams get preliminary information about the locations of leaks and losses before water flows out on the surface and people start to make calls.

- The installation of "reference points" for online water quality control in the network and on the customer side. Online water quality control in the network allows to adjust the water supply modes in a timely manner and guarantee compliance of water quality with regulatory requirements.

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### 3. IN 2011, LARGE-SCALE COAGULANT TESTS TO SELECT THE CHEMICALS THAT CAN PROVIDE A HIGH QUALITY OF WATER TREATMENT AT LOW TEMPERATURES WERE COMPLETED.

The tests were successful. Using aluminium hydroxochloride (coagulant) with its physical and chemical characteristics contributes to the steady operation of clarifiers and provides a high quality of treated water. The usage of

this chemical is effective for cold water in winter season. Using the range of chemicals will allow to increase the flexibility of the used water treatment technology in general.

## WASTEWATER DISPOSAL

### IN 2011, SUE "VODOKANAL OF ST. PETERSBURG" CONTINUED CONSISTENT IMPLEMENTATION OF ACTIONS AIMED TO IMPROVE THE PERFORMANCE OF MUNICIPAL SEWERAGE IN ST. PETERSBURG.

01. Vodokanal's wastewater treatment plants have implemented and are using an effective chemical process to remove phosphorus—one of the main nutrients contributing to eutrophication of the Baltic Sea.

By implementing such system at Petrodvorets WWTP in 2011 and putting into operation its permanent version at Northern WWTP Vodokanal could meet the HELCOM recommendations on phosphorus removal from wastewater.

02. Petrodvorets WWTP uses the cutting-edge process solutions and equipment, in particular, the tertiary treatment process followed by UV-disinfection. Thus, the treated effluent fully meets the current regulations.

03. In 2011, Vodokanal continued the studies and full-scale testing of various wastewater/sludge treatment methods, technologies and chemicals:

- Full-scale tests of alternative wastewater disinfection methods (treatment with 12% peracetic acid (PACS12) at Kronstadt WWTP) were made.
- Full-scale tests of aluminum sulfate for chemical phosphorus precipitation at Central WWTP were launched.
- The testing of advanced methods of checking the level of sludge in the primary clarifiers and activated sludge at Central WWTP continued.



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- The studies of new tertiary treatment processes continued:
    - floto-filtration a combination of two processes—flotation and filtration—in one treatment stage at South-West WWTP.
    - double-stage filtration using zeolite and activated carbon at Metallostroy WWTP.
- 04.** Vodokanal continued its search for advanced odor control technologies to remove bad smell emitted during of wastewater transport, at sewage pumping stations and in the process of wastewater treatment at WWTPs.



In 2011, several pilot projects of gas cleaning system were implemented in the places of concern. The performance of such systems was monitored continuously throughout the year, the opinion of local inhabitants also taken into account. The sorption-plasma-catalytic air cleaning unit installed at sewage pumping stations is one example of such system.

- 05.** In 2011, for the purpose of implementing energy efficient technologies and equipment in the city sewerage system, Vodokanal proceeded with the design of the Central WWTP Modernization Project comprising the construction of digesters to produce biogas as a renewable energy source for the WWTP.



- 06.** In 2011, the first data collection phase of the project aimed to create the integrated automated sewerage management system in St. Petersburg was completed. One of the main objectives of this project is to improve the energy efficiency of the sewerage system in general.

- 07.** In 2011, to create comfortable and environment-friendly conditions for the city dwellers in the winter period, Vodokanal performed preparatory works for the design and implementation of "stationary snow disposal stations", or, simply, snow-melting stations. The project implementation will allow to decrease the burden on the municipal "snow dumps".





## DEVELOPMENT OF HYDRAULIC SIMULATION

AN ESSENTIAL PART OF WATER SUPPLY SYSTEM UPGRADING IS THE IMPROVEMENT OF WATER DISTRIBUTION SYSTEM.

Activities targeted to this task are performed by SUE "Vodokanal of St. Petersburg" in several directions:

- establishment of a zoning system, which provided for the creation of water supply zones in accordance with relevant catchment areas of St. Petersburg water supply plants;
- development and further improvement of hydraulic models of water supply zones and minor territorial units i.e. the water supply areas;
- establishment of water metering system, including installation of water metering systems on the network and upgrading commercial water metering systems of all customers, in order to provide the automatic data transmission into a single databank;
- renovation and replacement of pumping and other process equipment, including the establishment of the automated process control system and introduction of adaptive water supply control;

- valves and fittings replacement, equipment of the network and pumping stations with the advanced control valves, air release valves and valves to prevent water hammer;
- development of target programs and action plans on water network upgrading (including replacement of reinforced-concrete water conduits and steel pipelines without insulation).

**DECISION-MAKING CONCERNING THE NETWORK RECONSTRUCTION AND DEVELOPMENT OF ITS OPERATION MODE IS BASED ON THE MATHEMATICAL (OR HYDRAULIC) MODEL.**

The model allows to make multiple-option hydraulic calculations, particularly, to define the pipe sections with minimum velocity and overloaded sections, choose the most efficient remedy measures, calculate various water consumption scenarios, strategies of maintenance, renovation and construction of pipelines. An important aspect is a multilevel approach to the networks sections: the sections of particular importance, water conduits, a street distribution network and other units are detached.



DETAILED MODELS HAVE BEEN DEVELOPED AND ARE NOW ADJUSTED IN SOME OF THE ST. PETERSBURG DISTRICTS (VYBORGSKY, KURORTNY, KRASNOSELSKY).

A lot of work was performed on creation and application of such models in St. Petersburg.

Experience has shown that the applied hydraulic models of water supply network adequately reflect water distribution in the municipal water supply network and gives clear understanding about velocity modes and pressure distribution. Models are constantly used in operation of existing network and in drafting programs and plans for the development of water supply and distribution systems.

Application of the developed models to calculate the change of water quality during its distribution is a new approach in national practice. Such calculations and other simulation tasks require an enhance level of detalization of water supply models. A hydraulic model is an element of water supply management system. Calculation of hydraulic modes is performed on the basis of

the equipment performance and telemetering data. Calculation results serve as necessary addition to data obtained from metering devices. Comparison of calculated and actual data enables to characterize the network operation and get signals on emergency situations.

Vodokanal makes calculations of operating modes during minimal and maximal consumption hours, engineering calculations and simulation of water quality. Calculations are performed with the account of constant improvements provided by the Plan-Do-Check-Act cycle.

An important source of information about network condition and its operation is field measurements. Regular pressure and water flow measurements are executed in order to complement the information received from remote water metering and water pressure control systems.

# PATENT WORK

IN 2011, SUE "VODOKANAL OF ST. PETERSBURG" RECEIVED 11 PATENTS FOR INVENTIONS AND USEFUL MODELS. BESIDES, 16 PATENT APPLICATIONS WERE GIVEN AND 11 PATENTED TECHNICAL SOLUTIONS WERE IMPLEMENTED.

Cost benefit from the use of intellectual property in 2011 amounted to 119 mln. Rubles.

Main principles of SUE "Vodokanal of St. Petersburg" intellectual property policy are to:

- provide timely legal protection of intellectual property results in compliance with the intellectual property law (particularly, technical solutions as inventions and useful models, architectural-design solutions as industrial model);
- prevent the violation of the Company's exclusive rights on the intellectual property;
- plan and manage design works and/or development of services.

In 2011, the Company obtained, inter alia, the following patents for inventions: "Filtering Media Testing Device for Water Treatment", "Underground Modification of the Fire Hydrant", and patents for useful models "Geoinformation System", "UV- treatment Device for Liquids", "Two-bed Pressure Filter for Enhanced Water Treatment", "A Mobile Laboratory and Diagnostic Unit".

In November–December 2011, Vodokanal received resolutions from the Federal Agency for Intellectual Property concerning the issuance of another 8 patents, including the pat-

ents for useful models "Damper Stand-Pipe", "Metered Water Flow Stand-Pipe", "Device for Submerged Pump Installation" and others.

Upon the receipt of intellectual activity results it is essential further to introduce and use the patented technical solutions

Over 2011, 6 technical solutions were implemented including the useful models of "Waste-water Sludge Disinfection System", "A Stand-Pipe" and etc.

In 2011, Vodokanal carried out scientific researches and experimental-design works related to:

- search of promising water treatment methods,
- development of new technological equipment and equipment components in water treatment,
- search of promising wastewater treatment methods,
- development of new technological equipment in wastewater treatment systems and diagnostic equipment for wastewater transportation systems.



As a result, the following models were developed and passed testing successfully:

- Contactless UV-Disinfection Device for Local Potable Water Treatment Systems,
- Ejector Stand-Pipe Dispenser,
- Hatch of the Inspection Manhole Equipped with the Device Preventing Its Spontaneous Opening,
- Ozone Generator,
- Gas (Ozone) Disinfection Unit.

The obtained results were used in the process of development of "The Innovation Development Programme in Raw Water and Wastewater Treatment till 2015 for Water and Wastewater Companies in the North-Western Federal District".

In 2011, SUE "Vodokanal of St. Petersburg" took an active part in the events performed within the Intellectual Property Days. Particularly, Vodokanal held a research-to-practice conference "Innovations in Industrial, Housing and Communal Sectors. The Role of Intellectual Property Services in Sector Development". Branch of the Russian Agency for Patents and Trademarks in the North-Western Federal District awarded SUE "Vodokanal of St. Petersburg" a laureate diploma for the "Contribution to Intellectual Property Development" in the category of "Best Enterprise in Terms of Work Arrangement in the Intellectual Property Field among Civil Industrial Enterprises". American-Russian Business Union awarded two useful Vodokanal models—"Automatic Water Quality Control System at Water Treatment Plant" and "Water Intake Stand-Pipe Dispenser"—with the gold medals "Innovations for Investments in Future".

# IT DEVELOPMENT

## THE IT INFRASTRUCTURE OF VODOKANAL, A BIG ADVANCED WATER COMPANY, IS AN INTEGRAL INSTRUMENT TO SUPPORT ITS PRODUCTION, ECONOMIC AND FINANCIAL OPERATION.

Vodokanal's IT infrastructure is divided into the following levels:

- analytical superstructure—management reports (OLAP level);
- automation of economic/financial and auxiliary activities (ERP level);
- automation of production tasks (MES level);
- automatic control of equipment (SCADA level).

The main IT development actions are aimed at the building of the Unified Information System for the Automation of the Company Activities (UIS ACA).

### UIS ACA IS USED FOR EFFICIENT MANAGEMENT OF INFORMATION AND PROCESSES:

- the staff at all levels receive the necessary volumes of reliable and consistent information;
- creation of integrated information space;





- end-to-end data exchange between the UIS ACA subsystems and other data systems of Vodokanal;
- single input of data at the point of origin;
- integration with other Vodokanal's information systems.

In 2007-2008, the UIS ACA prototype based on 18 subsystems (over 40 software modules) was developed. In December 2008, acceptance tests of the UIS ACA prototype were carried out at the Water Supply Production Unit.

In 2009-2010, three UIS ACA subsystems were developed and put into full-scale operation: Customer Service Centre (IS CSC), Integrated Production Planning System, IS "Water Balance", IS to provide data about Vodokanal's untreated wastewater discharges



and Vodokanal's customers within the catchment areas of relevant discharges (IS "Direct Discharges").

IS CSC supports the unified database, which accumulates information about clients, their requests, permitting documents, contracts with clients, meter readings, charges, billing, payments and accounts receivable, that allows to improve the efficiency of customer service. Introduction of IS "Water Balance" enables to realize the whole cycle of business processes of main production operations (during 24 hours or more). It allowed to optimize and control on a daily basis the production volumes, consumption of chemicals, fuel for sludge incineration and electric energy. Two data processing centers (DPC) were built to support the systems, which were put into full-scale operation. A fail-safe cluster was launched on the basis of DPCs.

In 2011, the information systems—"Maintenance and Repair Management" (MRO IS), "Investment Activity Management" (IAM IS) and "Automatic Electronic Document Management System" (AEDMS) were prepared for pilot operation. Further on, these systems should allow to shift from emergency recovery operations to regular maintenance and preventive repair of equipment and water and wastewater networks, to increase the speed of planning and getting approvals of investment projects, give up paper document flow and speed up documents review.

Today, the automated billing system has been introduced in SUE "Vodokanal of St. Petersburg" for customers of the Southern Water Supply Zone. Metering readings are transmitted into the automated billing system from the

Single Data Base (SDB) by a batch method via prepared web-services.

In order to ensure data batch transmission into SDB of SUE "Vodokanal of St. Petersburg" the Oracle DBMS has been integrated by using Web Logic application to ensure transmission of information about attributes of the metering stations and metering devices (master data), as well as about metering stations operational modes (occurrence/termination of emergency situation) into SDB.

SDB receives metered values from devices equipped with distant reading system. IS of the Customer Service Centre, IS "Water Balance" and other systems of the Company receive remote readouts from SDB.





# DEVELOPMENT OF GEOINFORMATION SYSTEM

ASSETS OF SUE “VODOKANAL OF ST. PETERSBURG” COMPRISE 15,000 KM DISTRIBUTION SYSTEM, OVER 780 LAND PLOTS AND NEAR 1,700 BUILDINGS AND STRUCTURES LOCATED AT THE MAIN AND AUXILIARY PRODUCTION FACILITIES IN THE TERRITORY OF ST. PETERSBURG.

The use of advanced information technologies is of priority importance for the companies, which own a large number of property items.

To make decisions concerning operation, maintenance, control and design of networks and structures, it is required to have, apart from the property characteristics, the exact data on location and position of network and structures against the facilities of municipal infrastructure. It makes it necessary to develop and use special geoinformation technologies in assets management.

A geographic information system (GIS) can be defined as a complex of technology software and graphic information means designed to define location of Company’s facilities. GIS is a certain integrator of all processes distributed on the territory and process-related information systems.

SUE “Vodokanal of St. Petersburg” has developed its own geographic information system.

It is developed with consideration of the following tasks to:

- ensure information security in operation of engineering networks, provided that current configuration of the Company’s communications channels and the architecture of the local computer network remain unchanged;
- use the address system for St. Petersburg facilities in order to ensure direct access to the database;
- integrate GIS into existing and designed information systems of the Company as well as apply cartographic information in external software;
- use WEB technologies for arrangement of remote access to the database via mobile workstations and establish the navigation system using reference stations of the Company.



SUE “VODOKANAL OF ST. PETERSBURG” HAS DEVELOPED ITS OWN GEOGRAPHIC INFORMATION SYSTEM.

As a result, Vodokanal together with ZAO “NPO Baltros” have developed a geographic information system “Baltics” (IS “Baltics”).

GIS is a set of subsystems (modules) integrated into a single system based on MapInfo MapExtreme component, it allows to increase functionality of the system at a minimum cost, ensure relative independence of subsystems and their close integration in the operating mode. Basic services are realized in the medium, including access rights differentiation system, detailed recording of user’s actions and system events, notification services, user’s interface settings and automatic update of the programme. Program interface is performed according to Microsoft Office standards.

Apart from the software solutions, organizational activities were conducted to introduce GIS-technologies in Vodokanal, including:

- technical inventory of the network to define its exact composition and spatial location;
- development of means to update the network information upon its acceptance/ writing-off as well as completion of maintenance or emergency works;
- exchange of information with the governmental authorities of St. Petersburg;

- use of the city address system by the Company to provide a direct access to database and ensure interaction of the information systems;
- ensure information security while operating the engineering networks, and keep the configuration of the Company’s communications channels and the architecture of the local computer network unchanged.

To develop the cartographic database SUE “Vodokanal of St. Petersburg” concluded the data exchange agreement with the St. Petersburg Committee for Land Resources and Land Management, the Committee for Urban Development and Architecture and purchased the digital 1:10000 scale maps designed by “Sevzapgeoinform” Centre.

In compliance with the agreement concluded between SUE “Vodokanal of St. Petersburg” and the Committee for Land Resources and Land Management, the Committee submits to the Company on a monthly basis its actual cadastral plans. All cartographic information is updated once a month.

The Committee for Urban Development and Architecture and SUE “Vodokanal of St. Petersburg” submit the approved land surveys to IS “Baltics”.

Thematic information contains data on the Company’s engineering network.



In order to ensure continuous updating of the network data, Vodokanal has developed and introduced the primary inventory of the engineering networks, consisting of two stages:

- at the first stage, map of the engineering networks is developed on the basis of the existing as-built documents and other data;
- at the second stage, the company performs field check of the data accumulated at the first stage and mark on the map the location of the reference facilities (wells, covers or other above-ground elements) with the precision of 0.5 m.



Development of the technology and inventory of the networks were executed in close cooperation with the City Department for Inventory and Real-Estate Evaluation. As a result, during the period from the middle of 2005 to the middle of 2007, Vodokanal conducted the inventory of all water and sewerage networks and obtained the coordinate description of over 14,000 km networks with the precision of 0.5 min a local coordinate system.

In order to ensure continuous updating of the network data Vodokanal took actions to ensure the use of the information system in the technological processes during the whole life cycle of the networks.



IN ORDER TO PROVIDE FOR REMOTE OPERATION OF MOBILE WORKSTATIONS AND FACILITATE ACCESS TO THE CARTOGRAPHIC INFORMATION FOR VARIOUS TARGET-GROUPS OF USERS, IS “BALTICS” WEB-APPLICATION HAS BEEN DEVELOPED.

TODAY, THREE MAIN TRENDS OF GIS DEVELOPMENT IN SUE VODOKANAL OF ST. PETERSBURG CAN BE DISTINGUISHED:

- integration of the Company information system with the cartographic database;
- updating and extension of the primary cartographic base.
- development of interrelated information-computing tasks and models to support the network operation.

IS “Baltics” was designed, primarily, as a system to support production processes of SUE “Vodokanal of St. Petersburg”. Therefore, the range of its functions is always expanding to meet production and technical needs of the Company.

First of all, Vodokanal is improving on an ongoing basis the provision, to the Company’s technical departments, of information about network units and elements, including:

- input and modification of network inventory data;
- input and modification of network technical data;
- input and modification of the network technical condition;
- survey and report-making on the network inventory;

- survey and report-making on the network technical data;
- survey and report-making on the network technical condition;
- marking-up networks with various legends depending on their status (for instance, owned by the Company, to be taken on balance, writing-off, reconstruction, capital repair, owned by other entity, technical supervision) in order to ensure data input during the inventory;
- identification of priority facilities for maintenance and work planning;
- keeping records and making maintenance schedules.

The Company has developed a module of water quality control points connected with the relevant gate valve, a module of water network inspection and a register of booster pumping stations for its Water Supply Branch.

For the Wastewater Disposal Branch, the Company has established a specialized register of tunnel collectors, a register of discharges and a register of sewerage pumping stations. Vodokanal has developed modules for hydrodynamic flushing of sewerage networks, keeping records on flushing at sewerage network sections and register of clogging.

In order to increase the efficiency of data transmission to regular and emergency teams, Vodokanal ensured support of basic GIS functions at remote locations by using cartograph-

ic data, information about engineering network and its location. These functions include:

- displaying of the cartographic data at the working area (vector cartographic layers, scanned 1:500 scale maps of underground utilities, etc.);
- reception and displaying of graphical data about the network at the working area (location of pipelines, wells, valves and fittings);
- quick access to semantic data related to the network at the working area (characteristics of pipelines, wells, valves and fittings);
- definition of coordinates with at least 0.5 m precision by using differential mode to determine coordinates and displaying of location online on the cartographic background.

The teams have at their disposal the following equipment:

- equipment for satellite positioning of geodesic coordinates;

- equipment for connecting the data transmission channel with the data processing center (differential correction and data on the network units connections);
- computer to visualize cartographic information, input and accumulate graphic and attribute data.

In order to provide for remote operation of mobile workstations and facilitate access to the cartographic information for various target-groups of users, IS “Baltics” WEB-application has been developed.

Availability of the Internet navigation tool (for example, Internet Explorer) is required to access IS “Baltics” at workstations; no updating of basic cartographic layers and specialized software with supplementary licenses are required for that purpose. WEB-application allows to connect supplementary GPC devices and integrate into other information systems of the Company. Application of WEB technologies has provided an opportunity to increase the number of, IS “Baltics” users without any growth of the system-related costs and to ensure adequate functionality of the application and standard user interface.





## ENERGY-SAVING AND ENERGY EFFICIENCY PROJECTS

SUE "VODOKANAL OF ST. PETERSBURG" IS ONE OF THE BIGGEST ENERGY CONSUMERS IN ST. PETERSBURG. IN 2001, ENERGY CONSUMPTION OF THE COMPANY ACCOUNTED FOR 749 MLN. KWH.

Moreover, due to the implemented energy-saving projects Vodokanal managed to reduce its energy consumption almost by 40% for the last two decades.

It became possible because of reduction of potable water volumes supplied into the city, replacement of outdated equipment with the energy efficient solutions, the use of alternative energy sources (heat and electric power produced by sludge incineration) as well as activities implemented to establish St. Petersburg water supply management system.

SINCE APRIL 2011, VODOKANAL HAS CARRIED OUT COMPREHENSIVE ENERGY INSPECTIONS TO PREPARE ENERGY PASSPORT OF THE COMPANY AND DEVELOP ENERGY-SAVING ACTION PLANS TO INCREASE ENERGY EFFICIENCY OF ITS FACILITIES.

Energy inspections included the collection and analysis of energy data over the last 5 years and instrumental review of the Company's facilities. Vodokanal analyzed reasons and nature of failures of Vodokanal's energy equipment and developed measures to increase the safety of its facilities.

By July 2012, Vodokanal plans to adjust its energy-saving action plan aimed to increase energy efficiency of the Company's facilities, to complete the preparation of the energy passport and get the energy passport approved as

required by law. The energy passport will be valid for 5 years.

SINCE MAY 2011, VODOKANAL HAS BEEN DEVELOPING AND IMPLEMENTING THE ENERGY MANAGEMENT SYSTEM (HEREINAFTER, ENMS) UNDER ISO 50001:2011 "ENERGY MANAGEMENT SYSTEMS. REQUIREMENTS WITH GUIDANCE FOR USE".

In 2011, Vodokanal audited the existing energy management system for compliance with ISO 50001:2011, conducted the training for its personnel with regard to requirements and principles of EnMS development and implementation, drafted EnMS documents, including the draft of "Guidance to Energy Management System. General Provisions", "Energy Assessment Procedures" and "Planning of Energy Management Activities", improved the integrated procedures of the Company in line with EnMS requirements, developed the draft of SUE "Vodokanal of St. Petersburg" Energy Policy.

Since January 2012, Vodokanal has started the introduction of EnMS in its three main branches (Water Supply Branch, Wastewater Disposal Branch and Transport and Logistics Branch). In the first half of 2012, Vodokanal plans to organize training, competence assessment and study course for the Company's internal EnSM auditors, followed by preparation to Vodokanal EnSM certification.





# SOCIAL RESPONSIBILITY

## AWARENESS BUILDING

UNDERTAKING ITS MISSION, VODOKANAL PLACES SPECIAL EMPHASIS ON DEVELOPING CAREFUL AND RESPONSIBLE ATTITUDE TOWARDS WATER RESOURCES AND ENVIRONMENT IN GENERAL.

The recent years' stable trend towards reduction of water consumption is, in particular, the result of Vodokanal's awareness building efforts.

For the purpose of disseminating the culture of water use and developing environmental thinking Vodokanal widely cooperates with mass media and uses the potential of different Internet-resources. In 2010, the Internet-portal [www.da-voda.com](http://www.da-voda.com) targeted for the active

part of Internet community was launched with the support of Vodokanal. The principal character of the Portal—the Neva Crayfish—has its own pages in social networks.

The key instruments of the Company's awareness building activities are the Youth Environmental Center (YEC) and "The Universe of Water" museum complex—both being part of the Information and Training Center branch.

## THE YOUTH ENVIRONMENTAL CENTER

THE YOUTH ENVIRONMENTAL CENTER WAS CREATED IN 2002, AND SINCE THAT TIME MANY HUNDRED THOUSANDS OF CHILDREN HAVE PARTICIPATED IN ITS LESSONS, PROGRAMS AND PROJECTS.

One of the key targets of YEC is distribution and promotion of importance of the environment and water resources protection, defining a vision about Vodokanal Petersburg activities and its impact on the city development among the younger generation, dissemination of sustainable development ideas and urgent questions of the modern world.

In 2011, the Youth Environmental Center was reconstructed. Two thematic halls were created: "Hall of the First Discoveries" for kids (from 4 to 9 years old) and "The Baltic Sea Hall" for school children and students.

The renovated YEC halls are equipped with modern instruments widely used for interactive programs and activities.





Each hall has advanced multimedia devices (touch panels, interactive boards, etc.) and laboratories. Dozens of various animation videos and video films about water properties, waterworks and wastewater treatment plants operation, the Baltic Sea and its inhabitants were prepared specially for new programs of the Youth Environmental Center. All this made the educational process more effective and fascinating.

Waterdrop, the main YEC character, meets kids in "The Hall of First Discoveries". It helps them to find out how dew, snowflakes and rain drops are formed. Besides, there is also a ship here waiting for kids to set on an imaginary journey over the Baltic Sea.

In the children's laboratory of the Youth Environmental Center young guests can conduct their first tests, watch Paramecium caudatum and other microorganisms via microscope.



YEC specialists have developed new environmental and educational interactive programs for the groups of different age, series of new brain educational games, particularly for computer medias; the scenarios of educational films have been written, the series of tutorial experiments have been developed, new training materials have been prepared and the rest of them have been updated.

NEW INTERACTIVE PROGRAMS, INCLUDING "WATER ON EARTH", "WATER IN EVERYDAY LIFE", "MYSTERIES OF NATURE", "THE SEA NEARBY", "SECRETS OF THE BALTICS", "THE CITY BY THE SEA", AND PROJECTS AND ACTIVITIES FOR CHILDREN AND YOUNG PEOPLE FROM 4 TO 17 YEARS OLD HAVE BEEN PERFORMED IN THE RENOVATED HALLS OF YEC.

In interactive programs new resources of the halls are used: a video film "The Baltic Nature"

is demonstrated with stereo and holographic effects and with 3D-animation (about 40 representatives of the Baltic fauna were drawn in 3D format in the process of its creation), a game table with the touch panel, an electronic encyclopedia of the Baltic Sea inhabitants, video quizzes with the electronic voting system, etc.

Throughout the year the Youth Environmental Center paid a lot of attention to the project activity involving children from pre-school up to high-school, as well as students, teachers and families. In 2011, a special attention was paid to reducing the human impact on the Baltic Sea, rational water consumption and advanced water treatment technologies.

Among the significant projects implemented in 2011 the Youth Russian-Finnish Project "Water, Russia, Finland—Outlook of the Young!" should be mentioned, as it united young people from St. Petersburg and Turku (Finland) around the idea of saving the Baltic Sea. Project results were presented by its members to the President of Finland Tarja Halonen during her visit to St. Petersburg in June 2011.

In 2011, the International Advanced Water Technologies Center, created by SUE "Vodokanal of St. Petersburg" and Lahti Science and Business Park (Finland), was opened. Over 2011, more than 600 school children and students were trained in the YEC. Within the framework of this relationship study visits of school children from St. Petersburg to Lahti (Finland) and from Lahti to St. Petersburg were organized.

FOR THE FIRST TIME THE INTERNATIONAL PROJECT FOR KINDERGARTENS AND FAMILIES WITH THE PRESCHOOLERS "WATER + MYSELF = FRIENDS!" WAS IMPLEMENTED.

The project involved families from St. Petersburg, Russia's regions, Finland, Ukraine, Belgium, Latvia and Japan. In the course of the project children were taught to care about water at home. As a result the book "Letters to Waterdrop" was published; it comprised creative works of participants and teachers' guides.

From 2009 till 2011, under the project for elementary school "One Drop Saves Another!" children and their parents conducted a water use survey in their families, developed and implemented a water saving plan.

A new initiative of the specialists from YEC and professional school No.89 was a collaborative program, aimed to raise the environmental culture level of the professional school students. The program comprised workshops on urgent environmental topics and efficient training methods for teachers and foremen, interactive lessons in the YEC for students and model lessons.

Along with the projects focusing on the rational water use problems the Youth Environmental Center promotes the sustainable development ideas, power saving and efficiency, considers topical problems of the modern world. YEC permanently participates in municipal and international festivals, events and holidays.



One of the YEC activities is work with youth core groups. High-school core group representatives participated in interactive programs and projects of the Youth Environmental Center. Having got new knowledge and skills, young people arranged and held a series of activities, projects and programs for children of their age and junior school children in their own and other educational institutions of the city. The youth core group represents environmental and educational activity of Vodokanal on the regional and international level as well. More than 20 key events were arranged and held in 2011 with the involvement of the YEC youth core group.

In 2011, the YEC youth core group participated in the XII International Environmental Forum "The Baltic Sea Day". YEC contribution to the environmental education of the coming generation and reducing the load on the Baltic Sea was awarded a Forum Diploma.

YEC took part in arrangement and conduction of the International Program of the high school children education "UN Model", the certified program of UN Hague Model (it is held in 90 countries of the world).

YEC specialists also helped to arrange and hold interactive programs for children and families at the "International Tea and Coffee Festival" and at municipal thematic holidays "Viva Water!".

Those children, who visited YEC trainings or participated in its projects and programs, promote the ideas of solicitous attitude to nature and water in their families.

THE TOTAL NUMBER OF PARTICIPANTS OF ALL YEC PROGRAMS, PROJECTS AND ACTIVITIES IN 2011 WAS 31,528 PEOPLE.

According to the results of the target group questionnaire, satisfaction with the Youth Environmental Center operation in 2011 was 97%.

# MUSEUM COMPLEX THE UNIVERSE OF WATER

215,769 PEOPLE VISITED THE UNIVERSE OF WATER IN 2011. IT IS 6.6% MORE THAN IN 2010 (THEN 202,408 PEOPLE CAME TO SEE THE MUSEUM).

The Universe of Water museum complex in 56 Shpalernaya str. is an open social project of SUE «Vodokanal of St. Petersburg». The museum complex not only offers the full picture of the man's views of water and its properties, but also shows the history of St. Petersburg, the city where water is a city-forming essence and the source of scientific, engineering and cultural achievements rather than just something that is used for household or industrial needs.

The museum complex comprises three exhibitions:

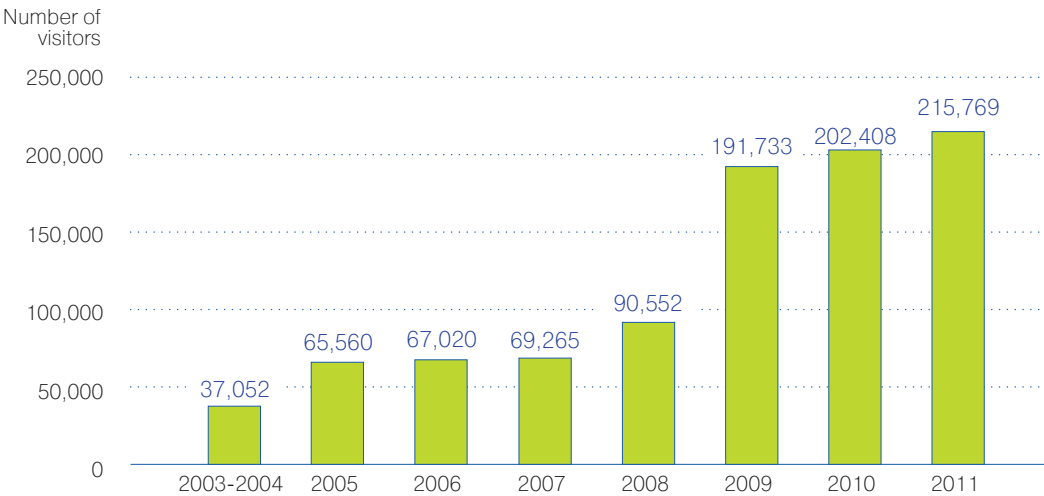
01. CLASSICAL MUSEUM EXHIBITION THE WATER WORLD OF ST. PETERSBURG (IN THE OLD WATER TOWER)

The exhibits—documents, pictures, objects, collections of sanitary equipment and hatch- es—show the history of water supply and sewerage origination and development.

02. MULTIMEDIA EXHIBITION THE UNDERGROUND WORLD OF ST. PETERSBURG (IN THE LEFT ANNEX TO THE WATER TOWER)

Visitors can trace the route of water from the intake to treatment plants, then to the flats via distribution networks and back to the treatment plants. Here, they can also look at a gigantic model of the historical center of St. Petersburg. The model was produced by the Institute of Architecture to Vodokanal's order.

## VISITORS OF THE MUSEUM COMPLEX



03. MULTIMEDIA EXHIBITION THE UNIVERSE OF WATER (IN THE FORMER UNDERGROUND CLEAN WATER RESERVOIR)

It is a unique storage of modern water knowledge. The exhibition is based on multimedia technologies, stereo effects and textual explanations. Over three dozen video-films disclosing various aspects of the water element are demonstrated here.

The exhibition in the Water Tower was opened in 2003—it was Vodokanal’s present on the

occasion of the 300th anniversary of St. Petersburg. The former clean water reservoir was transformed into The Universe of Water museum in 2008 when Vodokanal St. Petersburg celebrated its 150th anniversary.

The Water Universe offers novel interactive programs for visitors of different age groups. Interactive programs are developed for preschoolers and schoolchildren, general and various thematic excursions are offered to students and adults.

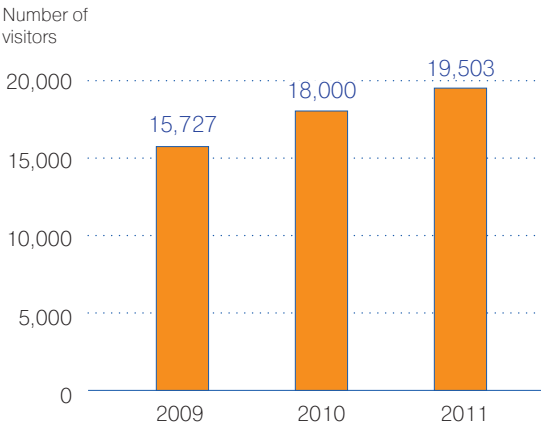


Museum complex “The Universe of Water” is a permanent participant of the international event “Museums at Nights”. Participation in this event helps draw also attention of those people who are not regular museum visitors. 10,210 people saw the museum complex exhibitions over the museum night in 2011.

From 28 October till 13 November 2011, during the autumn school holidays the museum complex took part in the *city festival of children’s museum programs “Children’s Museum Days in St. Petersburg”*.

The peculiarity of this event is independent work of children and their parents with a route map. Thus, its participants become not only passive listeners but researchers, who make their own discoveries in the world of water.

VISITORS OF THE “CHILDREN’S MUSEUM DAYS” FESTIVAL



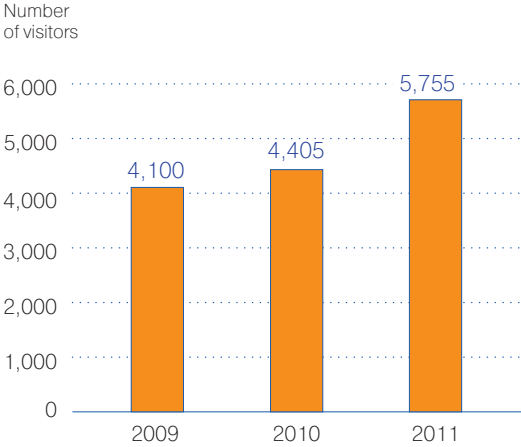
The record number of visitors—19,503 people—attended the museum complex during this event in 2011.

In 2011, the following temporary exhibitions were organized on the museum complex premises:

- the exhibition of contemporary Baltic artists “The Sea Unites the Countries, It Separates”;
- the exhibition of painted art-objects and paintings “Four Elements”;
- the exhibition by Natalia Rumyantseva “Immersion”;
- the exhibition of the author’s art dolls “Living Water of the Canals and Rivers of St. Petersburg”;
- the IX corporate exhibition of creative works by Vodokanal St. Petersburg employees “The Power of Life”, where 60 participants presented over 200 works.



VISITORS OF NEW YEAR'S INTERACTIVE PROGRAMS



At the end of December, 62 New Year's interactive programs for Vodokanal employees' children and schoolchildren of the city were held. 5,775 children participated in them.

In 2011, the museum complex "The Universe of Water" hosted the following events:

- Musical evenings with participation of the people's actor Vasily Gerello, the soloist of Mariinsky Theatre Olga Pudova, the International symphony orchestra of Tavricheskaya Capella.
- Evening meetings with the people's actor of the USSR V.S. Lanovoy and the people's actor V.I. Gaft.
- The evening "To the Memory of Master" dedicated to P.S. Velyaminov with participation of the people's actor of Russia Svetlana Kryuchkova, the people's actor of Russia Sergey Migitsko, the people's actor of Russia Vladimir Tatosov, the people's actor Ivan Krasko, the people's actor of Russia Boris Smolkin, the honored actress of Russia Taisia Kalichenko and the singer Elena Vaenga.

WEBSITE DA-VODA

THE INTERNET PORTAL WWW.DA-VODA.COM CREATED WITH THE ASSISTANCE OF VODOKANAL ST. PETERSBURG IS DEDICATED TO WATER AND CAREFUL ATTITUDE TO IT. WITH THIS SOCIAL PROJECT VODOKANAL COULD INVOLVE ACTIVE INTERNET USERS IN ITS AWARENESS-RAISING ACTIVITIES.

The key themes of Da-Voda Portal are:

- exhaustibility of water resources;
- protection of the Baltic Sea from pollution;
- how to handle water with care.

The main character of the Portal is the Neva Crayfish: at his video-lessons he tells, for example, how to install a water meter in your flat in a proper way.

The special section "Gadgets" contains information about different devices that can reduce water consumption (without impairing your comfort) and evaluates their pros and cons. The Portal visitors will learn how much water can be saved by using infrared sensor mixing faucets; why spray nozzles should be used; what shower meters are, etc.

One of the most popular sections of the website is "Da-Voda TV": videos about the ecology of water bodies in the North-West Region.

Da-Voda Portal is the initiator and active participant of the city's environmental campaigns. In 2011, garbage removal actions were organized and held at the lakes and river banks with the support of the Portal.

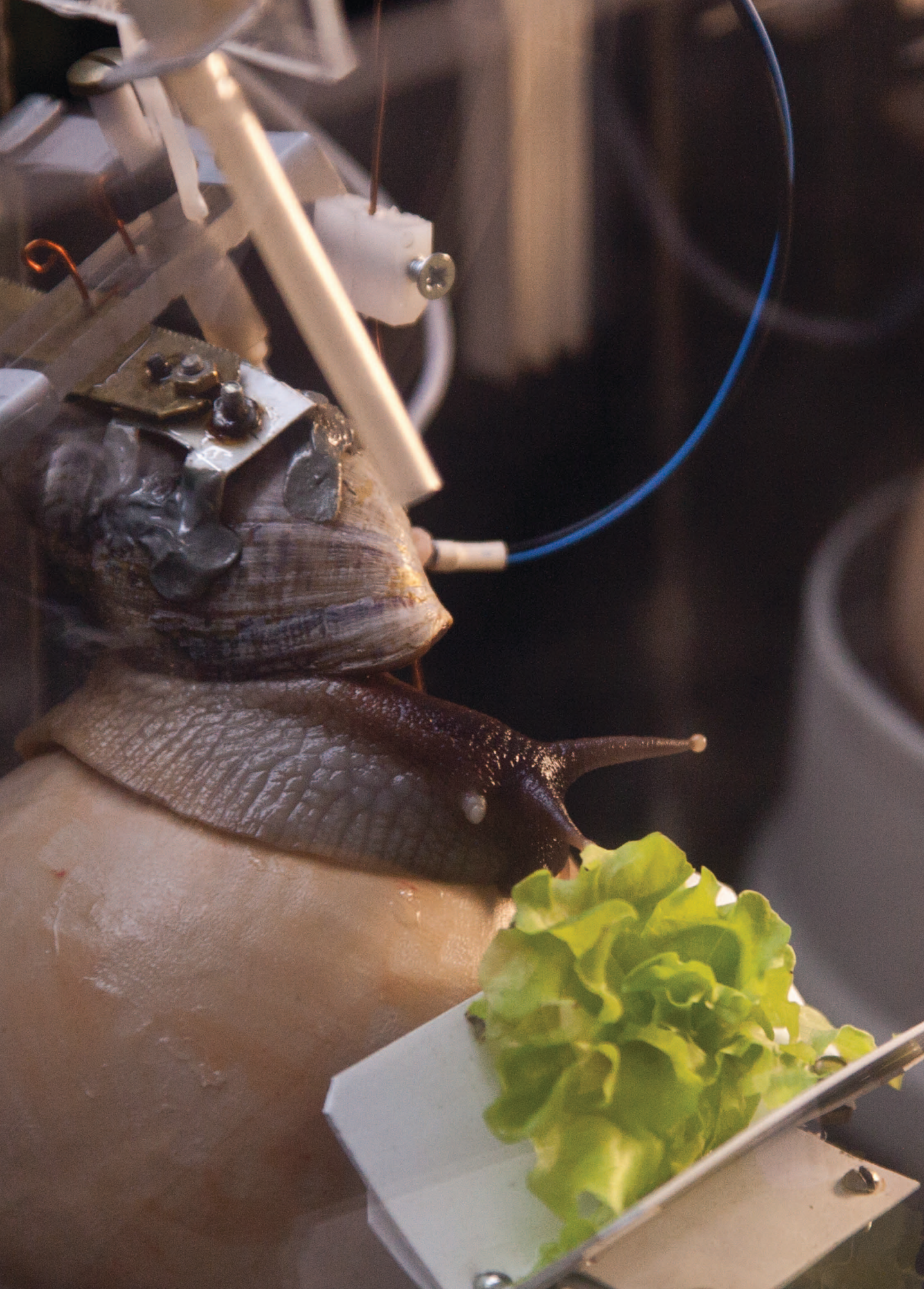
Furthermore, a new flash-game "The Neva Crayfish against Garbage" appeared on the Portal in 2011. The scene of the game is St. Petersburg—the motherland of the Neva Crayfish. The user task is to help the main character of the website collect all the garbage thrown into the Neva by careless citizens and guests.

Regularly, the Portal posts interviews with well-known people who have something to tell about careful attitude to water. In 2011, the "guests" of Da-Voda Portal were Neville Spiteri, the Hollywood special effects director, actors from "Univer" TV serial, TV presenters Anton Komolov and Olga Shelest, the most "Russian Finn"—actor Ville Haapasalo, the engineer Andre Laban, former companion of Jacques-Yves Cousteau, and others.

In December 2011, the Internet Portal da-voda.com became the winner of the prestigious international contest in the field of public relations—PROBA-IPRA Golden World Awards-2011 in the nomination "Best Social PR Project".

In 2010, the Portal won the Russian National Runet Award in the nomination "Health and Recreation".





# ENVIRONMENT PROTECTION AND LABOUR SAFETY

## ENVIRONMENT PROTECTION

PROTECTION OF THE ENVIRONMENT AND THE BALTIC SEA, RATIONAL USE OF NATURAL RESOURCES AND RESPONSIBILITY FOR THE RESULTS OF THE COMPANY'S ACTIVITIES BEFORE FUTURE GENERATIONS HAVE BEEN STATED AMONG THE KEY PRIORITIES OF SUE "VODOKANAL OF ST. PETERSBURG" AND COM-  
PRISE ONE OF THE STRATEGIC TARGETS OF THE COMPANY.

Vodokanal's environmental concept is based on understanding its role to ensure a positive environmental situation in the whole Baltic Sea Region. A key international line of leader's activity provides for participation in public and intergovernmental structures of the countries of the Baltic Region, particularly, in terms of the International Convention of the Helsinki Commission—Baltic Marine Environment Protection Commission (HELCOM).

Taking into account the Company's responsibility for the sustainable development of the city and the Baltic Sea Region and considering the approaches applied in the environmental management and the experience of similar European companies, in 2000, Vodokanal's management made a decision to implement the environmental management system in accordance with ISO 14001. In 2003, the environmental management system was certified in the national company Russian Register Certification Association and the international company SAI Global.

Starting from 2003, Vodokanal's environmental policy was revised in 2008 and 2011 (since a considerable part of commitments specified therein were fulfilled).

During 2011, Vodokanal continued a successive implementation of the environmen-

tal management system as an essential part of the Company management while studying current and future needs of all stakeholders, developing water consumption culture and contributing to preservation of the Baltic Sea basin.

In 2011, the following strategic targets in terms of the environment protection were updated:

- Improvement of the ecological state of water bodies and the environment (decrease of the environmental load on the water bodies of St. Petersburg, the Gulf of Finland and the Baltic Sea; reduction of landfill areas used for wastewater sludge storage, closure of untreated wastewater and flush water discharges).
- Increase of energy efficiency of the water supply and wastewater disposal facilities, implementation of resources and energy saving policy (plants renovation, implementation of the power consumption mode control system, implementation of the power management system in compliance with ISO 50001).
- Development of the water consumption culture and environmental consciousness.



Our target in terms of the environment protection is to apply the best practices and technologies, create conditions for sustainable development of not only our city but the whole Baltic Sea Region.

IN 2011, VODOKANAL CARRIED OUT THE FOLLOWING ACTIVITIES IN THESE DIRECTIONS:

01. The next stage of a large-scale program of untreated wastewater discharges closure was completed. Wastewater from small WWTPs was connected to the Northern Wastewater Treatment Plant (NWWTP); direct discharge points at Arsenalnaya and Vyborgskaya Embankments were eliminated (the wastewater is now channeled to NWWTP for treatment). As a result 94% of wastewater will be treated in St. Petersburg.

02. In June 2011, HELCOM requirements to phosphorus content in the discharged wastewater were completely fulfilled. Phosphorus content in St. Petersburg wastewater is under 0.5 mg/l, even with regard to the waste-

water discharged directly into water bodies. Such a figure could be achieved by reaching a level of 0.3-0.4 mg/l phosphorus in effluent at the main wastewater treatment plants.

Along with implementation of the enhanced phosphorus removal from wastewater, Vodokanal dealt with the problem of eliminating another nutrient—nitrogen—from wastewater.

03. Another achievement was the implementation of wastewater sludge utilization technology. St. Petersburg was the first city in the world to solve the problem of wastewater sludge utilization. Now, three sludge incineration plants are in operation in the city. One of them, located at the South-West Wastewater Treatment Plant is equipped with the flue gas biomonitoring system, which uses snails.

04. The energy management system is based on a complex of activities, aimed at energy metering automation, identification and elimination of irrational use of energy. Vodokanal St. Petersburg pays a special attention to the energy efficiency problems. Among the key energy saving projects implemented in



Vodokanal, the use of energy produced in the course of wastewater sludge incineration and establishment of the water supply management system should be mentioned.

05. To alleviate the negative environmental impact of sludge landfills, since 2010, we have been implementing the first phase of sludge landfills reclamation at Severny Landfill near the village of Novoselki. The methods of chemical treatment and stationary dewatering of wastewater sludge in geo-tubes has been used for decreasing the hazard class and sludge volume, and removal of odor. Reduction of pollutants emission is achieved by reducing area of the sludge landfills.

Vodokanal educational activity contributed to the achievements as well. The Company has the Universe of Water Museum and the Youth

Environmental Center (more detailed information see in "Awareness Building" section).

"St. Petersburg has done a lot to improve its image. The history of the city success proves that political will and motivation are very important when environmental law requirements are not enough, and more strict measures should be taken. In terms of harmful discharge reduction, St. Petersburg reached higher results than stipulated by the Russian and European norms",—states Anne Christine Brusendorff, the HELCOM Executive Secretary.

Moreover, the President of Finland Tarja Halonen noted in June, 2011 that St. Petersburg met more strict requirements compared to those applied by EU countries, and identified Vodokanal's projects as "encouraging environmental practice".

INDICATORS OF POLLUTANT DISCHARGES TO ST. PETERSBURG WATER BODIES

Indicator	Unit	2006	2007	2008	2009	2010	2011
Flow of wastewater discharged through public sewerage systems into water bodies	Mio.m <sup>3</sup> /year	1,026.1	1,023.6	1,034.6	970.4	952.1	931.6
Mass of suspended solids discharged into water bodies	t/year	20,535.0	19,418	21,845.4	15,826.9	14,120.8	13,706.9
Mass of BOD discharged into water bodies	t/year	26,860.2	26,074.3	28,627.3	18,718.2	17,677.9	15,635.6
Mass of total nitrogen discharged into water bodies	t/year	11,282.1	11,037.3	11,048.2	10,729.6	10,003	10,048.6
Mass of total phosphorus discharged into water bodies	t/year	1,576.7	1,269.7	1,177.8	759.9	677.7	492.4
Total pollutants emission into the atmosphere	t/year	4,468	4,555.7	4,538.2	4,653.9	4,790.0	3,952.0

# LABOUR SAFETY

## VODOKANAL'S OCCUPATIONAL HEALTH & SAFETY MANAGEMENT SYSTEM DEVELOPED IN ACCORDANCE WITH THE REQUIREMENTS OF THE INTERNATIONAL STANDARD OHSAS 18001-2007 AND APPLICABLE RUSSIAN LAW GUARANTEES THAT IDENTIFIED RISKS ARE UNDER THE CONTROL OF THE COMPANY.

The main purpose of the Company's occupational health and safety policy (updated in June 2011) is no occupational accidents and the creation of necessary conditions at workplaces to achieve high performance results, the complexity of production, the diversity of applied technologies and equipment being taken into account.

Employees of SUE "Vodokanal of St. Petersburg" and all stakeholders (contractors, visitors) are informed about the Company's occupational health and safety policy.

The effective operation of OHSAS at SUE "Vodokanal of St. Petersburg" provides also for the employee's health safety management. Programs for disease prevention and health improvement of employees, monitoring of working conditions and health of employees, as well as monitoring of efficiency of the taken measures have become an important element of OHSAS.

The monitoring system includes:

- monitoring of working environment (assessment of sanitary and hygienic working conditions, organization of labour and maintaining favourable social-psychological environment at work);

- monitoring of health status of employees (health survey for the detection of early symptoms of diseases, biological monitoring, polling of employees).

The international audit carried out in November 2011 confirmed that OHSAS at SUE "Vodokanal of St. Petersburg" operated in compliance with the requirements of OHSAS 18001-2007.

In 2011, in order to ensure safe working conditions, 1048 workplaces were certified for working conditions in the Vodokanal structural subdivisions. On the basis of certification results, action plans to improve working conditions (ensure safe working conditions) of the employees in the Company's structural subdivisions. Upon the results of workplace certification, 48 actions were carried out to ensure safe working conditions for Company employees. During 2011, regular checks to meet labour safety requirements were carried out in subdivisions. Over the review period, 463 violations of health and occupational safety requirements were corrected.

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During 2011, SUE "Vodokanal of St. Petersburg" carried out as a part of the Occupational Health & Safety Management System the following activities:

- working conditions at ten company production facilities were improved due to the introduction of new, safe practices and advanced technologies that ensure reliable and failure-free operation., as well as reduce the rate of injuries and professional diseases;
- monitoring the assessment of safe working conditions at 1,048 workplaces was organized and carried out based on instrumental measurements of hazardous and harmful production factors;

- it was ensured that 100% of employees had personal protective equipment;
- training and knowledge testing of 6,837 company employees in occupational health and safety was carried out.

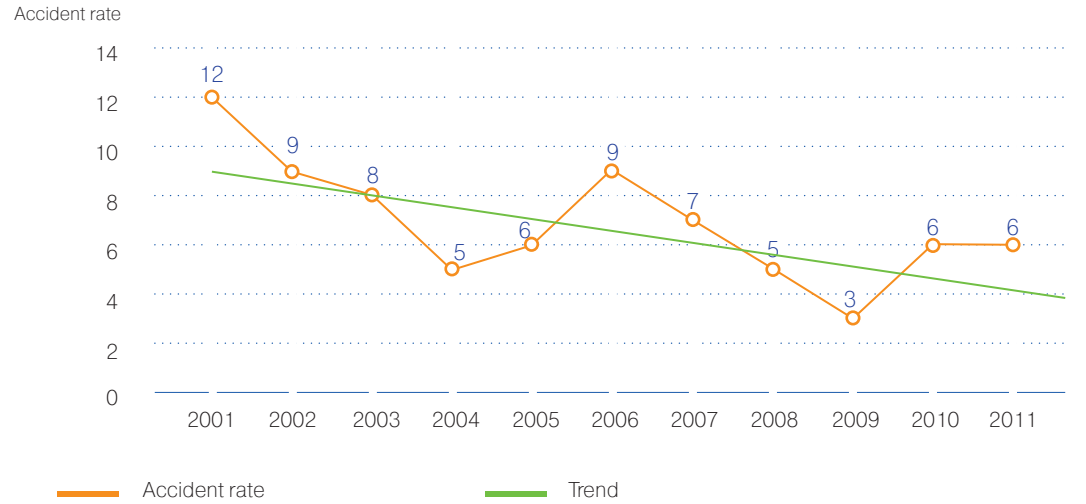
Accident prevention allowed to ensure the following core indicators in the Company:

- the number of insurance events per 1000 employees (Vodokanal's average is 0.69; industry average is 1.51);
- the number of days of temporary disability per one insurance event (Vodokanal's average is 87.8; industry average is 73.23).

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SOCIAL RESPONSIBILITY // ENVIRONMENT PROTECTION AND LABOUR SAFETY

### ACCIDENT RATE BY YEARS





## PERSONNEL POLICY

THE STAFF OF VODOKANAL NUMBERED 9,173 PEOPLE AS OF 31.12.2011.

The average age of employees is 42.9 years. 34% of Vodokanal employees have a higher or incomplete higher education. In 2011, the employee turnover in Vodokanal was 9.11%.

Work with the personnel in Vodokanal is built in accordance with the personnel management strategy and policy.

The strategic goals of the Company in personnel management are:

- increasing of the personnel deployment efficiency,

- improvement of the personnel development system,
- preservation and development of the company human resources,
- increasing of the company personnel satisfaction.

Vodokanal's personnel management policy is aimed to implement these goals.

Personnel management work is based on the process approach.

## ADAPTATION AND TUTORSHIP

AN IMPORTANT AREA OF WORK WITH THE PERSONNEL IS TO PROVIDE FAST ADAPTATION OF THE NEWLY EMPLOYED BY VODOKANAL FOR THEIR PROFESSIONAL DEVELOPMENT, OPTIMIZATION OF ENTERING TRAINEES INTO THE COMPANY SOCIAL ENVIRONMENT.

The hands-on training and adaptation process is conducted in accordance with an individual plan, which the leader develops taking into account the education and specialized training of the newly employed. In 2011, 1615 persons went through adaptation procedures. Organizing "Welcome to Vodokanal" festive events has become a good

company tradition. In 2011, three such events were held. The newly employed got a possibility to ask questions, get information on the career development in the Company, social programs and visit the museum complex "The Universe of Water". At the event the employees were handed the Company's badge.

# INNOVATIVE CONTRIBUTIONS OF THE PERSONNEL

In 2011, the Company held a contest for the best innovative project in the personnel management. The aim of the contest was to find new promising technologies and solutions in the field of personnel management.

23 innovative projects were submitted. According to the contest results the winners and all participants were given diplomas and cash bonuses. The best project ideas will be put into practice by Vodokanal St. Petersburg.

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SUE "VODOKANAL OF ST. PETERSBURG" // SUSTAINABILITY REPORT 2011

# PERSONNEL RECRUITMENT, MOTIVATION AND APPRAISAL

Personnel recruitment is performed in compliance with the Company standards "Labor Market Research" and "Recruitment and Employment Procedures" both in the internal and external labor markets.

Personnel recruitment is performed based on applications prepared by heads of business units. The application includes selection criteria for candidates i.e. qualification requirements. To fill vacancies, first of all, candidates are selected from the Company's succession pool. To search for and select candidates the internal labour market has been created that is supported by the Company's information system.

Modern HR-technologies are used to search for, and select candidates through Internet resources, specialized publications, employment services, interviewing, case studies and comprehensive candidate appraisal.

Personnel appraisal is made in accordance with the Vodokanal's standard "The Personnel Appraisal System". 245 people were involved in the appraisal activities in 2011.

44 junior managers underwent training on the topic "Job performance management and personnel efficiency assessment". The training was conducted in cooperation with the School of Management Skills.

# PERSONNEL SATISFACTION SURVEY

In 2011, the personnel satisfaction survey based on the satisfaction index analysis, loyalty and commitment was not performed. It was decided to conduct the survey in the first half

of 2012. In 2011, results of the action plans aimed at increasing personnel satisfaction were analyzed; the survey questionnaire was updated and supplemented.

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SOCIAL RESPONSIBILITY // PERSONNEL POLICY

# PERSONNEL TRAINING AND DEVELOPMENT

Personnel development management is made through competence management.

Competence models and performance indicators have been determined for the positions in the succession pool and positions assessed in 2011.

Work with the Company succession pool is carried out in compliance with the standard "Work with Succession Pool".

At present, Company "key positions" are selected. Current succession pool has been identified, which includes employees who act for the supervisors during their absence, as well as prospective employees, namely, specialists and chiefs for certain "key positions".

Besides, a group of talents has been sorted out of the personnel reserve, which includes employees with the highest development potential. In order to develop manager competences and leadership potential, 32 employees from the group of talents were trained at the School of Succession Pool. A group of 10

internal tutors was trained to support the application of knowledge and skills acquired by the group of talents in everyday practice.

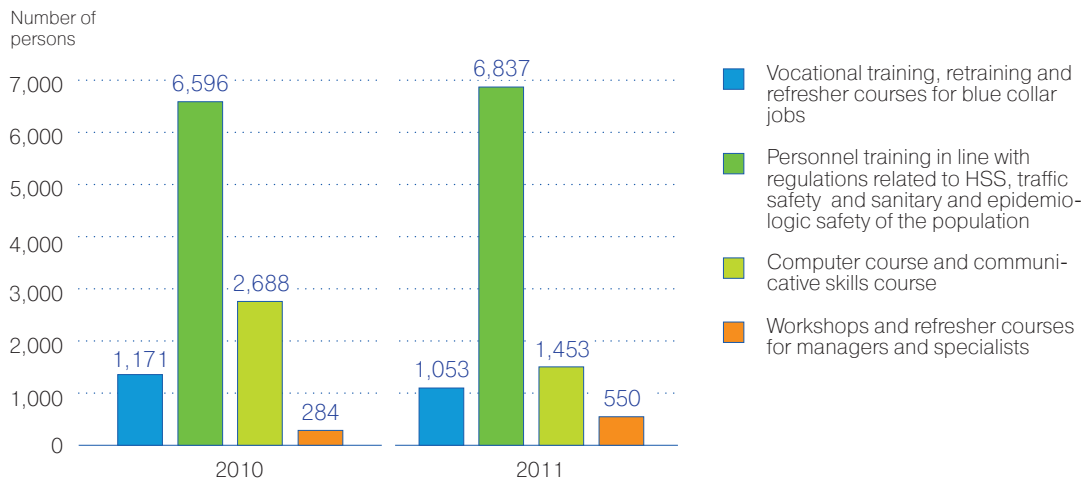
The succession pool ensures the continuity of management and reduces the risk of losing control over the Company in the transitional period of changing the Company top-management.

Vodokanal provides the continuous training system "From Worker to Manager" in accordance with the personnel management policy. 9,893 trainees participated in the training programs in 2011 (Vodokanal employees may take several programs in one year). 1,053 company employees were trained in 2011. The training was related to vocational preparation, retraining and refresher courses for blue collar jobs, including 816 people from the Professional School No. 89.

6,837 employees underwent training on health and occupational safety, road safety and sanitary and hygiene regulations for the population.



NUMBER OF TRAINEES AND TYPES OF TRAINING



1,453 people took computer course and communicative skills course.

550 people attended workshops and refresher courses for managers and specialists, and 275 of them underwent training on the topic "Advanced Water and Wastewater Technologies" under the training programme organized

by the International Advanced Water Technologies Centre.

The main ways to implement training activities are internal training programmes and external training (procurement of educational services), as well as implementation of partnership educational projects.

PROFESSIONAL SKILLS CONTESTS

A special form of training activities and personnel development is professional skills contests that make it possible to achieve and maintain a high professional personnel level, ensure dissemination of advanced and innovative techniques and methods of work, as well as provide employees with access to knowledge and experience gained in the Company.

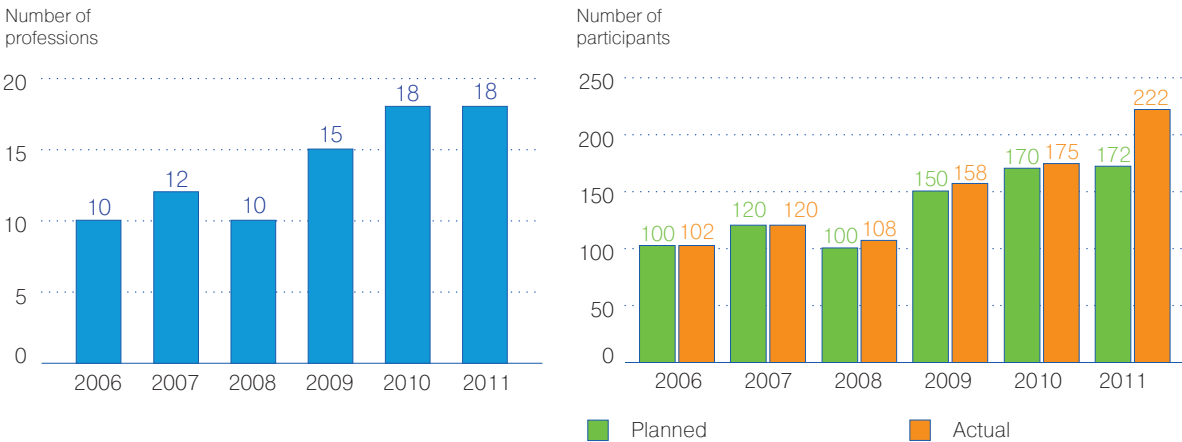
In 2011, Vodokanal held 18 final professional skills contests "Best Professional", where 222 persons participated. That figure has been a record-breaking indicator since 2006.

High professional level of the Company's workers is evidenced by Vodokanal workers success in interdisciplinary professional skill

contests, including the contest "Best Professional" held among the workers of St. Petersburg public utilities, the contest "Best Professional" held among the workers of public

utilities in St. Petersburg and Leningradskaya Oblast, the contest "Stroymaster 2011", as well as the contest within the framework of the exhibition "Russian Industrialist".

PARTICIPATION IN PROFESSIONAL SKILLS CONTESTS "BEST PROFESSIONAL" IN 2011



CORPORATE MEDIA

Since 1999, Vodokanal has been publishing its corporate newspaper "Vodokanal News". The newspaper is published 10 times a year with circulation of 4000 copies. The corporate newspaper not only informs the Company employees about events taking place in Vodokanal but also makes it possible for employees to congratulate their colleagues with important dates, exchange views on topical issues, etc. In 2011, the corporate newspaper paid a lot of attention to Vodokanal's activity related the Baltic Sea protection. Interviews with chief experts, for instance, the Director of St. Petersburg Research Center for Ecological Safety

Vladislav Dochenko, Chairman of the Board of the John Nurminen Foundation (Finland) Juha Nurminen, representatives of the Baltic Sea Foundation, were published in the newspaper. On the company corporate website [www.vodokanal.spb.ru](http://www.vodokanal.spb.ru) the newspaper is placed in electronic form. In 2011, another Company Internet resource—the museum complex website ([www.vodokanal-museum.ru](http://www.vodokanal-museum.ru)) continued to be developed. In 2011, the new Company Intranet Portal [vodokanal-info](http://vodokanal-info) was launched.





# SOCIAL POLICY

SOCIAL POLICY OF VODOKANAL ST. PETERSBURG IS A PART OF PERSONNEL MANAGEMENT AND HAS A SPECIAL PLACE IN THE EMPLOYEE MOTIVATION DEVELOPMENT, IMPROVING THEIR SELF-EXPRESSION IN WORK.

## PRINCIPLES OF SOCIAL POLICY IMPLEMENTATION

A CORPORATE SOCIAL POLICY OF SUE “VODOKANAL OF ST. PETERSBURG” PROVIDES FOR A DECENT STANDARD OF LIFE FOR ITS PERSONNEL AND CONSIDERS MUTUAL INTERESTS OF THE COMPANY AND ITS EMPLOYEES.

Increase of the labour productivity and the Company performance is ensured not only through basic wages but also through moral encouragement programs. Vodokanal management realizes the importance of social protection of the personnel and considers development of numerous social programs its priority task.

Vodokanal has defined the following priorities of its socially-oriented activity:

- increase of motivation and labor productivity;
- raising the attractiveness of work at the Company;

- staff qualification upgrade;
- social security level increase;
- creating conditions for healthy lifestyle of its personnel and their families;
- team building;
- reduction in staff turnover.

The keystone of high performance of SUE “Vodokanal of St. Petersburg” is a constant concern for its employees.

## SOCIAL PROTECTION PROGRAM AND TARGETED MATERIAL ASSISTANCE

In accordance with the Collective Agreement of SUE “Vodokanal of St. Petersburg” the following payments were made in 2011:

- lump-sum payment to retiring employees; to employees who reached jubilee
- age; as well as for an uninterrupted service in the Company;
- monthly targeted material assistance to veterans of the Great Patriotic War (former Company employees), payments to



- the war veterans on the occasion of the Full Lifting of Leningrad Siege and the Victory Day, payments to the citizens of besieged Leningrad, to Nazi camp prisoners (former Company employees);
- quarterly targeted material assistance to retired employees (former Company employees);
  - financial assistance for medical treatment, in case of damage caused by fire, natural disaster, theft etc.;

- payments for childbirth;
- payments after death of a relative;
- payments to employees, who worked for the Company prior to a recruitment into the Armed Forces of the Russian Federation and were newly employed.

In 2011, the material assistance was provided to 808 people: 757 employees, 51 former employees and their relatives.

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## RECOGNITION OF EMPLOYEES ACHIEVEMENTS

### 1. AWARDING THE TITLE "LABOUR VETERAN OF VODOKANAL ST. PETERSBURG"

In 2011, the Company awarded its personnel with the title "Labour Veteran of Vodokanal St. Petersburg" quarterly. This title is awarded to the employees who have had 20 years or more of uninterrupted work experience in the Company (in exceptional cases not less than 10 years, taking into account the employee's particular contribution). The awarding of the title is accompanied by presenting with a special badge and paying a money reward. In 201, 128 employees were awarded the title "Labour Veteran of Vodokanal of St. Petersburg".

### 2. AWARDING THE TITLE "HONORARY EMPLOYEE OF VODOKANAL ST. PETERSBURG"

The title is awarded by recommendation of managers and groups of staff to the Company's employees, as well as to other persons who have made a considerable contribution to development of water supply and sewerage

system of St. Petersburg. The title of "Honorary Employee of Vodokanal St. Petersburg" can be awarded for development, mastering and implementation of modern equipment and cutting-edge technologies, implementation of the labour management types and methods yielding considerable economic effect, promotion of a positive Company image in Russia and abroad, tutorship, promotion of the Company's corporate culture and high professional competence.

Awarding of the title is accompanied by presenting the employee with a special badge "Honorary Employee of Vodokanal St. Petersburg", by issuing a certificate, making an appropriate entry in the employee's work record and by paying a monetary reward to the employee.

An honorary employee has a right to obtain a free voucher to sanatorium "Burevestnik" for a health-improving vacation and sanatorium-and-spa treatment.

In 2011, the award ceremony for the title "Honorary Employee of Vodokanal St. Petersburg" took place in connection to the Company's Birthday, anniversaries and memorable dates.

13 employees were awarded this title in 2011.

In 2011, 68 Vodokanal employees got awards from St. Petersburg Government Agencies and Authorities, including:

- four employees were awarded certificates of honor by the Ministry of the Regional Development of the Russian Federation for contribution to the improvement of the Baltic Sea environment and for ac-

tive participation in the Clean Baltic Sea Project,

- eight employees received certificates of honor from the Governor of St. Petersburg,
- ten employees received gratitude from the Governor of St. Petersburg,
- forty six employees got awards from the city executive and legislative bodies.

527 Vodokanal employees were presented with awards and gratitude.

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## CATERING AND TRANSPORT

All Vodokanal's employees are provided with corporate catering on the territory of the Company in accordance with canteens' work schedules in each Branch, with partial compensation of the cost of meals. Emergency teams and drivers, working 24-hour shifts, are provided with free hot meals in the night time,

which are delivered to their work places in specially equipped vehicles. For over 10 years the employees have been provided with special transport to deliver them to their work places in the morning and to the nearest underground station at the end of the working day.

## RECREATION ORGANIZATION FOR EMPLOYEES AND THEIR FAMILIES

CREATION OF THE COMFORTABLE AND HEALTHY ENVIRONMENT FOR LABOR, EVERYDAY LIFE AND RECREATION OF EMPLOYEES, COMPREHENSIVE SOLUTION OF SOCIAL AND DOMESTIC PROBLEMS FORM THE BASIC PRINCIPLES OF SUE "VODOKANAL OF ST. PETERSBURG".

"Burevestnik" and "Orlovsky" sanatoria are used for supporting and promoting health of all employees and their families and for personnel rehabilitation, too. The Company gives an opportunity for the employees and their

families to buy vouchers for health care and recreation in a sanatorium "Burevestnik" at a reduced price. In order to prevent occupational diseases and reduce labor losses, Vodokanal employees working in harmful and

SOCIAL RESPONSIBILITY // SOCIAL POLICY



(or) hazardous labor conditions are provided extra leaves (over-leaves under the legislation of the Russian Federation) up to 10 calendar days long. Such leaves are provided to the employees for rehabilitation and recreation in “Burevestnik” sanatorium free of charge. In 2011, 133 employees of Vodokanal spent rehabilitation leaves in the sanatorium.

During summer vacations the Company employees can send their children to the children’s health camp “Zvyozdny”, located at one of “Burevestnik” sanatorium sites for vacation periods.



In 2011, over 2608 children visited the camp (in winter, spring, summer and autumn vacations). Shifts harmonically combine sports and creative work; children can express themselves on sports grounds and on stage, and also get to know the history and customs of various countries during the thematic sessions.

Various hobby groups function, where children make presents for their relatives, set on fascinating journeys in picturesque places, horse rides and bicycle tours as well, promote health in a swimming pool.

# HEALTH CARE

## VODOKANAL’S SOCIAL POLICY IN TERMS OF PROVISION OF MEDICAL CARE TO ITS EMPLOYEES IS BASED ON A PACKAGE OF SERVICES AIMED AT HEALTH PROTECTION, DISEASE PREVENTION, PROVISION OF TIMELY AND HIGH-QUALITY MEDICAL AID, MODERN AND HIGH-TECHNOLOGICAL TREATMENT METHODS.

SUE “Vodokanal of St. Petersburg” comprises a Medical Center as its branch. Its structural units provide a multilevel medical care system for the Company’s employees.

It consists of the following facilities:

- two sites of Diagnostic and Treatment Center, having the departments of medical examination, professional suitability expertise, radiodiagnosis, clinical laboratory;
- dental clinic;
- medical units of “Burevestnik” sanatorium;
- medical units of the production branches (10 health posts, exclusive of the one in the licensing process).

In October 2011, the Medical units of “Orlovsky” sanatorium affiliated to the Medical Center Branch. The medical rehabilitation department of the Diagnostic and Treatment Center was established there, thus allowing for the

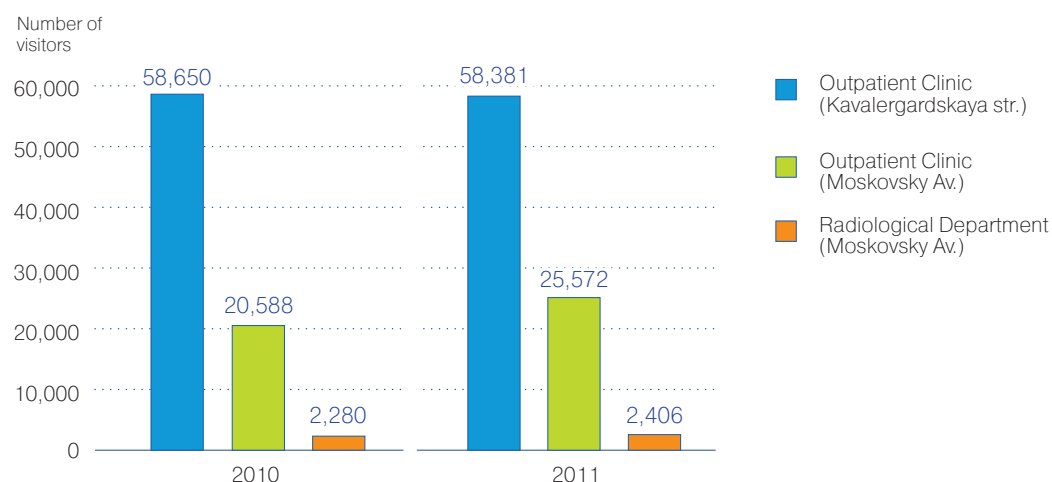
creation of the integrated system of medical support to Vodokanal employees, which includes the occupational medicine, modern outpatient care, high-tech medical investigations, preventive recreation and rehabilitation. Medical aid is provided to Vodokanal employees under compulsory health insurance and voluntary health insurance (outpatient care, dental care, doctor on call, emergency medical services) programs.

The Medical Center employs 8 Doctors and 15 Candidates of Medical Science, 55 doctors, 57 nurses of the highest category. The Center concluded three cooperation contracts—with Medical Academy of Postgraduate Studies, Federal Center of Heart, Blood and Endocrinology named after V.A. Almazov, Russian Scientific Center of Radiology and Surgical Technologies, and 56 contracts with medical insurance organizations and legal entities.

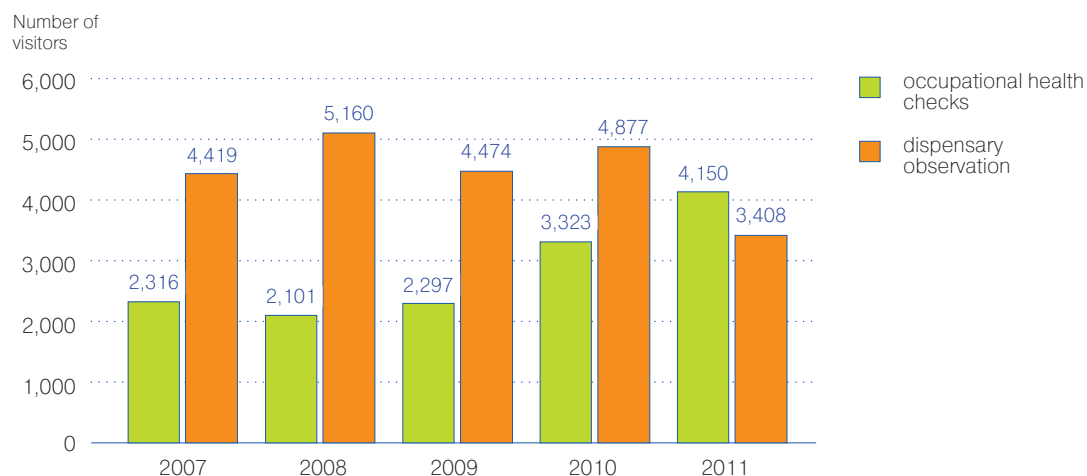
Totally, in 2011, 86,359 medical services were provided to Vodokanal employees at two sites of Diagnostic and Treatment Center; this figure is 6% higher than that in 2010.



## AMOUNT OF MEDICAL SERVICES PROVIDED



## NUMBER OF VODOKANAL EMPLOYEES COVERED BY CLINICAL AND OCCUPATIONAL HEALTH CHECKS (PERSONS)



In 2011, the number of working day losses reduced by 10% compared with the previous year and the sickness rate of Vodokanal employees reduced by 23%.

The complex of measures directed at protection of the company employees' health includes besides remedial measures:

- dispensary observation according to the results of a medical survey;

- regular health checks of Company employees exposed to adverse and (or) hazardous working conditions—occupational health checks;

- mandatory vaccination decreed employee groups and also vaccination to prevent seasonal infections (flue, A.R.V.I.).

- photofluorographic survey to prevent tuberculosis and early detect respiratory diseases;

- preliminary health checks of employment candidates.

In 2011, medical standards for ambulatory care were revised, plans of follow-up care for 2012 were generated on the basis of standard medical survey of employees in 2011, and the Oncology Register was developed in the Diagnostic and Treatment Center of the branch. In 2011, The Medical Center Branch developed the company standard Vodokanal SPb STO (organization standard) 24.2-2012 "The procedure of preliminary and regular medical surveys of employees of SUE "Vodokanal St. Petersburg" exposed to adverse and (or) hazardous working conditions". According to this standard, "Health Passports" will be prepared and issued to more than 5000 employees in 2012.

In 2011, the medical information system "Avicenna" continued to be improved. A new section for records of follow-up care was developed and implemented: now, employees can be automatically informed that they should pass a medical examination by e-mail via Intranet or by sms. An electronic out-patient medical record on flash media was developed, the first 500 samples of which will be given to Vodokanal employees as part of a pilot project in 2012.

In the Vodokanal Collective Agreement in force, the following opportunities of obtaining a medical care are specified:

- free medical care under compulsory medical insurance (CMI) and (voluntary health insurance) VHI policies based on the Medical Center divisions (the Diagnostic and Treatment Center and the Dental Clinic are standard for Vodokanal employees);
- individual medical and cosmetological services beyond the CMI and VHI programs (particularly, Vodokanal employees can pay a reduced price for ceramic-metal prosthesis);
- VHI of employees who have worked in the enterprise at least for a year and their minor children;
- rehabilitation leaves for up to 10 calendar days (for the employees with the 5-year employment history in the Company) for treatment in the "Burevestnik" sanatorium according to the list of occupations (positions), specified in the Appendix to the Collective Agreement;
- issuance of vouchers for rest and treatment in "Burevestnik" and "Orlovsky"



sanatoria with the opportunity for the employees and their families to pay from 10 to 50% of their cost;

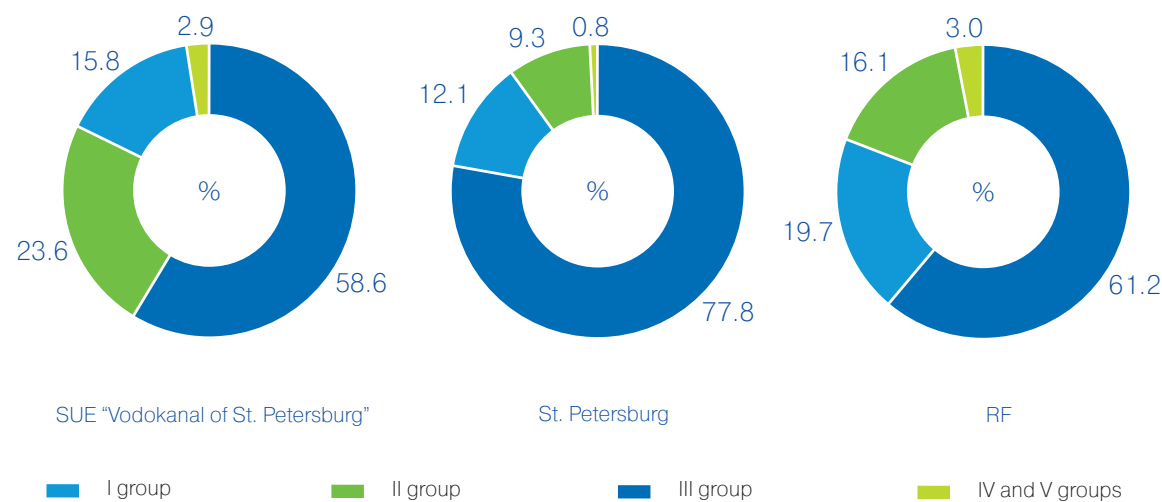
- medical care for former Vodokanal employees, participants of the Great Patriotic War, having the certificate "The Participant of the Great Patriotic War", as well as Company employees and former Company employees, who worked at Vodokanal facilities during the Siege of Leningrad—under the program of compulsory medical insurance in the Diagnostic and Treatment Center.

The social protection of Company employees also comprises an opportunity to receive a financial aid to pay the expensive treatment or free medical services in case of appeal to the social commission of the branch (at a primary place of employment).

All medical services, which can be obtained by Vodokanal employees, are available to their families at a price reduced up to 20% from its initial cost. Company employees' children can consult a pediatrician in the Diagnostic and Medical Center, located at 103 Moskovsky av., bldg. 2.

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#### HEALTH INDICATORS IN VODOKANAL, ST. PETERSBURG AND THE RUSSIAN FEDERATION



One of the results of the Medical Center branch activity is the indicator of healthy and apparently healthy people (I-II health groups).

In the Company it is 39.4% that is significantly higher than in St. Petersburg (21.4%) and on average in Russia (35.8%).

SUE "VODOKANAL OF ST. PETERSBURG" // SUSTAINABILITY REPORT 2011

## SPORTS SUPPORT

Implementation of the comprehensive rehabilitation program and arrangement of sports events contribute to development and support of healthy life, team building, strengthening interpersonal relationship and friendly ties. Sports contests of vodokanals, festivals and traditional winter and summer sports tourist meetings are annually held for the Company employees in the territory of "Burevestnik" sanatorium.

In 2011, the following events took place in "Burevestnik":

- A winter sports meeting of "Transport and Logistics" and "St. Petersburg Water Supply" Branches, where over 370 employees participated.
- A winter sports Vodokanal meeting participated by over 300 employees
- Two sports contests of Russia's vodokanals "Fellowship" participated by teams from Nizhny Novgorod, Cherepovets, Vologda, Veliky Novgorod, Vladimir and other cities of Russia—over 350 people.
- The Youth Games Festival, which allowed more than 300 young employees to express their sports achievements.
- A summer sports Vodokanal meeting, participated by over 500 employees.

Sports activities are one of the most important lines of Vodokanal corporate life. Sports grounds and swimming pools are rented for sports activities and exercises. Vodokanal

volleyball, football, table tennis, swimming, ski race teams, as well as a veteran's football team are organized on a regular basis.

Vodokanal teams took an part in sport contests arranged by Physical Training and Sports Society FSO Russia (1st place winner), Inter-regional Trade Union Committee (1st place), Central St. Petersburg District (2nd place).

A sport contest of SUE "Vodokanal of St. Petersburg" was arranged among the branch teams that included 11 kinds of sports.

In 2011, Vodokanal employees also participated in the following sports events:

- FSO "Russia" Ping-Pong Club Championship;
- Central District Head Mini Football Cup;
- Central District Mini Football Friendship Cup;
- "Veterans" Mini Football Championship;
- Football tournament between teams of Vodokanal St. Petersburg and Hamburg Wasser;
- City Football Championship;
- Volleyball Championship (amateur league);
- Russia Kayak and Canoe Paddling Championship among veterans.

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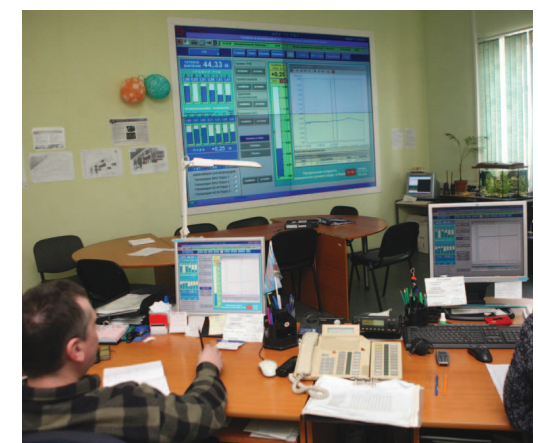
SOCIAL RESPONSIBILITY // SOCIAL POLICY



# TARIFF POLICY

## LEGAL FRAMEWORK OF TARIFF REGULATION

SUE “VODOKANAL OF ST. PETERSBURG” IS A MUNICIPAL COMPANY CARRYING OUT REGULATED ACTIVITIES IN THE FIELD OF WATER SUPPLY AND WASTEWATER DISPOSAL IN ST. PETERSBURG AND THE SUBURBS.



The legal framework and general principles of pricing and tariff regulation for public utilities are established by the Federal Law No. 210-FZ dated 30 December 2004 “On Principles of Public Utility Tariffs Regulation” and the Decree of the RF Government No. 520 dated 14 July 2008 “On Pricing Principles and Regulation of Tariffs, Surcharges and Limiting Indices to Be Used by Public Utilities”.

Under the current law, the tariffs for municipal water companies are regulated at the federal level by the Federal Tariff Authority. This federal executive body is authorized to exercise legal control over the national regulation of prices (tariffs) for services and to monitor the use thereof; it sets the average price change limits for the subjects of the Russian Federation.

At the level of the subject of the Russian Federation, the powers of the St. Petersburg state executive bodies in the field of tariff and surcharge regulation for municipal companies, in particular, SUE “Vodokanal of St. Petersburg”, are exercised by the St. Petersburg Tariff Committee under the current law.

Within its authority, the Tariff Committee sets tariffs for goods and services in the water sector subject to the limiting index established for St. Petersburg, tariffs for connection to the municipal infrastructure; approves investment programmes and production programmes of SUE “Vodokanal of St. Petersburg”. The Tariff Committee checks how the tariffs are applied and, if necessary, inspects Vodokanal operations to see whether the prices (tariffs)

are justified and applied properly; it also monitors the progress of production and investment programmes. Moreover, the Tariff Committee checks whether municipal utilities meet the information disclosure standards approved by the Government of the Russian Federation.

The Tariff Committee issues a special instruction establishing tariffs for Vodokanal water services for each customer group and each subsequent fiscal year.

The tariff is made up of two components:

- tariff for the production programme financing,
- tariff surcharge to finance Vodokanal's investment program.

The Committee sets tariffs for connection to water and sewerage networks throughout the effective period of Vodokanal investment programme.

# PRINCIPLES OF TARIFF POLICY

The Federal Law No. 210-FZ dated 30 December 2004 establishes the following general principles of tariff regulation:

- the balance of interests between the public utility and its customers should be reached to ensure affordability of goods and services provided by the public utility and, at the same time, efficient work of the public utility;
- the tariffs and surcharges should cover financial needs of the public utility as required for the implementation of its production and investment programs;
- motivate reduction of production costs, improve economic efficiency of opera-

tions and the use of energy saving technologies by the public utilities;

- create conditions as required for the raising of investments in order to develop and upgrade the infrastructure of public utilities;
- full repayment of the costs incurred by a public utility in the process of implementing its production and investment program;
- accessibility of information on the structure of tariffs and surcharges.

Vodokanal works in strict compliance with the above principles.

# REASONS FOR TARIFF INCREASE

When planning financial and economic activities and the production programme of Vodokanal, the total expenditures determining the tariff are calculated inclusive of material costs. The latter are estimated on the basis of:

## FOR PURCHASE OF MATERIALS, WORKS AND SERVICES:

- state-regulated tariffs (prices) or their projected values officially communicated

by a relevant tariff (price) regulating authority;

- forecasted price change indices by sectors of industry;
- forecasted consumer price indices officially published by the Russian Ministry of Economic Development;



- macroeconomic indicators of forecasted socio-economic development approved by the Government of the Russian Federation's subject in consideration of specific features of regional development;
- actual price trend (the soundness of such calculation should be confirmed by a relevant regulatory body).

Actions envisaged by the production and investment programmes and associated costs

are estimated on the basis of target performance indicators established for the Company for a relevant period

**FOR PROVISION OF SERVICES BY THE COMPANY DEPARTMENTS:**

- planned depreciation of the existing and newly commissioned fixed assets;
- payroll costs based on the planned number of employees.

## TARIFFS FOR THE COMPANY SERVICES IN 2011

Tariffs for 2011 are established by the instruction of the Tariff Committee No. 301-r dated 30.11.2010 "On establishment of tariffs

for cold water and wastewater disposal by the State Unitary Enterprise «Vodokanal of St. Petersburg» in 2011».

**COLD WATER TARIFFS OF SUE "VODOKANAL OF ST. PETERSBURG" IN 2011**

Item No.	Customer groups	Cold water tariffs, RUB/m <sup>3</sup> , from 01.01.2011 to 31.12.2011
1.	<b>Municipal service providers</b>	
	Cold potable water	13.37
2.	<b>Other customers</b>	
	Cold potable water	18.70
	Cold utility water	3.38

Note: The tariffs are shown without the value-added tax.

**WASTEWATER TARIFFS OF SUE "VODOKANAL OF ST. PETERSBURG" IN 2011**

Item No.	Customer groups	Tariffs for wastewater services, RUB/m <sup>3</sup> , from 01.01.2011 to 31.12.2011
1.	<b>Municipal service providers</b>	
	Wastewater disposal	13.37
2.	<b>Other customers</b>	
	Wastewater disposal	21.74

Note: The tariffs are shown without the value-added tax.

## CONNECTION TARIFFS

Tariffs for connection of newly constructed (re-constructed) real estate units to Vodokanal's cold water supply and sewerage systems in 2009-2011 are established by the Instruction of the Tariff Committee No. 156-r dated 10.12.2008.

The charge for connection to Vodokanal networks is calculated, in compliance with the Decree of the Russian Government, Article 14, No. 360 dated 9.06.2007 "On Approving

the Rules of Public Contracts Execution and Performance", as the product of declared demand (in m<sup>3</sup>/hour) and connection tariff.

**TARIFFS**

Tariffs for connection of newly constructed (re-constructed) real estate units to Vodokanal's cold water supply and sewerage systems in 2009-2011, RUB/m<sup>3</sup>/hour\*.

Description	Connected capacity under 4.17 m <sup>3</sup> /hour	Connected capacity: 4.17-41.67 m <sup>3</sup> /hour (inclusively)	Connected capacity over 41.67 m <sup>3</sup> /hour
Cold water supply	714,000	711,600	709,200
Wastewater disposal	738,000	735,600	733,200

Note: The tariffs are shown without the value-added tax.

# FINANCIAL STATEMENTS

## MAIN FINANCIAL INDICATORS OF SUE “VODOKANAL OF ST. PETERSBURG”

Indicators, Mio. RUB	2007	2008	2009	2010	2011
Turnover	14,850	16,720	18,413	20,060	22,797
Operating costs	12,649	14,123	15,484	17,694	19,853
Operating profit	2,200	2,597	2,929	2,366	2,944
Net profit	56	24	72	379	404
Profitability of core operations, %	17.4	18.4	18.9	13.4	14.8

Due to the growth of its main financial indicators over the recent years Vodokanal can finance different actions aimed to achieve the service quality targets in line with the long-term

company development strategy. The indicator “profitability of core operations” is high compared with that of other municipal utilities.

Indicators	2007	2008	2009	2010	2011
Current ratio (standard: 1 to 2)	2.4	2.0	1.6	1.1	1.3
Quick ratio (0.8 or higher)	1.9	1.5	1.1	0.8	0.9
Cash ratio (0.2 or higher)	0.3	0.2	0.2	0.2	0.3

Vodokanal St. Petersburg maintains a rather high level of solvency which is evidenced by the fact that its profitability ratios are within the

standard range meaning that the Company has sufficient funds for current payments.

Indicators	2007	2008	2009	2010	2011
Equity to Total	0.84	0.84	0.87	0.88	0.90
Financial Leverage	0.16	0.16	0.13	0.14	0.14

Vodokanal is a company with a high capital coefficient. The share of fixed assets in the balance sheet structure is over 90%. The Eq-

uity to Total Assets Ratio is high which means that the Company capital structure is stable.



BALANCE SHEET

as of 31 December 2011	OKUD	CODES		
		0710001		
	Date (day, month, year)	31	12	2011
Organization SUE "Vodokanal of St. Petersburg"	OKPO	03323809		
Taxpayer's Identification Number	INN	7830000426		
Type of business	OKVED	90.00.1, 41.00.1, 41.00.2, 85.11, 85.12, 85.13, 85.14		
Form of incorporation / Type of ownership	OKOPF/OKFS	42	13	
State Unitary Enterprise / RF subject owned				
Unit of measurement: '000 RUB	OKEI	384		
Location (adress) 42, Kavalergardskaya str., St. Petersburg, 191015				

Clarifi- cations	Item	Code	As of 31 December 2011	As of 31 December 2010	As of 31 December 2009
1	2	3	4	5	6
ASSETS					
I. NON-CURRENT ASSETS					
3	Intangible assets	1110	207 592	156 093	69 138
4	R&D results	1120	2 279	4 232	-
5	Fixed asset	1130	144 041 991	127 339 878	111 986 022
	from Line 1130:				
	buildings	1131	16 623 357	13 067 473	11 580 573
	structures	1132	105 076 079	91 879 569	77 662 903
	machinery and equipment	1133	6 607 665	5 815 150	3 746 900
6, 10	Construction in progress	1134	15 477 825	16 336 557	18 759 861
	Income-bearing investments in inventories	1140	-	-	-
7	Financial investments	1150	118 110	63 870	188 740
	Deferred tax assets	1160	381 877	361 766	338 256
	other non-current assets	1170	105 350	93 943	42 468
	from Line 1170				
8	uncompleted investments in non-current assets	1171	96 557	84 000	37 083
	SECTION I, TOTAL	1100	144 857 199	128 019 782	112 624 624

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SUE "VODOKANAL OF ST. PETERSBURG" // SUSTAINABILITY REPORT 2011

Clarifi- cations	Item	Code	As of 31 December 2011	As of 31 December 2010	As of 31 December 2009
1	2	3	4	5	6
II. CURRENT ASSETS					
9	Inventories	1210	1 719 627	1 300 602	1 487 186
	from Line 1210				
	Raw materials, materials, etc	1211	769 228	618 691	540 962
	Deferred expenses	1212	950 399	681 911	946 224
	Value-added tax on purchased valuables	1220	110 348	231 234	194 408
10	Accounts receivable	1230	5 905 484	4 599 280	4 009 106
	from Line 1230				
	Accounts receivable due beyond 12 months after the reporting date	1231	809 426	459 697	594 881
	from Line 12301 Buyers and Clients	12311	76 436	95 954	152 390
	Accounts receivable where payments are expected within 12 months after the reporting date	1232	5 096 058	4 139 583	3 414 225
	from Line 12303 Buyers and Clients	12321	3 990 012	3 158 544	2 722 002
	Financial investments (other than cash equivalents)	1240	-	-	200
	Monetary resources and cash equivalents	1250	2 583 926	1 476 646	880 160
	Other current assets	1260	18	30	28
	SECTION II, TOTAL	1200	10 319 403	7 607 792	6 571 088
	BALANCE	1600	155 176 602	135 627 574	119 195 712

continue on page 200

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FINANCIAL STATEMENTS // BALANCE SHEET

Clarifi- cations	Item	Code	As of 31 December 2011	As of 31 December 2010	As of 31 December 2009
1	2	3	4	5	6
LIABILITIES					
III. CAPITAL AND RESERVES					
	Registered capital	1310	1 467 627	1 167 627	1 167 627
	Own shares bought out from shareholders	1320	-	-	-
	Revaluation of non-current assets	1340	88 869 998	85 758 094	77 830 040
	Additional capital (not revaluated) from Line 1350	1350	46 116 108	30 039 391	22 856 316
	Special-purpose receipts	1351	6 500 138	4 493 212	4 160 472
	Reserve fund	1360	80 356	60 167	41 218
	Undistributed profit (uncovered loss)	1370	1 143 271	812 834	551 834
	SECTION III, TOTAL	1300	137 677 360	117 838 113	102 447 035
IV. LONG-TERM LIABILITIES					
11	Borrowings	1410	7 440 358	7 814 639	8 400 003
	from Line 1410				
	Loans repayable beyond 12 months after the reporting date	1411	5 446 358	5 813 223	8 400 003
	Credits repayable beyond 12 months after the reporting date	1412	1 994 000	2 001 416	-
	Deferred tax liabilities	1420	98 560	84 647	73 831
	Estimated liabilities	1430	-	-	-
	Other liabilities	1450	-	761 737	1 563 088
	SECTION IV, TOTAL	1400	7 538 918	8 661 023	10 036 922

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SUE "VODOKANAL OF ST. PETERSBURG" // SUSTAINABILITY REPORT 2011

Clarifi- cations	Item	Code	As of 31 December 2011	As of 31 December 2010	As of 31 December 2009
1	2	3	4	5	6
SHORT-TERM LIABILITIES					
11	Borrowings	1510	832 633	1 710 427	953 178
	from Line 1510				
	Loans repayable within less than 12 months after the reporting date	1511	823 239	1 296 729	953 178
	Credits repayable within less than 12 months after the reporting date	1512	9 394	413 698	-
11	Accounts payable	1520	6 860 290	5 124 151	3 427 619
	from Line 1520				
	suppliers and contractors	1521	3 153 426	3 732 727	2 253 424
	payroll debt	1522	145 529	128 846	104 903
	debt to state extra-budgetary funds	1523	64 334	41 313	25 734
	tax arrears	1524	1 050 881	198 546	569 555
	other creditors	1525	2 446 120	1 022 719	474 003
	Deferred income	1530	1 774 136	1 864 252	1 976 322
12	Estimated liabilities	1540	493 265	429 608	354 636
	Other liabilities	1550	-	-	-
	SECTION V, TOTAL	1500	9 960 324	9 128 438	6 711 755
	BALANCE	1700	155 176 602	135 627 574	119 195 712

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FINANCIAL STATEMENTS // BALANCE SHEET

Director General

(signature)

F.V. Karmazinov

(name)

Chief Accountant

(signature)

G.A. Khachaturova

(name)

22 March 2012



INCOME STATEMENT

	OKUD	CODES		
		0710001		
	Date (day, month, year)	31	12	2011
as of 2011				
Organization SUE "Vodokanal of St. Petersburg"	OKPO	03323809		
Taxpayer's Identification Number	INN	7830000426		
Type of business	OKVED	90.00.1, 41.00.1, 41.00.2, 85.11, 85.12, 85.13, 85.14		
Form of incorporation / Type of ownership	OKOPF/OKFS	42	13	
State Unitary Enterprise / RF subject owned				
Unit of measurement: '000 RUB	OKEI	384		

Clarifications	Item	Code	2011	2010
1	2	3	4	5
1	Turnover	2110	22 797 415	20 059 571
1	Cost of sales	2120	(19 853 247)	(17 763 399)
1	Gross profit (loss)	2100	2 944 168	2 296 172
	Commercial expenses	2210	-	-
	Administrative expenses	2220	-	-
	SALES PROFIT (LOSS)	2200	2 944 168	2 296 172
1	Income from participation in other organizations	2310	580	134
1	Interest receivable	2320	2 923	4 593
1	Interest payable	2330	(494 824)	(556 157)
1	Other income	2340	667 373	1 658 597
1	Other expenses	2350	(1 938 985)	(2 262 158)
	BEFORE-TAX PROFIT (LOSS)	2300	1 181 235	1 141 181

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SUE "VODOKANAL OF ST. PETERSBURG" // SUSTAINABILITY REPORT 2011

Clarifications	Item	Code	2011	2010
1	2	3	4	5
	Current profit tax	2410	(783 238)	(836 667)
	incl. constant tax liabilities (assets)	2421	(539 570)	(598 304)
1	Change of deferred tax liabilities	2430	(13 766)	(8 027)
1	Change of deferred tax assets	2450	21 187	16 803
	Other	2460	(1 634)	3 422
	NET PROFIT (LOSS)	2400	403 784	316 712

FOR REFERENCE				
	Result of non-current assets revaluation not included into the net profit (loss) of the period	2510	3 111 904	7 946 697
	Result of other transactions not included into the net profit (loss) of the period	2520	-	-
	Cumulative financial result of the period	2500	3 515 688	8 263 409
	Base profit (loss) per share	2900	-	-
	Diluted earnings (loss) per share	2910	-	-

Director General



(signature)

F.V. Karmazinov  
(name)

Chief Accountant



(signature)

G.A. Khachaturova  
(name)

22 March 2012

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FINANCIAL STATEMENTS // INCOME STATEMENT

# AUDIT REPORT ON FINANCIAL STATEMENTS

## AUDITED ENTITY

State Unitary Enterprise “Vodokanal of St. Petersburg”.

State registration: by the Decision of the Leningrad Council Executive Committee No. 738 dated 05.09.1988

Address: 42 Kavalergardskaya str., St. Petersburg, 191015, Russia.

## AUDITOR

ZAO “MCD”. OGRN: 1027810263579

Legal address: 2 Ploshch Truda, St. Petersburg, 190000.  
Physical address: 20 Aptekarskaya nab., St. Petersburg, 197376

ZAO “MCD” is a member of the self-regulatory organization Not-For-Profit Partnership “Institute of Professional Auditors”.  
ORN: 10202000038

We have audited the attached financial statements of the State Unitary Enterprise “Vodokanal of St. Petersburg”, namely:

- Balance Sheet as of 31 December 2011;
- Income Statement for 2011;
- Statement of Changes in Equity for 2011;
- Cash Flow Statement for 2011;
- Clarifications to the Balance Sheet and the Income Statement.

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SUE “VODOKANAL OF ST. PETERSBURG” // SUSTAINABILITY REPORT 2011

## RESPONSIBILITY OF THE AUDITED ENTITY FOR FINANCIAL STATEMENTS

The management of SUE «Vodokanal of St. Petersburg» is responsible for preparation of reliable financial statements in compliance with the Russian accounting standards, and for the internal control system as required for the statements not to contain any material misrepresentations due to malpractice or errors.

## RESPONSIBILITY OF THE AUDITOR

Our responsibility is to express our opinion on reliability of the financial statements on the basis of the audit made by us. We have made the audit in compliance with the federal auditing standards. These standards require observation of the applicable code of ethics and the planning and performing of audit in such a manner as to obtain sufficient confidence in the absence of any material misrepresentations in the financial statements.

The audit included the auditing procedures aimed to obtain the audit-based evidence confirming the figures in the financial statements and disclosure of information in the latter. The choice of auditing procedures is subject to our judgment which is based on our assessment of the risk of material misrepresentations made due to malpractice or errors. In the process of assessing this risk, we have examined the internal control system which supports the preparation of reliable financial statements, with the aim to select relevant auditing procedures rather than express our opinion about the effectiveness of the internal control system.

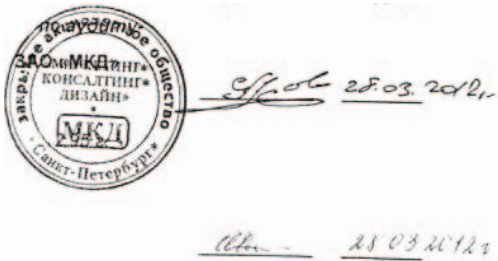
The audit also included assessment of the proper nature of the applicable accounting policy and soundness of the estimated figures obtained by the management of the audited entity, as well as the assessment of financial statements in general.  
We believe that the audit-based evidence provides sufficient grounds for the expression of opinion on reliability of financial statements.

## OPINION

In our opinion, the financial statements reflect truly, in all material respects, the financial standing of State Unitary Enterprise “Vodokanal of St. Petersburg” as of December 31, 2011, the results of its financial and economic activities and cash flow in 2011 in compliance with the Russian accounting standards.

Deputy Director General of Audit. Head of the ZAO “MCD” Audit Department A.V Gazaryan Qualification certificate for general audit No. 009228 dated 28.12.95 ORNZ 29502000977	Signature	Date
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------	------

Certificated auditor of ZAO “MCD”  
O. I. Svinyina  
Qualification certificate for general audit  
No. 02-000123 dated 22.02.2012  
ORNZ 20102008173



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FINANCIAL STATEMENTS // AUDIT REPORT ON FINANCIAL STATEMENTS



# CONTACT INFORMATION

## STATE UNITARY ENTERPRISE “VODOKANAL OF ST. PETERSBURG”:

42 Kavalergardskaya str., St. Petersburg 191015, Russia  
Tel.: +7 (812) 274-16-79, Fax +7 (812) 274-13-61 (Documents Division)  
e-mail: office@vodokanal.spb.ru  
e-mail: personal@vodokanal.spb.ru—Personnel Department (for CVs)

Website: www.vodokanal.spb.ru

**HOT LINE: +7 (812) 305-09-09**

### CUSTOMER SERVICE CENTRE BRANCH:

- Lit.A, 21 Gakkelevskaya str., St. Petersburg  
Open hours: 9.00 a.m.-6.00 p.m.
  - 8 (812) 438-44-27, 326-52-32 – Reception room,
  - 8 (812) 438-44-11—Administrative office, inquiries about availability of documents, responsible persons,
  - 8 (812) 329-34-50—consultancy on project approval and issuance of documents,
  - 8 (812) 438-44-88—consultancy on obtaining approvals for physical layouts and landscaping projects,
  - 8 (812) 438-44-13—consultancy on the drafting of specifications and connection conditions (South and South-West areas),
  - 8 (812) 438-44-33—consultancy on the drafting of specifications and connection conditions (North area),
  - 8 (812) 438-44-12—consultancy on the drafting of connection conditions and contracts of connection (if required),
- Pushkin—7, Filtrovskoye shosse, Room 103, 9.00 a.m.-6.00 p.m., lunch break: 12.00 a.m.-13.00 p.m., tel.: 438-47-58,

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SUE “VODOKANAL OF ST. PETERSBURG” // SUSTAINABILITY REPORT 2011

- Kolpino—15, Saperniy per., Room 218, 9.00 a.m.-6.00 p.m., lunch break: 12.00 a.m.-13.00 p.m., tel.: 438-47-55,
- Petrodvorets—1, Suворovtsev per., Room 12, 9:00-18:00, lunch break: 12.00 a.m.-13.00 p.m., tel.: 438-47-02,

### MUSEUM COMPLEX “THE UNIVERSE OF WATER”:

56 Shpalernaya Street, (underground station “Chernyshevskaya”)  
Tel.: 8 (812) 438-43-75, 275-43-25, 438-43-01  
Open hours: Wednesday-Sunday (Monday and Tuesday—closed).  
The museum is open 10.00 a.m.-8.00 p.m.  
Tickets can be bought till 7.00 p.m.

Website: www.vodokanal-museum.ru

### YOUTH ENVIRONMENTAL CENTER OF SUE “VODOKANAL OF ST. PETERSBURG”:

56 Shpalernaya Street, (underground station “Chernyshevskaya”)  
Tel. 8 (812) 438-43-96

E-mail: dec@vodokanal.spb.ru

## BUREVESTNIK SANATORIUM:

Office in St. Petersburg:  
12/15 Stavropolskaya Street, Room 10  
Tel. 8 (812) 271-20-71, 274-16-78;  
Tel./Fax: 8 (812) 438-44-85  
Office in Luga:  
16 Zapadnaya Street  
Tel. 8 (813-72) 4-33-03, 2-36-60

Website: www.vodokanal-zagorod.ru

### “MEDICAL CENTER” BRANCH TREATMENT & DIAGNOSTIC CENTER

- Lit. Я, 42, Kavalergardskaya Street  
Tel. 8 (812) 438-44-20, 326-52-78  
Open hours: Monday-Friday, 8.00 a.m.-8.00 p.m.,  
Saturday and Sunday – closed.
- Treatment & Diagnostic Center (including X-Ray Diagnostics Department):  
Block 2, 103, Moskovskiy Prospect, St. Petersburg.  
Tel. 8 (812) 438-47-77, 326-52-78  
Open hours: seven days a week, 8.00 a.m.-10.00 p.m.
- Dental Clinic:  
Lit. AK, 56, Shpalernaya Street.  
Tel. 326-53-19  
Open hours: Monday-Friday, 9.00 a.m.-9.00 p.m.,  
Saturday: 9.00 a.m.-3.00 p.m.,  
Sunday—closed.

E-mail: medcenter@vodokanal.spb.ru

Website : www.med-vdk.ru

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CONTACT INFORMATION //

