REPORT
Results of Radiation and Environmental Monitoring within the Belarusian Nuclear Power Plant Location Area

2025

TABLE OF CONTENTS

INTRODUCTION

The 2025 Report on Results of Radiation and Environmental Monitoring within the area of location of the State Enterprise "Belarusian Nuclear Power Plant" (hereinafter referred to as the "Belarusian NPP") is compiled as part of performing the Belarusian NPP Post-Project Analysis Program (agreed with the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus and the Ministry of Energy of the Republic of Belarus) to implement commitments of the Republic of Belarus under the Convention on Environmental Impact Assessment in a Transboundary Context (Article 7). The monitoring was implemented through the Belarusian NPP's employees with involvement of specialised Belarusian organisations.

CHAPTER 1
BELARUSIAN NPP GENERAL CHARACTERISTICS

The Belarusian NPP is located in the Ostrovets District, Grodno Region, Republic of Belarus, 18 km northeast of the town of Ostrovets (Fig. 1.1).

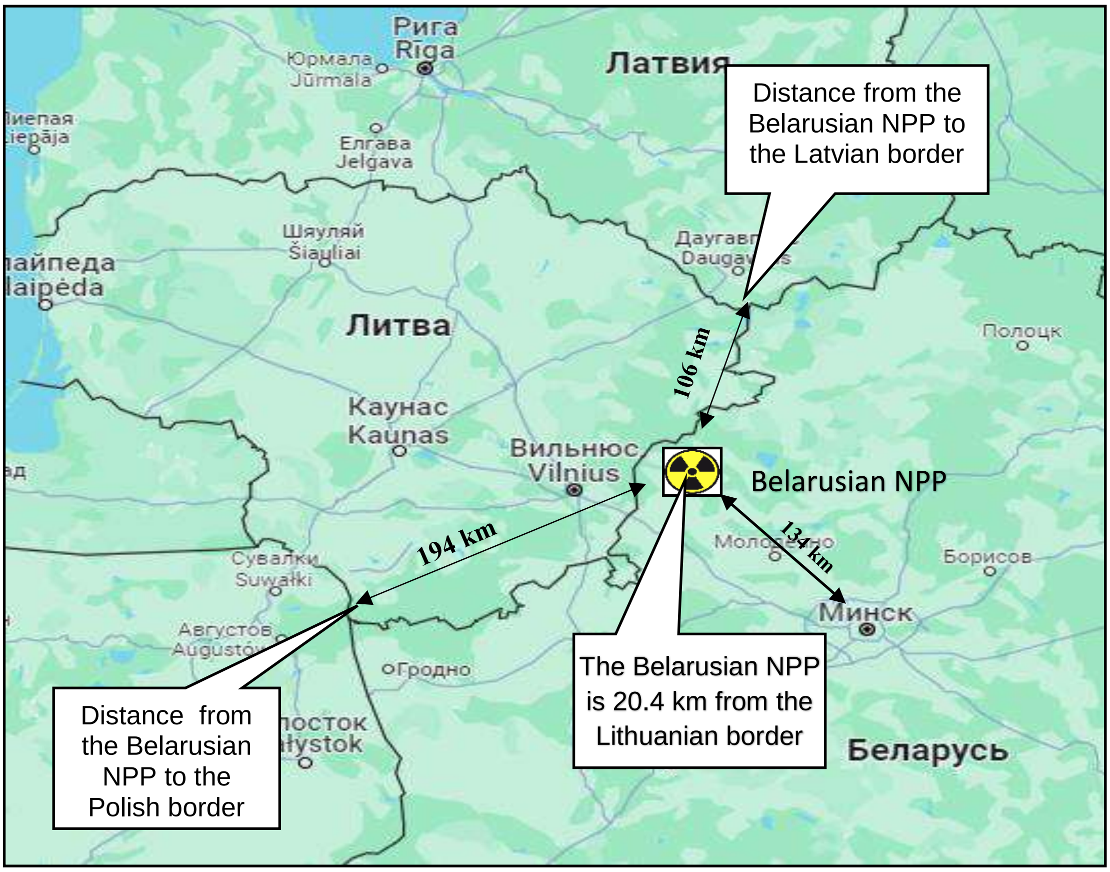


Figure 1.1 – Map-scheme of the Belarusian NPP location

The adjoining states are the Republic of Lithuania (distance to the border – 20.4 km), the Republic of Latvia (distance to the border – 106 km), the Republic of Poland (distance to the border – 194 km), the Russian Federation (distance to the border – 200 km) and Ukraine (distance to the border – 315 km).

The distance from the Belarusian NPP site to Minsk, the capital of the Republic of Belarus, is 134 km.

The Belarusian NPP consisting of two power units with a cumulative electric power capacity of up to 2,400 MW and operating VVER-1200 reactors is built according to the Russian “NPP-2006” Project belonging to the 3+ generation design near the town of Ostrovets (Grodno region). The Belarusian NPP Project complies with the most up-to-date so-called “post-Fukushima” reliability and safety standards due to implementing innovative “passive safety systems” capable of operating without the operators’ intervention even in case of complete NPP de-energisation.

The NPP VVER-1200 power unit schematic diagram is shown in Figure 1.2.

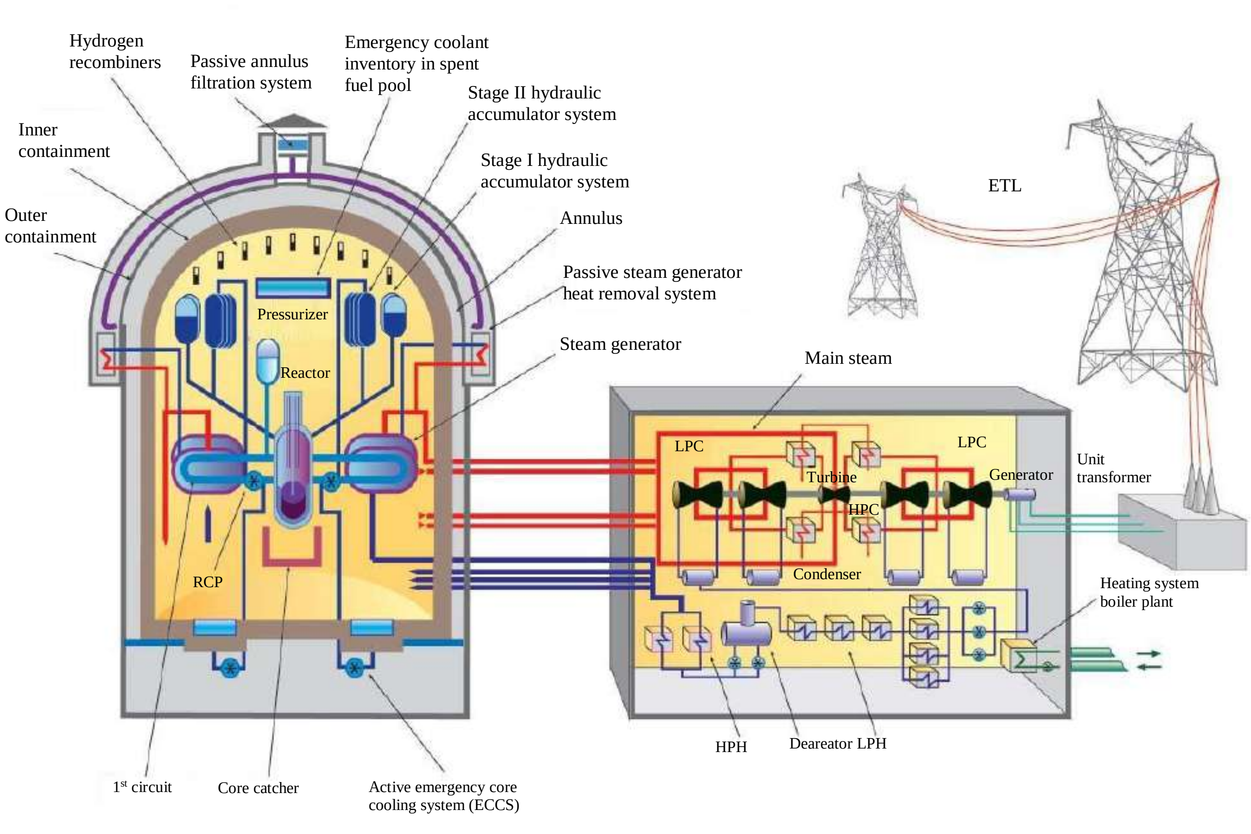


Figure 1.2 – NPP VVER-1200 power unit schematic diagram

Target key technical and economic features:

power unit installed nominal capacity – 1,200 MWe;

number of power units – 2;

power unit service life – 60 years;

efficiency (net) – 33.7%;

NPP balance – not more than 7.15% of rated capacity.

The Belarusian NPP Project safety is based on the defense-in-depth principle, i.e. the use of a system of barriers to the ionising radiation propagation and radioactive substance emission into the environment.

The barrier system comprises as follows:

- fuel matrix preventing fission products from releasing under the fuel element can;
- fuel element can prevent fission products from entering into main circulation circuit coolant;
- main circulation circuit preventing fission products from entering under the containment;
- containment system excluding the release of fission products into the environment.

The Belarusian NPP Project safety has been repeatedly confirmed by the International Atomic Energy Agency (hereinafter referred as the “IAEA”) and the World Association of Nuclear Operators experts (hereinafter – WANO). Belarus-gained successful experience while implementing the nuclear power plant project was duly appreciated by the international nuclear community.

The Belarusian NPP site has an area of about 1 km^2.

According to the Project, the Belarusian NPP site territorial boundaries coincide with the boundaries of the control area (hereinafter referred to as the “CA”), and the surveillance zone (hereinafter referred to as the “SZ”) measuring 12.9 km.

The Belarusian NPP uses a circulating service water supply system with cooling towers and spray cooling ponds.

The water intake facilities site for making up the service water supply system is located 7 km to the north of the Belarusian NPP site on the Viliya River at Malye Sviryanki settlement. The second-stage pumping station site is located 0.25 km to the north of Matskely settlement.

The water intake facilities for the utility and drinking water supply system are located 6 km to the south-east of the Belarusian NPP near Gaigoli settlement and Popishki settlement. The water intake facilities comprise 4 water intake sites and one utility and drinking water treatment plant site.

CHAPTER 2
BELARUSIAN NPP CORE OPERATIONS

The third planned maintenance (hereinafter referred to as the “PM-3”) has been performed at the Belarusian NPP power unit No. 1 from 03.12.2024 to 27.01.2025.

The following has been performed within the PM-3 framework: partial refuelling, the Belarusian NPP main and safety systems equipment maintenance, as well as the scheduled operations of the in-service control of metal and technical inspection of equipment and pipelines.

The second planned maintenance (hereinafter referred to as the “PM-2”) was performed at the Belarusian NPP power unit No. 2 from 13.11.2025 to 08.01.2026.

Within the PM-2 the following has been performed: full core offload, fuel element integrity control of all 163 fuel assemblies and partial refuelling, the Belarusian NPP main and safety systems equipment maintenance, as well as the scheduled operations of the in-service control of metal and technical inspection of equipment and pipelines.

The Belarusian NPP power units generated a total of 55.212 billion kWh of electric power since the time of hooking up to the power grid up to 01.01.2026. The substituted natural gas equivalent due to electric power generation since the first synchronisation of the Belarusian NPP No. 1, 2 power units’ turbine generators with the power grid of the Republic of Belarus amounts to about 15.1 billion m^3.

Figure 2.1 – Belarusian Nuclear Power Plant

To improve the system of nuclear and radiation safety during commissioning and subsequent operation of Belarusian NPP, to obtain outside expertise from foreign specialists, the Belarusian NPP actively cooperates with international organisations, such as IAEA, WANO, European Nuclear Safety Regulators Group and others.

Through the interaction with WANO, in 2025, the State Enterprise “Belarusian NPP” representatives participated in 26 events, some events were held at the Belarusian NPP site:

- first WANO Peer Review;
- training course “Operational Decision-Making”;
- follow-up Corporate WANO Peer Review.

The areas of cooperation with IAEA include as follows:

- 2 technical cooperation projects are under implementation:

BYE2008 “Improving the Belarusian NPP operational safety during the NPP commissioning and operation” extended till 31.12.2026 (main responsible organisation – state enterprise “Belarusian NPP”). Under this project 12 scientific visits at the Russian Federation NPPs were realised, 6 such visits are planned for 2026 year;

BYE2009 “Enhancing Safety, Reliability and Efficiency of Nuclear Power Plant at the Initial Stage of its Operation” (responsible organisation – SPA “Belenergo”);

- preparatory meeting for OSART mission (Operational Safety Review Team) organization was conducted;

- participation in the 69th Session of the IAEA General Conference, as well as in the IAEA-organised 14 international events.

In accordance with the Agreement for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons, in 2025, IAEA experts conducted nine inspections of nuclear material located at the Belarusian NPP.

In 2025, based on the Agreement on Scientific and Technical Cooperation between the Republican Unitary Enterprise “Belarusian NPP” and the Joint Stock Company “Russian Concern for Electric and Thermal Energy Generation at Nuclear Power Plants” (JSC “Rosenergoatom Concern”) the plan for visits by Belarusian NPP specialists to the central office of Rosenergoatom Concern JSC and its branches – operating nuclear power plants – for 2025 was agreed upon. This plan comprised 21 visits to the Russian Federation NPPs (Smolensk NPP, Novovoronezh NPP, Balakovo NPP, Kalinin NPP, Rostov NPP, Kola NPP, Leningrad NPP) and all these visits were implemented.

CHAPTER 3
BELARUSIAN NPP INTEGRATED MANAGEMENT SYSTEM POLICY AND RADIATION SAFETY POLICY AND THEIR IMPLEMENTATION

In 2020, the Belarusian NPP introduced the Integrated Management System Policy (hereinafter referred to as the “IMS Policy”). The environmental management system is a part of the IMS.

In 2024 the IMS Policy was updated; the updated document sets the following objectives in terms of environmental management:

production of electric power and heat energy while ensuring safety, including environmental safety, as the highest priority of the NPP operations;

sustainable management of natural resources.

The above objectives are to be achieved by implementing the applicable requirements and other commitments made in the field of environmental protection.

The IMS Policy is shared with all new recruits at the time of environmental induction training.

In 2025 the state enterprise “Belarusian NPP” implemented the IMS policy by as follows:

complying with requirements of the legislation of the Republic of Belarus in the field of environmental protection and sustainable management of natural resources;

demonstrating leadership by managers of all levels for safety reasons;

exercising internal forms of control over operations;

protecting the environment by preventing, mitigating and minimising potential adverse environmental impacts associated with the Enterprise operations.

The Belarusian NPP radiation safety policy was introduced on 22 April 2019 and updated on 24 September 2024.

Exercising its functions as an operating organisation subject to the regulatory legal acts of the Republic of Belarus in the area of nuclear energy use, the State Enterprise “Belarusian NPP” demonstrates its commitment to radiation safety as one of the priorities of the activity for use of nuclear energy.

The State Enterprise “Belarusian NPP” set radiation safety Policy goal: providing protection of life and health of the present and future generations of people, as well as the environment from harmful effects of ionising radiation at the level complying with the current requirements (from Belarusian NPP activity).

The above goal is to be achieved by as follows:

implementing activities for the use of nuclear energy and ionising radiation sources, excluding an adverse effect on the living conditions of the population of the Republic of Belarus and being regulated by the radiation safety provisions set forth in the international treaties, agreements and conventions ratified by the Republic of Belarus, legislation of the Republic of Belarus, local legal acts of the Enterprise, as well as by radiation safety recommendations contained in the IAEA documents;

identifying functional responsibilities of the Enterprise personnel and representatives of the organisations involved in the radiation safety activities and their liability for compliance with the imposed radiation safety requirements;

identifying and implementing a set of institutional and technical measures aimed at increasing the radiation safety level;

forming and continuously improving the safety culture of the Enterprise personnel and also representatives of the organisations involved.

The State Enterprise “Belarusian NPP” implementing the Radiation Safety Policy of the State Enterprise “Belarusian NPP”, follows the below stated three main principles:

prohibiting all types of activities for use of ionising radiation sources in case the benefit obtained is not in excess of the risk of potential harm caused by the irradiation being additional to the natural background exposure;

not exceeding main radiation dose limits for the personnel and population set by the legislation of the Republic of Belarus;

maintaining the lowest possible and achievable level of exposure to radiation doses and the number of exposed persons when ionising radiation sources are used, considering the economic and social factors.

To comply with the above principles the Enterprise management assumes the following obligations:

bringing Radiation Safety Policy to the attention of all Enterprise employees, explaining and consistently implementing it in practice, conveying its convictions that lie behind the Policy to the personnel by setting an example with its own behaviour and managerial practice;

demonstrating leadership on radiation safety issues;

providing necessary institutional and structural conditions for effective functioning of the radiation safety management process;

monitoring and optimising radiation doses to the Enterprise personnel and representatives of the organisations involved by implementing the ALARA principles;

promoting training and the Enterprise personnel development in the field of radiation safety;

examining and supporting any employees' initiatives aimed at maintaining and improving radiation safety.

CHAPTER 4
ENVIRONMENT AND QUALITY MANAGEMENT SYSTEM

The IMS of the Belarusian NPP is a set of interrelated documented and managed processes aimed at achieving target indicators, provided that established requirements are complied with.

The Enterprise-managed IMS integrates such safety aspects as nuclear safety, radiation safety, industrial safety, fire safety, engineering safety, nuclear security, environmental safety, labour protection by separation of the appropriate processes, as well as such elements as quality assurance, human and institutional factors and socio-economic aspects. The highest priority of the Enterprise's operation is safety.

To date, the Enterprise has implemented, operates, keeps current and also certified in the National System of Conformity Attestation of the Republic of Belarus the following:

Quality Management System for the production of electricity and heat, performance of the customer's and developer's functions, delivery of engineering services during construction of 1-4 complexity class facilities for compliance with the requirements of STB ISO 9001-2015 "Quality Management Systems. Requirements" (Certificate of Conformity No. BY/112 05.01.003.01 01552 dated 17.07.2025, valid up to 16.07.2028);

Quality Management System for the production of electricity and heat for compliance with requirements STB ISO 19443-2023 (ISO 19443:2018, IDT) "Quality management systems. Specific requirements for the application of ISO 9001:2015 by organizations in the supply chain of the nuclear energy sector supplying products and services important to nuclear safety (ITNS)" (Certificate of Conformity No. BY/112 05.14 003.01 01553 dated 17.07.2025, valid up to 16.07.2028);

Health and Safety Management System in the pursuit of occupational activities for electricity and heat production for compliance with the requirements of STB ISO 45001-2020 "Occupational health and safety management systems. Requirements and guidance for use" (Certificate of Conformity No. BY/112 05.04.003.01.01265 dated 10.09.2024, valid up to 12.12.2026);

Environmental Management System (hereinafter referred to as the “EMS”) for the production of electricity and heat for compliance with the requirements of STB ISO 14001-2017 “Environmental management systems. Requirements and guidance for use” (Certificate of Conformity No. BY/112 05.10.003.01. 01264 dated 10.09.2024, valid up to 12.12.2026).

In 2025, the Enterprise continued activities to maintain and operate the IMS within the framework of the current IMS, including as follows:

the Expectations of the Management of the State Enterprise "Belarusian NPP" in the area of “Leadership and Management for Safety” were adopted;

the IMS Coordination Council functioned and was predominantly tasked to coordinate the operation of the Enterprise within the IMS framework, maintain and constantly improvement of the IMS and assure follow-up the decisions taken at the meetings held by the Coordination Council;

IMS documents for various areas of the Enterprise's activities (Mission, vision, strategy, values; guidelines, Enterprise standards, Regulations, process passports, quality assurance programs, etc.) were updated;

process risks are analysed and assessed, Risk Registers and Risk Management Programs for the IMS processes were developed;

НАЦИОНАЛЬНАЯ СИСТЕМА ПОДТВЕРЖДЕНИЯ СООТВЕТСТВИЯ РЕСПУБЛИКИ БЕЛАРУСЬ

СЕРТИФИКАТ СООТВЕТСТВИЯ

СТБ ISO 14001

Зарегистрирован в реестре **№ BY/112 05.10. 003.01 01264**

Дата регистрации 10 сентября 2024 г.

Действителен по 12 декабря 2026 г.

Республиканское унитарное предприятие
«Белорусская атомная электростанция»

Место нахождения юридического лица:
Республика Беларусь, 231220, Гродненская область,
Островецкий район, Ворнянский с/с
(2/7, административно-лабораторно-бытовой корпус (00UYA))
Место осуществления деятельности:
Республика Беларусь, 231220, Гродненская область,
Островецкий район, Ворнянский с/с
(2/7, административно-лабораторно-бытовой корпус (00UYA))

регистрационный номер в Едином государственном регистре юридических лиц и индивидуальных предпринимателей **190919639**

Настоящий сертификат соответствия удостоверяет, что система менеджмента окружающей среды
производства электрической и тепловой энергии
соответствует требованиям СТБ ISO 14001-2017 (ISO 14001:2015, IDT)

Дополнительная информация:
Внесены изменения в юридический адрес организации.
Выдан взамен бланка №0336941. Дата первичной регистрации 28.04.2021.

Заместитель директора М.П. Т.Э.Якусевич

№ 0347572

IMS internal audits, including verification of compliance with the requirements of quality assurance programs with execution of relevant documents (programs, plans, reports, corrective action plans) are performed;

external audits of Supplier Management Systems, including verification of compliance with the requirements of Quality Assurance Programs with execution of relevant documents (programs, plans, reports, corrective action plans);

existing IMS processes are monitored at regular intervals (once every 3 months);

management-performed analysis;

measures on improving the IMS are being continuously implemented.

In 2025, an independent body for management systems certification the Republican Unitary Enterprise “Belarusian State Institute of Metrology” conducted a periodic assessment of the Environmental Management System for compliance with the requirements of STB ISO 14001-2017, recertification of the quality management system for compliance with the requirements STB ISO 9001-2015 “Quality Management systems. Requirements”, and initial certification of the quality management system for compliance with requirements STB ISO 19443-2023 (ISO 19443:2018, IDT) “Quality management systems. Specific requirements for the application of ISO 9001:2015 by organizations in the supply chain of the nuclear energy sector supplying products and services important to nuclear safety (ITNS).

As a result, the IMS operation was positively assessed.

In its environmental safety activities, the Enterprise is guided by the following key principles:

compliance of operational activities with legislative, including international, requirements in the field of environmental protection;

mandatory assessment of the proposed activity impact on the environment by identifying and assessing the environmental aspects of operations;

identification of high environmental risks as a result of the Enterprise operations and development of measures aimed at preventing or minimising the NPP-related adverse effect on the environment and management of high environmental risks;

provision of transparency and accessibility of environmental information.

To achieve high environmental performance of the Enterprise, the following activities were implemented in 2025:

the environmental aspects of the departments' performance and associated environmental impacts were updated, and a “Register of Significant Environmental Aspects and High Environmental Risks of the State Enterprise “Belarusian NPP” for 2026” was compiled.

CHAPTER 5
MAIN DOCUMENTS REGULATING THE BELARUSIAN NPP ENVIRONMENTAL PROTECTION ACTIVITIES AND OPERATIONS RELATING TO FUNCTIONING OF RADIO-ECOLOGICAL MONITORING OF THE ENVIRONMENT

Environmental safety activities at the State Enterprise “Belarusian NPP” are implemented subject to the Belarusian legislation requirements:

1. Convention on Environmental Impact Assessment in a Transboundary Context (adopted in Espoo on February 25, 1991).

2. Law of the Republic of Belarus No. 208-Z of October 10, 2022 “On Regulation of Safety in the Use of Atomic Energy”.

3. Law of the Republic of Belarus of November 26, 1992, No. 1982-XII “On Environmental Protection”.

4. Law of the Republic of Belarus No. 198-Z of June 18, 2019 “On Radiation Safety”.

5. Law of the Republic of Belarus No. 2-Z of December 16, 2008 "On the Protection of Atmospheric Air"

6. Law of the Republic of Belarus No. 271-Z of July 20, 2007 "On waste management”;

7. Code of the Republic of Belarus of April 30, 2014, No. 149-Z “Water Code of the Republic of Belarus”.

8. Code of the Republic of Belarus of July 14, 2008, No. 406-Z “Code of the Republic of Belarus on Subsoil”.

9. Code of the Republic of Belarus No. 425-Z of July 23, 2008 “The Land Code of the Republic of Belarus”.

10. Resolution of the Council of Ministers of the Republic of Belarus of July 14, 2003 No. 949 “On the National Environmental Monitoring System in the Republic of Belarus”.

11. Resolution of the Council of Ministers of the Republic of Belarus No. 482 of April 28, 2004 “On Conducting Certain Types of Environmental Monitoring and Use of Their Data”.

12. Resolution of the Council of Ministers of the Republic of Belarus No. 576 of May 17, 2004 “On Conducting Radiation Monitoring and Use of Its Data”.

13. Resolution of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus of October 11, 2013 No. 52 “On the Observations in the Field of Environmental Protection and Rational (Sustainable) Use of Natural Resources”.

14. STB ISO 9001-2015 “Quality Management Systems. Requirements”.

15. STB ISO 14001-2017 “Environmental Management Systems. Requirements with Guidance for Use”.

16. GOST ISO/IEC 17025-2019. “General Requirements for the Competence of Testing and Calibration Laboratories.”

17. Norms and Rules for Nuclear and Radiation Safety “General Provisions for Ensuring the Safety of Nuclear Power Plants”, approved by Resolution of the Ministry of Emergency Situations of the Republic of Belarus No. 15 of April 13, 2020.

18. Norms and Rules for Nuclear and Radiation Safety “Safety of Nuclear Power Plants within the Buffer Area and the Radiation Control Area. Requirements for Organisation and Provision of Radiation Monitoring" approved by Resolution of the Ministry for Emergency Situations of June 30, 2016 No. 29.

19. Hygienic Standard “Indicators of Safety and Harmlessness of Water Bodies for Drinking and Household and Municipal and Amenity Water (Recreational) Use and Water in a Swimming Pool”, approved by Resolution of the Council of Ministers of the Republic of Belarus of January 25, 2021 No. 37.

20. Sanitary Rules and Norms 2.1.2.12-33-2005 “Hygienic Requirements for the Protection of Surface Waters from Pollution”, approved by Resolution of the Chief State Sanitary Doctor of the Republic of Belarus of November 28, 2005 of No. 198.

21. Sanitary Rules and Norms, and hygienic standards “Hygienic Requirements for the Design and Operation of Nuclear Power Plants”, approved by Resolution of the Ministry of Health of the Republic of Belarus of March 31, 2010 of No. 39.

22. Sanitary Rules and Norms “Requirements for the Maintenance of Surface Water Bodies at their Recreational Use”, Hygienic Standard “Permissible Values of Water Safety Indicators of Surface Water Bodies for Recreational Use”, approved by Resolution of the Ministry of Health of the Republic of Belarus of December 5, 2016 No. 122.

Other regulatory legal acts of the Republic of Belarus in the field of environmental protection and radiation safety.

CHAPTER 6
TECHNICAL COMPETENCE AND LABORATORY CONTROL INDEPENDENCE ASSURANCE SYSTEM AS PER GOST ISO/IEC 17025-2019

The Enterprise operates laboratories accredited in the National Accreditation System of the Republic of Belarus for compliance with requirements of GOST ISO/IEC 17025-2019. "General Requirements for the Competence of Testing and Calibration Laboratories".

1. An industrial laboratory (hereinafter referred to as the "DEP IL") was established in the Department of Environmental Protection (hereinafter referred to as the "DEP") complying with the criteria of the National Accreditation System of the Republic of Belarus and is accredited for compliance with requirements of GOST ISO/IEC 17025-2019 "General Requirements for the Competence of Testing and Calibration Laboratories" (Accreditation Certificate No. BY/112 2.4928 of 19.05.2017).

The DEP IL is accredited to analyse the drinking water quality by the following indicators: sampling (GOST 31862-2012), ferrum (GOST 4011-72 Para 2), odour (GOST 3351-74 Para 2), taste (GOST 3351-74, Para 3), colour (GOST 31868-2012, method B), turbidity (GOST 3351-74, Para 5), pH index (STB ISO 10523-2009), total hardness (GOST 31954-2012, method A), dry residue (GOST 18164-72, Para 3.1), permanganate index (STB ISO 8467-2009), total microbial count (MUK RB 11-10-1-2002 Para 8.1), thermotolerant coliform bacteria (MUK RB 11-10-1-2002, Para 8.2), common coliform bacteria (MUK RB 11-10-1-2002, Para 8.2), sulphite-reducing clostridia spores (MUK RB 11-10-1-2002, Para 8.4), synthetic surface active substances (FR.1.31.2014.17189 (Federal Environmental Regulatory Documents 14.1:2:4.158-2000 (M01-06-2013)), petroleum products (FR.1.31.2012.13169 (Federal Environmental Regulatory Documents 14.1:2:4.128-98 (M 01-05-2012)).

The DEP IL is also accredited for analysing the quality of surface water and waste water by the following indicators: sampling (GOST 31861-2012, STB 17.13.05-29-2014/ISO5667-10:1992, STB ISO 5667-6-2021), mass concentration of hydroxyethylidene diphosphonic acid of zinc disodium salt (MVI.MN 6332-2021), suspended solids (MVI.MN 4362-2012), water salt content (MVI.MN 4218-2012), total phosphorus (GOST 18309-2014, method G), total ferrum (STB 17.13.05-45-2016), pH index (STB ISO 10523-2009), chemical oxygen demand (FR.1.31.2012.12706 (PND F14.1:2:4.190-2003)), phosphate ion (GOST 18309-2014, method Б), ammonium ion (STB 17.13.05-09-2009/ISO 7150-1:1984), nitrite ion (STB 17.13.05-38-2015), nitrate ion (STB 17.13.05-43-2015), chloride ion (STB 17.13.05-39-2015), sulphate ion (STB 17.13.05-42-2015), synthetic surface active substances (FR.1.31.2014.17189 (PND F 14.1:2:4.158-2000 (M01-06-2013))), petroleum products (FR.1.31.2012.13169 (PND F 14.1:2:4.128-98 (M 01-05-2012)), temperature (MVI.MN 5350-2015), mass concentration of hydroxyethylidene diphosphonic acid of zinc disodium salt (AMI.MN 0015-2021), Kjeldahl nitrogen concentration (MVI.MN 4139-2011), biochemical oxygen demand with dilution (STB

17.13.05-22-2011/ISO 5815-1:2003), biochemical oxygen demand without dilution (STB 17.13.05-23-2011/ISO 5815-2:2003).

Accreditation Certificate validity: up to 19.05.2027.

2. The radiation safety shop (hereinafter – RSS) and radiation monitoring laboratory (hereinafter referred to as the "RML") of the radiation safety shop accredited in the National Accreditation System of the Republic of Belarus for compliance with GOST ISO/IEC 17025-2019 for all types of radiation control and monitoring (Accreditation Certificate BY/112 2.5262 and № BY/112 1.1824).

The Belarusian NPP's radiation monitoring system consists of two components: automated radiation monitoring and laboratory radiation monitoring, which are carried out by two laboratories: the Laboratory of the Automated Radiation Monitoring System (hereinafter referred to as the "LARMS") and the Laboratory of Environmental Radiation Monitoring (LERMO), respectively.

The automated system consists of 10 radiation monitoring stations (hereinafter referred to as the "RMS AERMS") located in the vicinity of the nuclear power plant, where they continuously monitor radiation levels in the area (ambient dose equivalent rate (hereinafter referred to as the "ADER"), annual ambient dose equivalent (hereinafter referred to as the "AADER")) and monitor the radionuclide composition of the atmosphere.

Seven posts are equipped with filtering ventilation units that continuously sample aerosols from the ground layer of the atmosphere for subsequent laboratory radiation monitoring.

The system also includes an automated meteorological station used to forecast the potential spread of emissions based on air mass movement data.

Laboratory radiation monitoring is carried out by the LERMO for the following groups of environmental objects:

atmosphere (ground-level aerosols, fallout (precipitation, snow));

water bodies (river water, bottom sediments, aquatic vegetation, groundwater);

terrestrial objects (soils, including agricultural soils, forest and meadow vegetation);

locally produced food products (milk, meat, fish, vegetables, grain crops, drinking water, animal feed).

CHAPTER 7
INDUSTRIAL OBSERVATIONS IN THE FIELD OF ENVIRONMENTAL PROTECTION AND RATIONAL (SUSTAINABLE) USE OF NATURAL RESOURCES AT THE BELARUSIAN NPP

The state enterprise "Belarusian NPP" bears full responsibility for environmental safety at all life cycle stages.

Subject to Article 94 of the Law of the Republic of Belarus "On Environmental Protection" and in accordance with the Decree of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus dated October 11, 2013 No. 52, the following local legal acts and monitoring schedules were developed for arranging industrial observations in the field of environmental protection and rational (sustainable) use of natural resources at the Belarusian NPP:

Organisation Standard STO 1.1.1.006.0009-2022 “Basic Rules of Environmental Protection at a Nuclear Power Plant”;

Instruction for performing industrial observations in the field of environmental protection and rational (sustainable) use of natural resources at the Belarusian NPP;

Instruction for management of industrial waste at the Belarusian NPP;

Regulation for radiation monitoring at the Belarusian NPP;

Program of environmental radiation monitoring in the buffer area and radiation control area of the Belarusian NPP;

Instruction on control of radioactive substances emissions and releases at the Belarusian NPP;

Schedule of observations within local monitoring;

Schedule of industrial observations of contaminant emissions into the atmospheric air from stationary sources;

Sketch map of the location of sources of contaminant emissions into the atmospheric air within local monitoring;

Sketch map of monitoring wells as part of local groundwater monitoring;

Sketch map of location of contaminant emission sources and release sources at the production sites of a natural resources’ user.

The facilities of industrial environmental surveillance at the Belarusian NPP include as follows:

1) Buildings, structures, equipment, systems networks, etc. recorded on the Belarusian NPP balance sheet which may adversely affect the environment.

2) Natural resources such as:

surface water within the area of location of waste water discharge sources;

groundwater within the area of location of identified or potential sources of groundwater contamination;

land (including soil) within the area of location of identified or potential sources of their contamination;

flora resources recorded on the Belarusian NPP balance sheet.

3) Engineering system subject to industrial surveillance:

domestic and technical water supply systems;

sanitary sewer systems of the free access zone;

industrial storm water drainage system;

sanitary sewer systems of the controlled access zone;

petroleum products waste sewer;

the system of wastewater severed from the NPP into the Viliya River and formed by blowdown water from cooling towers and discharged salt effluents from water treatment plants which are not suitable for reuse in the in-plant process water recirculation system of technical water supply and are not subject to treatment;

water reuse and recycling systems;

waste water treatment systems;

stationary sources of contaminant emissions into the atmospheric air, including gas cleaning plants and systems for cleaning exhaust gas from mobile emission sources;

industrial waste storage facilities;

industrial waste intermediary storage facilities.

4) The following is also subject to industrial surveillance:

operation and production process management techniques directly or indirectly affecting the environmental quality;

waste generation sources, including production facilities, shops, sections, and specific technological processes;

other facilities which are used or may be used in the course of performing economic and other activities;

fuel, raw materials and materials used in economic and other activities;

quantitative and qualitative composition of contaminant emissions into the atmospheric air;

quantitative and qualitative composition of wastewater discharged into water bodies, sewerage systems and wastewater drainage networks.

The industrial observation results serve as the basis for drawing up Inspection Reports or Instruction Acts (in the event of violations of environmental legislation).

Sampling and measurement in the field of environmental protection is performed in-house at the State Enterprise “Belarusian NPP”, as well as with the involvement of accredited testing laboratories within the contractual relationship.

Subject to Decree of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus No. 5 dated January 11, 2017, the State Enterprise “Belarusian NPP” from 22.07.2020 is entered into the list of legal entities involved in local monitoring. The following are monitored locally:

emissions of contaminants into the atmospheric air from process and other equipment, technological processes, machinery and mechanisms (4 emission sources from boiler plants, Ostrovets);

wastewater discharged into surface water bodies, including through the storm water drainage system, and into surface water in the area of location of wastewater discharge sources (wastewater discharge point into the Viliya River, monitoring section on the Viliya River and control section on the Viliya River);

groundwater in the area of identified or potential sources groundwater contamination (3 monitoring wells, Enterprise territory, Ostrovets);

soils (grounds) in the area of identified or potential sources of their contamination (16 sample areas in the Enterprise territory and in its buffer area, Ostrovets).

CHAPTER 8
ENVIRONMENTAL IMPACT

8.1. Atmospheric Air Protection

The total contaminant emissions from all Enterprise sites specified in the Inventory Report of Contaminant Emissions into the Atmospheric Air (hereinafter referred to as the “Inventory Report”) amount to 95.275 tons per year. The total actual volume of contaminant emissions from all facilities in 2025 amounted to 21.32 tons, which account for 22.38% of the total determined gross amount of emissions. This indicator is higher compared to that of 2024 period (18.924 tons - 20.87 % of the total determined volume). This is due to an increase in the number of pollutant sources and emissions resulting from the inventory, as well as an increase in gas consumption during the winter heating period in boiler units.

Subject to the Inventory Report, the number of existing contaminant emission sources located at all Enterprise facilities is 152, including: stationary source of emissions - 118, fugitive emission sources – 34. The increase in the number of emission source – and, like a cloud, of atmospheric air pollutants – is attributable solely to the return of facilities previously transferred under lease and gratuitous use agreements, as well as to the commissioning of a new facility (a car wash).

Main sources contributing to contaminant gross emissions from the Enterprise facilities are provided in Table 8.1.

Table 8.1 Major contaminant emission sources at the State Enterprise “Belarusian NPP”

No.	Contaminant emission source	Emission determined by Inventory Report, in 2025t/y	Actual amount of emissions in 2024, t/y	Actual amount of emissions in 2025, t/y
1	Treatment facility complex (TFC)	8.45	8.174	8.373
2	Diesel-generator unit (DGU)	24.63	4.06	5.628
3	Auxiliary boiler (AB)	50.94	3.316	3.243
4	Free access zone shops	2.23	0.893	0.856
5	Boiler plant of military community charged for NPP security (Modular gas boiler (MGB)).	0.8	0.371	0.478

The contribution of the major contaminant emission sources to the gross emissions of the Enterprise in 2025 is shown in Figure 8.1.

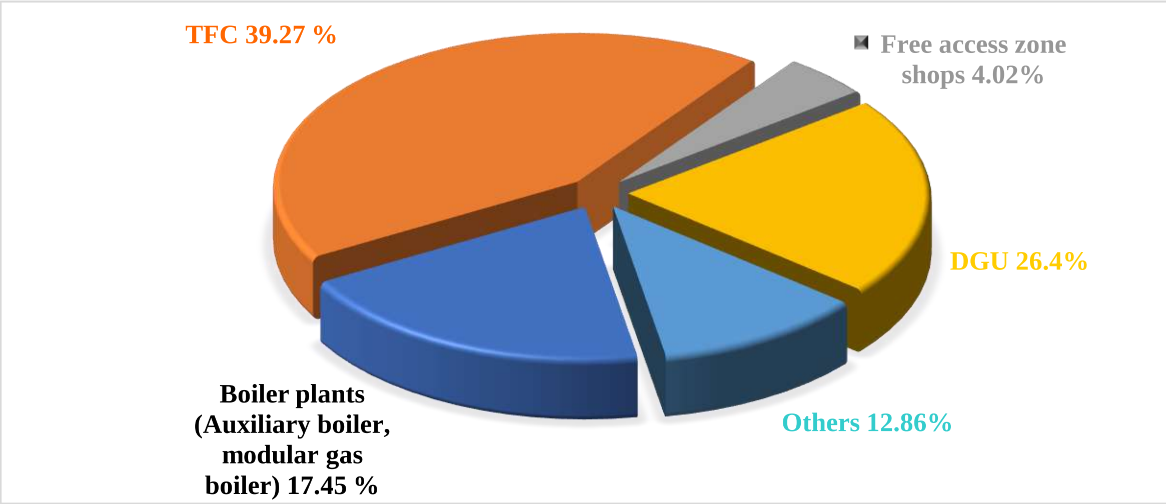


Figure 8.1 – Gross emissions from major contaminant emission sources at the Belarusian NPP in 2025, %.

Draft standards of permissible contaminant emissions into the atmospheric air have been developed for 68 sources of contaminant generation and emissions at the Enterprise facilities. These standards are included into the Integrated Permit №04.0031 dated 11.03.2025 (hereinafter – Permit).

According to the Permit, the permissible emission limits is 67.094 tons per year. The actual gross emission of contaminants released in the atmospheric air from controlled stationary emission sources under the in 2025 amounted to 12.965 tons which accounted for 19.32% of the set standardised value.

The dynamics of contaminant emissions in tons from the Enterprise boiler plants compared to the previous years is provided in Fig. 8.2.

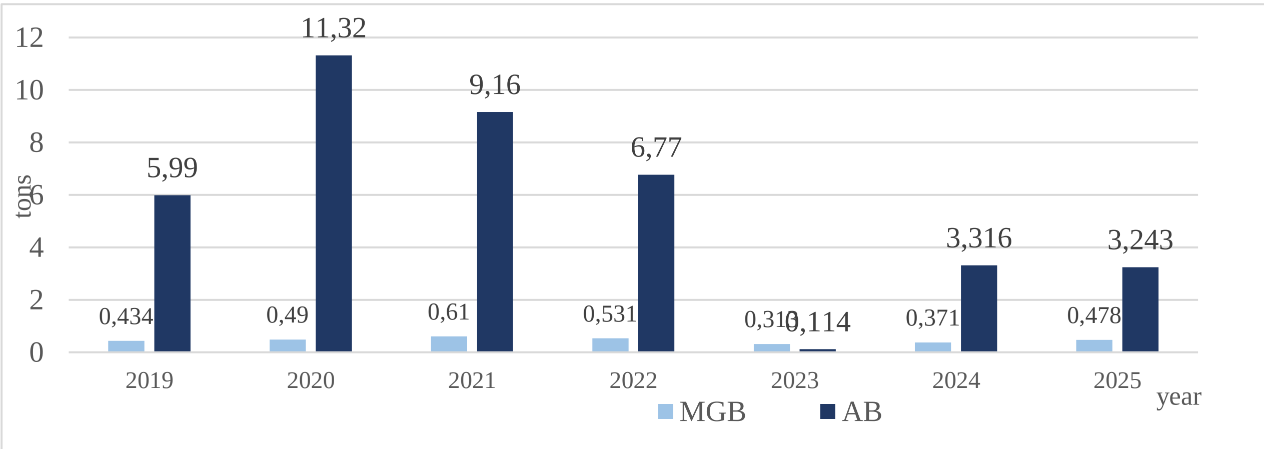


Fig. 8.2 Dynamics of contaminant emissions from Belarusian NPP boiler plants, t/y

In 2025, PM-3 was performed at the power unit No. 1. In January 2025, was conducted PM-2 at the power unit No. 2. As a result, pollutant emissions from the AB were caused by unscheduled boiler operation to support the plant's thermal loads, as well as for commissioning work.

The Enterprise emissions contain 1-4 hazard class contaminants, of this, 1st hazard class substances account for 0.00015 tons, 2nd hazard class substances - 3.235 tons, 3rd hazard class substances - 1.916 tons and 4th hazard class and unclassified hazard substances - 16.169 tons. The contribution of emissions of contaminants grouped by hazard class to the total actual emissions in 2025 is provided in Figure 8.3.

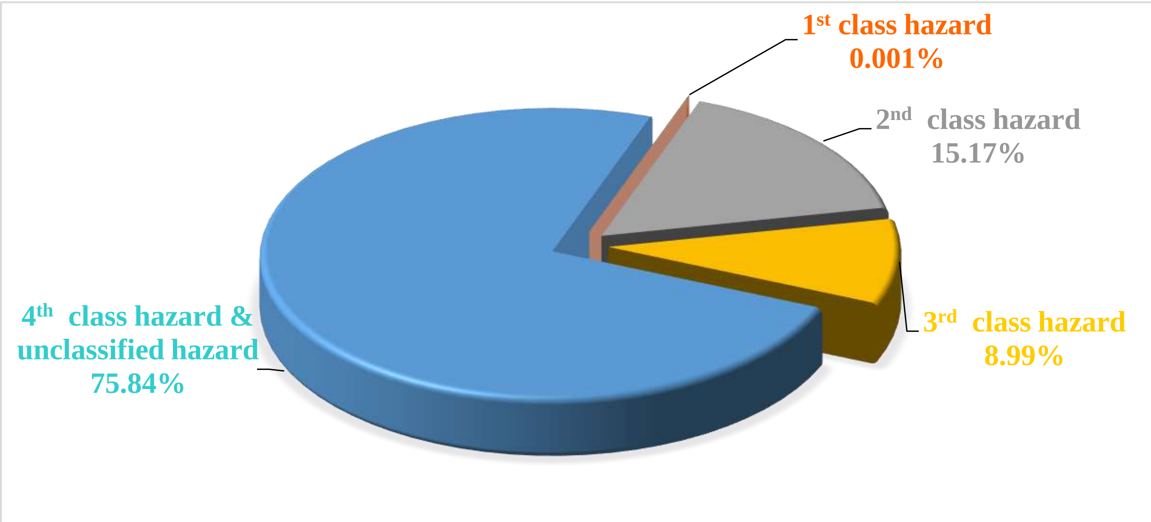


Figure 8.3 Composition of contaminant emissions into atmosphere in 2025, %.

In 2025, the analytical (laboratory) control of contaminant emissions from the impact-producing facilities was performed under the contract with RUE “Lida CSMC” No. 12/5, namely, Auxiliary boiler, Boiler plant of military community charged for NPP security, treatment facilities complex and workshops of the free access zone. In accordance with the approved schedule of industrial monitoring of emissions of pollutants into the atmosphere from stationary sources during the reporting period in 2025, 19 measurements of contaminant emissions were performed for 4 contaminants, with measurements being formalised by Protocols No. 34-ZV, No. 170-ZV, No. 275-ZV, No. 350-ZV and No. 63-ZV.

Permissible limits of contaminant emissions into the atmospheric air from all emission sources were not exceeded.

8.2 Industrial Waste Management

According to the Law of the Republic of Belarus “On Waste Management” dated July 20, 2007, No. 271-Z, the State Enterprise “Belarusian NPP” separately collects the generated industrial waste.

In 2025, containers were purchased to separately collect industrial waste generated during the planned maintenance. Instructions for waste management during the PM were developed for the contractors’ employees involved in the planned maintenance.

Due to changes in the legislation of the Republic of Belarus in the field of industrial waste management, which entailed a change in the procedure for handling certain types of waste, the pre-planned industrial waste inventory was carried out at the enterprise in 2025.

Over the period of 2025, the State Enterprise “Belarusian NPP” generated 634.805 tons of industrial waste (2024 – 601.691 tons). As of the end of 2025, 91.199 tons of waste, 1855 pcs of mercury containing lamps, were in the interim storage.

The production waste breakdown in tons by hazard classes for the reporting year is shown in Fig. 8.4.

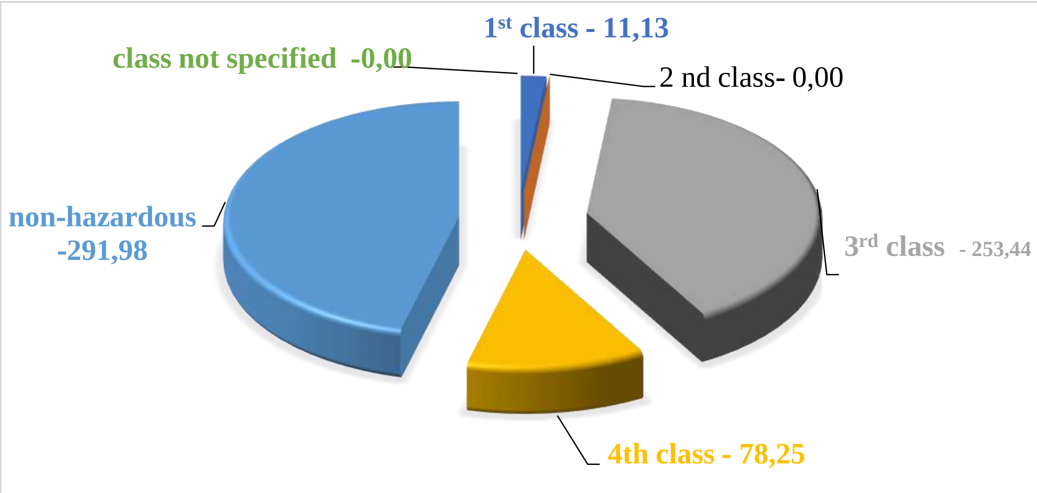


Figure 8.4 Generation of industrial waste in 2025 with breakdown by hazard class, tons

In the reporting year, industrial wastes were transferred to the waste use and disposal facilities in accordance with the permits and concluded contracts, as well as moved to interim storage sites in the territory of the Enterprise.

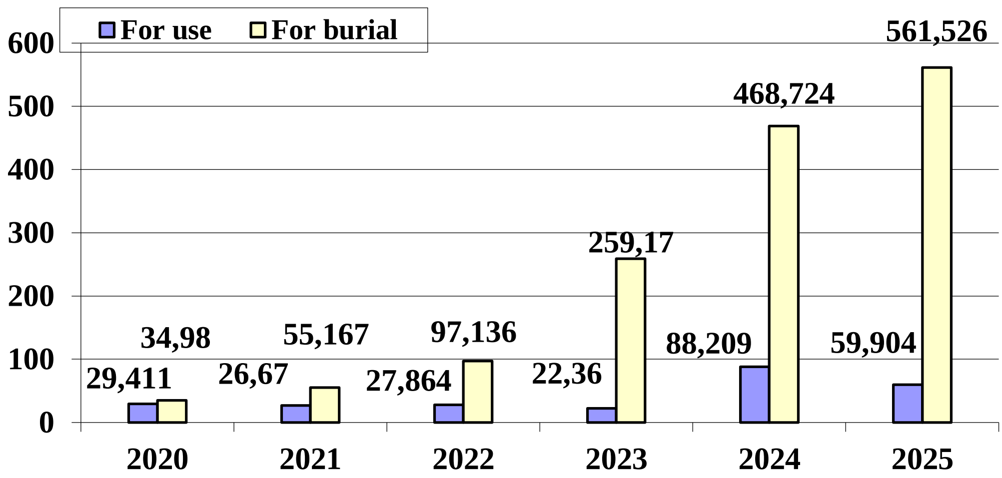


Figure 8.5 Dynamics of transfer of the industrial waste to the use and disposal facilities, tons

The share of secondary material resources of the total waste accounted to 9.44 % (in 2024 – 14.5 %). The increase in the waste transferred for disposal is due to planned maintenance of power unit No. 1 and No. 2 and implementation of relevant production processes.

The dynamics of transfer of the industrial waste to the use and disposal facilities, in tons, compared to previous years is shown in Fig. 8.5.

Mercury-containing waste (mercury and fluorescent lamps) is transferred for disposal as one transport unit accumulates: in 2020 and 2021 - 0 pcs, 2022 – 1,460 pcs, 2023 – 1,117 pcs, 2024 - 0 pcs, 2025- 1319 pcs.

During the Belarusian NPP operation in 2025, radioactive waste (after preliminary partitioning before treatment) was generated in the following quantities:

At power unit No. 1:

very low-level radioactive waste and solid waste of the controlled access zone – 68.4581 m^3;

very low-level solid radioactive waste – 23.185 m^3;

low-level solid radioactive waste – 10.126 m^3;

intermediate-level radioactive solid waste – 3.87 m^3;

high-level solid radioactive waste – 0.03 m^3;

At power unit No. 2:

very low-level radioactive waste and solid waste of the controlled access zone – 59.6018 m^3;

very low-level solid radioactive waste – 16.0233 m^3;

low-level solid radioactive waste – 5.394 m^3;

intermediate-level radioactive solid waste – 3.26 m^3;

high-level solid radioactive waste – 0.41 m^3.

After treatment and containerisation, the solid radioactive waste was placed in the solid radioactive waste storage facility in 334 containers (metal drums of 0.2 m^3 each) filled with very low-level waste and controlled access zone solid waste (82 drums – power unit No. 1, 84 drums – power unit No. 2). 2), very low level solid radioactive waste (74 drums – power unit No. 1, 43 drums – power unit No. 2), low level solid radioactive waste (16 drums – power unit No. 1, 11 drums – power unit No. 2), intermediate-level solid radioactive waste (16 drums – power unit No. 1, 8 drums – power unit No. 2), in total – 66.8 m^3 as well as six capsules for assembling in-reactor detectors (0.05 m^3 in volume) filled with high-level solid radioactive waste, with a total volume of 0.3 m^3.

8.3 Use and protection of water resources

The Belarusian NPP managed water consumption and water disposal in accordance with the limits specified in the Permit, without exceeding the design and set values.

Water consumption and water disposal in 2025 compared to previous years are shown in Table 8.2.

Table 8.2 Water consumption and water disposal at State Enterprise “Belarusian NPP” in 2025

Indicator	Water use limits set subject to Permit for special water use, thous. m^3/y	Value, thous. m^3					
		2020	2021	2022	2023	2024	2025
1. Extracted (produced) received water, total	78 516,8	5 527,4	29 567,8	29 537,8	49 686,5	60 814,146	70 034,3
2. Water used for Enterprise’s needs, total	78 001,0	160,8	15 382,2	22 509,8	3 590,4	4 064,743	4 615,8
3. Water transferred to other organisations	530,8	5 366,7	14 185,6	6 930,3	139,1	48,424	16,3
4. Waste water discharged to surface water body	38 127,4	4 155,2	19 176,6	21 998,0	26 408,2	30 991,633	35 930,96

Conducting local monitoring of wastewater and surface water at 3 observation stations (site of waste water discharge to the Viliya River, background monitoring section and control section on the Viliya River), as well as of drinking water quality is performed by the accredited laboratory DEP IL (Accreditation Certificate No. 112 2.4928, valid up to 19.05.2027). In addition, to perform a full scope of production observations, accredited third-party laboratories are contracted.

Over the period from January to December 2025, 28 tests of waste water and surface water samples collected at 3 observation stations of local monitoring were performed, with 168 protocols of measurements in the field of environmental protection being formalised.

Subject to observation results, no values were exceeded over the reporting period.

8.4 Groundwater Protection

In 2025, 3 monitoring wells at the Belarusian NPP site were entered into the List of observation stations for local environmental monitoring.

Groundwater monitoring in the areas of location of identified or potential sources of groundwater contamination includes the following 3 types of work:

groundwater level dynamics monitoring;

groundwater temperature monitoring;

groundwater chemical composition dynamics monitoring.

The chemical analysis included determination of the biochemical oxygen demand (BOD_5), level of mineralisation, pH, temperature, chemical oxygen demand (COD_{Cr}), total ferrum, potassium, sodium, sulphate ion and chloride ion.

In March 2025, subject to the contract with BelGidrotekhproekt Limited Liability Company groundwater samples from 3 monitoring wells were tested and a Protocol for measurements in the field of environmental protection No. 647-khal/2025 of 15.05.2025; No. 19-2025 OF 07.04.2025 was formalised.

Observations results revealed no excessive values over the reporting period.

8.5 Integrated Environmental Monitoring

In 2025, the Belarusian NPP performed integrated environmental monitoring in the CA and SZ.

Manpower and resources of specialised accredited organisations of the Republic of Belarus were contracted to perform those works.

According to the Belarusian NPP Monitoring Programmes, the following types of monitoring were implemented in 2025:

groundwater regime observations;

monitoring of meteorological processes, phenomena and factors, including, inter alia, meteorological and microclimate observations;

aerological monitoring;

surface water regime observations;

seismological monitoring;

geodetic monitoring of present-day crustal motion;

monitoring of contamination/pollution of the surface layer of the atmosphere, terrestrial and aquatic ecosystems, water bodies and the state of aquatic biological resources;

radiation monitoring.

8.5.1 Groundwater regime observations

In 2025, the groundwater regime observations included three types of activities: groundwater level dynamics monitoring; groundwater temperature monitoring; monitoring of groundwater chemical composition dynamics and potential contamination of it. The chemical analysis included the measurement of water physical properties, mineralisation level, water hardness, free and aggressive CO_2, O_2 oxidizability, ions Cl^-, SO_4^{2-}, HCO_3^-, Ca^{2+}, Mg^{2+}, Na^+, K^+, Fe_{total}, pH, BOD_5, COD_{Cr}.

The monitoring was performed on the equipped monitoring wells (piezometric monitoring well network comprises 26 well clusters) (Fig. 8.6, 8.7).

Figure 8.6 Piezometric well cluster

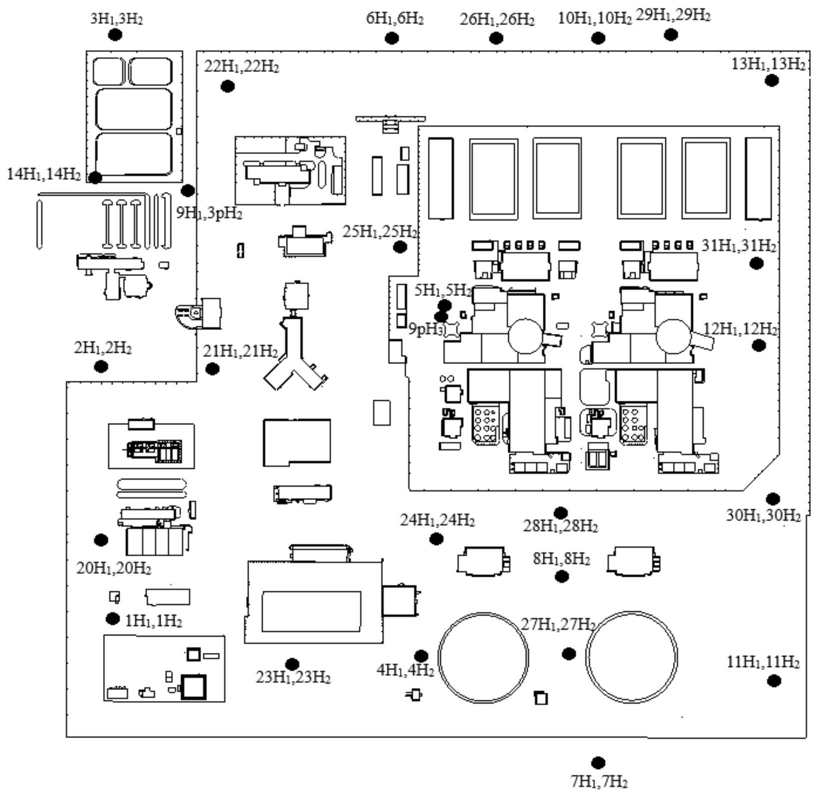


Figure 8.7 – Schematic diagram of monitoring well clusters

The 2025 ground water monitoring resulted in completion of the full scope of activities aimed at determining the groundwater regime.

In 2025, the decreasing trend in groundwater levels in monitoring wells of the Sozh terminal moraine horizon continued, the value of which is up to 0.15-0.20 m.

The groundwater level regime of the monitoring wells at the Belarusian NPP site generally correlates with the fluctuations of daily precipitation recorded by the Markuny meteorological station (hereinafter referred to as the "MS"), as shown in Figs. 8.8-8.9, and remains largely stable throughout the year (an average amplitude of fluctuations during the year is not in excess of 0.46 m). Water levels in the monitoring wells located in the Sozhsky H2 terminal moraine aquifer fluctuated in the range of 157.22 and 164.93 m of the Baltic Elevation System (hereinafter referred to as the "BS") with an average value of BS 160.65 m. The amplitude of water level fluctuations within these piezometers during 2025 varied from 0.48 to 0.94 m with an average of BS 0.60 m.

The water level in the only monitoring well constructed in the Sozhsky H3 terminal moraine aquifer fluctuated insignificantly during 2025 - at absolute levels from 150.29 to 150.81 m BS with an average value at the level of BS 150.45 m, and the amplitude of fluctuations was 0.52 m.

The data for 2025 fully correlate with the material already accumulated based on the annual cycles of observations of the groundwater regime on the territory of the industrial site of the Belarusian NPP.

Diagram of groundwater fluctuations in Sozhsky terminal moraine aquifer system

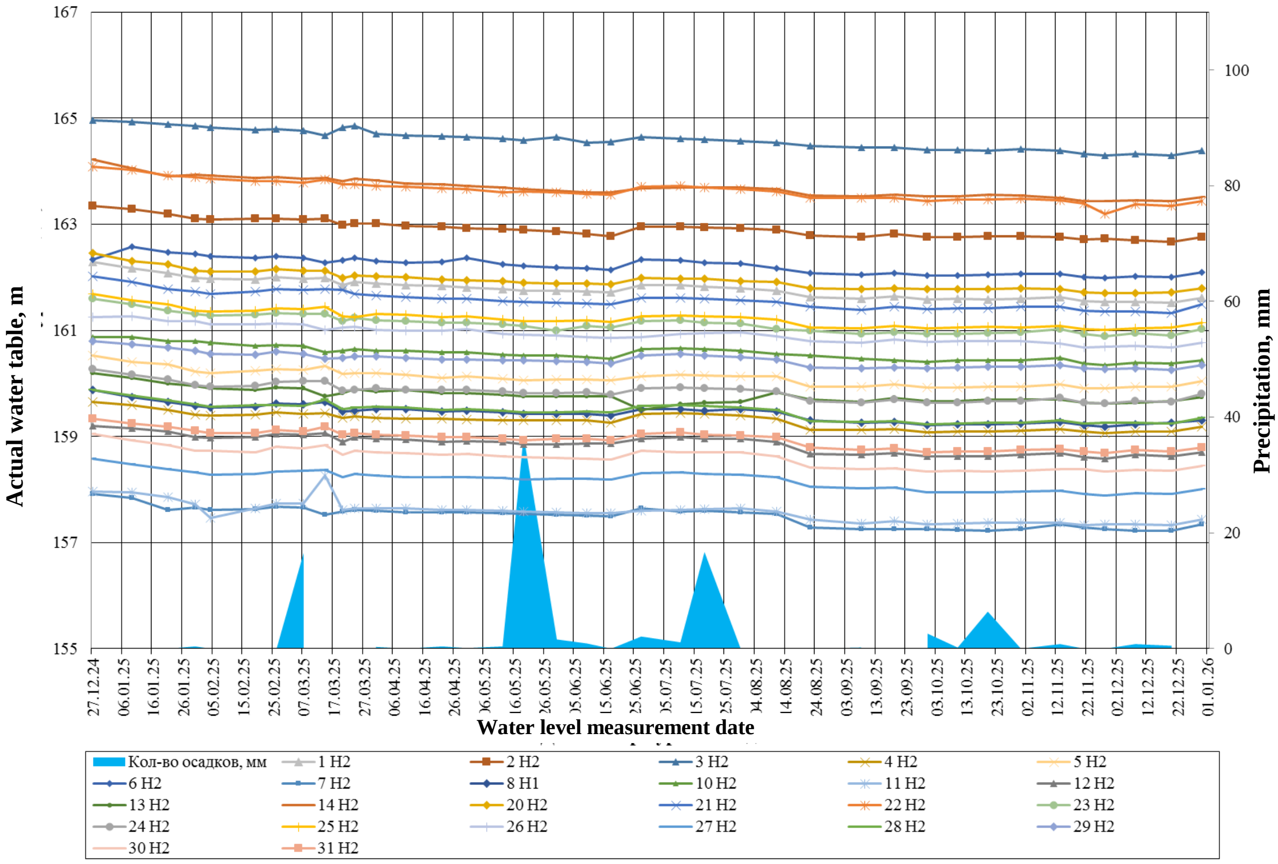


Figure 8.8 Diagram of groundwater fluctuations in Sozhsky terminal moraine aquifer horizon in 2025

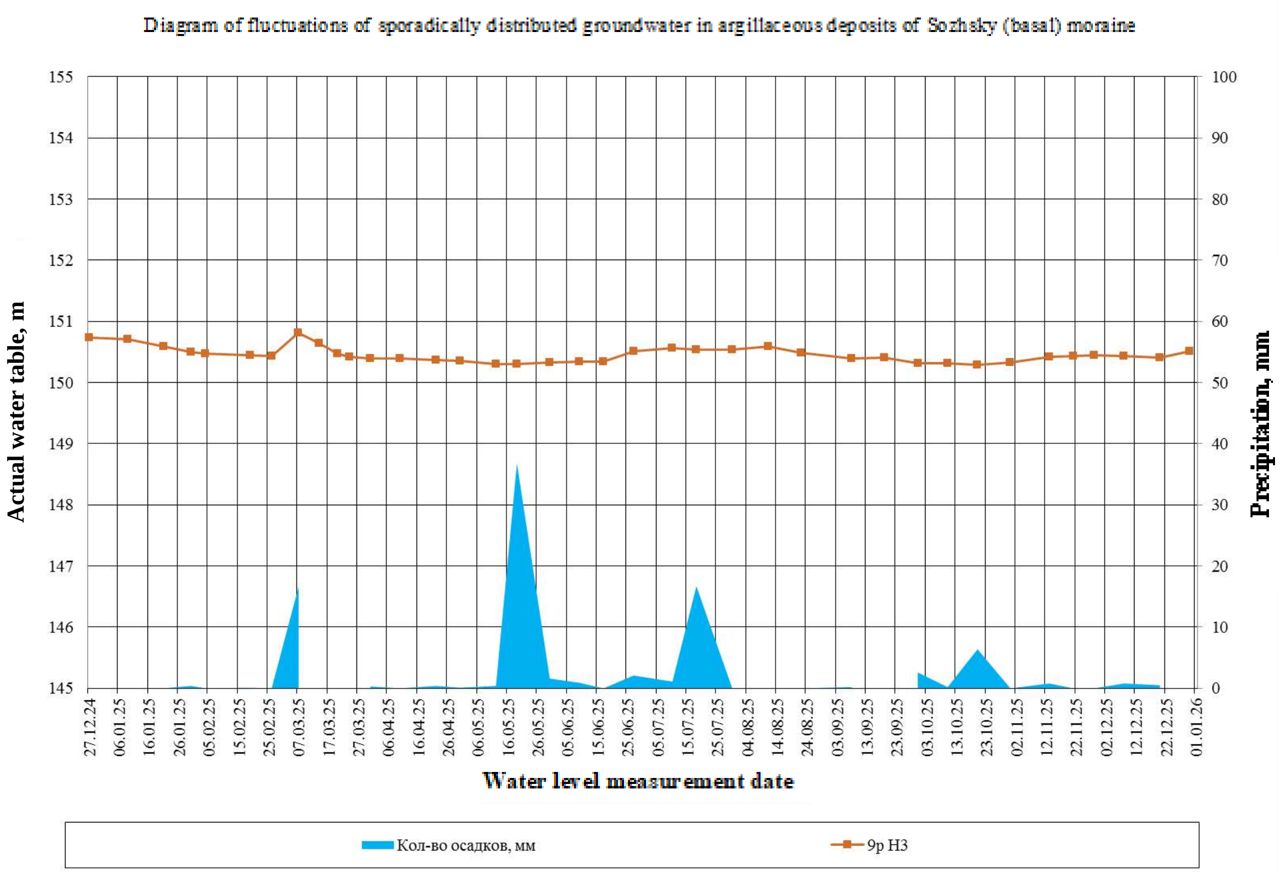


Figure 8.9 Diagram of fluctuations of sporadically distributed groundwater in argillaceous deposits of Sozhsky (basal) moraine in 2025

The temperature regime of groundwater for all monitored aquifers within the Belarusian NPP territory for 2025 exhibits similar cyclical seasonal fluctuations and depends on climatic factors. as shown in Figs 8.10-8.11.

Data analysis showed that groundwater temperature regimes correlate with the depth of the aquifer: the highest average daily temperatures and maximum fluctuation amplitudes are characteristic of sporadic groundwater and perched waters.

Composite indices of sporadically distributed groundwater and temporary perched groundwater temperature regime in 2025 are as follows:

- temperature changes from 8.1°C to 12.4°C, average – 9.8° C;
- maximum amplitude of temperature fluctuation – 2.6° C;
- minimum amplitude of temperature fluctuation – 0.8° C;
- average amplitude of temperature fluctuation – 1.6° C.

Composite indices of groundwater temperature regime of the Sozhsky terminal moraine aquifer in 2025:

- temperature changes within half a year from 8.1 to 11.1°C, average – 9.2°C;
- maximum amplitude of temperature fluctuation – 1.7°C;
- minimum amplitude of temperature fluctuation – 0.8° C;
- average amplitude of temperature fluctuation – 1.0° C.

The temperature regime of sporadically distributed groundwater in argillaceous deposits of Sozhsky (basal) moraine is characterised as follows:

- temperature changes within half a year from 8.6 to 9.4° C, average – 8.9° C
- temperature fluctuation amplitude – 0.8° C.

According to OST 41-05-263-86 classification, groundwater of monitoring wells on the Belarusian NPP industrial site area is characterised as cold all year round (temperature is not beyond the range of 4-20° C). In general, the temperature regime of groundwater remains stable.

Overall, groundwater temperatures remain stable. They are typically influenced by climate factors: in the autumn and winter, groundwater temperatures at the Belarusian NPP site decrease, on average, with a 5-7-day delay in response to the decrease in average daily air temperature. In the Sozh terminal moraine aquifer, groundwater temperatures reach their minimum values in early spring due to meltwater infiltration. Groundwater in sporadic and perched waters is typically subject to thermal influences from buildings and structures, leading to increased temperatures in winter due to its shallow occurrence.

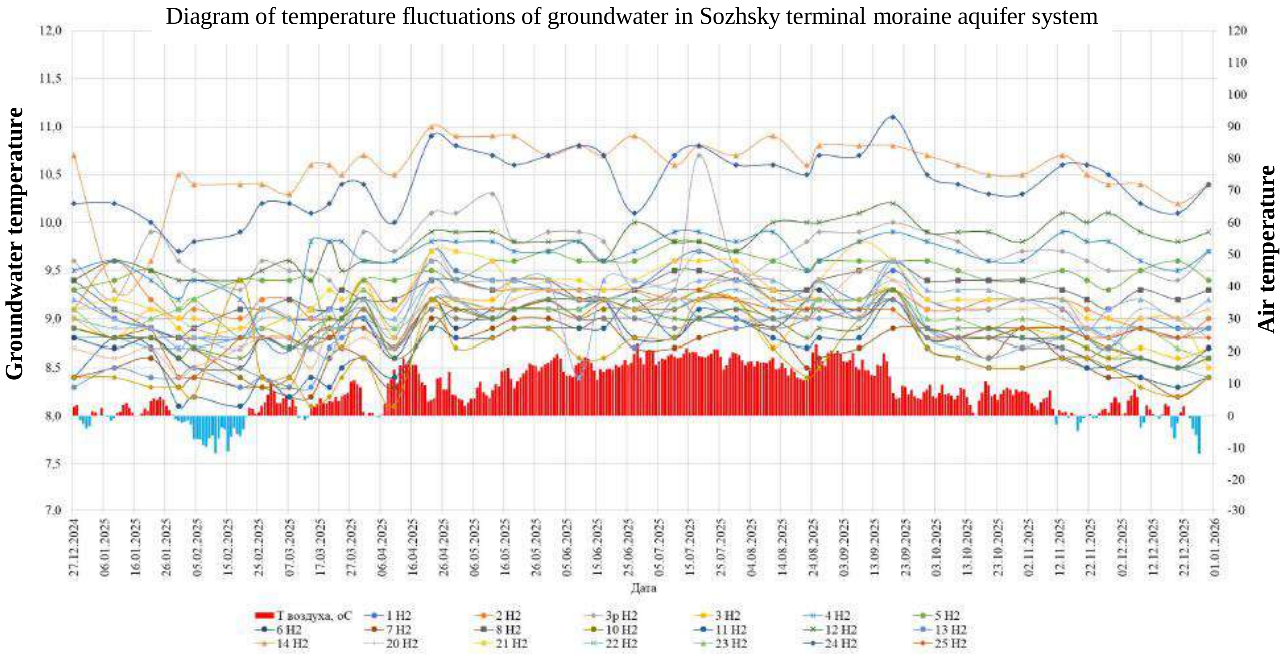


Figure 8.10 Chronological diagram of temperature fluctuations of groundwater in Sozhsky terminal moraine aquifer system in 2025

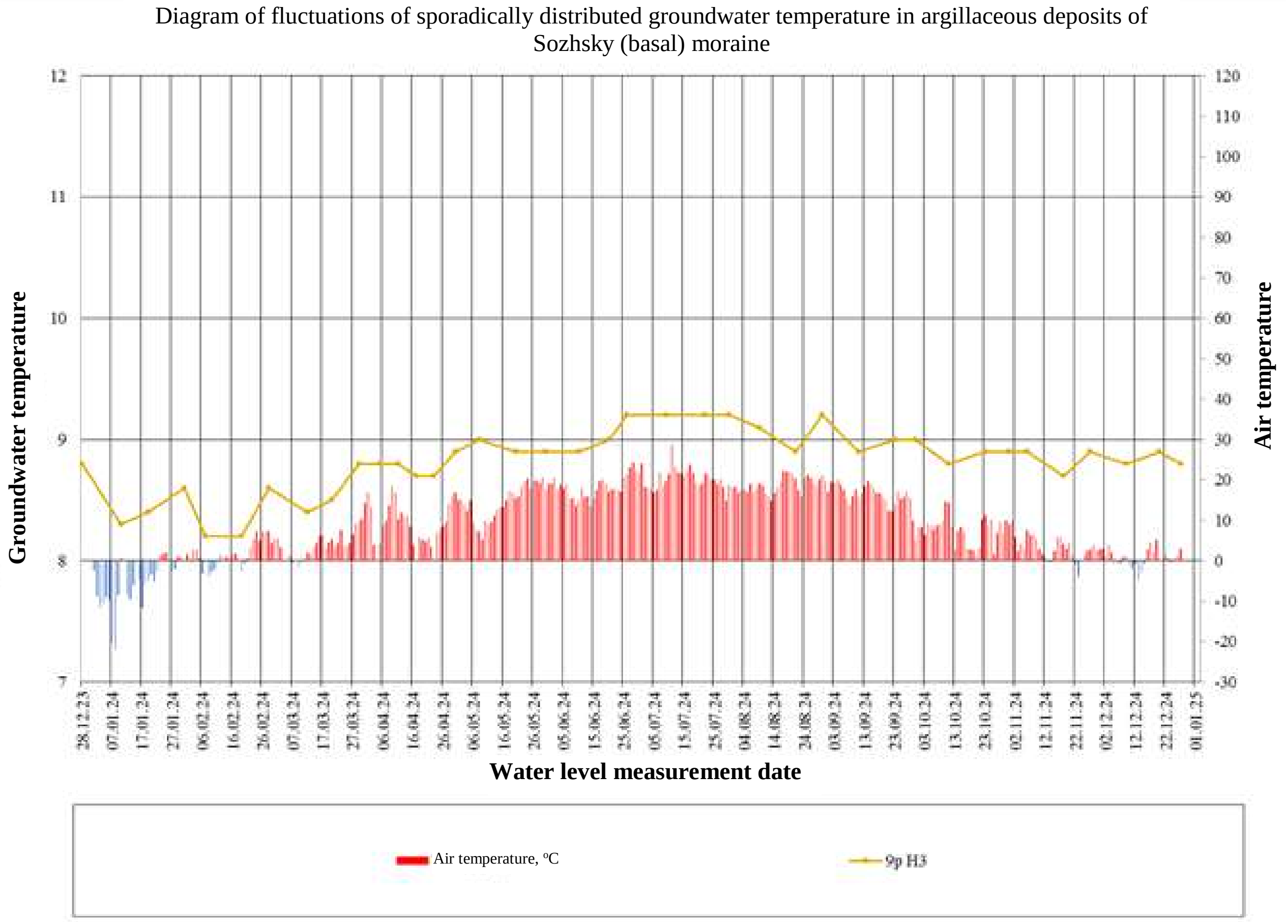


Figure 8.11 Chronological diagram of fluctuations of sporadically distributed groundwater temperature in argillaceous deposits of Sozhsky (basal) moraine in 2025

In 2025, the following types of laboratory water sample tests were performed: water physical properties (turbidity, transparency, sediment, odour, taste and colour), determination of chloride, sulphate, hydrocarbonate ions, ions of calcium, magnesium, sodium, potassium, total ferrum, acidity (pH), BOD_5, COD_{Cr}, water hardness and mineralisation, CO_2 free and aggressive acidification.

By its chemical composition the groundwater is fresh hydrocarbonate magnesium-calcium with mineralisation from 136 mg/dm^3 to 579 mg/dm^3 (with an average value of 339 mg/dm^3). The pH value is within the norm (MAC 6-9) and varies from 6,8 to 8,3 (with an average value of 7.8). In terms of degree hardness, groundwater is classified from very soft to hard (total hardness from 1.1 to 6,9 mg-eq/l (average – 3,7 mg-eq/l). The content of aggressive carbon dioxide in the collected groundwater samples was not in excess of 8.7 mg/l, and varies from 2.2-39.6 mg/dm^3. Oxidizability of the collected samples fluctuated from 0.50-2.86 mgO_2/dm^3 throughout the year, averaging 1.29 mgO_2/dm^3/year as of 2024 level. The COD_{Cr} seasonal mean value varied was at the level <10 mgO_2/dm^3 during the year, single BOD_5 values fluctuated in the range from < 0.5 to 4.0 mgO_2/dm^3, average value is 1.6 mgO_2/dm^3.

Like in the previous years, hydrocarbonates prevail in the groundwater anionic composition. Fluctuations in the values of the to-be-determined anions content during

2025 were as follows: hydrocarbonates 28.1-384.3 mg/dm^3; chlorides 1.2-64.3 mg/dm^3; sulphates 2.3-42.2 mg/dm^3; carbonates 0 (not detected)- <6.0 mg/dm^3. Calcium and magnesium cations prevail in the groundwater cation composition. Fluctuations in the values of the to-be-determined anions content during 2025 were as follows: calcium 11.0-80.0 mg/dm^3, magnesium 4.0-35.0 mg/dm^3, sodium 2.5-32.7 mg/dm^3, potassium 0.7-5.8 mg/dm^3. Water from wells in the controlled network is characterized by elevated total ferrum levels. High ferrum concentration in groundwater is natural and related to geological features. According to observations in 2025, the average total ferrum concentration exceeded the hygienic standard (0.3 mg/dm^3) and amounted to 19.3 MAC (5.8 mg/dm^3).

There are no observed trends toward increasing groundwater pollution in 2025; the chemical composition of groundwater at the Belarusian NPP site remains relatively constant.

Groundwater monitoring along the hydrogeological network of the Belarusian NPP site showed that groundwater in this area was largely in its natural state in 2025.

8.5.2 Monitoring of meteorological processes, phenomena and factors

In 2025, 8-term observations of meteorological parameters were performed at the Markuny MS, as well as a complex of special observations: gradient observations of air temperature and humidity, wind velocity at 0.5 and 2 m heights, observations of glaze-ice phenomena, measurements of soil temperature at depth, and observations of evaporation from the water surface (Figs. 8.12, 8.13).

Figure 8.12 – Markuny MS

In 2025, the average air temperature according to the Markuny MS data was 7.9° C and that of soil - 9.5 °C. The coldest month of 2025 was February with an average monthly air temperature of minus 4.4° C, the hottest month was July with an average temperature of 18.9°C. The absolute maximum air temperature of 30.7 °C was recorded on 03.07.2025, the absolute minimum was observed in February (16.02.2025) and it was minus 18.7 °C.

Average annual relative air humidity was 90%. Maximum humidity (97–100%) was observed in the autumn-winter period (October-January), and the minimum (73%) was observed in April. The diurnal variation of relative humidity during all months shows a decreasing trend in the daytime hours with minimum values at 03:00 p.m. local time. From March to September, relative humidity and saturation deficiency have a strongly pronounced diurnal variation, in other months it is more smoothed out.

The water vapour partial pressure repeats variations of mean monthly air temperature and increases from winter to summer. In 2025, monthly averages varied between 6.9 and 4.0 mb in January and February reaches maximum mean monthly values in July (19.2 mb, respectively) and decreases again by the end of the year to values of 6.8 mb (December).

During 2025, the mean monthly pressure at the Markuny MS varied from 993.8 hPa (July) to 1011.6 hPa (February) and averaged 998.7 hPa. The highest atmospheric pressure was recorded on February 7th reaching 1032.1 hPa, the lowest - 967.6 hPa on March 14th.

Figure 8.13 Markuny MS measuring instruments

The year 2025 was characterized by a high frequency of rainy days—217 for the year-but with sharp seasonal variability in their intensity. The total number of days with precipitation (>0.1 mm) was 200, reaching 27 in May, although the bulk of this was light and moderate rain. Heavy precipitation was most frequent during the warm period: from May to July, all downpours exceeded 20 mm, with July being the year's unique year-round event with daily totals exceeding 40 mm. During the cold season (October-April), precipitation was predominantly drizzly, without extreme manifestations. Thus, the precipitation pattern was strongly convective in summer and frontal-overwhelming during the rest of the year.

The wind regime in 2025 is characterized by pronounced seasonal variability of prevailing directions, moderate speed and a significant recurrence of calms in certain months. (Fig. 8.14).

Figure 8.14 Windrose diagram according to the Markuny MS
in January-December 2025

The average annual wind speed in 2025 was 3.4 m/s. The windiest months were January (4.5 m/s) and June (4.4 m/s), while the calmest was July (2.3 m/s).

Throughout 2025, light and moderate winds (speeds from 0 to 5 m/s) predominated. Their combined share is 85% of the year. Strong winds (≥6 m/s) were rare, accounting for only 15% of the year. Maximum wind speeds were observed during the cold period (January, December) and early spring (March), when the frequency of winds of 6–7 m/s reached 13–19%, and gusts of 8–11 m/s accounted for 3–8%. The minimum number of strong winds occurs in the summer (July-August), when their share drops to 5–6%, and winds of ≥8 m/s are virtually absent. The frequency of calms and winds with a speed of 1 m/s was most often observed in February-May - 40-46%, and July-November - 39-61%.

Comparison of the observation series obtained during 2015-2025 at the Markuny/Oshmyany/Lyntupy MSs allow the conclusion to be made regarding the representativeness of meteorological observations of the Markuny meteorological station in relation to the analogue stations.

All of the above indicators allow for the conclusion that it is possible to use long-term data of the above mentioned analogue stations for calculation of meteorological parameters for monitoring purposes in the area of the Belarusian NPP location.

8.5.3 Microclimate observations

In 2025, microclimatic observations were continued in the Belarusian NPP area. Microclimate observations were conducted at 10 points on two profiles. Profile No. 1 Michalishki-Chekhi is oriented from north to south, profile No. 2 Chekhi-Bobrovniki - from east to west (Fig. 8.15). Observations are conducted twice daily from 06:00 to 07:00 a.m. and from 06:00 to 07:00 p.m.

Figure 8.15 Layout of microclimate observation stations

A comparative analysis of meteorological parameters was conducted between the Lyntupy, Markuny, and Oshmyany meteorological stations and the local pickets, using ground-level meteorological observations.

Thus, a comparative analysis of morning and evening air temperature readings revealed a very close linear relationship between the compared weather stations and pickets: the correlation coefficients are close to 1.0 and range from 0.96 to 0.97.

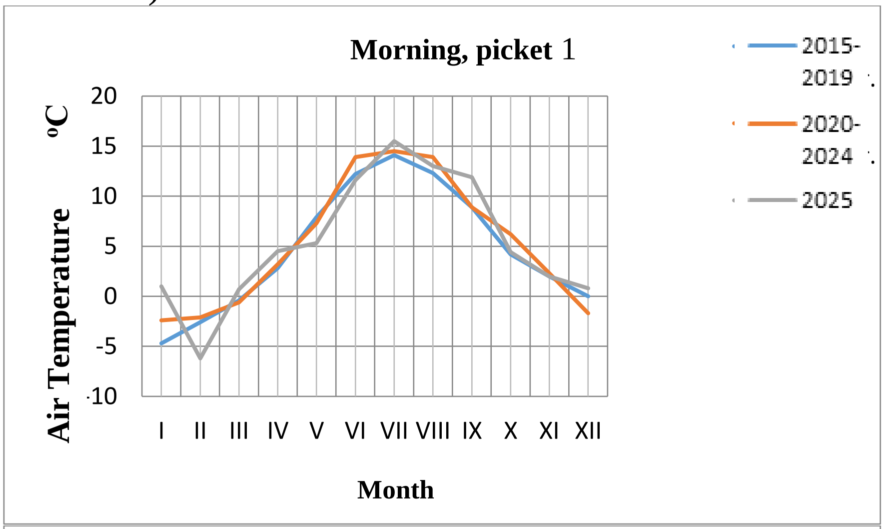
The linear correlation coefficients for relative humidity values at the pickets and weather stations in the morning hours were lower – 0.38–0.42. In the evening, the correlation coefficients ranged from 0.71 to 0.77, indicating a stronger linear relationship between the values at the pickets and weather stations.

A comparative analysis of wind speeds revealed a linear relationship between the values at the pickes and weather stations, with correlation coefficients ranging from 0.70 to 0.85 in the morning and from 0.58 to 0.79 in the evening.

To simplify the analytical information, the data for the first 10 years of observations were averaged over five-year periods: 2015–2019 and 2020–2024. This is appropriate, as the compared data relate to the same areas and the methodology for determining them is consistent. Overall, this will allow us to identify cyclical patterns and long-term trends.

For a comparative analysis, the values of meteorological atmospheric parameters at the observation stations (data from the central point – point 7 and the outer observation stations – point 1 and point 10) were used. The comparison was made with urgent data (at 6:00 a.m. and 6:00 p.m.) from the Lyntupy meteorological station, the Markuny meteorological station, and the Oshmyany meteorological station.

Combined temperature graphs at the observation stations showed that in 2025, January temperatures were significantly above average, while in February, they were significantly lower. The year-over-year trend indicates a lack of seasonal fluctuations. (Figs. 8.16-8.18).



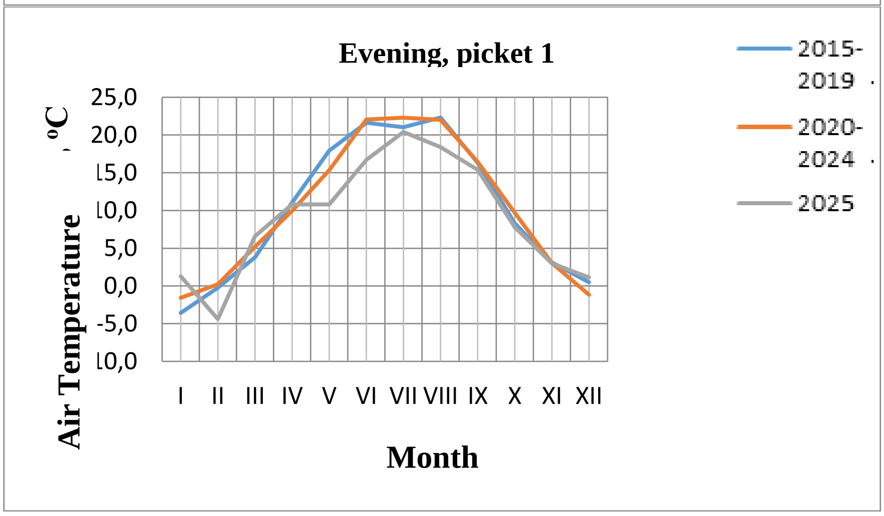
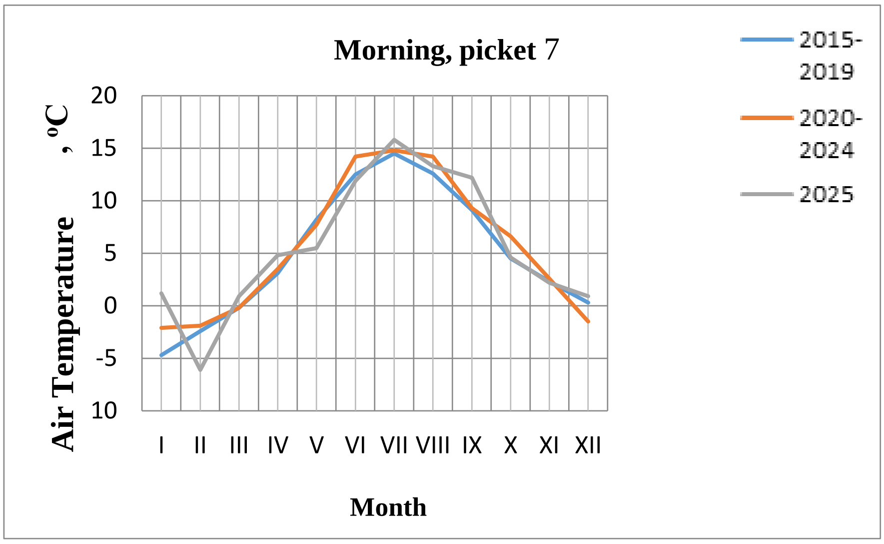


Figure 8.16 Combined air temperature variation graphs at picket 1 over 2015-2019, 2020-2024 and 2025 observation periods



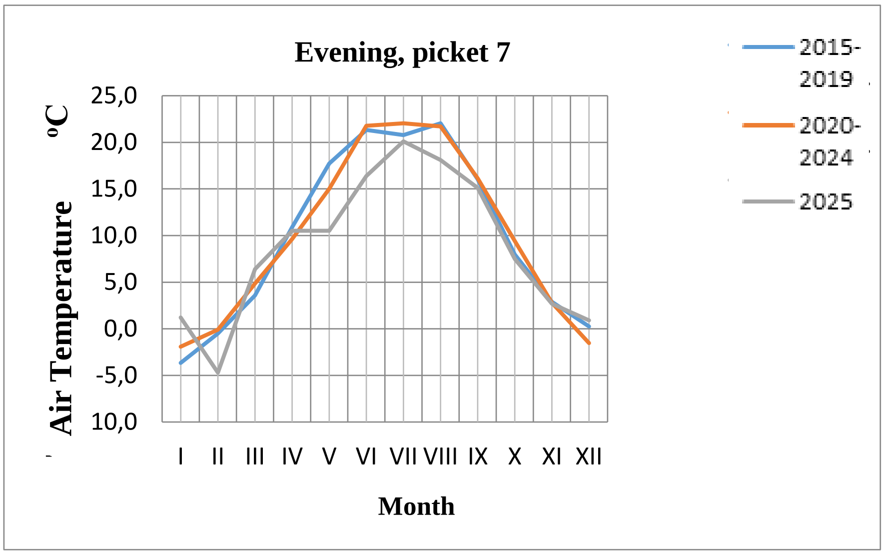
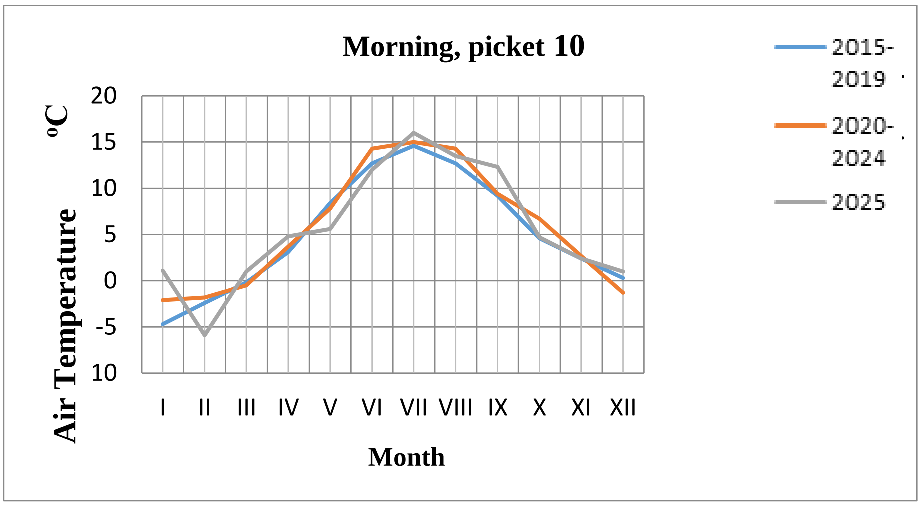


Figure 8.17 Combined air temperature variation graphs at picket 7 over 2015-2019, 2020-2024 and 2025 observation periods



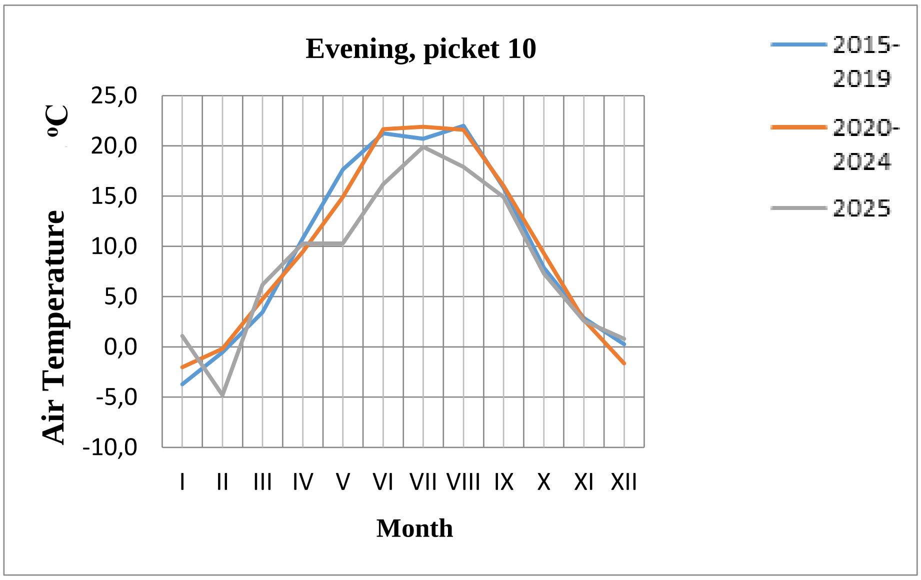
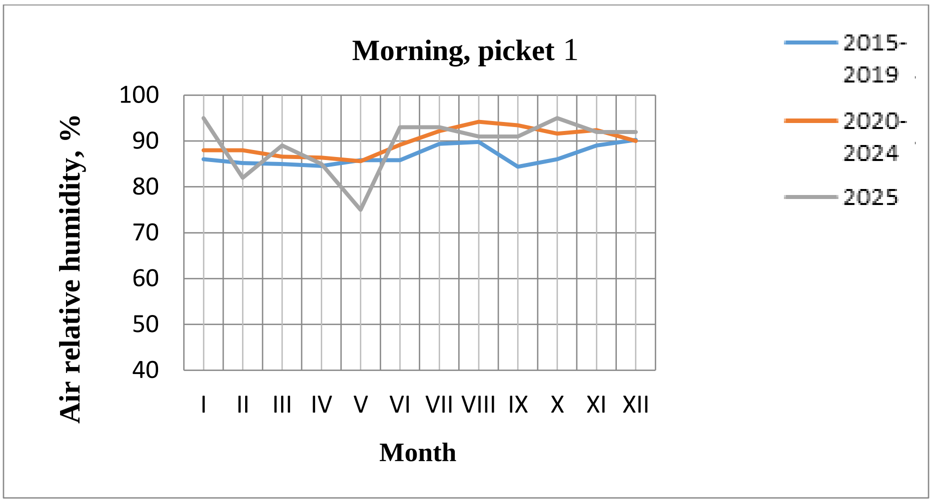


Figure 8.18 Combined air temperature variation graphs at picket 10 over 2015-2019, 2020-2024 and 2025 observation periods

The combined graphs of the relative air humidity dynamics demonstrate similar long-term dynamics and the presence of short-term fluctuations (Figs. 8.19-8.21).



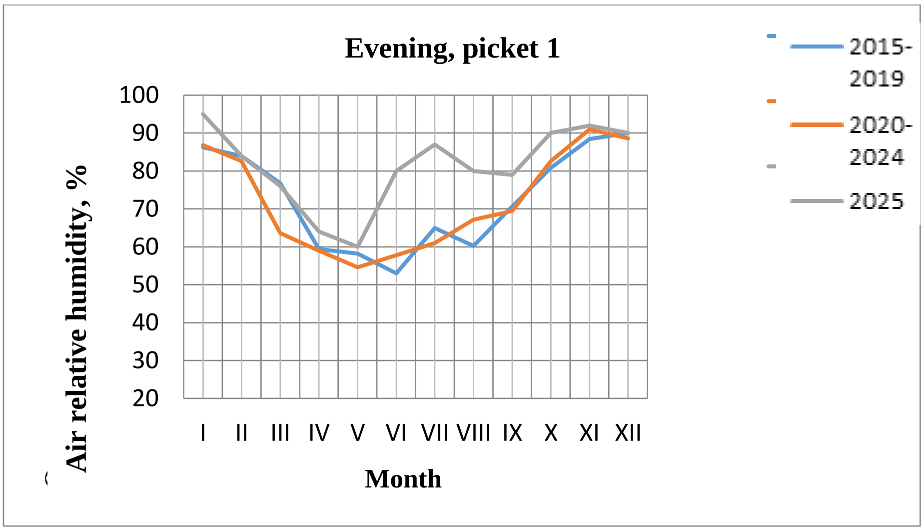
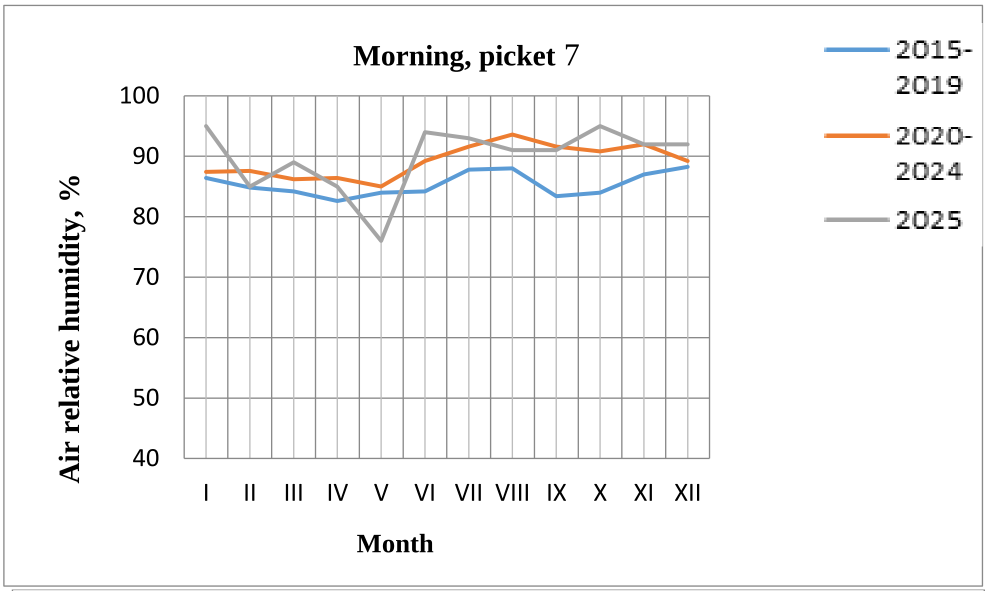


Figure 8.19 Combined air relative humidity variation graphs at picket 1 over 2015-2019, 2020-2024 and 2025 observation periods



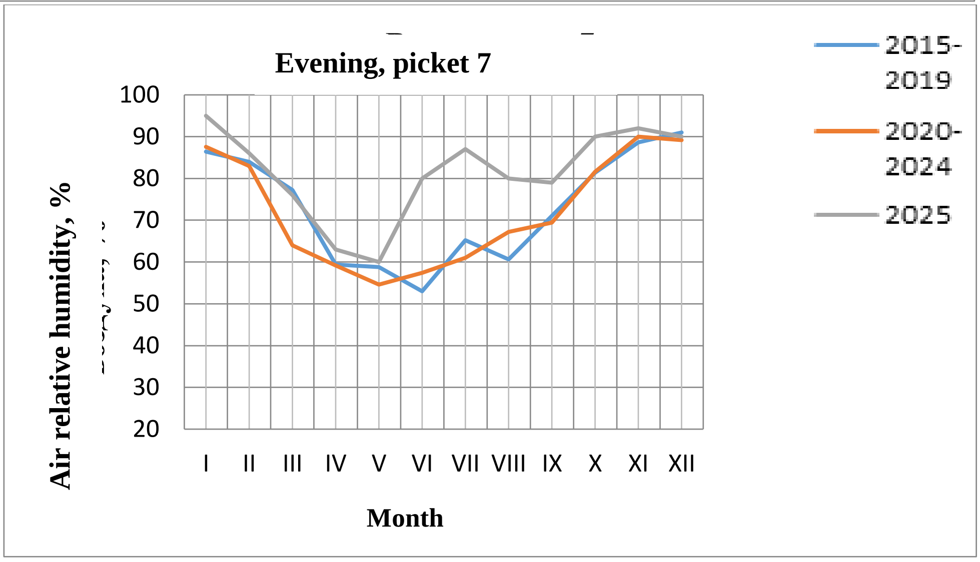
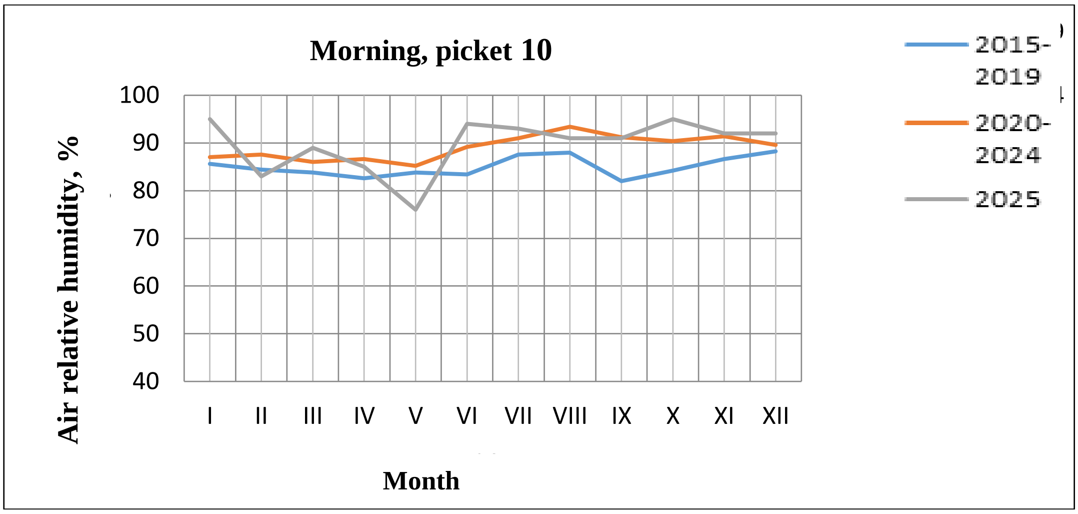


Figure 8.20 Combined air relative humidity variation graphs at picket 7 over 2015-2019, 2020-2024 and 2025 observation periods



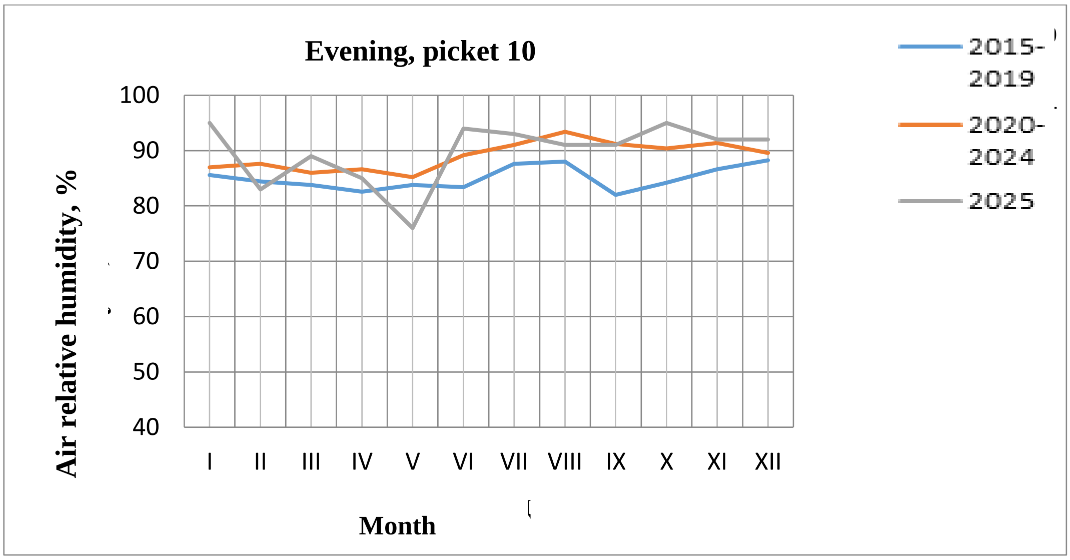
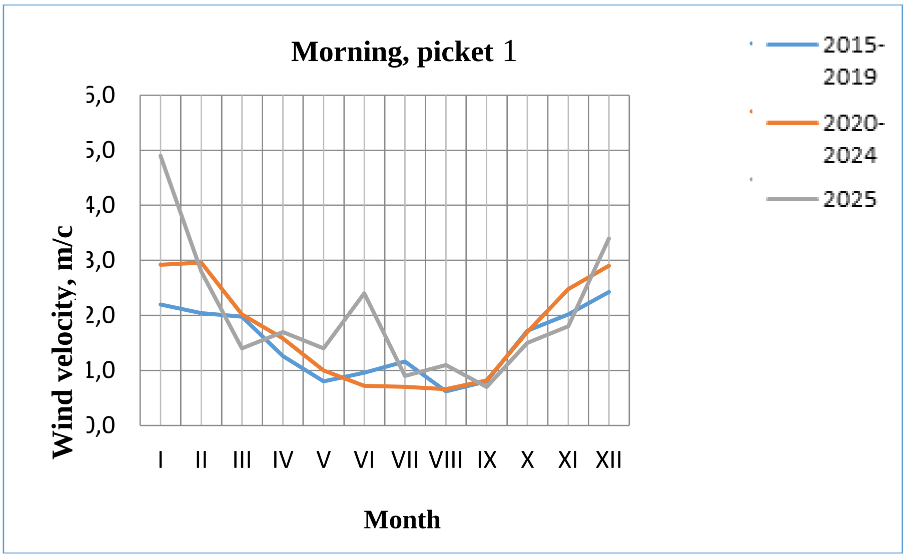


Figure 8.21 Combined air relative humidity variation graphs at picket 10 over 2015-2019, 2020-2024 and 2025 observation periods

The combined graphs of wind speed trends showed that over the entire observation period since 2015, the highest wind speed values (above average values) were observed in the morning in January and in the evening in January, June, August and December 2025 (Figs. 8.22-8.24).



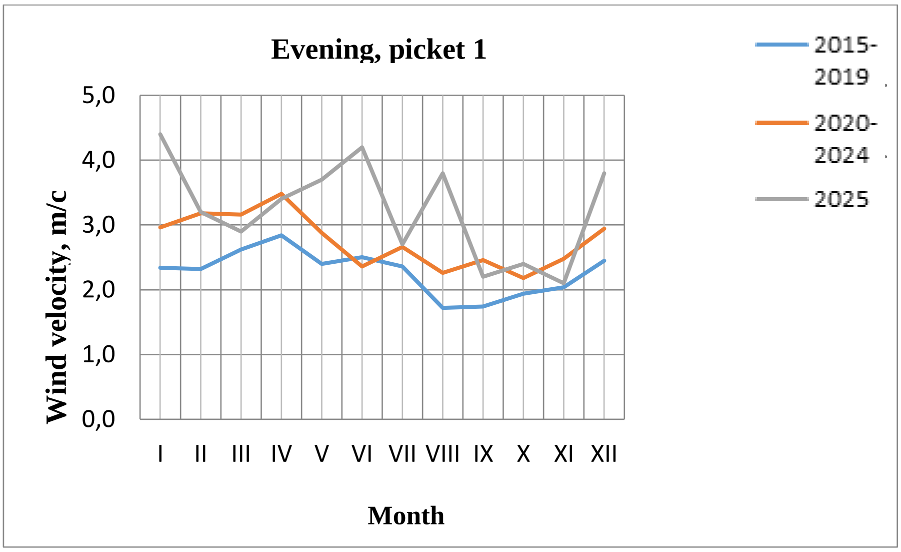
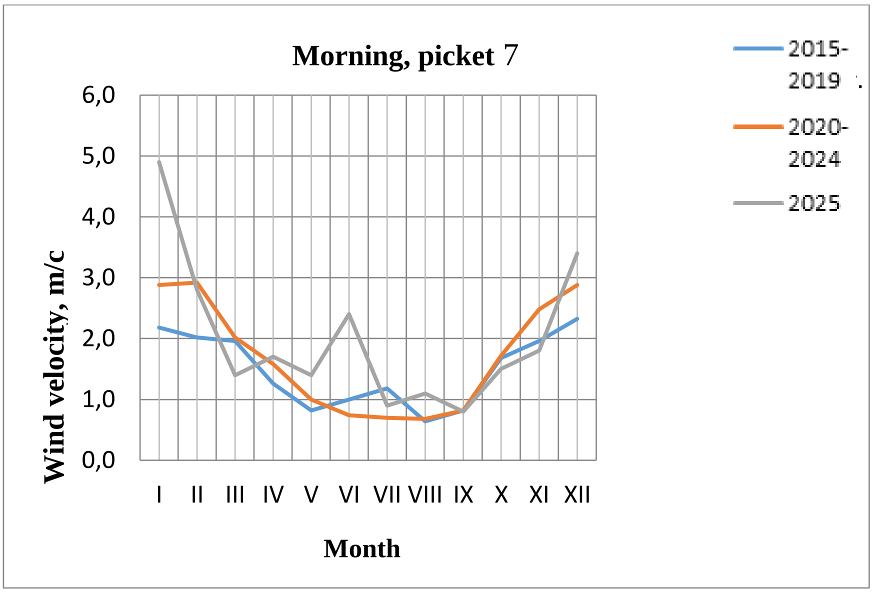


Figure 8.22 Combined wind velocity variation graphs at picket 1 over 2015-2019, 2020-2024 and 2025 observation periods



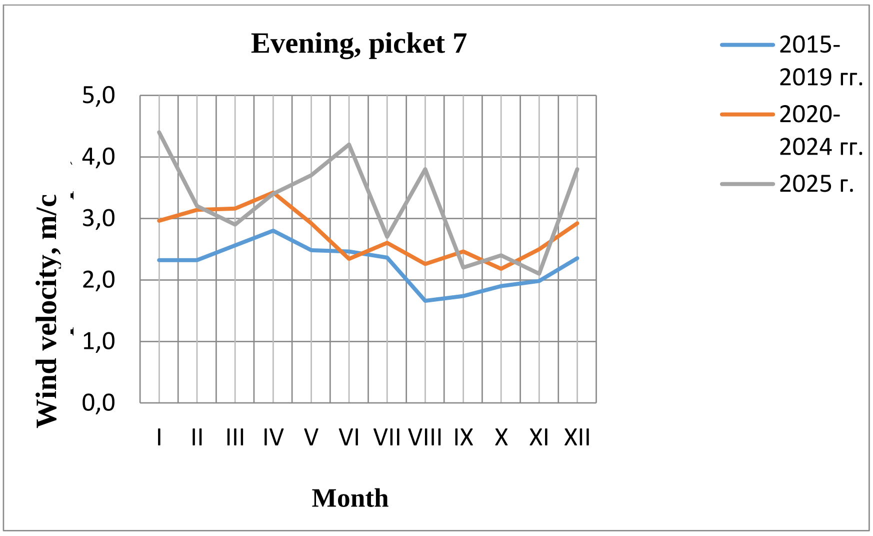
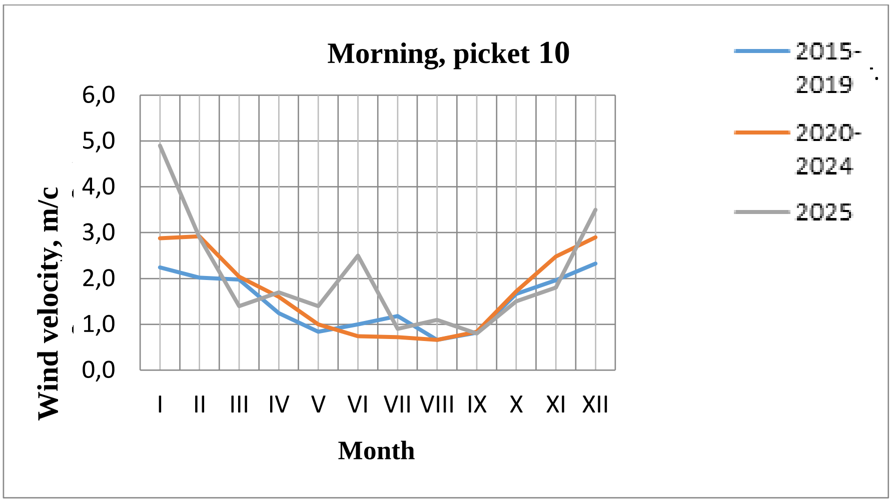


Figure 8.23 Combined wind velocity variation graphs at picket 7 over 2015-2019, 2020-2024 and 2025 observation periods



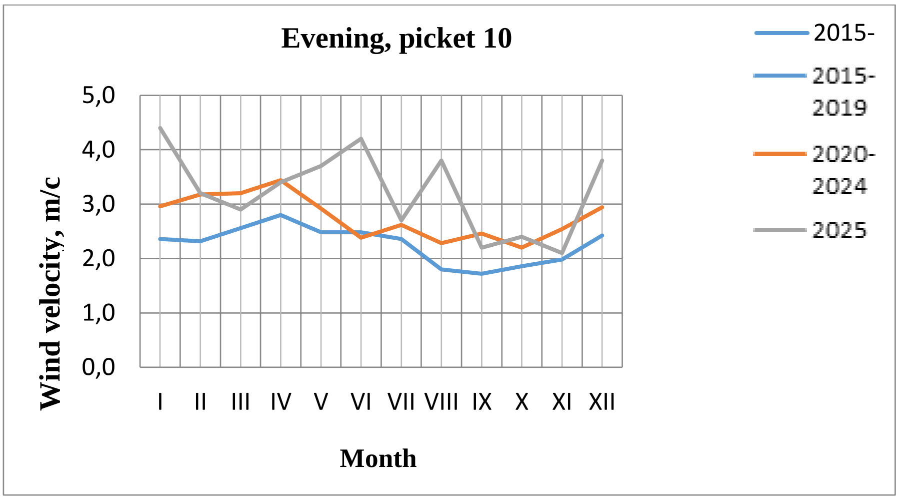


Figure 8.24 Combined wind velocity variation graphs at picket 10 over 2015-2019, 2020-2024 and 2025 observation periods

Natural and climatic features of the area correspond to yearly seasonality, microclimatic indicators change regularly and predictably. 2025 data show that the operation of cooling towers has no significant environmental impact.

8.5.4 Aerological monitoring

In 2025, exploration within the aerological monitoring of the atmospheric boundary layer condition (hereinafter referred to as the ABL) was performed at Markuny MS. The calculated characteristics of the atmospheric dispersion conditions by seasons and in general for a year at different altitudes were obtained. The ABL main characteristics were analysed. The observations were performed using the SODAR/RASS measurement system (Fig. 8.25).

Figure 8.25 SODAR measurement system

The 2025 observation results showed that vertical temperature gradients and temperature inversions are indicative of intercepting layers presence in the ABL and qualitatively characterise the impurities dispersion conditions. In an average year, the vertical temperature gradient is positive and varies for the 0-300, 0-600 and 0-900 m layers within the range of 0.25-0.41° C/100 m. Among different types of inversions, raised inversions prevail. Total frequency of unfavourable stability classes (E and F) of the exploration period is about of 9.9 %.

Data analysis showed that during 2021-2025, the total frequencies of unfavourable stability classes (E and F) were minor and ranged 5.1-10.9% (annual averages). During the spring months, when unfavourable impurities dispersion conditions frequently occur in the ABL, the total frequencies of unfavourable stability classes (E and F) varied from 6.5% (2022) to 15.2% (2023). The D class (ranging from 35.8-35.9% in 2021 to 53.6% in 2025), which is favourable for dispersion of impurities, prevailed over 2021-2025 period.

Average wind velocities are moderate, and generally south-western winds prevail over the exploration period (Fig. 8.26).

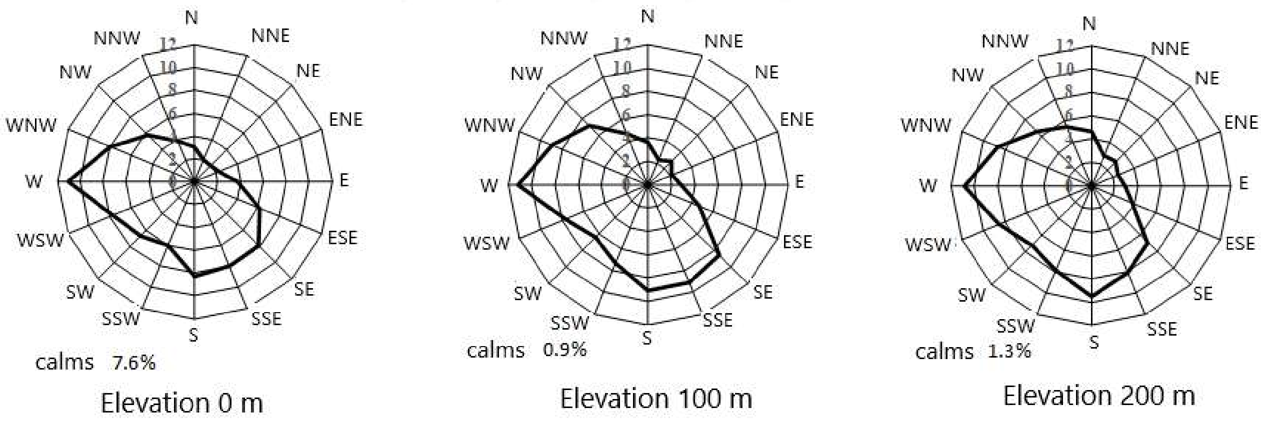


Figure 8.26 Average annual wind rose at elevation 0, 100 and 200 m in 2025

Thus, low interannual variability and interannual stability is typical for the estimated values of the ABL aerological characteristics.

The obtained results suggest that favourable atmospheric dispersion conditions are largely characteristic of 2025.

8.5.5 Surface water regime observations

The annual complex level, runoff, thermal regimes, water turbidity and ice phenomena observations on the rivers of Viliya, Stracha, Gozovka and Polpa were completed in 2025 (Fig. 8.27).

Figure 8.27 Water gauge station

The results of the water level regime observations in 2025 revealed that the water level of the Viliya River near the settlement of Malye Sviryanki varied from 2.08 m BS (14,16.05.2025) to 3.02 m BS (02.08.2025). The average water level in 2025 was 2.43m BS (Figure 8.28).

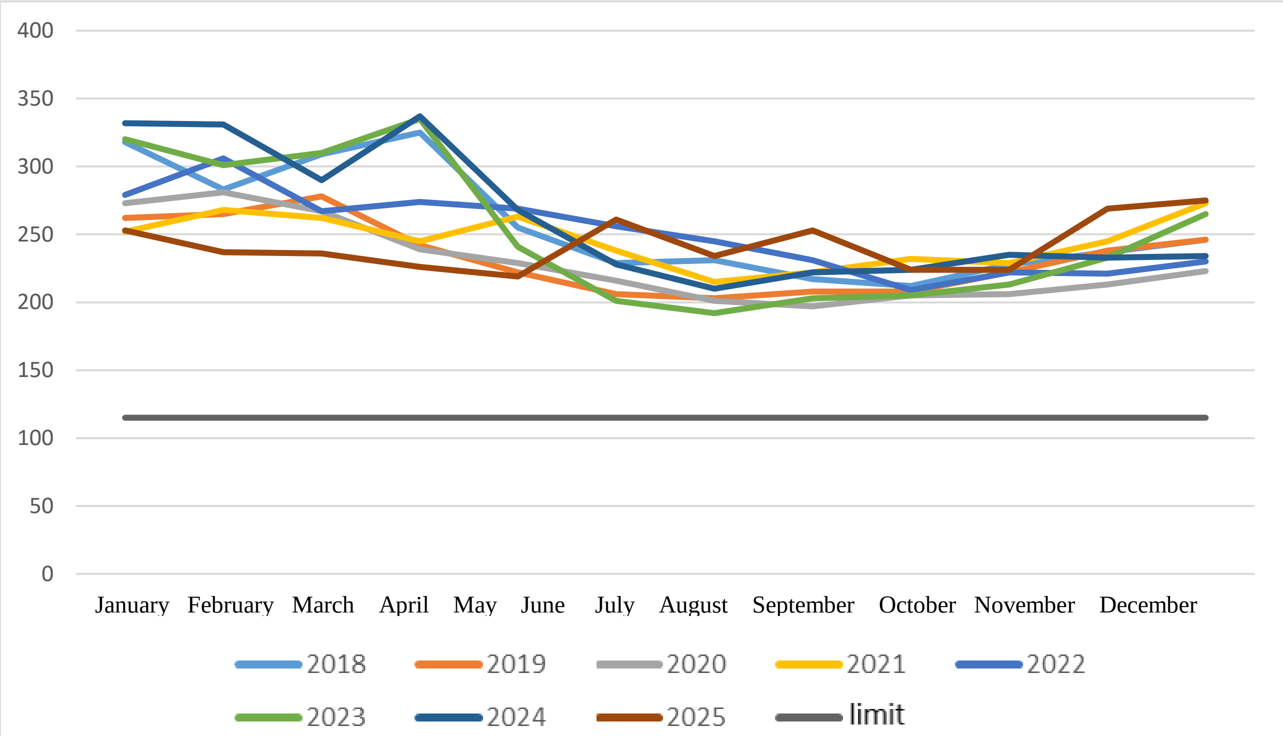


Figure 8.28 Graph of water level measurement at the water gauge station of the Viliya river (Malie Sviryanky settlement) in 2018-2025, m, BS

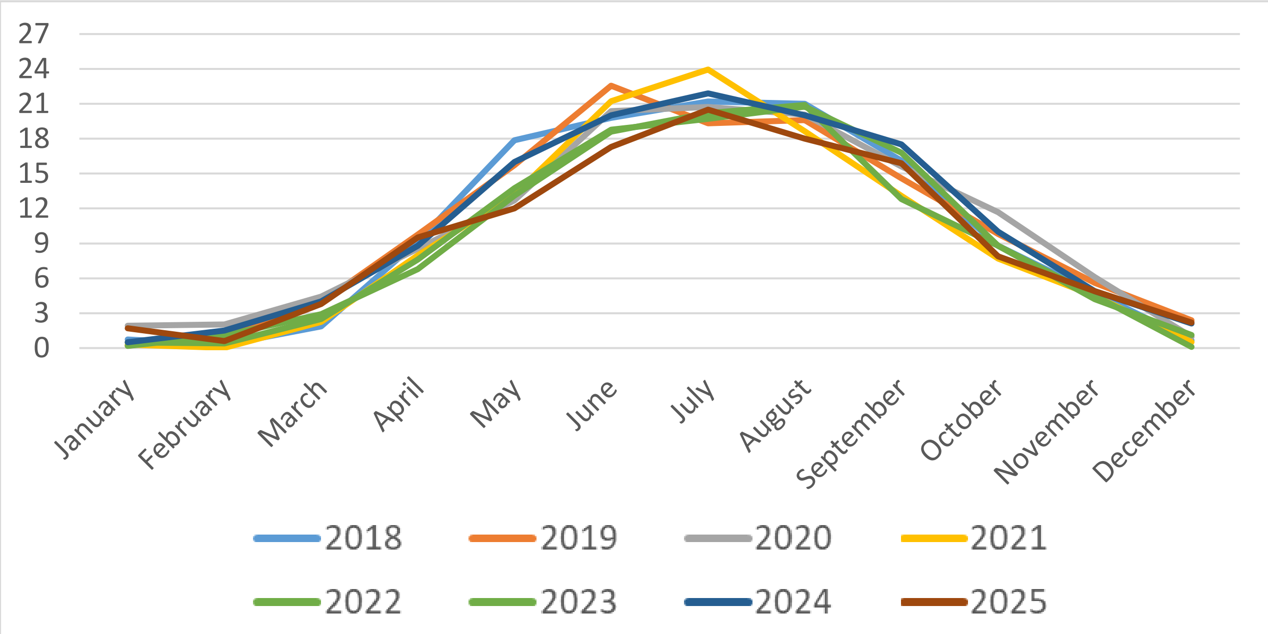
The maximum and minimum values of the Viliya River level measured in 2025 was not in excess of the estimated parameters limits adopted as a design basis.

In general, the level regime in the explored rivers in 2025 was characterised by a low amplitude throughout the year being within the measurement range of previous observation years.

The results of the temperature regime observations in 2025 revealed that the Viliya River water temperature at the of Malie Sviryanky settlement varied from 0.1° C (10-26.02.2025) to 22.1° C (23.07.2025). The average water temperature in 2025 was 9.5° C (Fig. 8.29).

It should be noted that the maximum values of the Viliya River water temperature measured in 2025 were not in excess of the limits of the estimated parameters adopted as a design basis.

In general, the temperature regime of the rivers under exploration in 2024 was within the measurement range of previous years of observations.



8.29 Graph of water temperature measurement, °C, at the water gauge station of the Viliya River (Malye Sviryanki settlement) in 2018-2025.

The flow regime observation results 2025 revealed that the Viliya River water discharge at the settlement of Malye Sviryanki varied from 36.7 m^3/s (14.05.2025) to 94.6 m^3/s (02.08.2025). The average water discharge is 2025 was 55.5 m^3 /s (Fig. 8.30).

The maximum and minimum values of measured water discharges of the Viliya River obtained in 2025 are within the limits of the estimated parameters adopted as the design basis.

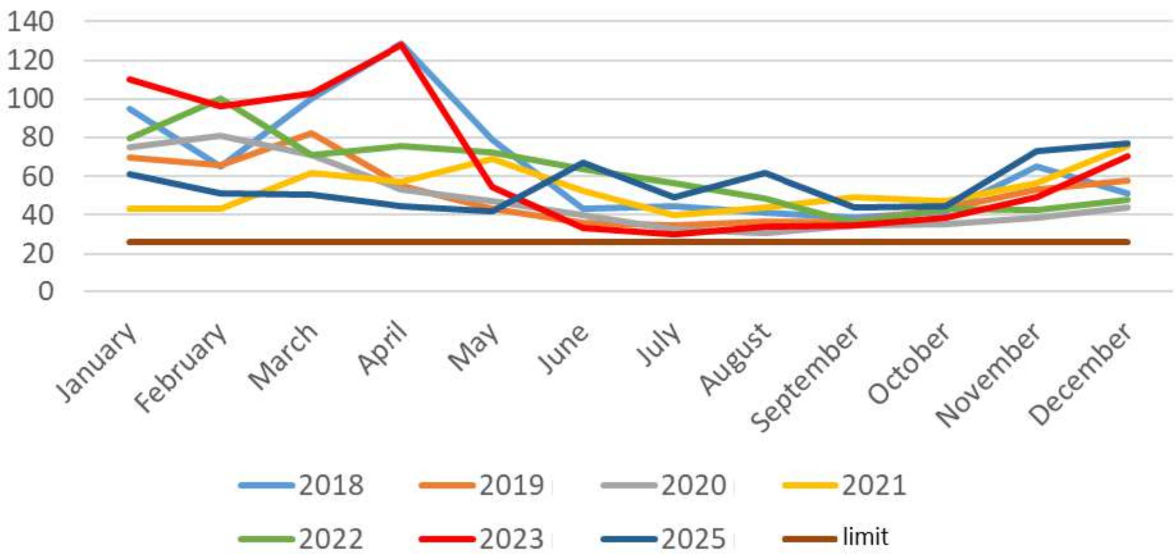


Figure 8.30 Graph of water discharge measurement at the water gauge station of the Viliya River (Malye Sviryanki settlement) in 2018-2025, m^3/s.

Ice phenomena on the rivers under exploration were observed only during January-February and beginning of March 2025 due to warm weather. On the Viliya River, over the period of January 5-8, 2025, shore ice and slush ice drift were observed, then the river freed of ice. The timing and intensity of ice phenomena in 2025 are consistent with previous observations and correspond to the data adopted in the design framework.

The average flow velocity in the Viliya River near the settlement of Malye Sviryanki in 2025 was 0.68 m/s, the maximum - 0.92 (02.08.2024), the minimum - 0.56 m/s (16.05.2024).

In 2025, water was sampled during all phases of the hydrological regime at four water gauging stations (Viliya River, Stracha River, Gozovka River and Polpa River) to determine the chemical composition of water over the following range of indicators: water physical properties, suspended solids, hardness, gases dissolved in water, pH, content of principle ions, nutrients, Si, Fe, BOD_5 (5 days), petroleum products, synthetic surface-active substances, phenols, heavy metals and pesticides.

Subject to the results of the “Day 1” analysis, the river water is classified as weakly alkaline for most of the year, the hydrogen index value (pH) varied from 7.4 to 8.3.

In 2025 the oxygen regime remained favourable for stable functioning of watercourse ecosystems only during periods of winter low water and autumn floods. For the rest of the year dissolved oxygen content complied with the established quality standards and varied from 6.3-6.9 mgO_2/dm^3 where the norm is 8 mgO_2/dm^3.

In 2025, rivers will have significantly lower BOD_5 values compared to 2024. The average annual value of this indicator for the Viliya River was 3.9 mgO_2/dm^3 where the normative is no more than 3 mgO_2/dm^3.

The macronutrient composition of the water corresponded to natural values and varied within the following ranges: calcium – 24.0–108.5 mg/dm^3, magnesium – 5.0–39.0 mg/dm^3, sodium – 4.2–8.2 mg/dm^3, potassium – 1.2–7.6 mg/dm^3, hydrocarbonates – 198.9–492.9 mg/dm^3, sulfates – 6.0–36.4 mg/dm^3, chlorides – 5.5–36.4 mg/dm^3.

The less favorable situation is observed for the nutrient regime: only the nitrate content in the water did not exceed the established standard (40 mg/dm^3), unlike phosphates, nitrites, and ammonium ions.

For most of the year, phosphate concentrations in river waters exceeded the MAC (average annual concentrations by 1.4-2.0 times, maximum concentrations by 3.1–5.0 times).

The average annual ammonium ion concentration in the Viliya River waters exceeded the MAC (0.39 mg/dm^3) by 1.8 times.

The average annual nitrite concentration in the Viliya River waters exceeded the MAC (0.08 mg/dm^3) by 1.1 times.

The concentrations of heavy metals (copper, lead, manganese, zinc, molybdenum, aluminum, and nickel) in river waters were significantly below the maximum permissible concentrations and often below the detection limit.

For COD, petroleum products, surfactants, phenols, sulfides, and hydrogen sulfide, no exceedances of the approved standards for river waters were recorded in 2025.

Total iron content in river waters exceeded the maximum permissible concentration by 1.1–5.9 times throughout the year.

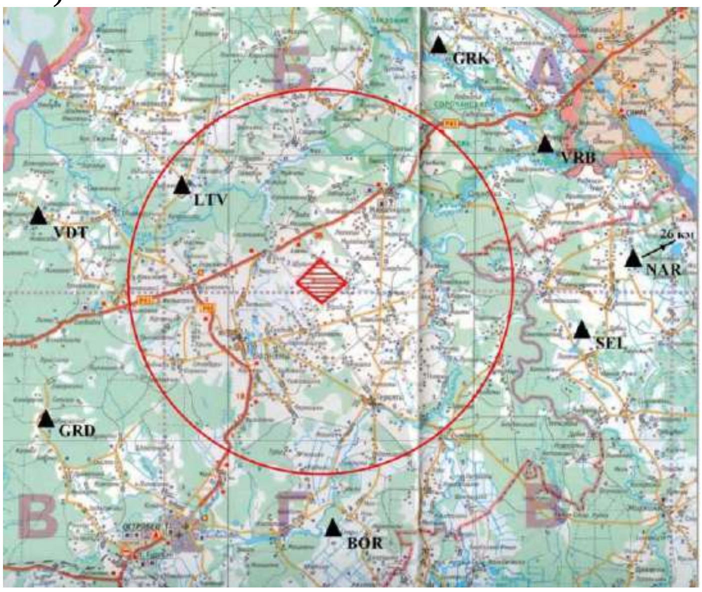
The substances for which MAC levels were exceeded in 2025 are typical pollutants of the country's surface waters: total iron and nutrients. The increased nutrient content may also be due to the warmer climate of the year, when higher river temperatures contribute to increased nutrient processes in watercourses.

In 2025, exceedances of river water quality safety indicators for microbiological parameters were recorded in the Viliya River near Malye Sviryanki: on March 25, total coliform bacteria exceeded 4.2 times, and thermotolerant coliform bacteria exceeded 2.3 times, which is due to the influx of water from the catchment area during the peak and trough of the flood.

The data obtained as a result of performed works provide evidence of the absence of significant impacts of the Belarusian NPP operation on the background natural indicators.

8.5.6 Seismological Monitoring

Seismic parameters at the site of the Belarusian NPP location are monitored by using a temporary local observation network (7 observation stations of the local seismic network: “Vadatishki”, “Gradovshchizna”, “Boyary”, “Selishche”, “Vorobyi”, “Gornaya Kaimina” and “Litvyany”). This local network operates 24/7 with continuous recording of signals transmitted by natural and artificial sources of seismic vibrations and registers seismic events in a wide range of epicentral distances and energies (Fig. 8.31).



Legend:

▲ - seismic stations: Boyary - BOR; Gradovshchizna- GRD; Vadatishki - VDT; Selishche - SEL; Vorobyi - VRB; Gornaya Kaimina - GRK; Litvyany - LTV; Naroch - NAR, ◈ - Belarusian NPP site outline.

Figure 8.31 – Location map of seismic stations in the area adjacent to the Belarusian NPP

Distant, regional and close earthquakes, as well as technogenic seismic events (explosions) were informatively recorded during the reporting period based on the processed recording data. Local earthquakes in the near zone up to 30 km from the NPP site were not recorded by the local observation network during the reporting period.

The Catalogue of distant earthquakes with magnitude M ≥ 6.0 for annual observation cycle contains information on 222 earthquakes. The Catalogue of regional earthquakes for the annual cycle contains information on 172 earthquakes. The Catalogue of close earthquakes (R = 30 - 300 km) for the annual cycle of observations contains information on 67 earthquakes. The Catalogue of technogenic seismic events for the annual cycle includes 196 explosions.

In 2025 all close earthquakes were recorded in the southern part of Belarus (Soligorsk mining area), with epicentral distance from 200 to 300 km from the Belarusian NPP site. Earthquakes epicentres are confined to the Pripyat non-linear seismogenic superzone of potential earthquake sources (hereinafter referred to as the "PES"), which is the most extensive and active geodynamic structure within Belarus. This superzone includes a number of zones, which in their turn are subdivided into subzones: the North Pripyat seismogenic zone (Luban, Berezino and Gomel subzones), the Central Pripyat seismogenic zone and the South Pripyat seismogenic zone (Slovechnenskaya and Turovskaya subzones). The main factor for delineation of the PES Pripyatskaya superzone was its confinement to the Pripyat-Dnieper-Donets paleorift seismotectonic province. Such structures are characterised by increased seismicity on other ancient platforms. Heavy earthquakes usually occur in the marginal parts of the structures, small earthquakes - in the central part of the deflection. They are mainly associated with longitudinal faults, fragments of which are active at the new tectonic evolution stage. Concentration of close earthquake sources (in 300 km zone from the Belarusian NPP location site) is observed in the north-western part of Pripyat superzone. Close earthquake epicentres are located in the Central-Pripyat seismogenic zone and two seismogenic subzones - Luban and Berezino. Seismotectonic potential of the Central-Pripyat seismogenic zone (M_{max} = 3.5; h = 5 km; I = 4 - 5 magnitude). Seismotectonic potential of two seismogenic subzones: Luban (M_{max} = 4.0; h = 5 km; I = 5 - 6 magnitude) and Berezino (M_{max} = 4.5; h = 10 km; I = 6 - 7 magnitude).

The magnitude range of the recorded close earthquakes for the second half of 2025 was M = 1.0 - 2.4 and for the annual cycle – M = 1.0 - 2.8 is not in excess of the seismotectonic potential of the PES zones where their epicentres are located.

Regarding earthquakes producing greatest seismic effect on the NPP site, the following parameter values were obtained for the annual cycle of 2025. The maximum acceleration value and the maximum intensity value were obtained from the distant earthquake, which occurred on the island of Crete, Greece on 22.05.2025 with magnitude of 6.5 and maximum peak acceleration of 0.210 cm/sec^2 ($2.10 \cdot 10^{-4}$ g) with estimated value of 1.2 magnitude (Fig. 8.32).

Figure 8.32 Map of epicentres of distant earthquakes with M ≥ 6.0 recorded during the annual observation cycle of 2025

The maximum acceleration value and the maximum intensity value are obtained from the regional earthquake which occurred in Poland on 27.02.2025 with 4.7 magnitude and maximum peak acceleration of 0.032 cm/sec^2 ($0.32 \cdot 10^{-4}$ g) with estimated value of 0.0 magnitude (Fig. 8.33).

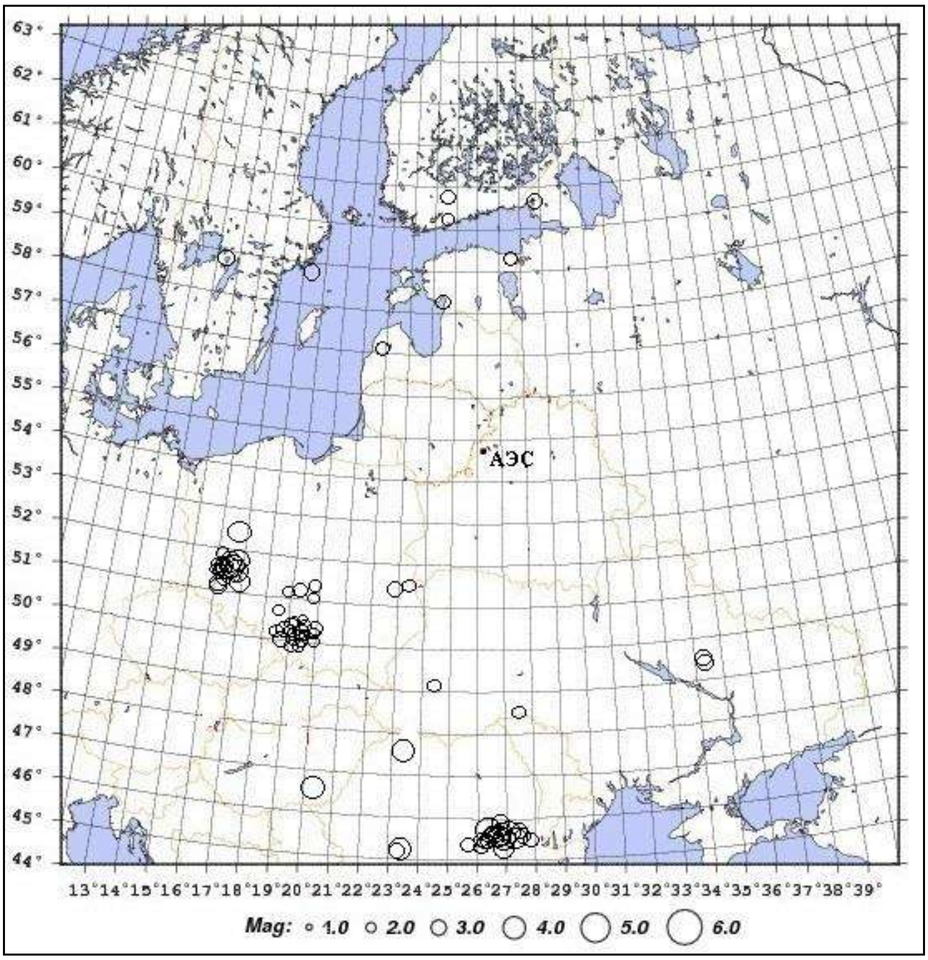
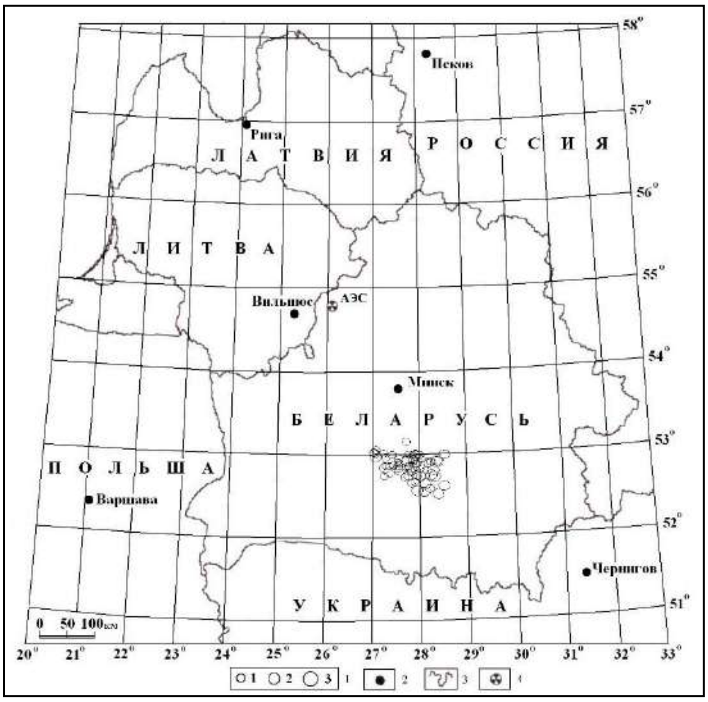


Figure 8.33 Map of epicentres of regional earthquakes recorded over the annual observation cycles of 2025

The maximum acceleration value and the maximum intensity value were obtained from the close earthquake which occurred in Belarus 11.02.2025 with 2.8 magnitude and maximum peak acceleration of 0.044 cm/sec^2 ($0.44 \cdot 10^{-4}$ g) with estimated value minus 1.4 magnitude (Fig. 8.34).



1 – magnitude, 2 – city, 3 – state border, 4 – Belarusian NPP

Figure 8.34 Map of epicentres of close earthquakes recorded over the annual observation cycle of 2025

Thus, for the year 2025 the maximum intensity of seismic effect on the Belarusian NPP site is 1.2 magnitude from the distant earthquake which occurred on the island of Crete, Greece on 22.05.2025 with magnitude of 6.5, that is considerably lower than the values of design level which are 6 magnitude for the design earthquake (DE), for the maximum design earthquake (MDE) - 7 magnitude.

8.5.7 Geodetic monitoring of present-day crustal motion

The present-day crustal motion observations include the works to determine the horizontal and vertical components of motion.

In 2025, observations of the horizontal crustal motion using GPS technologies were performed. The use of sophisticated satellite geodetic technologies (GPS measurements) to locate points at different periods of time subsequently allows the state of horizontal motions to be determined at the millimetre accuracy level. The space geodesy methods are an order of magnitude higher in accuracy than accuracy of measurements made by classical geodesy methods and have higher effectiveness, making it possible to perform observations at remote points without regard to mutual visibility and are characterised by high metrological performance, all-weather measurements and highly advanced processing software.

The satellite geodetic network comprises 18 observation stations, of which 15 are deep benchmarks, 1 ground benchmark and 2 points with a forced centring device (tripod).

Field measurements at the geodynamic polygon points were performed once a year.

2024-2025 monitoring results revealed that the average annual velocities of horizontal motions of crust points ranged from 19.2 to 35.8 millimetres per year, with an average value of 29.3 millimetres per year, the value of which is not in excess of the accepted tolerance. An average direction of motion to the northeast along the azimuth of 65°.

Over the period of 2012-2025 (13.0135 years), the velocity of horizontal motions of the points were in the range of 24.5 - 25.7 millimetres per year with an average value of 25.3 millimetres per year. An average direction of motion to the northeast along the azimuth of 58° (Figs. 8.35, 8.36).

The horizontal motion velocity gradients in the observation area ranged from $5 \cdot 10^{-10}$ to $3 \cdot 10^{-7}$ 1/year as the change in the amplitude of motion per unit distance per unit time (Fig. 8.37).

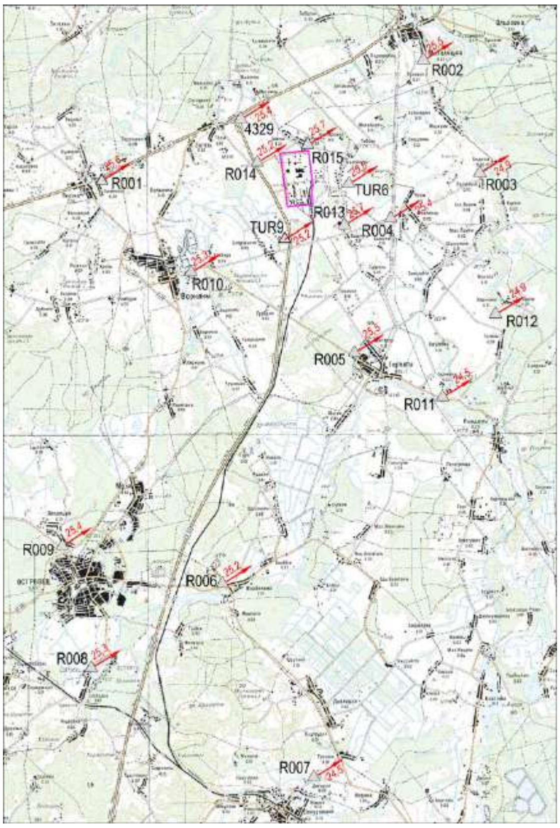


Figure 8.35 Diagram of directions of horizontal motions of points between epochs, 2012-2025

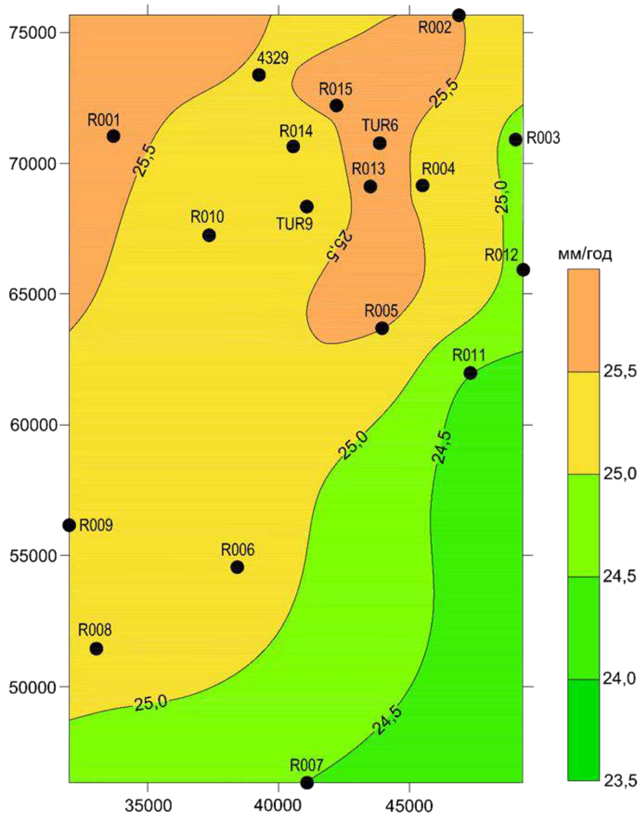


Figure 8.36 Distribution of velocities of horizontal motion of points recorded in 2012-2025

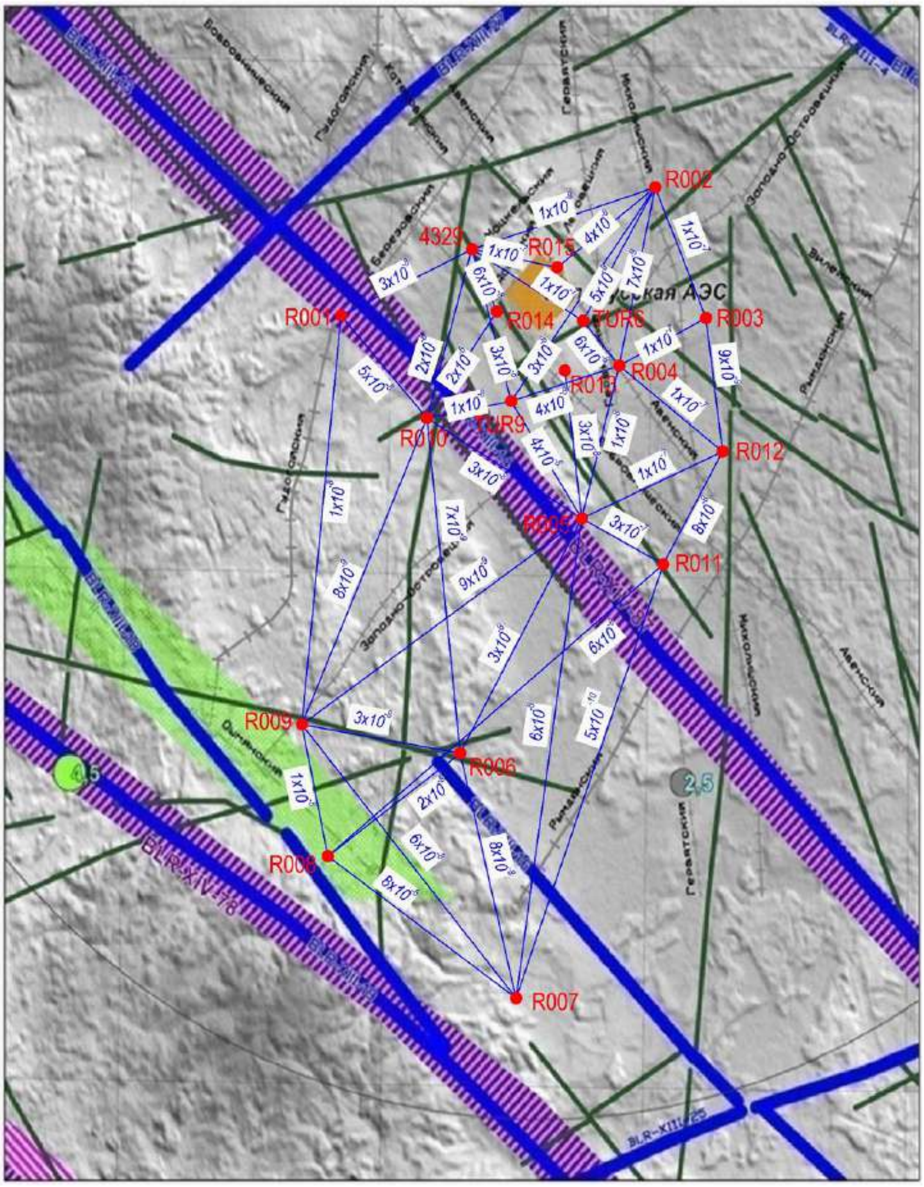


Figure 8.37 Diagram of horizontal motion velocity and velocity gradients between epochs, 2012-2025

The Belarusian NPP project adopted critical non-exceedance velocities of present-day motion - 50 millimetres for horizontal displacements per year. The point velocities measured in area under study are not in excess of these values.

The analysis of the results of observations of the crust horizontal motions in 2025 suggests that the values and directions of horizontal motions at the geodynamic polygon of the Belarusian NPP matches the values and directions of the general motions of the East European platform. Insignificant discrepancies of velocities and directions of motion of points may not indicate the presence of any local horizontal motions in the area under study.

In 2025, the vertical crustal motion was monitored using high-precision re-levelling of class I.

Geometric levelling of geodetic points of the geodynamic network subject to the I class method was performed to calculate the vertical component of the present-day crust motions. I class levelling was performed in forward and reverse directions while keeping equal distances from a levelling instrument to rods by two pairs of transition points forming two separate lines. Measurements at the observation stations were performed once a year.

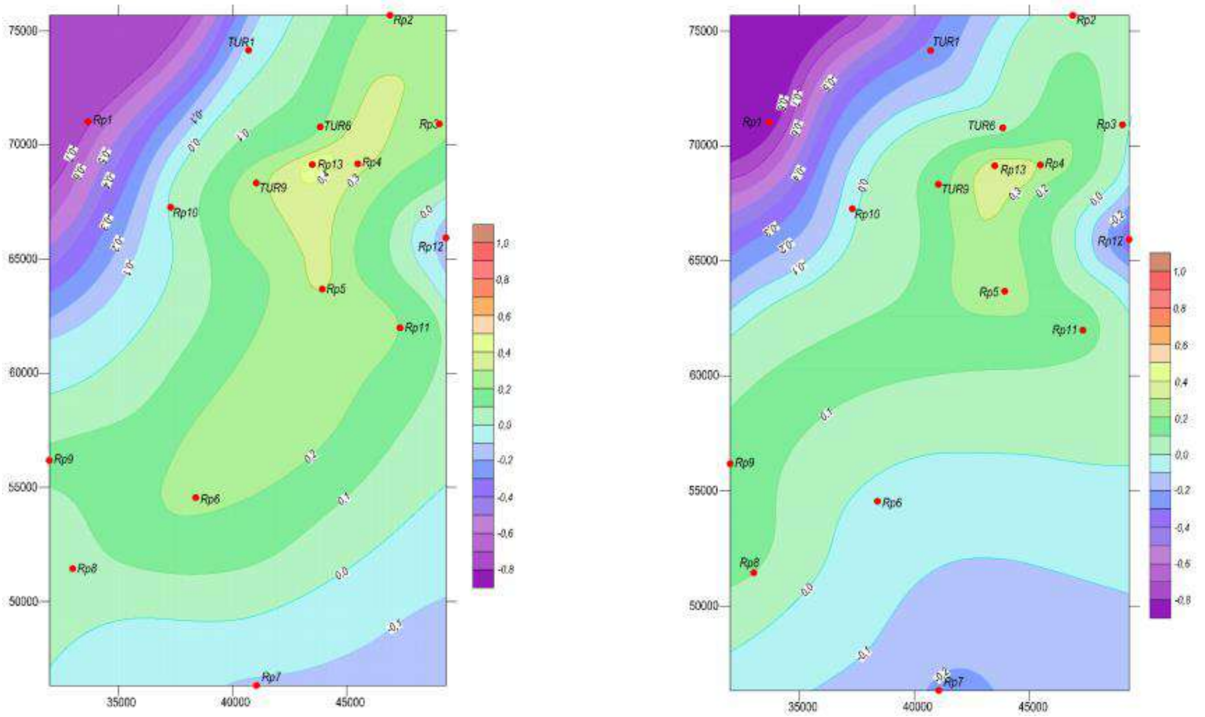
The network total length is 145.05 km. Traverses consist of 14 separate lines between the points and form 6 closed polygons with an average perimeter of 31.44 km (tolerance 40 km). The network is secured on the ground by 13 deep benchmarks, 39 ground benchmarks, 9 wall benchmarks, 3 TUR-type centres. The total number of points is 64.

Analysis and evaluation of the results of monitoring of crust vertical motions and velocities in 2025 showed that the vertical motion velocities of points ranged from (-3.75) to (+5.16) millimetres per year, average velocity (+0.84) millimetres per year. Therefore, the velocities of vertical displacements of the points of the geodynamic polygon are within acceptable limits (not exceeding 10 millimetres per year). The total values of points vertical displacement rate gradient for the entire geodynamic polygon area throughout 2025 are $7.1 \cdot 10^{-9}$ 1/year.

The 2012-2025 observation data indicate the total values of vertical velocity of the geodynamic polygon points ranged from (-0.16) to (+0.26) millimetres per year, average velocity (0.06) mm/year.

The weighted average inter-cycle displacements of the network points range from (+0.33) to (-0.85) millimetres per year (Fig. 8.38).

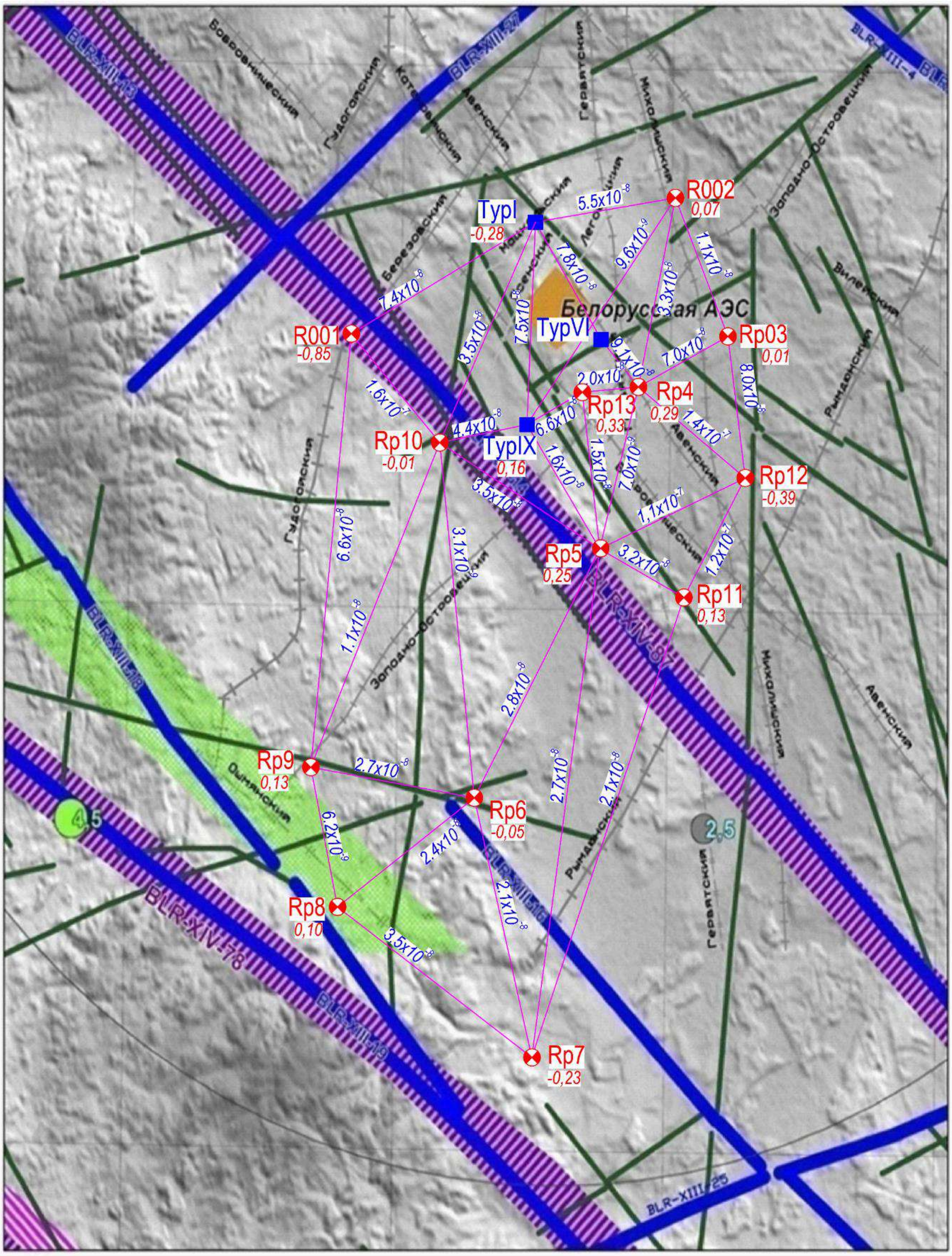
Vertical motion velocity gradients in the observation area ranged from $3.1 \cdot 10^{-9}$ to $1.1 \cdot 10^{-7}$ 1/year. The total values of the velocity gradient of the geodynamic polygon points ranged from $7.1 \cdot 10^{-9}$ to $4.9 \cdot 10^{-8}$ 1/year. The direction changes insignificantly that is indicative of the absence of geodynamic processes signs (Fig. 8.39).



a) b)

a) point vertical motions b) annual average motion velocities

Figure 8.38 Distribution of weighted average vertical motions of points and velocities in 2012-2025



Rp.5 Deep benchmark
Typ I Forced centring point (TUR)
3.5x10^{8} Vertical motion velocity gradient
Rp.5 station number
-0.23 Denominator- vertical motion velocity mm/y

Figure 8.39 Vertical motion velocity gradients at the Belarusian NPP geodynamic polygon in 2012-2025

The obtained data allow for a conclusion that the directions, distances and stability criteria of the geodynamic monitoring points are stable, the values of partial accelerations are not in excess of the criteria and indicate the absence of signs of geodynamic processes in the Belarusian NPP location area.

8.5.8 Monitoring contamination of the surface layer of the atmosphere, land and aquatic ecosystems, contamination load of water bodies and condition of aquatic biological resources

In 2025, a yearly observation cycle was completed as part of environmental monitoring in the Belarusian NPP CA and SZ. Samples of atmospheric air, soil, water and bottom sediments were collected; the condition and/or extent of contamination of atmospheric air, land and aquatic ecosystems was assessed.

The results of route surveys in the warm period of 2025 (April-October) are indicative of a moderate anthropogenic load on atmospheric air in the area of the Belarusian NPP. No exceedances of maximum permissible concentrations were recorded in 100% of cases. The quality of atmospheric air in the neighbouring settlements remains high.

The ecological condition of the soil cover within the surveyed area boundaries is satisfactory. The threshold values of the gross content of chemical elements at the sampling sites in the Belarusian NPP observation zone are not in excess of the "low contamination degree" category.

Surface water monitoring results for 2025 and an analysis of long-term data series indicate that the monitored water bodies are not subject to significant anthropogenic influence. Minor exceedances for certain indicators are seasonal in nature and are most likely due to natural factors or agricultural activities in the watershed, rather than the operation of the Belarusian Nuclear Power Plant.

Overall, the environmental condition of water bodies within the Belarusian NPP's observation zone is stable, but requires regular monitoring to prevent potential negative changes.

An analysis of data over a five-year period showed that bottom sediments in 2025 exhibited higher pollutant concentrations compared to 2021–2024, which may be due to the year's climatic conditions, which affected the hydrological regime of water bodies. Despite the higher values, they remained below threshold values or estimated permissible concentrations, indicating the absence of bottom sediment contamination in the Belarusian NPP's surveillance zone.

Compared to 2017-2024, fluctuations in heavy metal concentrations were observed within the reaction norm, primarily due to natural climate fluctuations and the eco-biochemical characteristics of specific animal species.

No significant impact of anthropogenic factors on the general health of the animal kingdom in the area of the Belarusian Nuclear Power Plant in 2025 or over the compared interannual period.

To date, the environmental situation in the Belarusian NPP monitoring zone remains stable, and the NPP is environmentally safe.

8.5.9 Radiation monitoring

In 2025, radiation monitoring in the Belarusian NPP BA and SZ was conducted subject to the Programme of Environmental Radiation Monitoring in the Buffer Area and Radiation control Area of Belarusian NPP and the Regulations on Radiation Monitoring of Belarusian NPP. The purpose of environmental radiation monitoring is to assess the radiation situation in the buffer area and radiation control area and to determine trends in its change under normal (accident-free) operating conditions of the Belarusian NPP.

The main tasks of radiation monitoring include as follows:

continuously systematically controlling the level of radioactive environmental contamination in the BA and SZ;

acquiring necessary, sufficient and reliable data on the radiation situation in the BA and SZ;

assessing the current state of environmental radiation monitoring in the BA and SZ of Belarusian NPP and analysing its trends;

assessing radiation doses to the population residing in the SZ;

forecasting changes in the radiation situation in the BA and SZ;

collecting, compiling and transmitting information on radiation situation and environment condition in the BA and SZ to the authorities and agencies concerned and on forecasting their trends.

Radiation control of emissions and discharges from the Belarusian NPP

In 2025, the values of emissions and discharges of radioactive substances from the Belarusian NPP power units No. 1 and No. 2 were not in excess of the values of the maximum permissible limits of emissions/discharges of radioactive substances from the Belarusian NPP into the environment approved by the Nuclear Power Plant Chief Engineer-issued Order No. 278 of 20.06.2022 and approved by Gosatomnadzor, State Institution “Grodno Oblast Centre of Hygiene, Epidemiology and Public Health” and the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus.

Data on discharges of radioactive substances from the Belarusian NPP power units Nos. 1 and 2 over the period from 01.01.2025 to 31.12.2025 are provided in Table 8.3.

Table 8.3 Discharges of radioactive substances from the Belarusian NPP power units Nos. 1 and 2 in 2025

Specified radionuclide	for 12 months of 2024 Power unit No. 1, No. 2				
	Annual discharge, Bq	PD for year, Bq	PD index, %	MPD for year, Bq	MPD index, %
^{3}H	4,69E+12	7,00E+12	67,00	3,50E+13	13,40
^{60}Co	7,35E+07	1,08E+09	6,81	5,42E+09	1,36
^{131}I	6,67E+07	7,46E+09	0,89	3,73E+10	0,18
^{134}Cs	7,81E+07	8,39E+08	9,31	4,20E+09	1,86
^{137}Cs	7,55E+07	1,15E+09	6,57	5,73E+09	1,32

Note: MPD – maximum permissible discharge, PD – permissible discharge.

Data on emissions of radioactive substances from the Belarusian NPP power units Nos. 1 and 2 over the period from 01.01.2025 to 31.12.2025 provided in Table 8.4.

Table 8.4 Radioactive substance emissions from the Belarusian NPP power units Nos. 1 and 2 in 2025

Radionuclide	Total volumetric emission activity for 2024, Bq	PE (year), Bq	PE index, %	MPE (year), Bq	MPE index,%
Power unit No. 1					
^{3}H	8,63E+11	6,78E+13	1,27	3,39E+14	0,25
^{14}C	1,26E+10	5,08E+12	0,25	2,54E+13	0,05
^{60}Co	6,98E+06	3,62E+09	0,19	1,81E+10	0,04
^{131}I	3,52E+06	1,41E+09	0,25	7,03E+09	0,05
^{133}I	4,03E+06	2,54E+09	0,16	1,27E+10	0,03
^{134}Cs	5,26E+06	3,72E+08	1,41	1,86E+09	0,28
^{137}Cs	5,71E+06	5,60E+08	1,02	2,80E+09	0,20
RIG	8,33E+12	2,04E+13	40,83	1,02E+14	8,17
Power unit No. 2					
^{3}H	5,09E+11	6,78E+13	0,75	3,39E+14	0,15
^{14}C	1,51E+10	5,08E+12	0,30	2,54E+13	0,06
^{60}Co	6,00E+06	3,62E+09	0,17	1,81E+10	0,03
^{131}I	3,82E+06	1,41E+09	0,27	7,03E+09	0,05
^{133}I	4,02E+06	2,54E+09	0,16	1,27E+10	0,03
^{134}Cs	4,70E+06	3,72E+08	1,26	1,86E+09	0,25
^{137}Cs	4,89E+06	5,60E+08	0,87	2,80E+09	0,17
RIG	8,18E+12	2,04E+13	40,10	1,02E+14	8,02

Note: RIG – radioactive inert gases; MPE – maximum permissible emissions; PE – permissible emissions.

Gamma radiation dose rate in the territory

The layout of the Belarusian NPP radiation monitoring posts of the automated control system of radiation situation (hereinafter referred to as the “ACSRS”) is shown in Figure 8.40.

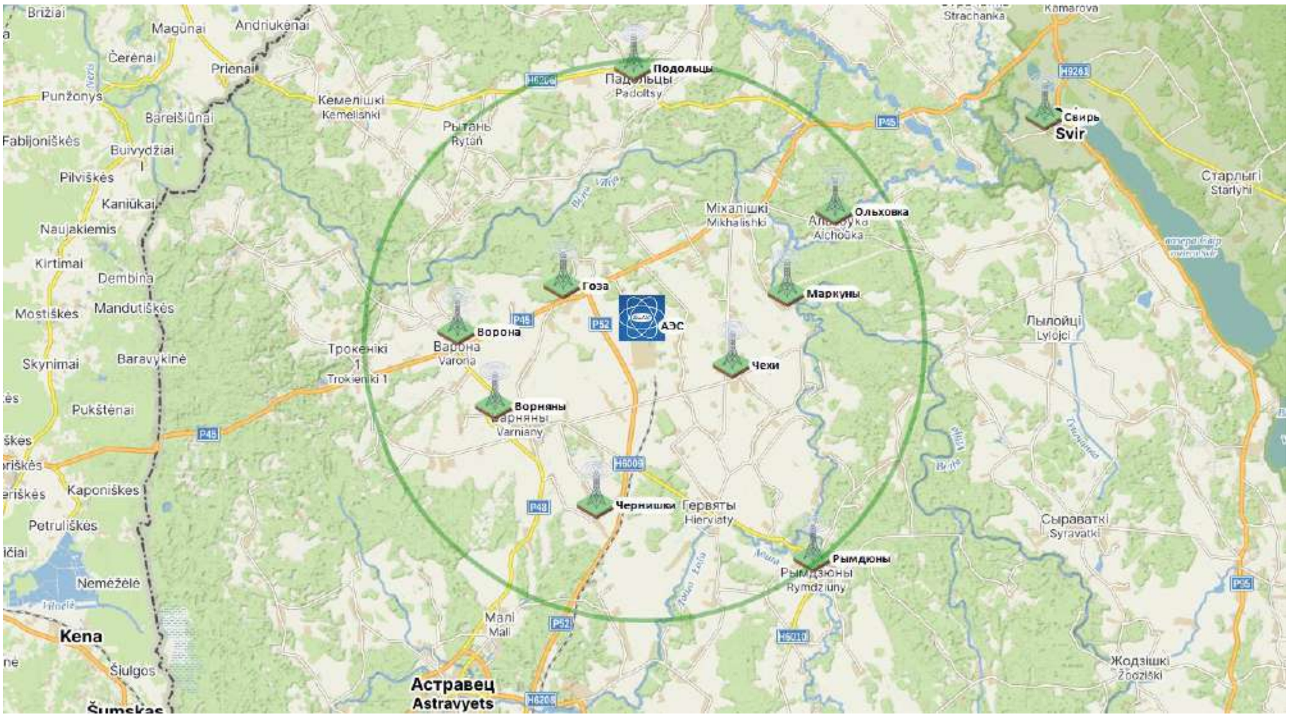


Figure 8.40 Belarusian NPP ACSRS RCP layout

In 2025, the levels of ambient dose equivalent of gamma radiation (ADER) in the Belarusian NPP SZ were in the range of 0.060-0.065 µSv/h, which corresponds to the determined long-term values for this region of the Republic of Belarus.

Figure 8.40.1 shows the dynamics of changes in the average monthly ADER values in the Belarusian NPP's ZN in 2025.

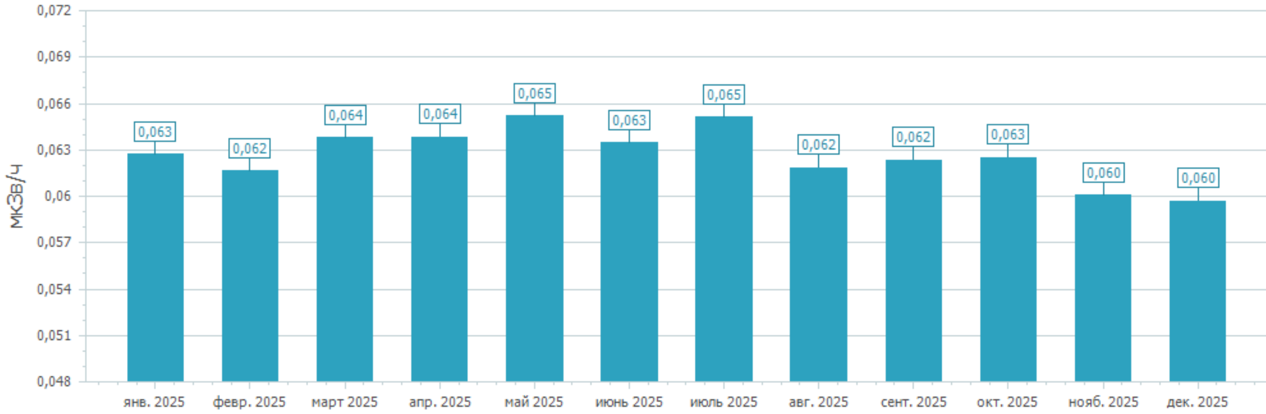


Figure 8.41 Average monthly values of ADER in 2025

The annual values of the ADER in 2025 were in the range of 0.65 − 0.75 mSv, which corresponds to the established values of “zero” background radiation (0.62 − 0.87 mSv) for this region of the Republic of Belarus.

Radiation Monitoring of Natural Environments

Figures 8.42–8.49 show the locations of observation stations where environmental samples are collected for radiation monitoring.

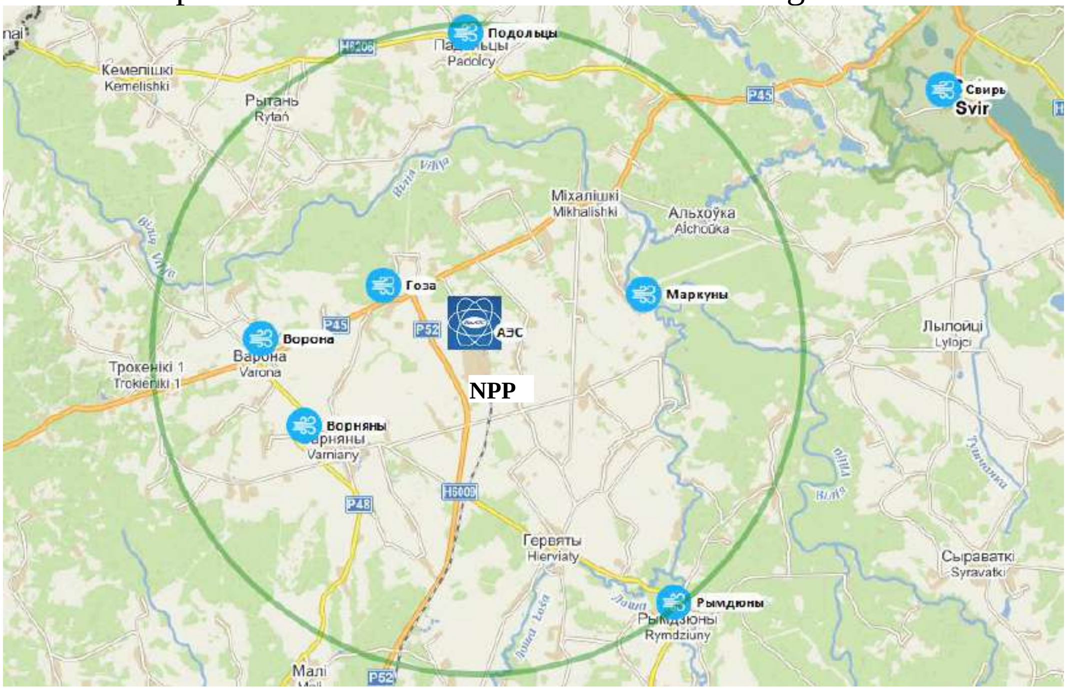


Figure 8.42 Layout of observation stations for atmospheric air radiation monitoring

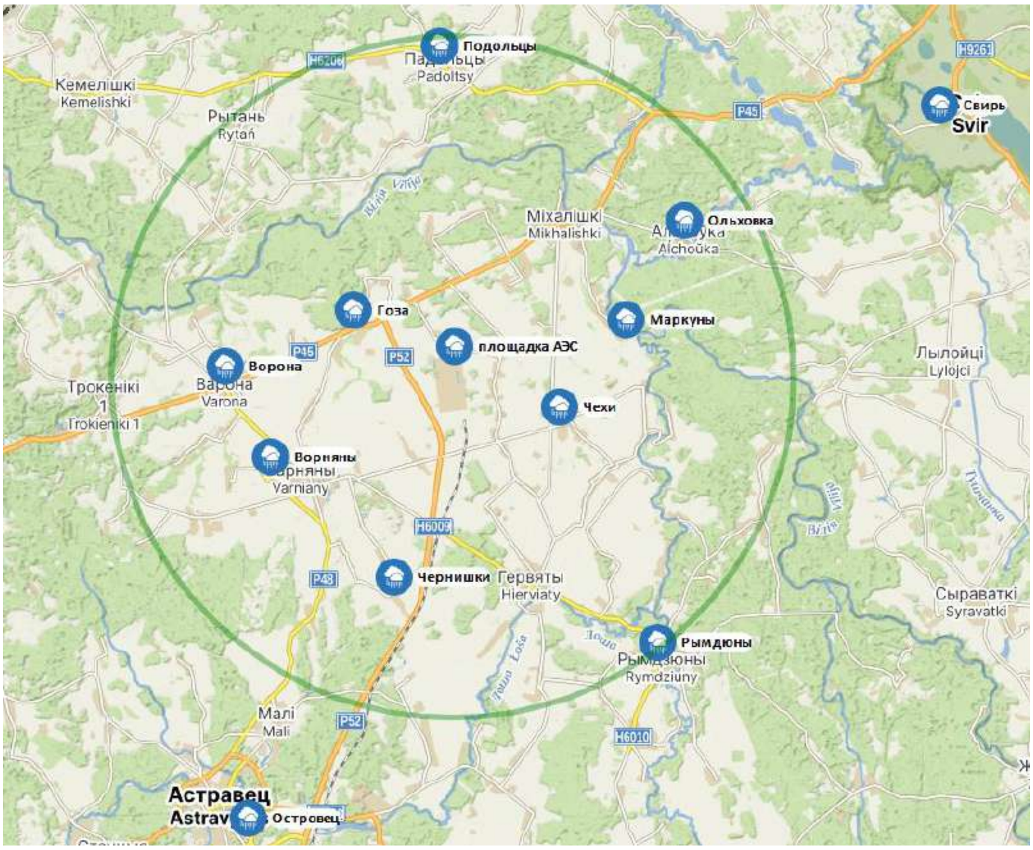


Figure 8.43 Layout of atmospheric fall-out control and radiation monitoring points

Figure 8.44 Layout of surface water radioactive contamination surveillance points

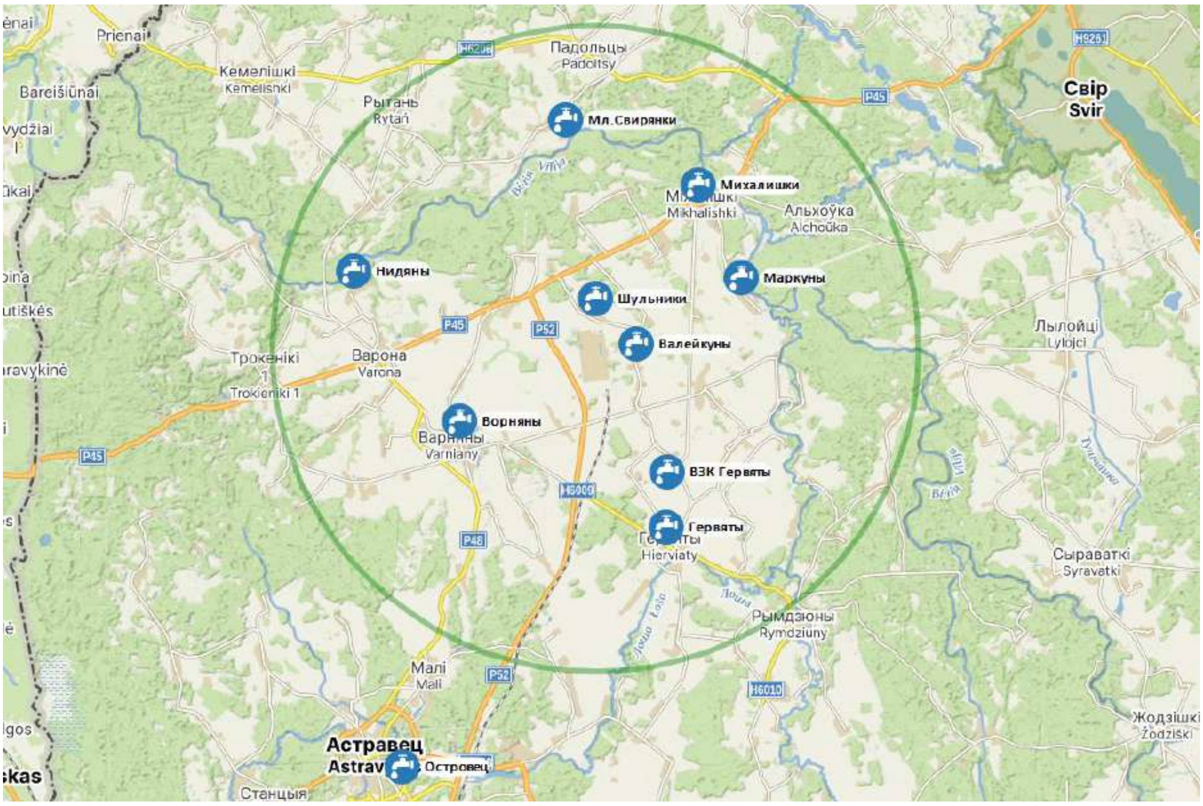


Figure 8.45 Layout of drinking water radioactive contamination surveillance points

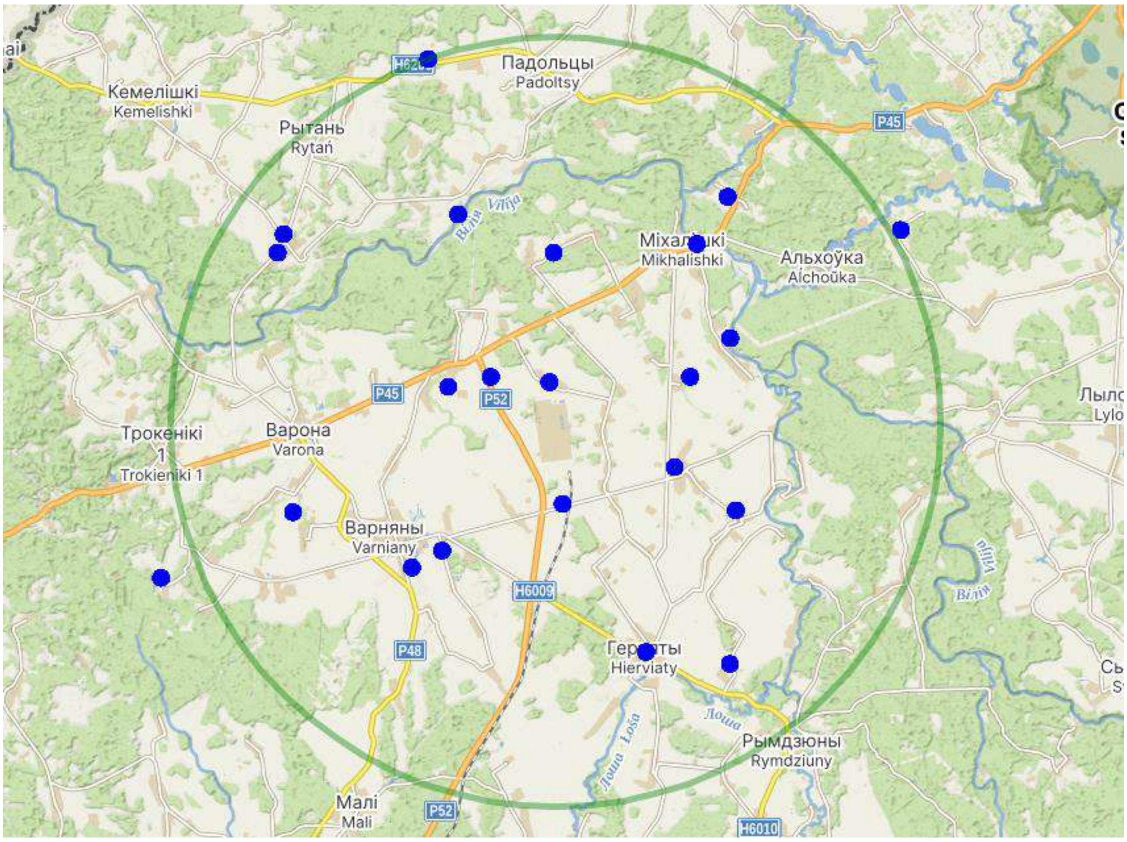


Figure 8.46 Layout of surveillance points for monitoring radioactive contamination of soils and agricultural lands

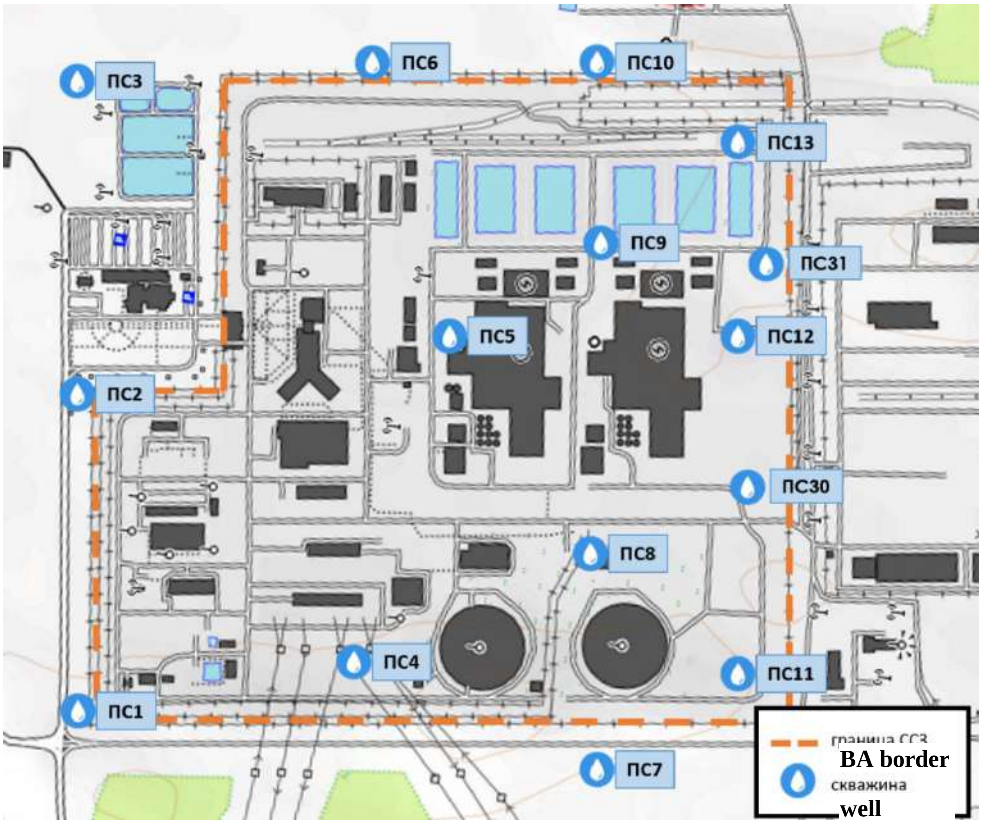


Figure 8.47 Layout of groundwater surveillance points

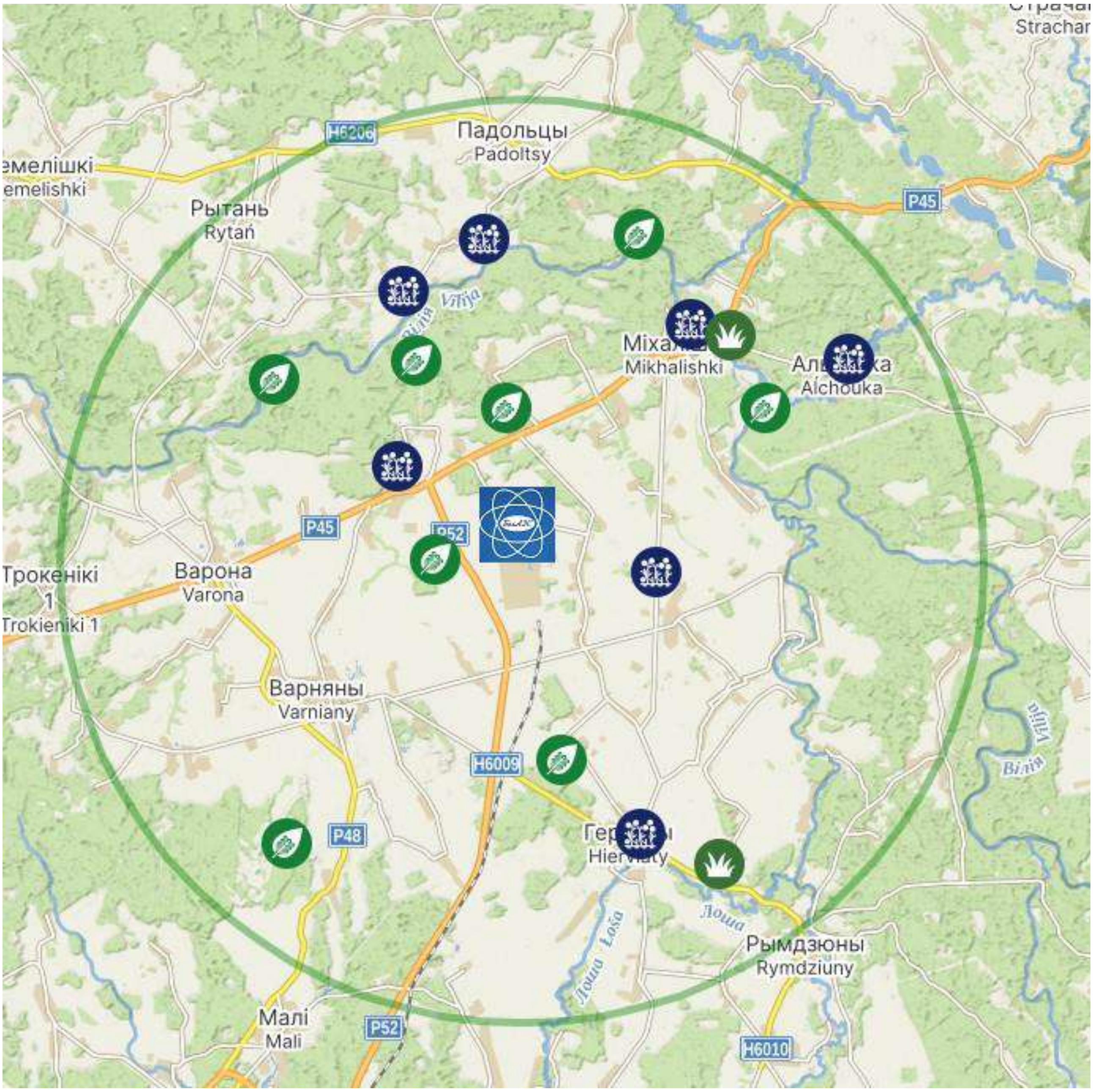


Fig.8.48 Layout of surveillance points for radiation monitoring of terrestrial, aquatic, and coastal-aquatic vegetation

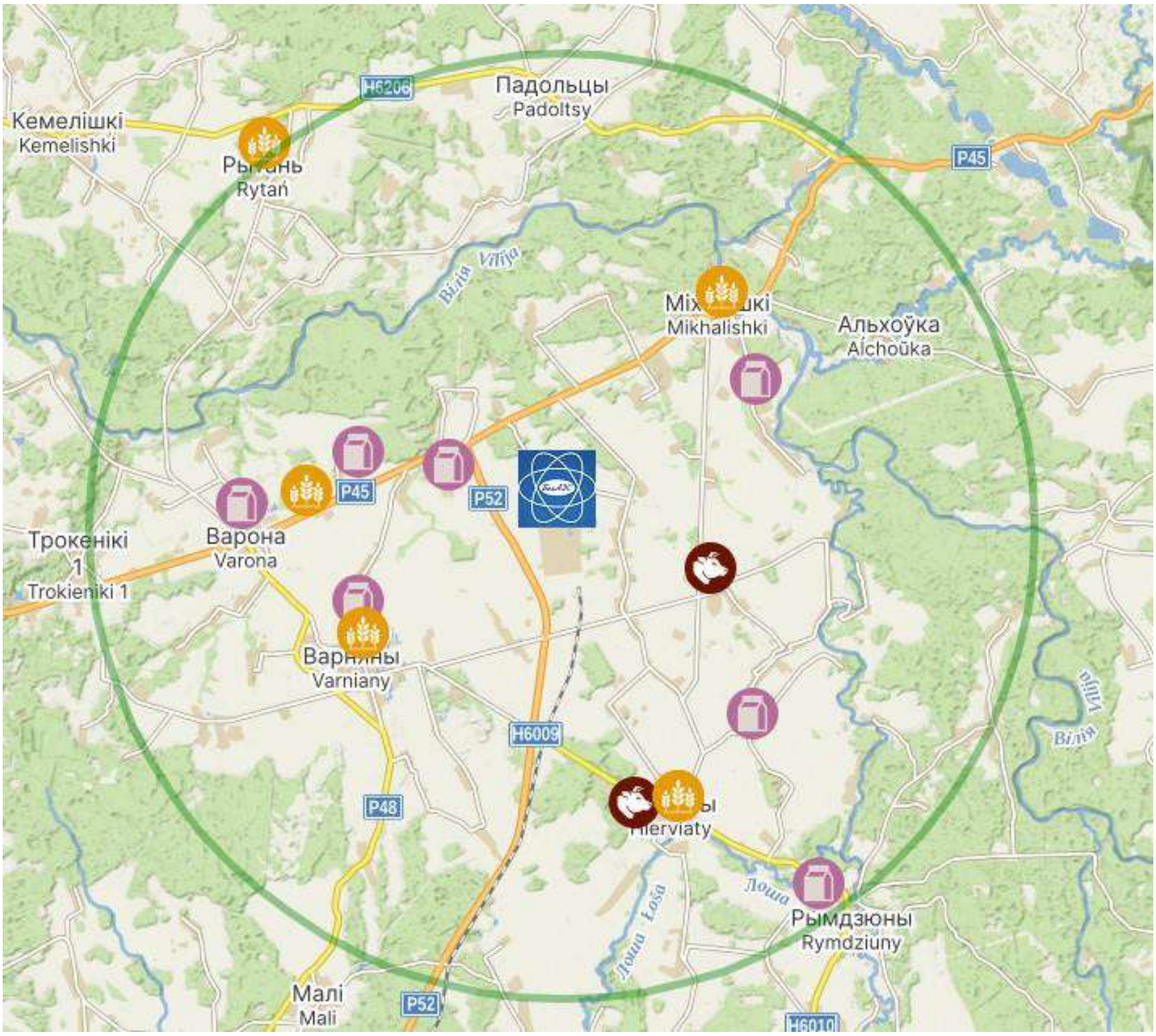


Fig. 8.49 - Layout of radiation monitoring stations for locally produced agricultural products (milk, meat, food, feed)

The results of laboratory monitoring of radionuclide content in samples of environmental objects are presented in Table 8.5.

The results of radiation monitoring in the Belarusian NPP SZ obtained in 2025 indicate that the radiation situation in the area of the Belarusian NPP location remains stable.

The levels of gamma-ray radiation ADER and radionuclide activity in environmental objects during 2025 year were in line with established multi-year values and did not exceed the reference levels for radionuclides set out in the sanitary-hygienic standard "Criteria for assessing radiation exposure", approved by the resolution of the Council of Ministers of the Republic of Belarus dated 25.01.2021 № 37.

Table 8.5. - Average annual values of monitored parameters for 2025

Monitoring subject	Radionuclide	Maximum "zero" background value/Reference level**	Average annual values for 2025	Unit
Ground layer aerosols	Σβ	$34,0 \times 10^{-5}$	$13,1 \times 10^{-5}$*	Bq/m³
	^{137}Cs	<$2,0 \times 10^{-5}$*	$0,011 \times 10^{-5}$*	Bq/m³
	^{90}Sr	<$3,0 \times 10^{-5}$*	<$0,04 \times 10^{-5}$*	Bq/m³
	^{3}H	0,065	<0,5*	Bq/m³
	^{14}C	<1,2*	<0,5*	Bq/m³
Atmosphere precipitation	Σβ	5,2	0,16	Bq/m²×day
	^{137}Cs	0,019	0,0012	Bq/m²×day
	^{90}Sr	0,030	<0,019*	Bq/m²×day
Surface water	Σβ	0,29	0,028	Bq/dm³
	^{137}Cs	$7,2\times10^{-3}$	<$0,8\times10^{-3}$*	Bq/dm³
	^{90}Sr	0,012	<0,3*	Bq/dm³
	^{3}H	4,1	0,59	Bq/dm³
Benthal deposits	^{137}Cs	13,76	2,34	Bq/kg
	^{90}Sr	7,0	<1,0*	Bq/kg
Aquatic vegetation	^{137}Cs	21,6	<0,8*	Bq/kg
	^{90}Sr	4,0	<0,1*	Bq/kg
Groundwater monitoring well	Σβ	0,12	<0,10*	Bq/dm³
	^{137}Cs	0,010	0,003	Bq/dm³
	^{90}Sr	<0,006*	<0,3*	Bq/dm³
	^{3}H	7,6	1,22	Bq/dm³
Soils	^{137}Cs	18,0	2,5	Bq/kg
	^{90}Sr	6,1	0,33	Bq/kg
Ground vegetation (stand elements)	^{137}Cs	93,5	3,94	Bq/kg
	^{90}Sr	3,0	2,9	Bq/kg
Ground vegetation (grass-subshrub layer)	^{137}Cs	124,0	0,15	Bq/kg
	^{90}Sr	4,0	2,9	Bq/kg
Ground vegetation (meadow)	^{137}Cs	24,6	<0,5*	Bq/kg
	^{90}Sr	5,0	2,2	Bq/kg
Wild berries	^{137}Cs	160**	1,38	Bq/kg
	^{90}Sr	4,0	3,0	Bq/kg
Mushrooms (dried)	^{137}Cs	2500**	126,2	Bq/kg
	^{90}Sr	16,0	6,1	Bq/kg
Drink water	Σα	0,5**	0,014	Bq/dm³
	Σβ	1,0**	0,4	Bq/dm³
	^{137}Cs	10,0**	<0,0008*	Bq/dm³
	^{90}Sr	10,0**	<0,3*	Bq/dm³
	^{3}H	10000,0**	2,2	Bq/dm³
Milk	^{137}Cs	100,0**	0,01	Bq/dm³
	^{90}Sr	5,0**	<0,1*	Bq/dm³
Meat	^{137}Cs	200,0**	<0,11*	Bq/kg
	^{90}Sr	0,44	<0,37*	Bq/kg
Fish fauna	^{137}Cs	130,0**	0,18	Bq/kg
	^{90}Sr	10,0**	<1,73*	Bq/kg
Agriculture feed	^{137}Cs	7,2	<0,08*	Bq/kg
	^{90}Sr	4,9	0,9	Bq/kg

Notes:
* - Minimum detectable activity (MDA) or lower limit of the measurement range of the method used).
** - The reference level of radionuclide content established in the sanitary-hygienic standard "Criteria for assessing radiation exposure", approved by the resolution of the Council of Ministers of the Republic of Belarus dated 25.01.2021 № 37 (as amended by the decision of the Council of Ministers of the Republic of Belarus dated 29.11.2022 № 829).

The Belarusian NPP during operation of power units 1 and 2 has no any impact on the radiation situation in the region, and the problematic environmental conditions caused by radiation have not been identified.

CHAPTER 9
INFORMATION ON MONITORING RESULTS AT THE OBSERVATION STATIONS OF THE NATIONAL SYSTEM OF ENVIRONMENTAL MONITORING IN THE REPUBLIC OF BELARUS OUTSIDE THE BELARUSIAN NPP OBSERVATION ZONE

9.1 Radiation monitoring

A network of radiation monitoring observation stations in the impact area by the Belarusian NPP was created to monitor its operation, promptly identify changes in the radiation situation, assess and predict the possible consequences of radiation exposure on public health and the environment, and (if necessary) promptly take measures to prevent or reduce radiation exposure.

National radiation monitoring is carried out outside the observation zone (circle with a radius of 12.9 km) of the Belarusian NPP.

The collection, processing, storage of data, and provision of information obtained as a result of radiation monitoring in the impact area by the Belarusian NPP outside the observation zone is carried out by the radiation monitoring service of the State Institution “Republican Center for Hydrometeorology, Radioactive Pollution Control and Environmental Monitoring” (Belhydromet).

In the impact area, there are 10 radiation monitoring observation stations of the National Environmental Monitoring System (hereinafter NEMS, Figure 9.1):

3 observation stations for radiation monitoring of atmospheric air: Lyntupy, Naroch and Oshmyany.

3 observation stations for radiation monitoring of surface waters: the Viliya River (Bystritsa village), Lake Naroch (Naroch settlement) and Lake Svir (Svir settlement).

4 observation stations for soil radiation monitoring – landscape-geochemical testing sites (hereinafter – LGTS): Bystritsa, Svir, Gudogay and Kemelishki.

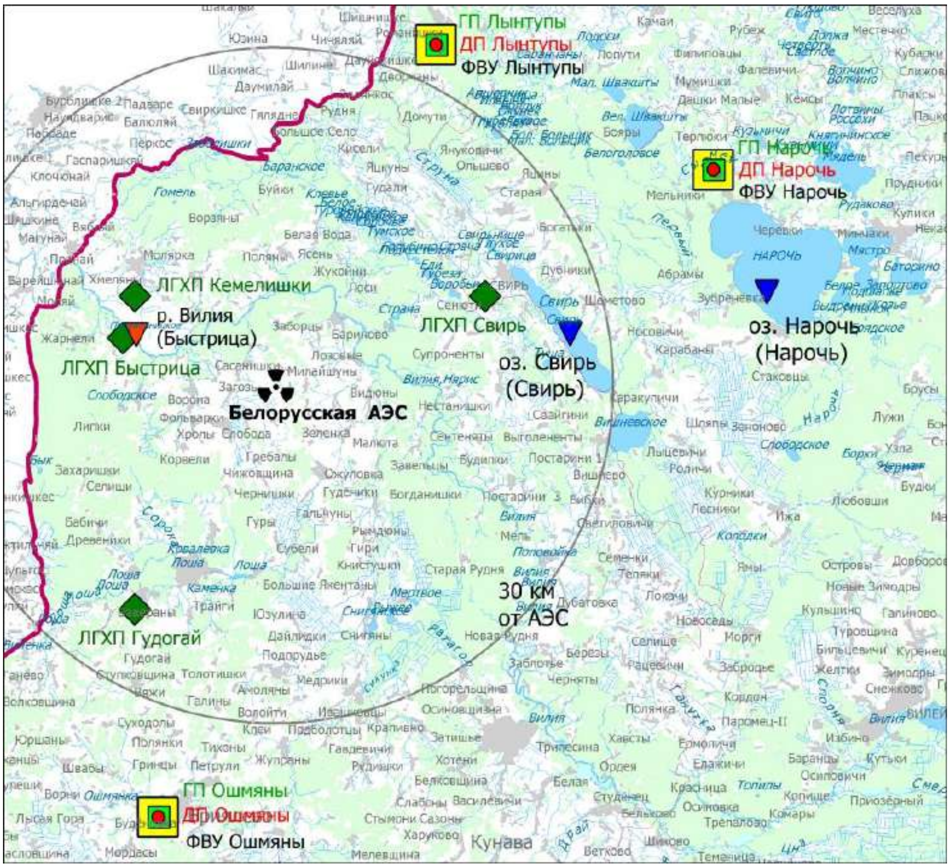


Figure 9.1 – Layout of the NSEM radiation monitoring observation stations located outside the Belarusian NPP observation zone

Legend:

Observation station for atmospheric air radiation monitoring:

– dosimetric post (DP) – measurement of gamma radiation dose rate

– horizontal tablet (HT) – sampling of natural fallout from the surface layer of the atmosphere;

– filter ventilation unit (FVU) – sampling of radioactive aerosols;

Soil radiation monitoring observation station:

– LGTS – soil sampling

Surface water radiation monitoring observation station:

– observation station for radiation monitoring of surface waters;

– transboundary observation station for radiation monitoring of surface waters;

– location of the nuclear power plant;

30 км – distance from the nuclear power plant, km.

Radiation monitoring of atmospheric air is carried out according to the following observation parameters:

- gamma radiation dose rate;
- total beta activity (radioactive aerosols of the ground layer of the atmosphere and natural fallout from the ground layer of the atmosphere);
- activity of gamma-emitting radionuclides (^{137} Cs) in combined monthly samples (radioactive aerosols of the ground layer of the atmosphere and natural fallout from the ground layer of the atmosphere);
- activity of ^{90} Sr in combined quarterly samples (radioactive aerosols of the ground layer of the atmosphere and natural fallout from the ground layer of the atmosphere).

Observation frequency: gamma radiation dose rate, total beta activity in samples of aerosols of the atmospheric ground layer and fallout from the atmospheric ground layer – daily; activity of gamma-emitting radionuclides – once a month; activity of ^{90}Sr – once a quarter.

In 2025, the average annual values of gamma radiation dose rate at the observation stations of Lyntupy, Oshmyany, and Naroch amounted to 0.10 µSv/h. (the natural radiation background in the Republic of Belarus is up to 0.20 µSv/h).

Figures 9.2 and 9.3 show the average monthly values of the total beta activity in aerosol samples and natural fallout from surface layer of the atmosphere at observation stations located in the impact area for 2025.

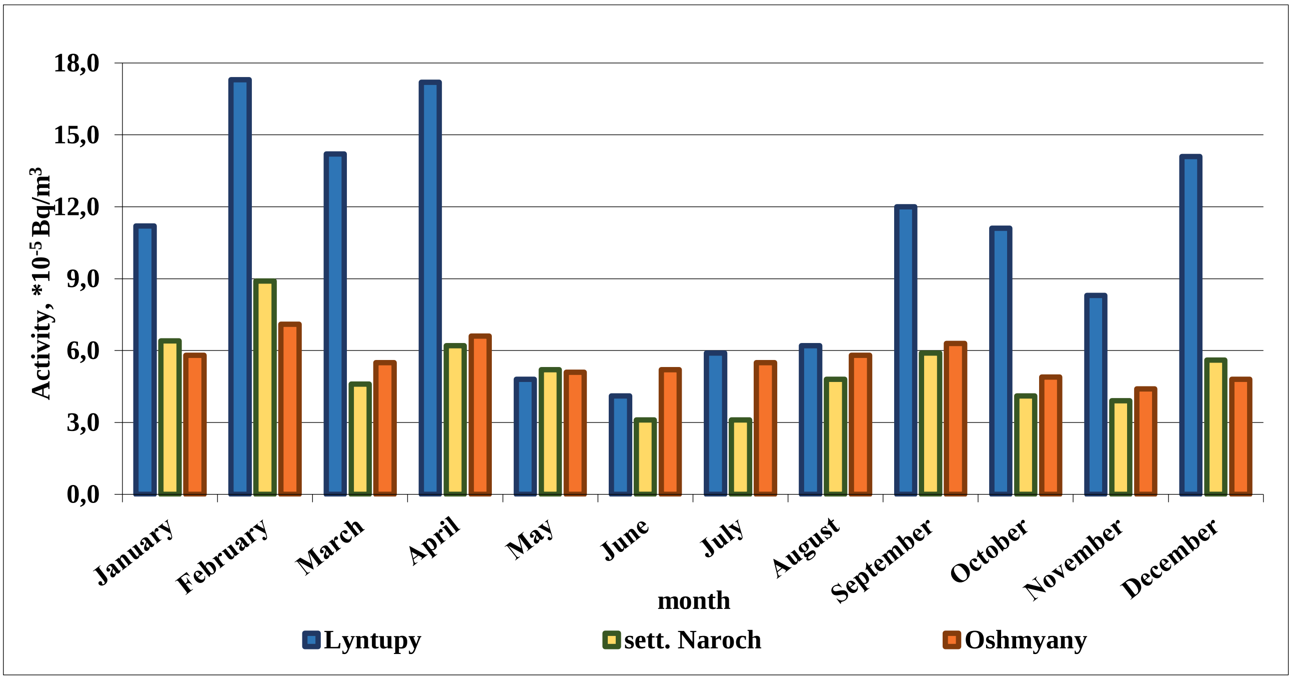


Figure 9.2 – Average monthly values of total beta activity in samples of aerosols of the ground layer of the atmosphere at observation stations in the impact area for 2025

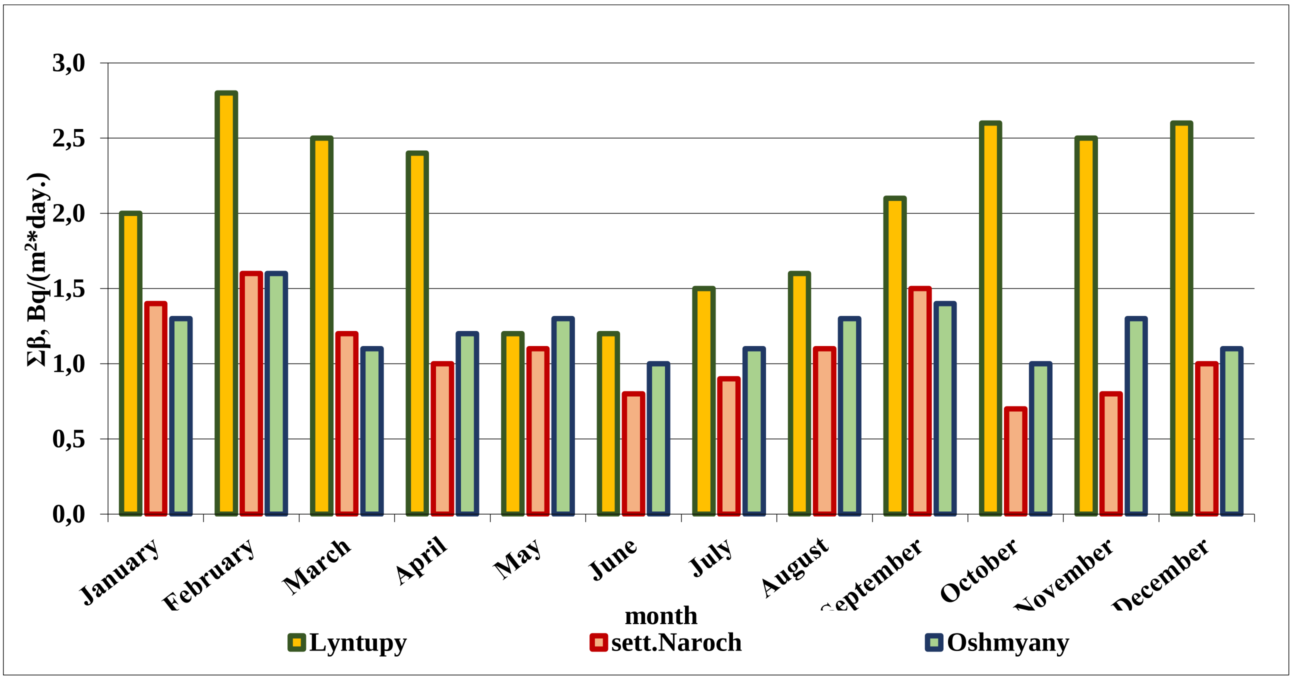


Figure 9.3 – Average monthly values of total beta activity in samples of natural fallout from the ground layer of the atmosphere on observation stations in the impact area for 2025

Total beta activity in average monthly samples of natural fallout and aerosols of the atmospheric ground layer at the observation station collected in 2025 in the impact area, corresponded to established long-term values and were in range (3.1-17.3)·10^{-5} Bq/m ^{3} – for ground-level aerosols atmosphere; 0.7-2.8 Bq/ (m^2 day) – for fallout from the ground layer atmosphere.

The activity of ^{137}Cs in the combined monthly aerosol samples was in the range of (<0.10-0.15)·10^{-5} Bq/m ^{3}.

The activity of ^{137}Cs in the combined monthly samples of radioactive fallout was below the detection limit (<0.01 Bq/m^2 day).

The activity of ^{90}Sr in quarterly aerosol samples in most cases did not exceed the lower limit of the measurement range of the method used (hereinafter - LLMR), which is 0.2 Bq per sample. Only at one atmospheric air observation station - Naroch, the maximum value of ^{90}Sr activity was recorded - 0.04·10^{-5} Bq/m^3, which correlates with the values obtained at this observation station for the observation period from 2018 to 2022 and falls within the range of (<0.01-0.30)·10^{-5} Bq /$m^{3.}$ The content of ^{90}Sr in samples of deposition from the surface layer of the atmosphere exceeded the LLMR only in the combined sample taken in the 4th quarter and amounted to 0.004 Bq/m^2 day.

Radiation monitoring of surface waters was carried out using the following observation parameters:

- total alpha and beta activity,
- activity of ^{137}Cs, ^{90}Sr;

- activity of ^{137}Cs and ^{90}Sr in bottom deposits.

The frequency of observations for surface waters on the Viliya River (Bystritsa village) is 5 times per year; on Lake Naroch (Naroch settlement) and Lake Svir (Svir settlement) – once per quarter. The frequency of radiation monitoring of bottom deposits is once per year.

The total alpha activity in surface water samples collected in 2025 from water bodies within the impact area of the Belarusian NPP was below the lower limit of the measurement range of the measurement method used. Values were in the range of <0.01 - <0.07 Bq/dm^3, while the total beta activity was <0.03-0.11 Bq/ dm^3.

The results of radiation monitoring of surface waters in 2025 show that the volumetric activity of ^{137}Cs was in the range from <0.002 Bq/ dm^3 to 0.006 Bq/ dm^3, the volumetric activity of ^{90}Sr did not exceed 0.008 Bq/ dm^3.

Analysis of data in the monitored rivers showed that the concentrations of the above-mentioned radionuclides and the total alpha and beta activity in 2025 were below the reference levels in drinking water established by the Hygienic Standard “Criteria for Assessment of Radiation Exposure”, approved by Resolution of the Council of Ministers of the Republic of Belarus dated November 29, 2022 No. 829 (the reference level for drinking water is 10 Bq/dm^3 for ^{137}Cs and ^{90}Sr; 0.5 Bq/dm^3 and 1.0 Bq/dm^3 for total alpha and beta activity, respectively).

The results of measurements of the content of ^{137}Cs and ^{90}Sr in bottom deposits samples collected in 2025 show that at all observation stations the activity values for these radionuclides corresponded to previously established values and did not exceed 7.2 Bq/kg and 4 Bq/kg, respectively.

Radiation monitoring of soils located outside the observation zone of the Belarusian NPP is carried out according to the following observation parameters:

- gamma radiation dose rate;
- distribution of the activity of ^{137}Cs and ^{90}Sr in the soil at a depth of 10 cm layer by layer with a step of 1 cm.

Observation frequency: once a year.

At the soil radiation monitoring observation stations (SRMOS), the specific activity of ^{137}Cs varied from <1.0 to 15.3 Bq/kg, ^{90}Sr – <0.4 to 18.5 Bq/kg.

The gamma radiation dose rate levels measured at a height of 1 m and 3-4 cm from the underlying soil surface did not exceed 0.10 μSv/h.

Figures 9.4 and 9.5 show the distribution of ^{137}Cs and ^{90}Sr along the vertical profile of soils at the LGTS located outside the observation zone of the Belarusian NPP.

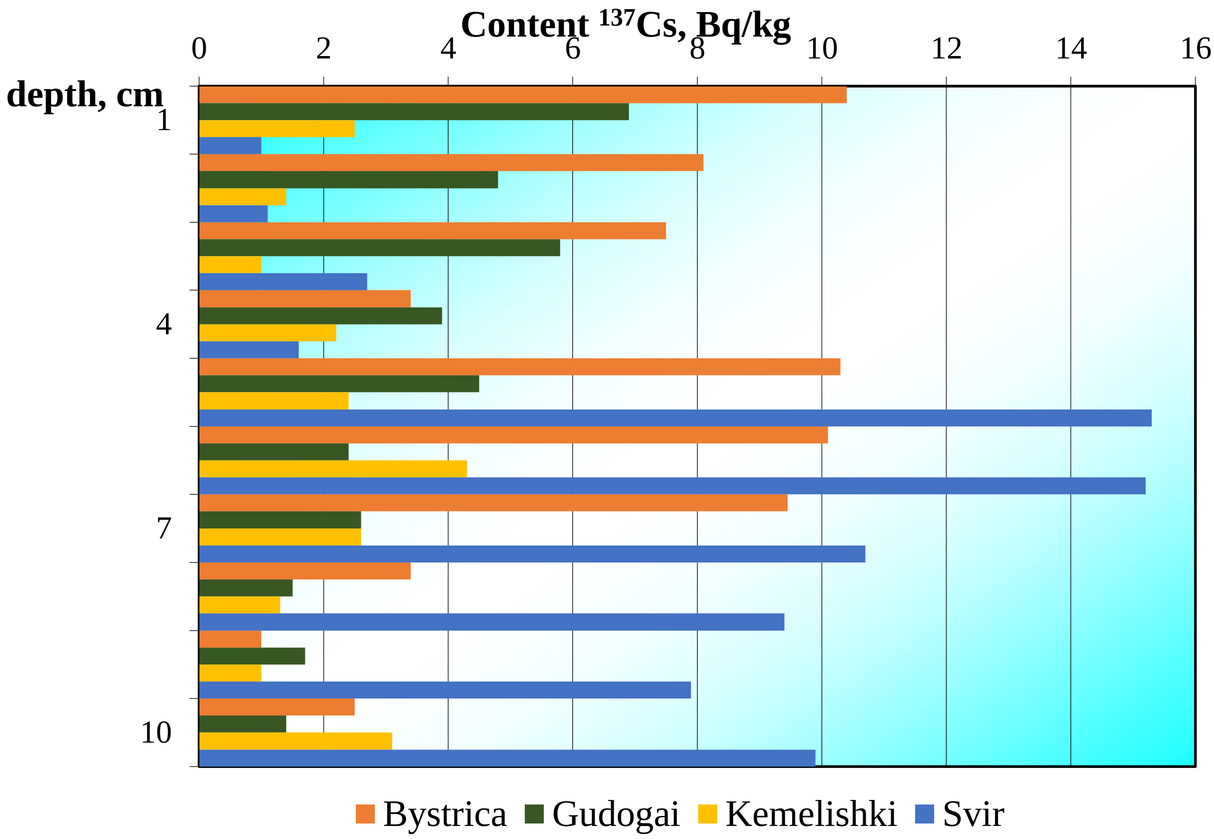


Figure 9.4 – Actual distribution of ^{137}Cs along the vertical profile of soils at LGTSs located in the area of the Belarusian NPP

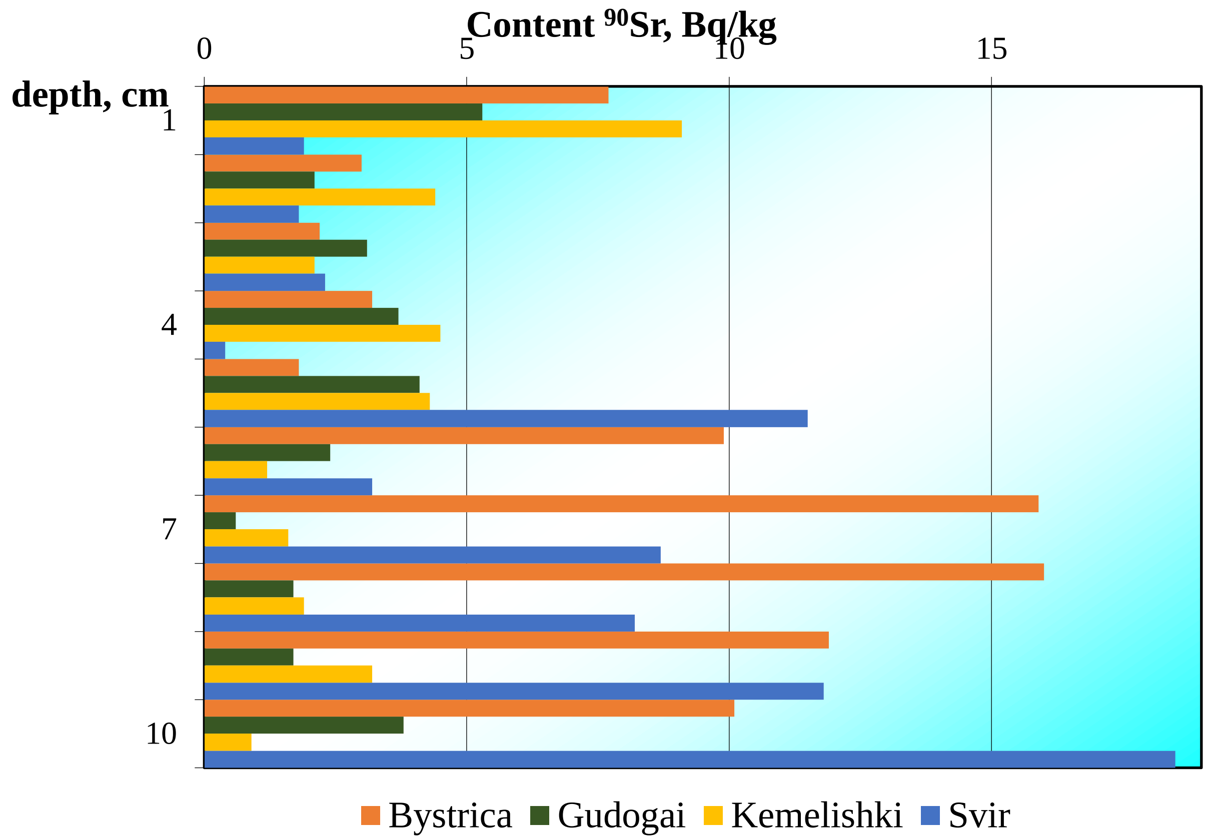


Figure 9.5 – Actual distribution of ^{90}Sr along the vertical profile of soils at LGTSs located in the area of the Belarusian NPP

At most LGTSs, the activity maxima of ^{137}Cs and ^{90}Sr are located at a depth of 5-10 cm, which excludes their connection with “fresh” radioactive contamination.

It's worth noting that at the Bystritsa and Gudogay LGTSs, the highest specific activity of ^{137}Cs was recorded at a depth of 0-1 cm (10.4 and 6.9 Bq/kg, respectively). Meanwhile, at the Svir LGTS, the highest specific activity of ^{137}Cs was recorded at a depth of 4-5 cm and amounted to 15.3 Bq/kg, which is higher than the maximum specific activity values at the Bystritsa and Kemelishki mining sites in the uppermost soil layer.

At the Gudogai and Kemelishki LGTSs, the highest specific activity of ^{90}Sr is found in the 0-1 cm soil layer, amounting to 5.3 and 9.1 Bq/kg, respectively. The maximum specific activity of ^{90}Sr at the Bystritsa mining and processing plant is 16.0 Bq/kg, at a depth of 7-8 cm; at the Svir mining and processing plant, it is 18.5 Bq/kg, at a depth of 9-10 cm.

The received results confirm that the operation of the Belarusian Nuclear Power Plant does not affect the radioactive contamination of the soil.

In 2025, the radiation situation in the republic remained stable.

Radiation monitoring of atmospheric air revealed no cases of dose rate exceeding established long-term values. Total beta activity levels and ^{137}Cs and ^{90}Sr levels in atmospheric air samples were consistent with established long-term values.

The activity levels of radionuclides in surface water and bottom deposits samples are consistent with established values.

The results of soil monitoring in 2025 did not show any deviations from long-term processes or new trends associated with the presence of radionuclides in the soil.

The results of radiation monitoring conducted in 2025 at the NSEM observation stations located in the impact area show that the commissioning of power unit No. 1 and power unit No. 2 of the Belarusian NPP does not have a negative impact on the radiation situation in the environment.

9.2 Results of surface water monitoring in the Viliya River 0.3 km northeast of Bystrica for 2025

Observations of the surface waters state are carried out within the framework of the National Environmental Monitoring System in the Republic of Belarus at observation stations of the state observations network of the surface waters state.

In the water of the Viliya River, at the observation station of the state observations network of the surface waters state, 0.3 km northeast of the settlement of Bystrica (10.0 km from the border with the Republic of Lithuania), observations are being carried out on the state of surface waters based on hydrochemical, hydrobiological and hydromorphological indicators.

The assessment of surface water quality based on hydrochemical indicators was based on a comparison of hydrochemical data obtained through observations with the water quality standards for surface water bodies established by EKONIP 17.06.01-006-2023 "Environmental Protection and Nature Management. Hydrosphere. Water Quality Standards for Surface Water Bodies", approved by Resolution No. 15-T of the Ministry of Natural Resources and Environmental Protection dated December 15, 2023, as well as threshold values of indicators for the Viliya River, established by the Technical Protocol of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus and the Ministry of Environment of the Republic of Lithuania on cooperation in monitoring and exchange of information on the state of transboundary surface water dated April 10, 2008.

The results of monitoring of surface water for 2025 did not reveal any new trends in the water quality of the Viliya River compared to the results of previous years' monitoring (see Table 9.1).

At the same time, the non-systematic exceedances identified of water quality standards for iron, zinc were due to their natural background content and not associated with the activities of the Belarusian nuclear power plant.

Table 9.1 – Results of observations in the water of the Viliya River 0.3 km northeast of the settlement of Bystrica for 2025.

Parameter	MAC for the Viliya River	Threshold values of indicators for the Viliya River according to the Technical Protocol	Average annual rate
Suspended solids (mg/ dm^3)	no more than 25	-	6.9
Dissolved oxygen (mgO_2/dm^3)	during the ice-covered period at least 6, otherwise – 8	at least 2.0	10.5
BOD_5 (mgO_2/dm^3)	3	23.0	2.55
COD_{Cr} (mgO_2/dm^3)	25	100	29.03
Ammonium ion (mgN/dm^3)	0.39	3.9	0.37
Nitrite ion (mgN/dm^3)	0.024	0.2	0.016
Nitrate ion (mgN/dm^3)	9.03	12.0	0.993
Phosphate ion (mgP/dm^3)	0.066	1.0	0.049
Total phosphorus (mg/dm^3)	0.2	1.5	0.075
Total iron (mg/dm^3)	0.370	-	0.589
Manganese (mg/ dm^3)	0.100	-	0.0909
Copper (mg/dm^3)	0.0043	0.05	0.0026
Zinc (mg/dm^3)	0.030	1.0	0.034
Nickel ($\mu g/dm^3$)	34	50	<5
Petroleum products (mg/dm^3)	0.05	0.7	0.014
Anionic surfactants (mg/dm^3)	0.1	1.0	<0.025
Total nitrogen according to Kjeldahl (mg/dm^3)	5	-	1.58
Hydrogen index (pH)	should not go beyond 6.5-8.5	6.0-9.0	8.24
Cadmium (mg/dm^3)	0.005	0.01	0.0006
Calcium (mg/dm^3	180	-	59
Magnesium (mg/dm^3)	40	-	30,3
Water mineralization (mg/dm^3)	no more than 1000	-	274.6
Arsenic (mg/dm^3)	0.05	-	0.001
Mercury ($\mu g/dm^3$)	0.07	5.0	0.01
Lead ($\mu g/dm^3$)	14	100	<5
Sulfate ion (mg/dm^3)	100	-	19.23
Chloride ion (mg/dm^3)	300	-	16.5
Chromium (mg/dm^3)	0.005	0.05	0.002

The ecological condition (status) of the Viliya River 0.3 km northeast of Bystritsa, based on observation results for 2025, is classified as good (quality class 2 for hydrobiological indicators, quality class 2 for hydrochemical indicators, quality class 1 for hydromorphological indicators). The ecological condition (status) and quality classes are calculated in accordance with Technical Code of Common Practice 17.13-24-2021 "Environmental Protection and Nature Management. Sampling and Measurements, Monitoring. Procedure for Classifying Surface Water Bodies (Their Parts) into Ecological Condition (Status) Classes".

CHAPTER 10
OUTREACH ACTIVITIES IN THE FIELD OF RADIATION AND ENVIRONMENTAL MONITORING

In 2025, more than 4 thousand persons as members of 200 delegations visited the NPP Information Centre.

Lectures, excursions, workshops were held for the Information Centre visitors related to the issues of the Belarusian NPP safety, NPP-2006 project specifics, Belarusian NPP efficiency, its role in national economy, the NPP impact on the ecology of the region and other issues.

Figure 10.1 Students of the National Children's Technopark at the Belarusian NPP

Representatives of domestic and foreign media (hereinafter referred to as media) were provided with practical assistance in preparing television stories, reports, and interviews about the operation of the Belarusian NPP and its best employees.

The press tour was held for journalists from Kazakhstan to mark the 5th anniversary of the connection of Unit 1 to the power grid. This event was also held due to the visiting meeting of the Council of the House of Representatives of the National Assembly of the Republic of Belarus at the Belarusian Nuclear Power Plant.

Coverages on the Belarusian NPP operation were prepared for the regional socio-political newspaper "Astravetskaya Prauda"

Assistance was provided in preparation of special coverages by Stolichnoe Televidenie CJSC, Second National TV Channel CJSC, RTR-Belarus, and others.

The information support is provided in preparing the reports related to the Belarusian NPP operation for industry mass media: Energy Strategy, Energy of Belarus.

One of the priority areas of the awareness-building effort is participation in specialised forums and exhibitions.

In 2025, the Enterprise's stand was presented at the 29th Belarusian Energy and Environmental Forum "Energy Expo 2025", in the exhibition of achievements of sovereign Belarus as part of the IV Eurasian Economic Forum, the World Atomic

Week in Moscow, the "My Belarus" exhibition, and the exhibition of winners of the 2024 Belarusian Government Award for Quality Achievements.

To provide prompt and comprehensive coverage of the most important events at the Belarusian NPP, to more actively and in more detail inform youth audience about nuclear power, the Enterprise maintains official pages in popular social networks, such as Telegram, Facebook, Vkontakte, Odnoklassniki and Instagram.

The Enterprise website content is regularly updated.