ANNUAL REPORT

2019

T. G. Masaryk
Water Research Institute, p.r.i.

Prague 2020

Index

INTRODUCTION

The year 2019 was relatively exceptional for the T. G. Masaryk Water Research Institute, p.r.i., as it was in the spirit of celebrating 100 years since the establishment of the institute. Various events, seminars, open days and conferences were organized. Preparations for the anniversary began a year earlier, when sources for a comprehensive publication on the history of the institute were sought. During research in the archives, for example, it was found that the institute was founded on December 9, 1919, i.e. ten days earlier than previously thought, which can be attributed to the relatively turbulent period that the young Czechoslovak Republic went through. Probably the most visible act for the general public was a program about the history of the research institute on Czech Television or the renaming of a public transport stop bearing the older name used until 1951 "Hydrological Institute" to the current "Water Research Institute".

From the point of view of water management, last year followed a series of dry years, and even surpassed them in terms of average temperatures. Summer is even considered the warmest since 1961, as it was about 2.5 °C above the long-term normal. The year was average in terms of precipitation, but the warm summer and the very warm winter, accompanied by a lack of snow, made it insufficient to replenish the groundwater reserves, which had already been in deficit since previous years. Unfortunately, the start to 2020 is not optimal, but it is encouraging that at least it was enough to fill virtually all important reservoirs on watercourses. Only filling the Orlík water reservoir will take a little longer after repairs.

The professional activity of the research institute thus necessarily focused on the issue of drought. The basis was the support of the activities of the Ministry of the Environment, either by participating in the National Coalition for Combating Drought, by acting in the Water-Drought Commission, or by participating in thematic conferences. However, it was crucial for the institute to extend the long-term research project DROUGHT of the Ministry of the Environment for another three years. In it, the Ministry defined the key directions that it considered to be the most beneficial for solving the problem of drought research. The most visible to the public will be the HAMR application, which maps hydrological, agronomic, meteorological drought and water retention in the landscape and provides not only historical data, but above all a drought forecast for several weeks ahead. The highly sophisticated application developed in cooperation with other partners is the basis for the activities of future dry commissions, which are introduced by the amendment to the Water Act and which, together with flood commissions, will enable municipalities to prepare for extreme situations. In turn, it will provide ordinary citizens with information on how water will look in their wells or gardens and in the fields in the coming weeks and months. However, within the DROUGHT project, the institute focused not only on forecasts, but also on solutions research that would help municipalities. Groundwater subsidies, so-called infiltration, seem to be the most promising.

As part of the DROUGHT project, as well as other research, the institute monitored the influence of groundwater status after the revitalization of the Orlice stream in the Jordán meander, initiated a construction procedure for performance of infiltration in the village of Ivančice or selected suitable localities in the whole republic where infiltration could be best used. However, the drought project also includes an analysis of above-limit consumption in the South Moravian Region or research into nature-friendly measures providing recommendations for the most suitable solutions targeted at individual territorial units of our state.

Other key projects, as in previous years, included support for the performance of state administration, the so-called PVSS for the Ministry of the Environment, or the Growth Pole, where the contracting authority, the City of Prague, addressed issues related to water in our metropolis from reservoirs of drinking water in Káraný and Želivka, through large Prague streams and reservoirs to the recreational potential of the capital, or the effects of climate change.

The preparation of projects for the Environment for Life program was crucial, which, although applied and evaluated at the beginning of 2020, will be crucial for the development and operation of the institute due to their scope and long-term focus. The employees of the institute prepared 43 projects for sub-program 1 and 2 for registration, including the design of the WATER competence centre for sub-program 3. They also participated in the preparation of other projects, where the research institute acts as a co-investigator. The institute then applied for several projects in the international programs Interreg or Horizon 2020.

The positive financial results of the institute enabled the purchase of a device for non-targeted LC-MS analysis in the amount of CZK 13.5 million and a QTOF liquid chromatograph in the amount of CZK 2.3 million for the Ostrava Branch, the Flow-3D program in the amount of CZK 1.4 million CZK and a Toyota Hilux off-road vehicle for the Prague workplace or the renewal of a number of devices in the amount of over CZK 1.5 million and a VW Caddy vehicle for the branch in Brno. The implementation of a complex IT system based on the QI application, office repairs or the preparation of a large reconstruction of a filling station in a small model hall is ongoing.

Great attention was paid to the employees. They are the most valuable part of the institute and are the generator of its success. The focus was on professional growth, both in the field of education, where in addition to participation in scientific symposia, conferences and seminars, employees had the opportunity to participate in a number of language courses, as well as in the field of financial evaluation. Based on the annual evaluation carried out by the heads of departments, a variable salary component was introduced, enabling regular monthly remuneration for all employees of the institute. Employees, in addition to rewards for quality work on projects or the creation of publications, also received a pre-Christmas reward in the form of the 13th salary.

Compared to 2018, revenues increased by 4.6% to CZK 217 million, the number of employees in the recalculated state increased by 1.7% and the economy ended with a positive result of CZK 13.4 million before tax. The economic trend in recent years thus gives a solid outlook to 2020, and thus successfully begins the next century of the institute's existence.

Ing. Tomáš Urban

the director of the public research institution

BASIC INFORMATION

Name	T. G. Masaryk Water Research Institute, public research institution
Adress	Podbabská 2582/30, Prague 6
Identification number	00020711
Tax identification number	CZ00020711
Legal Status	public research institution
Date of entry in the Register of p.r.i.	1. 1. 2007
Bank details	KB Prague 6, bank account number 32931-061/0100
Founder	The Ministry of the Environment
Adress of the founder	Vršovická 1442/65, 100 10 Prague 10
Identification number of the founder	00164801

Contacts

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Brno Branch

Mojmírovo náměstí 16, 612 00 Brno-Královo Pole
tel.: 541 126 311, fax: 541 211 397, info.brno@vuv.cz

Ostrava Branch

Macharova 5, 702 00 Ostrava
tel.: 595 134 800, fax: 595 134 880, info.ostrava@vuv.cz

INFORMATION ON INSTITUTE BODIES MEMBERS AND ACTIVITIES

The bodies of the Institute, within the meaning of Section 16 of Act No. 341/2005 Coll., as amended, are:

- a director, who is the statutory body and decides on all matters of the public research institution, unless they are entrusted by law to the competence of the institution's board, supervisory board or founder,
- the Council of the TGM WRI, p.r.i.,
- Supervisory Board of the TGM WRI, p.r.i.

Institute bodies and their members

In 2019, most of the institution's bodies functioned in a stable composition. In the Council of the Institute, the number of members decreased from the original 9 to 8 after the resignation of the deputy chairman Ing. Petr Tušil, Ph.D., MBA. At the 54th meeting of the Council on 8th April 2019, Ing. Jiří Kučera was chosen.

A. Director:
- Ing. Tomáš Urban

B. The Council of TGM WRI, p.r.i.
- researchers of TGM WRI, p.r.i.:
  - Ing. Anna Hrabánková (TGM WRI, p.r.i., Prague) – chairwoman,
  - Ing. Petr Tušil, Ph.D., MBA (TGM WRI, p.r.i., Ostrava Branch) – vice-chairman until 30th April 2019,
  - Ing. Miriam Dzuráková (TGM WRI, p.r.i., Brno Branch),
  - Ing. Jiří Kučera (TGM WRI, p.r.i., Prague) – vice-chairman from 1st May 2019,
  - Ing. Adam Vizina, Ph.D. (TGM WRI, p.r.i., Prague),
- external representatives:
  - Ing. Jaroslav Beneš (Vltava River Basin, s.e., Prague),
  - Ing. Jaroslav Kinkor (CHMI),
  - Mgr. Vít Kodeš, Ph.D. (CHMI),
  - doc. Ing. Aleš Havlík, CSc. (CTU in Prague).

Ing. Luděk Strouhal, Ph.D. (TGM WRI, p.r.i., Prague) continued in the position of Secretary of the Council of the Institution from 1st October 2017.

C. Supervisory Board of TGM WRI, p.r.i.:
- on 1st January 2019, the Supervisory Board of TGM WRI, p.r.i., was composed of:
  - Ing. Jan Landa (Ministry of the Environment) – chairman,
  - Ing. Berenika Peštová, Ph.D. (Ministry of the Environment),
  - Ing. Vladimír Sassmann (Ministry of the Environment),
  - Mgr. Ladislav Faigl (Department of Agriculture),
  - Ing. Roman Dvořák (TGM WRI, p.r.i.),
  - RNDr. Jan Daňhelka, Ph.D. (CHMI).

The Secretary of the Supervisory Board of TGM WRI, p.r.i., was Ing. Michal Vaculík from TGM WRI, p.r.i.

The Report on activity of the Council of the TGM WRI, p.r.i., in 2019

The composition of the Council of the TGM WRI in 2019 recorded a change in the number of members and in the position of vice-chairman. The Council was chaired by Ing. Anna Hrabánková, on April 30, 2019, the Deputy Chairman Ing. Petr Tušil, Ph.D., MBA resigned. The number of members thus dropped from 9 to 8 without compensation. At the 54th meeting of the Council on 8th April 2019, Ing. Jiří Kučera was chosen.

In 2019, three meetings of the Council of the institution took place at irregular intervals according to the dates of the necessary agenda for discussion. All meetings were regular and with a high attendance, and the Council was always capable of drafting a resolution. With one exception, the director of the institution also attended all meetings as a guest.

In addition to the obligations of the Council imposed by law and internal regulations, the Council, after the introduction of reporting on prepared project proposals in the previous year, dealt with their evaluation and commenting as standard and on an ongoing basis with the aim of harmonizing the activities of individual workplaces and connecting research teams in areas with the potential for cooperation. Furthermore, due to the lack of the Scientific Council, the Council participated in the creation of the Strategy for the Direction of Science and Research, specifically in the definition of five areas of research activities and launched activities for their evaluation and classification.

According to the Rules of Procedure, the secretary prepares minutes of each meeting of the Council, which are available to all

employees in the internal information database of the institute after approximately ten working days of the comment procedure by the members of the Council of TGM WRI, p.r.i.

The Report on activity of the Supervisory Board of the TGM WRI, p.r.i., in 2019

In 2019, four meetings of the Supervisory Board were held on 28th March, 5th June, 30th September and 11th December, with the following most important conclusions. All meetings held in 2019 were attended by the director of TGM WRI, p.r.i., Ing. Tomáš Urban.

The Supervisory Board, after discussion, considered:

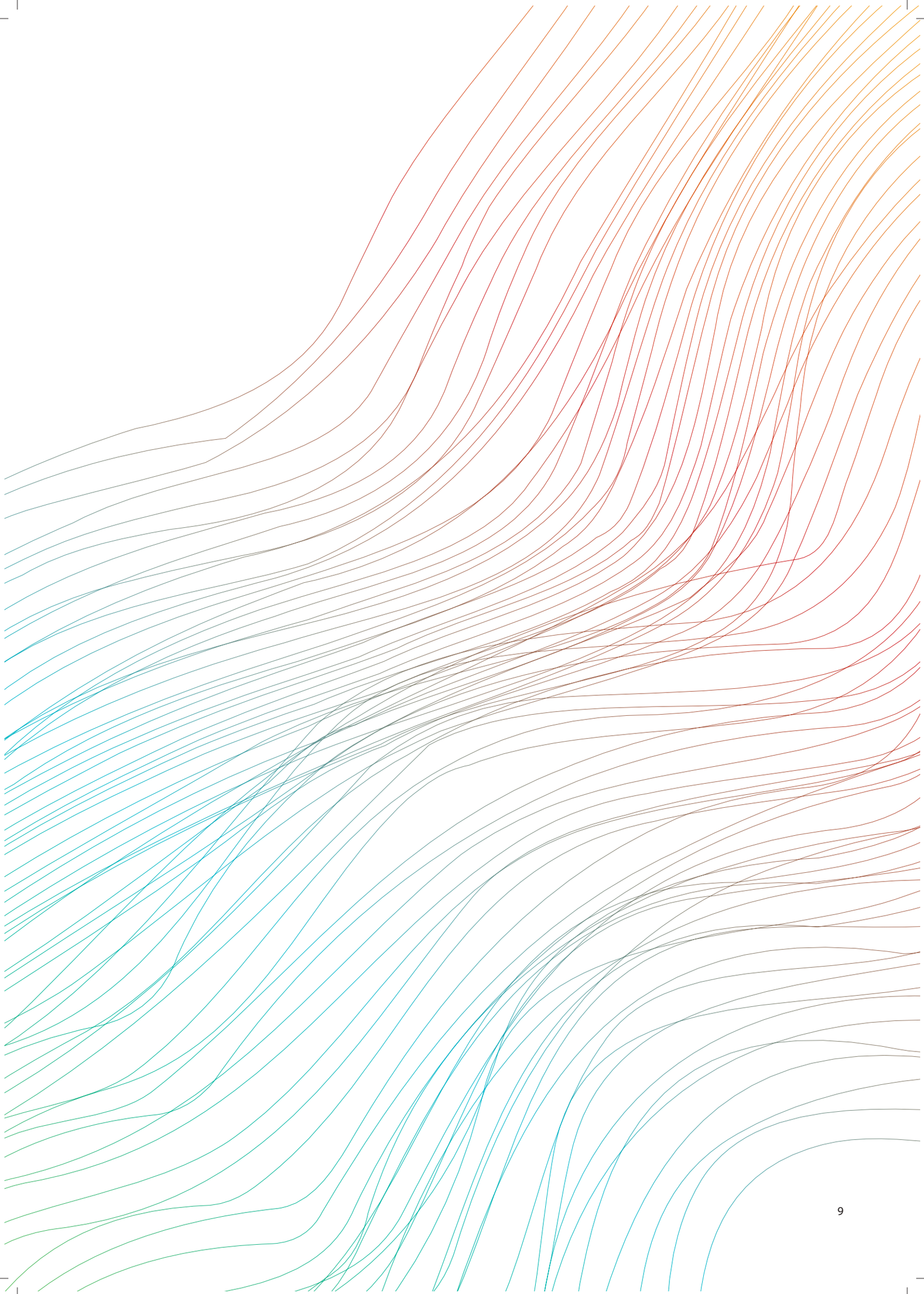
- draft of the Annual Report 2018 and it recommended its approval in the Board of TGM WRI, p.r.i.,
- without comments, the financial results of TGM WRI, p.r.i., in 2018 contained in the Annual Report 2018,
- draft of the budget of TGM WRI, p.r.i., for the year 2019.

The "Report on the Activities of the Supervisory Board of TGM WRI, p.r.i., in 2018" was prepared and submitted for publication in the 2018 Annual Report.

In the sense of § 19, paragraph (1), letter l) of Act No. 341/2005 Coll., as amended, the Supervisory Board prezented the Report about its eleventh year of activity (from 1st June 2017 to 31st May 2018) to the founder and Ing. Tomáš Urban.

In 2019, an investment plan was implemented for the acquisition of laboratory equipment, with the help of which research will be carried out focused primarily on the study of the aquatic environment. It is a set of LC-MS-QTOF – non-targeted analysis (non-target screening) of organic micropollutants in the price of CZK 13.5 million. In the sense of § 19, paragraph (1), letter b) of the Act No. 341/2005 Coll., as amended, the Supervisory Board issued a prior written consent to the investment plan No. 2.14.

At its meetings, the Supervisory Board also addressed current issues related to the activities of TGM WRI, p.r.i., e.g. information was provided on planned events that took place in 2019 as part of the 100th anniversary of the establishment of TGM WRI, p.r.i., as well as communications in connection with the purchase of a new QI information system for institutions, within which the unification of the economic system with project management and human resources is expected. In connection with the Environment for Life program, TGM WRI, p.r.i., prepared 43 projects, of which 36 projects were submitted in the final total.



ORGANIZATIONAL STRUCTURE

Council of TGM WRI, p.r.i.

Supervisory Board of TGM WRI, p.r.i.

Director

Advisory Bodies
- Scientific Board of TGM WRI, p.r.i.
- Editorial Bodies of TGM WRI, p.r.i.
- Committees Established by the Director

100 Section of the Director

- **101** Department of Secretariats, HR, Payroll and Metrology
- **102** Department Organizational, Legal and of External Relations
- **103** Department of Inspection, Occupational Safety and Health and Fire Protection

200 Section of the Deputy Director for Research and Professional Activities

210 Branch of Hydraulics, Hydrology and Hydrogeology
- 211 Department of Hydrology
- 212 Department of Hydraulics
- 213 Department of Hydrogeology
- 214 Czech Calibration Station of Current Meters (CCSCM)

220 Reference Laboratory of Environment Components and Wastes
- 221 Department of Hydrochemistry
- 222 Department of Water Microbiology
- 223 Department of Hydrobiology
- 224 Department of Radioecology

230 Branch of Water Protection and Informatics
- 231 Department of Summary Water Management Information
- 232 Department of Water Quality Protection
- 233 Department of GIS and Cartography
- 234 Department of WRI HEIS

240 Branch of Water Technology and Wastes
- 241 Testing Laboratory of Water Management Installations
- 242 Technological Laboratory
- 243 Department of Water Supply and Wastewater Treatment
- 244 Centre for Waste Management

250 Brno Branch
- 251 Department of Water Management
- 252 Department of Water Quality Protection
- 253 Department of Hydrochemistry
- 254 Department of Hydrobiology
- 255 Department of Informatics and Operation

260 Ostrava Branch
- 261 Department of Water and Waste Management
- 262 Department of Water Quality Protection
- 263 Department of Hydrochemistry
- 264 Department of Hydrobiology
- 265 Department of Informatics and Operation

270 Branch of Applied Ecology
- 271 Department of Aquatic Organisms Ecology
- 272 Department of Aquatic Ecosystems Protection
- 273 Department of Special Hydrobiology and Ecology

300 Centre for Assessing Proficiency of Laboratories (ASLAB)

400 Section of the Deputy Director for Economic and Operationally Technical Activities

410 Branch of Economics and Contracts Management

411 Department of Plan, Finance and Analyses
412 Department of Financial Accounting
413 Department of Planning, Coordination and Registration of Contracts

420 Investment and Operating Branch

421 Department of Investments
422 Department of Material and Technical Supply and Stock Management
423 Department of Property Registration
424 Department of Internal Administration, Vehicle Fleet and Workshop Operations

430 Branch of Services

431 Department of Scientific and Technical Information Centre (SVTI)
432 Department of Editorial Office
433 Department of Information System Management and Computer Network (LAN)
434 Department of Filing, Archival and Shredding Services

BRANCH OF HYDRAULICS, HYDROLOGY AND HYDROGEOLOGY

Comprehensive research in the field of hydrology has long been primarily concerned with the evaluation of the hydrological regime for current and future conditions affected by a climate change, with an emphasis on hydrological extremes – drought and floods. Quantification is based on the Bilan hydrological balance model, which has long been developed and modified at the department for the needs of individual projects. The model itself, together with the water balance model, is an entry into the HAMR system (Hydrology, Agronomy, Meteorology and Retention), for which the department coordinates research and development work. Based on the findings, adaptation measures are proposed, from nature-friendly measures to technically oriented measures (research results are published on the website www.suchovkrajine.cz). Last but not least, the anthropogenic influence on the water regime of the landscape and its consequences, the hydrological aspects of the revitalization of the landscape and river systems and the relationships between hydrological conditions and the protection of ecosystems are evaluated.

The department also deals with research in the field of hydraulics, for example verifying the operation and functionality of existing and new water works using physical hydraulic models, hydraulic evaluation of bridges and culverts on watercourses and determination of floodplains using mathematical modelling. The work is also focused on the design of preventive measures against floods, the determination of minimum residual flows on streams and water bodies, the evaluation of flash floods together with the optimization of warning systems.

Another important part of the department's research is research in the field of hydrogeology. A comprehensive research of groundwater quantity and quality, including micro pollutants in natural waters, is carried out. Methodical and conceptual tools for groundwater protection, evaluation of surface pollution and revision of vulnerable areas according to the Nitrates Directive are developed. Another task is the study of artificial infiltration and induced groundwater sources, evaluation of the interaction of surface and groundwater and evaluation of the effects of groundwater on terrestrial ecosystems. Research, remediation and monitoring of ecological accidents and old ecological burdens are carried out, including the assessment of ecological risks.

The department also operates the Czech Calibration Station for Water Meter Propellers, which is an accredited by the Czech Accreditation Institute workplace and ensures the calibration of free-level water flow meters according to CSN ISO 3455.

The department deals with professional problems in the field of hydrology and hydraulics of surface and groundwater. It focuses on issues of quantification and protection of water resources, the study of water flow in natural and artificial environments, the development and application of methods for measuring and monitoring water movement parameters in streams, reservoirs and rock environments, as well as hydroecology. The department performs expert and assessment activities and participates in a number of national and international projects.

BRANCH OF ANALYSIS AND ASSESSMENT OF ENVIRONMENT COMPONENTS

The Department of Analysis and Evaluation of Environmental Components is a research institute that focuses on the study of water quality and other components of the environment that affect it. It examines the occurrence and behaviour of substances in the hydrosphere and the influence of its quality by anthropogenic factors and natural influences. The department consists of four departments – the department of hydrochemistry, the department of water microbiology, the department of hydrobiology and the department of radioecology, the focus of which enables comprehensive research into the state of the hydrosphere and the processes taking place in it.

An integral part of the department are the laboratories of each department, which form one of the two workplaces of the Testing Laboratory of Technologies and Components of the Environment TGM WRI, p.r.i. The main task of the laboratory is to provide analytical data so as to ensure a qualified solution of projects and targeted research in the field of detection and evaluation of changes in water quality during their use and protection. The work of the laboratory is part of monitoring programs of national importance. It also deals with the development and verification of analytical methods and the development of new test procedures. For the Laboratory Competence Assessment Centre (ASLAB), it regularly provides technical preparation for laboratory proficiency testing.

The workplace has highly qualified professional staff and it is equipped with state-of-the-art instrumental technology and it has a high-quality operational and technical laboratory background. Thanks to this, the laboratory of the department can perform the determination of chemical, microbiological, hydrobiological and radiological parameters in water and in other matrices. The determinations are performed according to standard procedures as well as according to newly developed methods. It also focuses on offering unique determinations, such as illegal substances (drugs) or very low concentrations of tritium.

The results of experimental work are applied in their own projects of applied research, as well as they are used by researchers from other departments of the institute and external customers. In 2019, it underwent re-accreditation according to the CSN EN ISO / IEC 17025:2018 standard, and the new accreditation also includes the determination of drugs and their metabolites.

BRANCH OF WATER PROTECTION AND INFORMATICS

The activities of the department are focused on the support of the professional activities of TGM WRI, p.r.i., in the field of informatics, data services and analyses of water management data. The department has long ensured the development and operation of the Hydroecological Information System (heis.vuv.cz) and the administration of DIBAVOD (dibavod.cz), including activities related to the use of geographic information systems. In the field of research, the department's activities are focused on the development of information tools and balance, prediction and evaluation systems (software, public specialized databases) and data analysis, especially for the needs of planning and implementation of EU directives in the field of water management and water protection. The department also deals with the use of Earth remote sensing methods and ensures the publicity of research projects of TGM WRI, p.r.i., in the form of websites and data services.

As part of the support of state administration, the department ensured the keeping of selected records of the Public Administration Information System for the "WATER" area, preparation of reporting of river basin plans under the Water Framework Directive to the European Commission and reporting of emissions to the aquatic environment to the European Environment Agency. It also ensures the annual compilation of the "Comprehensive Water Balance of the Main River Basins of the Czech Republic" according to Decree of the Ministry of Agriculture No. 431/2001 Coll. companies Basin. In 2019, the protection zones of water resources were updated and the river network was harmonized as part of the ISVS-VODA update. The Department supported the Czech Republic's participation in the activities of the International Commission for the Protection of the Elbe (ICPOL) and in the activities of the Standing Committee of Saxony and the Standing Committee of Bavaria of the Czech-German Boundary Waters Commission. Part of the support for the performance of state administration was the provision of activities within groups of experts of international commissions for the protection of the Elbe, Odra and Danube and support for the implementation of INSPIRE. Selected summary information on water was prepared for documents and publications provided and submitted by the Ministry of the Environment and the Ministry of Agriculture (Environmental Report of the Czech Republic, Statistical Yearbook of the Environment, Report on the State of Water Management in the Czech Republic).

The Department participates in the solution of projects within the Prague Operational Program – the Growth Pole of the Czech Republic. Employees of the department collaborated, for example, on the projects Above-limit consumption of the South Moravian Region, Processing of data on raw water quality for the period 2014–2016 according to Decree No. 428/2011 Coll. and on the project ResiBil – Balance of water resources in the eastern part of the Czech-Saxon border and evaluation of the possibility of their long-term use, supported by the European Regional Development Fund from the Cooperation Program Czech Republic – Free State of Saxony 2014–2020.

BRANCH OF WATER TECHNOLOGY AND WASTES

The Branch of Water and Waste Technology deals with research topics in the field of water technology (water treatment, wastewater treatment, recycling of treated wastewater) and waste.

Two departments (Testing Laboratory of Water Management Facilities and Department of Basic Chemical Analysis) are part of the Testing Laboratory of Technologies and Environmental Components of TGM WRI, p.r.i., which is accredited by the Czech Accreditation Institute according to CSN EN ISO / IEC 17025:2018 as Testing Laboratory No. 1492 and assessed ASLAB according to the same standard as laboratory No. 4035.

The testing laboratory of water management facilities performs tests of the efficiency of treatment of domestic wastewater treatment plants according to accredited testing procedures described by technical standards. The testing laboratory is able to offer customers other methods of testing water management equipment according to their needs, such as light liquid separators and grease traps.

The Department of Basic Chemical Analysis provides analytical background in the field of ZCHR for researchers of the research institute as well as for external customers.

The Branch of Water Management and Wastewater Treatment deals primarily with methods of water treatment and wastewater treatment, and in recent years mainly with the issue of micro pollutants, their occurrence, transformation and disposal options. The department, in cooperation with other departments of the institute, deals with the impacts of discharged wastewater on recipients, especially in times of drought.

The department also includes the Centre for Waste Management, which conducts research in the field of waste management and also deals with commenting on draft legislation on waste.

BRNO BRANCH

The focus of the Brno Branch's long-term activities lies in solving problems arising from climate change. The consequences are obvious from both hydrological extremes – floods and droughts. The focus of the branch's research activities seeks to cover all important aspects of this issue, which can include monitoring and detailed description of causal phenomena, analysis of their impact on the environment. The research results lead to proposals for adaptation and mitigation measures that cover the whole range of protection options, i.e. from structural changes within hydrological units (river basins) to proposals for amendments to legislation or methods of financing the relevant types of public services.

The employees of the branch also deal with the quality of not only surface water. It is a theoretical and practical elaboration of the issue of monitoring and evaluation of the quality of the aquatic environment in terms of hydrochemistry, hydrobiology and microbiology, both at the national and international level, especially in the international Danube basin. As part of the solution of a number of research tasks, suitable measures are being sought to improve the condition of water bodies in the intentions of national and European legal regulations.

OSTRAVA BRANCH

The research and expert activities of the employees of the Ostrava Branch of the institute are primarily focused on the issue of quality assessment and water protection. Water is conceived not only from a regional and national point of view, but also comprehensively, as part of international river basins. For these needs, new methods of analysis and evaluation are being developed and introduced, which significantly refine the detection level of the survey, but also increase the level of the proposed measures to protect the ecological quality of water. Ostrava experts also deal with the issue of water planning, detection and assessment of the impact of accidental pollution on the biological quality of water. The activities of Ostrava experts at the international level are also significant. These are implemented mainly through membership in working groups of the International Commission for the Protection of the Oder against Pollution, or through regular participation in meetings of the international consortium of major European research institutes EurAqua. The branch's portfolio also includes solutions to waste issues and treatment for further use, as well as documentation of historically significant water management structures.

Implementation and evaluation of the results of routine and specialized analyses of water, sludge and waste are provided by the workplaces of hydrochemistry and hydrobiology, which are covered by the Testing Laboratory of Hydrochemical and Hydrobiological Analyses of TGM WRI, p.r.i., Ostrava Branch. This laboratory has received accreditation from the ASLAB Laboratory Competence Assessment Center and the Czech Accreditation Institute for a wide range of analytical methods (especially hydrochemical and hydrotoxicological).

BRANCH OF APPLIED ECOLOGY

The Branch of Applied Ecology is primarily engaged in monitoring and evaluating the development of natural and anthropogenically influenced aquatic ecosystems and their biological components. The activity focuses on research of selected species, groups and communities of animals and plants, their requirements for the state and degree of pollution of the aquatic environment, tolerance to a wide range of anthropogenic influences and ways to protect them in natural and anthropogenically influenced aquatic ecosystems. The department also deals with analyses of a wide range of pollution sources and other impacts on aquatic ecosystems and develops methodological procedures for assessing the status of water bodies, the degree of anthropogenic threat to the aquatic environment and the effectiveness of various types of measures. It also deals with the development of monitoring procedures and sampling devices for monitoring water, pollution sources and biological components of aquatic ecosystems. An integral part of the work of the department is the implementation of research results into practice and legislation (new approaches and methodologies), including consulting and assessment activities.

The Branch of Applied Ecology is organizationally divided into three departments – the Department of Aquatic Ecology, the Department of Aquatic Ecosystem Protection and the Department of Special Hydrobiology and Ecology.

In 2019, the Department of Aquatic Ecology focused mainly on research projects that assessed the state of fish communities in the Dyje border area between the Czech Republic and Austria, projects that focused on assessing the migration permeability of selected fish passages and monitoring fish migration to selected monitoring profiles in the Elbe river basin. An important part of the work was also the monitoring of selected Natura sites from the perspective of selected fish species that are subject to protection in these areas. The staff of the department also participated in the popularization of the issue of migration and ecology of river eel, which is an important species from a pan-European perspective and is given due attention in the Czech Republic.

In 2019, the Department of Aquatic Ecosystem Protection dealt with a number of research projects, which focused mainly on the issue of various types of water pollution and their spread in the aquatic environment. Significant projects include monitoring and evaluation of the input and transformation of substances from the PPCP group and plant protection substances in the

catchment area of the Švihov of Želivka water reservoir, which is the most important source of raw water for treatment into drinking water in the Czech Republic. The emission characteristics of selected pollution sources and the method of transformation of substances in the river network and water reservoirs were studied. Other significant projects addressed in the department include the evaluation of eutrophication of watercourses and reservoirs in the Prague River Basin and the identification of priority sources of pollution in river basins, the elimination of which would significantly improve water status and increase the recreational potential of bathing sites and the overall ecological status of watercourses and streams in the territory of Prague and in the part of the Central Bohemian Region.

In 2019, the Department of Special Hydrobiology and Ecology dealt with several projects, the most important of which have long focused on research into localities with the occurrence of freshwater pearl mussels as a critically endangered species of our waters. In a cross-border project with Austria on the Malše River, surveys found adults and subadult individuals as a sign of independent population recovery. Therefore, the project proceeded to a detailed mapping of the bottom and search for freshwater pearl mussel in the backbone flow. As part of the project, freshwater pearl mussel breeding was carried out to strengthen the population at the breeding facility in Blanica, and genetic tests of freshwater pearl mussel were performed in cooperation with the CULS with regard to the host population of brown trout. A similar project "Strengthening and protection of the freshwater pearl mussel population in the Šumava National Park" is also taking place in the Teplá Vltava and Vltava river basins in the Vltava floodplain. The knowledge about pearl populations obtained within both projects serves to deepen the knowledge about this important umbrella species. The project solved on the upper reaches of the Vltava includes many other activities, including monitoring the impact of boating on bottom communities and assessing water quality based on the composition of macrozoobenthos.

ASLAB

ASLAB – Centre for Assessment of Laboratory Competence at TGM WRI, p.r.i., is authorized to perform state delegated powers by the State as a central state administration body (Measure No. 12/06, No. 7081/M/06):

- organize interlaboratory comparisons in the field of environment – the output is a Certificate of participation in aptitude tests,

- assess the professional competence of hydroanalytical laboratories in the field of environment according to CSN EN ISO / IEC 17025 – the output is a Certificate of proper operation of the laboratory, which is in accordance with Act No. 254/2001 Coll., on Waters, as amended, and Decree No. 328/2018 Coll. one of the conditions for meeting the requirements for an authorized laboratory, including the area of drinking water and pool water (Act No. 258/2000 Coll., as amended by Act No. 253/2005 Coll. and Decree No. 238/2011 Coll.),

- to perform the activities of the National Inspection Body of Good Laboratory Practice (GLP) for the area of chemical substances and chemical preparations according to Act No. 350/2011 Coll. (Chemical Act) and Decree No. 163/2012 Coll. on the principles of good laboratory practice, as amended.

A significant part of ASLAB's activities consists of proficiency testing (PT), which according to the valid statute is the basic level of external control of hydroanalytical laboratories. The number of participating laboratories from the Czech and Slovak Republics in the PT programs organized by ASLAB in 2019 was 206.

ASLAB builds on new and forthcoming legislation containing test methods or references to them and develops proficiency testing methodologies in these new areas with a view to their implementation in its programs. It prepares laboratories for changes in conditions resulting from new or amended legislation and their further verification.

In 2019, ASLAB awarded a certificate of proper laboratory operation to twenty newly assessed laboratories, and as of 31st December 2019, a total of 51 of these certificates were in force. As at 31st December 2019, ASLAB inspected a total of five test facilities in the area of good laboratory practice.

In addition to the obligations imposed by the statute, ASLAB employees cooperated in the creation of legislative documents of the Ministry of the Environment, technical standards and documents related to laboratory assessment, all with the aim of supporting state administration activities, evaluating information created by ASLAB activities and transferring information created elsewhere to ASLAB activities. Reports on all ASLAB activities are issued and stored in the archive.

THE ACTIVITIES OF THE INSTITUTE

T. G. Masaryk Water Research Institute, public research institution, was entered into the Register of Public Research Institutions, maintained by the Ministry of Education, Youth and Sports, on 1st January 2007.

The institution's activities are based on the charter of a public research institution given by Measure No. 12/06 of the Ministry of the Environment of 12th December 2006, as amended by Measure No. 2/11 of the Ministry of the Environment on issuing the full text of the charter of 31st May 2011.

The main mission of the Institute is:

- research of the state, use and changes of aquatic ecosystems and their links in the landscape and related environmental risks, waste management and packaging,
- professional support for water protection, flood prevention and waste and packaging management, based on the above research.

Ensuring the mission of the institute takes place both in the area of the main and other activities of the institution according to its founding charter.

The main activity includes:

- research in hydrology, hydrogeology and hydraulics,
- research on water resources, water protection and river basin protection,
- research in chemistry, toxicology and radiology of water,
- research in biology and microbiology of water,
- research on water pollution and pollution abatement processes,
- research on water pollution and pollution abatement processes,
- research into methods for determining and evaluating water status,
- research in the ecological links of water in the landscape,
- research on observation methods, field measurements and sampling, including instrumentation,
- research of methods of analytical chemistry, including instrumentation,
- research of methods of information processing, creation and use of databases, including geographic information systems,
- economic research in relation to water and its use as a component of the environment,
- research of the revitalization of river systems and the hydric revitalization of damaged landscapes,
- research of the selection of aquatic habitats suitable for restoration or revitalization and the database of relevant sites,
- research of protection against the harmful effects of water,
- research of water planning, water balance and water use,
- research on waste management, its composition and properties, including hazardous waste, and their impact on the aquatic environment,
- research on the risk of landfills and old pressures for the aquatic environment,
- research on packaging and packaging waste management,
- research, development, application and evaluation of technological methods for waste management, including evaluation of waste production and management,
- providing research infrastructure.

As part of other activities, the institute provides:

- elaboration of assessments, opinions, expertises and analyzes in the field of the subject of the main activity,
- carrying out observations, field measurements, sample analyzes, chemical analyzes in the field of the main activity,
- international cooperation, activities within the relevant and thematic strategies in the field of the main activity,
- cooperation with universities, institutes of the Academy of Sciences and other research institutes in the field of the subject of the main activities,

- publishing and information activities in the field of the subject of the main activity,
- designing indicators of good ecological status of water,
- designing programs to reduce surface water pollution by dangerous harmful substances and particularly dangerous harmful substances,
- assessment of sensitive and vulnerable areas, as well as surface water suitable for the life and reproduction of native species of fish and other aquatic animals, protected areas of natural water accumulation and surface water used for bathing,
- designing and monitoring of areas of natural water accumulation within the scope of the main activity,
- designing the protection of water resources,
- records of watercourses and reservoirs, buffer zones of reservoirs and groundwater sources,
- management of thematic water management cartography,
- assessment and evaluation of the surface circulation regime and groundwater with a link to the state of use of water resources,
- determination of minimum residual flows and minimum groundwater levels,
- technical support for the preparation of river basin management plans,
- operation of reference laboratories for all components of the environment,
- assessment of professional competence of hydroanalytical laboratories for chemical, biological, microbiological, toxicological and radiochemical testing methods and organization of interlaboratory comparison of tests in the field of environment,
- methodical management of hydroanalytical laboratories and unification of their working procedures,
- professional support for the prevention of major accidents caused by chemicals and preparations,
- participation in the provision of a permanent and emergency component of the national radiation monitoring network,
- creation and operation of an assessment system of water status and potential and reference conditions of water bodies,

- the establishment and operation of a monitoring network for the monitoring of surface water and groundwater, excluding their quantity,
- material and organizational provision of activities for the assessment and assessment of surface water and groundwater,
- keeping and updating records of the WATER public administration information system,
- design assessment and evaluation of the operation of technological equipment in water and sewage treatment,
- evaluation of the effectiveness of revitalization of river systems,
- professional support for the Czech Republic's international cooperation in the field of water within the framework of bilateral and multilateral agreements and arrangements,
- providing the documents needed to carry out the tasks arising from the relationship with the European Communities and the documents included in the reports on the implementation of the directives in the field of water and waste protection, as required by the European Communities,
- evaluation of individual methods of waste management,
- operation of a waste management information system and keeping records of production and management of waste and packaging,
- evaluation of analytical methods and properties of waste, evaluation of efficiency of waste treatment, evaluation of composition and properties of waste, including hazardous waste,
- performance of the function of the National Inspection Body of Good Laboratory Practice,
- performance of the function of the National Inspection Body of Good Laboratory Practice,
- technical support for the updating and evaluation of waste management plans,
- providing information on the state of the environment in the field of waste,
- performance of the function of a professional body for professional and registration activities,
- performing the function of an aptitude assessment centre for the calibration of working free-flow water flow meters,
- performance of the function of a calibrator of working water meters of free surface,
- activity of testing laboratory of water management facilities.

In addition to the above functions, the institute also performs other activities arising from the Measure of the Ministry of the Environment No. 12/06 and given by the relevant trade licenses.

THE MAIN ACTIVITY

In 2019, the activities of the Department of Hydraulics, Hydrology and Hydrogeology focused mainly on drought research, which is becoming increasingly relevant due to the duration of the precipitation deficit and rising temperatures. The HAMR system is being developed to model drought forecasts, which is closely linked to the forthcoming amendment to the Water Act and will be a key basis for decision-making for the water management community (water authorities, river basin managers, drought and water scarcity management commissions). The system can analyze time series of hydrological balance by individual components (direct outflow, basic outflow). At the same time, it can analyze time series of hydrological balance by individual components (direct runoff, basic runoff). The system itself also assesses meteorological, agronomic and hydrological drought conditions, which are assessed separately for ground (shallow) and surface waters. Based on these data, the water shortage hazard index is calculated. At present, the prediction of individual elements for two weeks is in progress. A new web platform was created in 2019, which will be launched during 2020. The system runs on the web portal hamr.chmi.cz.

In addition to the development of system tools for solving the problem of drought, the department deals with proposals for measures to reduce its impacts, such as proposals for controlled groundwater subsidies, or strengthening water accumulation using methods of natural infiltration into underground collectors.

One of the other potential tools in the fight against drought is the assessment of the possibility of using existing dry reservoirs. The aim of this activity is to assess the possibilities of increasing water retention in the landscape and influencing the hydrological regime at the outflow from the reservoirs through partial changes in the use of existing dry reservoirs, specifically by creating a water supply. Intentions to change the use of dry reservoirs bring a number of issues to be solved, the solution of which will enable the correct setting of decision-making processes. Technical, environmental, organizational and economic aspects must be taken into account. The research assumes the achievement of four main results – the creation of a database of dry reservoirs in the Czech Republic, maps of dry reservoirs expressing the possibilities of potential changes, methodology for assessing dry reservoirs in terms of possible changes in their use and detailed assessment of selected groups of dry reservoirs with regard to possibilities of changes in their use.

Along with drought modeling and prediction and proposals for individual measures to improve the condition, the department also deals with the monitoring of watercourses, which aims to evaluate the impact of individual measures on the overall hydrological status.

The Department of Analysis and Evaluation of Environmental Components is engaged in research of the quality of water and other components of the hydrosphere and the environment in general. It examines the occurrence and behavior of substances in the hydrosphere as well as the influence of water by pollution sources, the research activity of the department is based on experimental work and its evaluation. Basic chemical and microbiological indicators of water quality are monitored, but also specific organic pollutants (e.g. pharmaceuticals, pesticides), metals, radionuclides in very low activities and, last but not least, hydrobiological indicators of water quality.

An important research activity is the monitoring of selected drugs and their metabolites in surface and municipal wastewater, not only within the project of the City Hall of the City of Prague (Pole of Growth II) CZ.07.1.02/0.0/0.0/16_040/0000 "Wastewater as a diagnostic medium of the capital city of Prague", as well as monitoring and evaluation of the impact of pollution sources – e.g. within projects of the Prague City Hall (Growth Pole II) CZ.07.1.02/0.0/0.0/16_040/0000 "Evaluation of pollution sources and their impact on the recreational potential of water in the urban environment" and "Possibilities of water recreation in the capital city of Prague (from history to present)". Active cooperation took place on the project NAKI DG16P02M032 "Non-invasive and gentle procedures for solving the quality of the environment and maintenance of water elements in monument care" and Technology Agency of the Czech Republic (Epsilon II program) TH02030532 "New procedures for treatment and stabilization of sewage sludge from small municipal sources". Work has begun on two new research projects: Security Research of the Ministry of the Interior – VI20192022142 "Innovative methods for detection of ultra-low concentrations of radionuclides to assess the vulnerability of drinking water sources in a nuclear accident" and Theta Technology Agency of the Czech Republic – TK02010064 – "Concept of a new system for modeling the spread of artificial radionuclides in the hydrosphere, including data assimilation for the needs of the state during the normal operation of the NPP and its accident with an impact on the environment".

An important part of the department's activities was cooperation on research projects of researchers from other departments of the institute in the form of providing chemical, microbiological, hydrobiological and radiological analyzes for their research projects.

The Branch of Water Protection and Informatics participates in a number of research projects across the organization. The research is focused on the creation of software-type results in the field of models of behaviour of water management systems in relation to the quantity and quality of water, protection of native species and endangered organisms. In the project "Prediction of the danger of non-native fish and crayfish and optimization of eradication methods of invasive species" (TH02030687), software "Crayfish in the Czech Republic" was developed in cooperation with Hydrosoft Veleslavín, s.r.o., to record and report the occurrence of crayfish in nature (https://heis.vuv.cz/projekty/raci2017?t=mobilniaplikace). In the project "Protection of critical infrastructure – Želivka water source – from the effects of PPCP and pesticides in conditions of long-term drought" – VI20172020097 work began in 2019 on the implementation of simulation models aimed at modelling the occurrence and spread of pesticides and PPCP substances in surface waters (completion planned for end of 2020). The solution of the project "Water management and water supply systems and preventive measures to reduce risks in drinking water supply" was launched (VI20192022159). The Department also participated in the development of procedures for determining significant effects on the morphology and hydrological regime of watercourses for planning purposes under the Water Framework Directive or collaborated on project BV VI3VS/713 – Water and water systems and preventive measures to reduce risks in drinking water supply. In 2019, the project of the Technology Agency of the Czech Republic TJ02000091 – Use of Earth remote sensing methods for monitoring the condition and quality of bathing places in the Czech Republic was launched, which is being solved in cooperation with the National Institute of Public Health.

Research in the field of water and waste technology in 2019 continued to focus on the occurrence of substances from the PPCP group (pharmaceuticals including antibiotics, hormones and additives added to soaps and perfumes and some of their intermediates) in water, their transformation and disposal. This issue has been addressed in a number of research projects, specifically in the catchment area of the Švihov valley reservoir, where the main sources of these substances from individual wastewater treatment plants are being investigated. Research is being carried out on the removal of substances from the PPCP group during the filtration of treated wastewater through activated carbon, as well as on the possibility of removing polyaromatic hydrocarbons from rainwater draining from paved areas contaminated by traffic.

At the same time, other research topics are being addressed, such as the effects of dry matter on streams as recipients of treated wastewater or the composition of mixed municipal waste from various localities (housing estates, villa development, mixed development).

Research in the field of hydrobiology is an important area provided by the Brno Branch of the institute. This is mainly a long-term development of the assessment of ecological status and water quality. The developed procedures are sought after by foreign partners, e.g. when evaluating the impacts of transport

constructions on environmental components. At the same time, the mentioned procedures are applied within the monitoring and prediction of drought impacts.

A significant part of the work in 2019 was devoted to the issue of water elements of cultural monuments and technical equipment of monumentally protected water management structures. Projects focused in this way are solved in the programs of the Ministry of Culture of the Czech Republic in cooperation with the National Monuments Institute, the Institute of Vertebrate Biology of the Academy of Sciences of the Czech Republic, Masaryk University Brno, Palacký University in Olomouc and other entities.

In the area of flood issues, activities continued focused on the process of introducing the principles of the EU Floods Directive into routine activities, which are provided by state and local government units. These included, for example, methodological support for the process of creating flood hazard and flood risk maps and the preparation of flood risk management plans. At the same time, ways are being sought to favourably influence runoff conditions in watersheds with a significant share of agricultural land in order to reduce the possible impacts of floods due to torrential rains and soil erosion. The result are proposals for complexes of measures within hydrological units, such as pilot sites solved in the South Bohemian Region in the international project RAINMAN.

Within the Ostrava Branch, the researchers of the hydrobiology department in 2019 dealt with the issue of introducing two miniaturized methods, enabling the detection of potentially significant pollutants in emerging waters into the portfolio of analytical methods of the workplace. The first method introduced is the Yeast estrogen screen test using genetically modified yeast to identify estrogenic substances. The second method is the Ames' fluctuation test (ISO 11 350), which uses genetically modified bacterial strains of Salmonella typhimurium to monitor the presence of direct and indirect mutagens in the environment. These are modern (effect-based) methods aimed at monitoring the occurrence of priority substances in waters, which are carried out in the Czech Republic only at a few highly specialized workplaces. Both mentioned methods belong to ecotoxicological tests, recommended Technical report on aquatic effect-based monitoring tools (2014). They are based on monitoring the response of organisms that are exposed to the effects of bioavailable substances and their metabolites. The significance of these methods lies in the fact that, unlike chemical analyzes, they are able to take into account the effects of mixtures of pollutants in the environment.

Another important research activity, which was carried out by the employees of the Ostrava Branch, was the completion of the methodology for deriving biologically available concentrations of selected metals for the needs of evaluating the chemical status of surface water bodies. The methodology was opposed in the process of its certification and was used to assess the chemical status of surface waters throughout the Czech Republic (for the first time ever, the bioavailable form of nickel and lead was evaluated in the three-year 2016–2018 evaluation).

One of the key topics, which the Branch of Applied Ecology has systematically and conceptually dealt with and is dealing with, is the issue of river network fragmentation.

The existence of transverse barriers in the river network, such as weirs or waterworks, significantly changes the original river environment due to changes in sediment transport, environmental parameters such as dissolved oxygen or changes in temperature gradient. In addition to environmental changes with a direct impact on the availability and quality of river habitats, transverse barriers to restricting the free migration of aquatic animals, which in connection with hydropower can be further accompanied by injuries or deaths during their downstream migration by hydropower plants. This anthropogenic pressure poses a significant global threat to the maintenance and conservation of the biodiversity of aquatic ecosystems. Within the EU, therefore, the restoration of migration throughput and the achievement of good ecological status of flows is required through a number of measures, such as Directive 2000/60/EC (EU, 2000), Council Regulation (EC) No. 1100/2007 (EU, 2007), laying down measures for the recovery of the stock of European eel, Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EU, 1992) and others.

The long-term activities of the department include intensive cooperation with the Ministry of the Environment (MoE) and the Agency for Nature and Landscape Protection of the Czech Republic (AOPK) on the preparation of a strategic framework governing the fragmentation of aquatic ecosystems. approximately four-year cycles updated (last in 2019). In connection with its fulfilment, the department cooperates in solving many current issues / activities, such as mapping of transverse obstacles, construction of transverse obstacles, VD and MVE, minimum residual flows, construction, design, hydraulic and biological monitoring, both within the Commission for fish passages at the AOPK, through the support of the performance of the state administration of the Ministry of the Environment, or within the solution of specific projects. Technical support is also provided to other stakeholders.

In connection with the solution of river network fragmentation in the Czech Republic (and the Concept), the key activities are mainly applied research of the department: development, testing and standardization of biological monitoring of compensatory measures (fish passages, safety elements of MVE), both for objective evaluation of specific constructions and from the point of view of the development of standardized evaluation (see the methodological basis prepared in 2019 "Methodological procedures for biological evaluation of fish movements"). This enables the comparison and selection of the most effective type measures (the Technology Agency of the Czech Republic project is being prepared) and represents the basic basis for

their optimization and further development, which are ideally implemented experimentally (experimental channel application) with subsequent field verification.

Necessary research includes the study of migration requirements of aquatic organisms (model organisms are mainly fish) and the application of knowledge in the protection and management of not only fragmentation of endangered species (cooperation with the Ministry of Agriculture of the Czech Republic, including the management of eels, etc.). Important activities of the department also include awareness-raising activities (the 3rd year of the "World Fish Migration Day" event will take place in 2020) and the organization of professional events (e.g. the traditional Sázava seminar).

Most of the research activities of the department are carried out with international participation in active cooperation with major international workplaces and organizations.

Publications in Journals

In 2019, the staff of the institute were the authors or co-authors of 49 papers in professional journals, the vast majority of which were peer-reviewed journals, 51 articles were published in proceedings. Thirteen articles have been published in journals with an impact factor, such as Ecological Indicators, Soil and Water Research, Water, Scientific Reports and others.

Results with legal protection and technically implemented results

In 2019, one software application called Crayfish in the Czech Republic was created. The application is mainly used to record and report the occurrence of crayfish in nature. The application includes information necessary to identify individual species of crayfish and then general information, such as basic information on the protection of crayfish, distinguishing features, basic terminology, etc. In addition, 11 utility models were created.

International cooperation in research

In the field of hydrogeology, the international project RESIBIL, supported by the European Regional Development Fund from the Czech-Cross-Border Cooperation Program Czech Republic – Free State of Saxony, is being solved together with the Saxon Land Office for Environment, Agriculture and Geology (LfULG) and the Czech Geological Survey (CGS). The project is focused on the joint protection of groundwater resources in the Czech border region based on the use of modern model tools. The area of the entire area of interest reaches 1,888 km^2, in which three pilot areas have been defined: Děčínský Sněžník, Hřensko-Křinice / Kirnitzsch and Lückendorf.

International research is also being conducted in the field of hydrology and hydraulics. The cooperation takes place, for example, within the framework of international projects FRIEND (Flow Regimes from International Experimental and Network Data). TGM WRI, p.r.i., also deals with the RAINMAN project (Integrated Heavy Rain Risk Management), which is financed from EU funds – INTERREG CENTRAL EUROPE. The project focused mainly on work in pilot areas in the South Bohemian Region and the completion of the catalogue of measures and its implementation in the so-called Toolbox, which is one of the key outputs of the project. The project is solved in cooperation with partner countries of the Czech Republic, Germany, Poland, Hungary, Austria and Croatia.

Within the framework of Cooperation on Border Waters with Austria, tasks related to water quality are provided. Following the meeting of the Czech-Austrian Boundary Waters Commission. Part of the task is to ensure and evaluate extensive monitoring of water quality of border streams, its evaluation with regard to national differences and solving problems with extraordinary pollution affecting the quality of waters of neighbouring states. The validity of analytical data of laboratories performing monitoring at border flows is checked by the organization of international interlaboratory comparisons.

As part of international cooperation, our Brno Branch is part of the largest international river research expedition of 2019 called Joint Danube Survey 4 (JDS4), which takes place in 13 countries of the Danube basin, including the Czech Republic, and which was officially launched on Danube Day 29th June 2019. The main purpose of joint surveys of the Danube is to provide reliable and mutually comparable information on selected indicators of water quality and the state of ecosystems of the Danube River, including its main tributaries in a short period of time. Three joint Danube surveys have already taken place in 2001, 2007 and 2013. The JDS itself is coordinated by the Secretariat of the International Commission for the Protection of the Danube River (ICPD). The results can be expected in the second half of 2020 (for more details see http://www.danubesurvey.org/jds4/about). Informal cooperation with foreign experts and work on the sustainability of the project continues even after the official completion of the Czech-Austrian projects Dyje-Thaya and ProFor.

Other international cooperation includes:

- participation of TGM WRI in the framework of the Water Management Mission to Israel WATEC Israel,
- research on life-history traits of non-native species: Gozlan et al. Native drivers of fish life history traits are lost during the invasion process, France: Université de Montpellier et al.,
- Interreg Malsemuschel project (ATCZ37 Malsemuschel, 2017–2021) – Support for the natural environment and the occurrence of freshwater pearl mussels (Margaritifera margaritifera) in the Malše river basin, etc.

Presentations at international meetings of experts

The staff of the institute also participated in the exchange of experiences in the international field.

The employees participated in 33 international conferences and presented 45 papers in the form of lectures, papers in proceedings or poster presentations. Important conferences and seminars included, for example:

- VII. Czech water management mission to Israel,
- 7th International Conference on Sustainable Development,
- 10th IALE World Congress,
- 11th Symposium for European Freshwater Sciences,
- 19th International Multidisciplinary Scientific GeoConference SGEM 2019,
- Central Europe towards Sustainable Building 2019,
- EMaRT 2019,
- ENVIRA 2019,
- IPW9,
- SWWS 2019 and others.

Significant domestic meetings of experts

In 2019, the employees of TGM WRI organized or collaborated on the preparation of more than 20 conferences, seminars or workshops and presented over 23 papers in the form of lectures, presentations or poster presentations.

It is possible to mention for example:

- 30. Sailing days,
- Climate change and its security implications,
- Landscape Engineering 2019,
- National Water Dialogue: Water Resources and Drinking Water Supply,
- Groundwater in water supply practice 2019,
- Radiological methods in the hydrosphere 19.,
- GIS Symposium Ostrava 2019,
- Tower reservoirs,
- Water Biology 2019,
- Water tanks 2019 and others.

Within the seminars and courses organized by the staff of TGM WRI, for example, a sampling course for employees of water management laboratories was implemented, as well as a workshop called Water footprint. In 2019, employees of the Brno Branch participated in organizing the Ponds 2019 conference, which took place at the CULS in Prague.

ADDITIONAL AND OTHER ACTIVITY

Support for the state administration

This is a long-term task solved for the Ministry of the Environment on the basis of current needs defined in the so-called task lists. In 2019, 29 partial tasks were solved, focusing mainly on professional support for the implementation of selected EU directives, international cooperation in the field of water, and on information and professional support of the Ministry of the Environment as the central water authority. The main areas that are addressed in support of state administration are providing professional support in international cooperation of the Czech Republic in the field of water, registration and access to water management data and information, especially in relation to national and European regulations, support for the implementation of European regulations, including reporting, radiation monitoring networks and analyzes of water use and quality and preparation of documents for the Report on the State of Water Management in the Czech Republic. In addition to these stable activities, other tasks arising from the current needs of the Ministry of the Environment are also performed. In 2019, tasks focused on updating the protection zones of water resources, professional support for the legislative process in the field of water, as well as ecologically focused tasks such as evaluating the impact of Ploučnice floating and evaluating the migration permeability of watercourses, were carried out.

International cooperation in the field of water

Employees of TGM WRI actively participated in the work of international commissions for the protection of the Elbe, Danube and Odra and in the activities of the Standing Committee of Saxony, the Standing Committee of Bavaria, the Czech-German Boundary Water Commission, the Border Waters Commission with Poland, Austria and Slovakia. Professional support consisted mainly of work in working groups and groups of experts.

Registration and access to water management data and information

The work was mainly focused on the creation of data collection and processing in the field of water and their access to the general public. These include data collection for registration under the responsibility of the Ministry of the Environment pursuant to the relevant § 21 of the Water Act, processing of documents for the overall water balance pursuant to § 22 of the Water Act, processing of summary information on Czech waters, providing web services to inform the public about individual activities in bilingual version, including processing of professional texts placed on the web, data updating and information support of the system for management, updating and sharing of data from water resource protection zones (OPVZ). Furthermore, TGM WRI, p.r.i., has long been involved in providing information support for the performance of public administration and fulfilling the information obligations of the Ministry of the Environment in the field of water protection and water management. In particular, keeping and updating 10 selected ISVS VODA records defined by Decree No. 252/2013 Coll., on the scope of data in surface and groundwater status records and on the method of processing, storing and transmitting these data to public administration information systems.

Implementation of European regulations, including reporting

As part of the support for the implementation of European directives and reporting, the work was focused on supporting the implementation of EU directives and supporting activities in the water planning process. For example, support in reporting the preliminary flood risk assessment under Directive 2007/60/EU and in assessing the chemical and quantitative status of groundwater, in assessing trends in chemical and physico-chemical indicators of chemical and ecological status of surface waters, in assessing progress in achieving environmental objectives of surface and groundwater bodies for national plans and in assessing the effectiveness of measures and the completion of indicator gaps and key type measure indicators in river basin management plans under Directive 2000/60/EU.

Part of the support provided was participation in meetings of EU working groups WG Groundwater, WG Chemicals, WG Flood, WG ECOSTAT, the Nitrates Committee and other meetings of EU experts.

Provision of radiation monitoring network

T. G. Masaryk Water Research Institute, p.r.i., in cooperation with the state-owned companies Povodí in accordance with Resolution No. 388 of the Government of the Czech Republic of 12th April 2006 and Resolution No. 522 of the Government of the Czech Republic of 13th July 2011 (Annex 1) ensures the fulfilment of the Framework Agreement on the activities of the components of the nationwide radiation monitoring network. TGM WRI, p.r.i., participates in ensuring the activities of the permanent and emergency RMS unit and transmits the obtained data to the information system (IS). The RMS performs activities in monitoring in the normal mode and in monitoring in the emergency mode, i.e. during monitoring in the event of a radiation emergency, and continues its activities after the declaration of the emergency mode by the SUJB Crisis Staff, according to its instructions.

Evaluation of the influence of Ploučnice floating and evaluation of migration passing

These are new tasks, the purpose of which is to assess the impact of human activities on the environment. Abundant attendance of paddlers on rivers represents a significant potential risk for objects of protection of sites included in the Natura 2000 system (EVL Horní Ploučnice). The aim of the work in 2019 was to evaluate the possible impact of excessive load on EVL Horní Ploučnice and to verify the applicability of the proposed evaluation methods in the current state of boating use of the river. As part of the assessment of migration permeability, documents were prepared for the implementation of the Concept for the Operation of the Czech River Network, which defines priority watercourses in the Czech Republic in terms of migration permeability for aquatic animals and sets objectives and measures in this area.

Methods and results reflected in standards and legislation

Another area of activity of the institute's staff in 2019 was the preparation of methodological guidelines, legal regulations and cooperation in standardization.

Researchers prepared three certified methodologies in 2019. Methodology for designing adaptation measures to eliminate the impacts of water scarcity, Methodology for deriving biologically available concentrations of selected metals for the needs of assessing the chemical status of surface water bodies and a methodology entitled Integrated protection of areas within the collection areas of critical points. Employees of the Brno Branch collaborated on the preparation of the Methodology for the assessment of the ecological status of surface water bodies (river category) using the biological component of fish, which was certified in February 2020.

Consulting and expert activity

Assessment and consulting activities are an important form of direct application of research results. In 2019, for example, a statement was prepared on the intention to build a derivative MVE on the river Ohře, assessments of hydraulic calculations were prepared to meet the requirements of the Flood Directive 2007/60/EC in a total of 24 assessments, consultations were provided for the National Monuments Institute in the reconstruction of cultural monuments, namely Weir in Oblekovice and VD Jevišovice.

As a workplace, the Department of Analysis and Evaluation of Environmental Components is a component of the nationwide Radiation Monitoring Network, which monitors the radiation situation for the State Office for Nuclear Safety. During the year, employees created contractual analyzes of chemical, microbiological, hydrobiological and radiological indicators in samples for both internal and external orders.

In 2019, several trainings were held by the staff of TGM WRI, e.g. training for CEI staff from all over the Czech Republic on the issue of leak tests according to § 39 par. d) of the Water Act and to harmful substances pursuant to the same Section 39 of the Water Act.

As part of the expert activities of TGM WRI, researchers participated in the evaluation of the impacts of existing nuclear resources on the hydrosphere and in professional support for the evaluation of the impact of new nuclear sources, e.g. projects "Monitoring of the Jihlava River around Dukovany NPP (EDU)" in the Temelín NPP complex "or the comprehensive study" Evaluation of the impact of the NPP ETE on surface water bodies".

Employees are active members of the TNK 104 Water Quality Commissions, Czech Agency for Standardization (UNMZ), where they work on the assessment of draft standards.

Memoranda of cooperation

In 2019, a memorandum was signed on the establishment of cooperation with the Czech University of Agriculture and the Central Bohemian Innovation Centre. Agreed memoranda with the J. E. Purkyně University, the University of Chemical Technology in Prague and the Research Institute of Water Management in Slovakia are still valid from 2018.

Other activities

Cooperation with universities is also an important part of the institute's activities. Employees of the department are active mainly at CTU, MENDEL University, the Faculty of Environment of the CULS, the Faculty of Civil Engineering of the Czech Technical University, the Faculties of Science of Charles University, Masaryk University and the University of Ostrava, as well as at the Faculty of Arts of Charles University and Masaryk University. The cooperation continued in 2019 at University of Mining – Technical University of Ostrava and Palacký University in Olomouc.

Employees are also involved in consultations and supervision of bachelor's, diploma and dissertation theses (e.g. Faculty of Civil Engineering, CTU, Faculty of Science, Charles University, CULS, UJEP, etc.), excursions are organized for students and they are also allowed professional practice at the department. Employees also act as members of the commissions for state final examinations at CTU, CULS, University of Mining – Technical University of Ostrava, Charles University, etc.

As part of the cooperation with the Faculty of Arts of Masaryk University, the staff participated in the preparation of the Night of Scientists, which took place on 27th September 2019.

LIST OF PROJECTS

Contract name	Responsible researcher	Submitter
Branch of Hydraulics, Hydrology and Hydrogeology		
Administration of the SUCHO II. task	Ing. A. Vizina, Ph.D.	Ministry of the Environment
Data update for ZBZ NJZ EDU – water use in the area	RNDr. J. Datel, Ph.D.	Czech Power Company
Update of national river basin plans	RNDr. H. Prchalová	VRV, a.s.
Analysis of adaptation measures to mitigate the impacts of climate change and urbanization on the water regime in the area of outer Prague	Ing. A. Hrabánková	Prague City Hall
Analysis of waste from hydrological extremes and evaluation of adaptation measures	Ing. P. Balvín	Prague City Hall
Objective 3 – cross – border cooperation Saxony – Czech Republic RESIBIL	doc. RNDr. Z. Hrkal, CSc.	CRD
Detailed model of groundwater flow and transport of substances for the immediate vicinity of the plot NJZ ETE	RNDr. J. Datel, Ph.D.	Temelín II Power Plant, a.s.
Addition of HG monitoring wells in the Temelín locality	RNDr. J. Datel, Ph.D.	Czech Power Company
HAMR	Ing. A. Vizina, Ph.D.	Ministry of the Environment
Hydrogeological and hydrological monitoring of NJZ EDU for the year 2019	Mgr. D. Rozman	Nuclear Research Institute Řež, a.s.
Hydrological study – evaluation of the possibility of collecting groundwater for industrial purposes in the vicinity of Mladá Boleslav	Mgr. M. Klapka	SKO-ENERGO, s.r.o.
Hydrological and hydrogeological conditions of surface and groundwater in the area of interest	RNDr. J. Datel, Ph.D.	Prague City Hall
Hydrological assessment for the territorial study of the interconnection and development of the Studenov and Horní domky ski resorts	Ing. A. Vizina, Ph.D.	The town of Rokytnice nad Jizerou
Interreg heavy rain risk management	Ing. P. Balvín	Ministry of the Environment
Water quality of pilot areas – evaluation using a quantitative-quality model	Ing. A. Vizina, Ph.D.	Prague City Hall
Methodology of ecological potential evaluation	RNDr. H. Prchalová	Ministry of the Environment
Methodology of evaluation of surface water bodies	RNDr. H. Prchalová	Ministry of the Environment
Methodology for delimitation of heavily affected water bodies	RNDr. H. Prchalová	Ministry of the Environment
Methodology of incorporation of hydromorphological influences into the assessment of ecological status	RNDr. H. Prchalová	Ministry of the Environment
Model simulation of the effect of revitalization of the Jordan meander on Orlice on the water regime	Mgr. D. Rozman	Ministry of the Environment

Contract name	Responsible researcher	Submitter
Model situations of using JU Ivančice	doc. RNDr. Z. Hrkal, CSc.	Bundle of water mains
Modernization of PK lines – physical model	Ing. J. Hlom	Vltava River Basin, s.e.
NJZ ETE – technical advice	RNDr. J. Datel, Ph.D.	Nuclear Research Institute Řež, a.s.
Fulfillment of condition No. 16 ETE 3.4 – groundwater monitoring	Mgr. M. Klapka	Czech Power Company
Support for long-term planning in the field of water management on the territory of the Krkonoše National Park with an emphasis on solving the problem of the influence of technical snowmaking on the decrease of flows	Mgr. P. Treml	Technology Agency of the CR
Groundwater to PDP Morava and PDP Dyje 2021–2027	RNDr. H. Prchalová	Morava River Basin, s.e.
Comparison of estimates of changes in temperature, precipitation and runoff from river basins in the Czech Republic according to Climate change scenarios – developments in the period 1995–2018	Ing. R. Kožín	Ministry of the Environment
Potential for the use of dry reservoirs in water management	Ing. P. Balvín	Technology Agency of the CR
Elberegime Project 2100	Ing. R. Kožín	Bfg–Bundesanstalt
Nitrates Directive project – water monitoring for the period 2018–2021	Ing. A. Hrabánková	Department of Agriculture
Calibration of hydrometric propellers	Bc. A. Trávníčková	CHMI
Regional hydrological study of the Ore Mountains	Ing. L. Kašpárek, CSc.	Ohře River Basin, s.e.
Development of the Bilan model	Ing. L. Strouhal, Ph.D.	Ministry of the Environment
DROUGHT II. Infiltration	RNDr. J. Datel, Ph.D.	Ministry of the Environment
DROUGHT II. Monitoring	Ing. A. Beran, Ph.D.	Ministry of the Environment
Turow – 2nd stage of the survey	Ing. R. Vlnas	Czech Geology Survey
VD Šanov, VD Senomaty – assessment of hydrological data and operations	Ing. L. Kašpárek, CSc.	Vltava River Basin, s.e.
VD Vranov – reconstruction of NE control valves, physical model	Ing. J. Hlom	Morava River Basin, s.e.
Influence of small reservoirs on groundwater level	Ing. A. Beran, Ph.D.	Technology Agency of the CR
Selection of the so-called medium climate change scenario for water management for the Elbe River Basin	Ing. A. Vizina, Ph.D.	Elbe River Basin, s.e.
Selection of the so-called medium climate change scenario for water management for the Morava River Basin	Ing. A. Vizina, Ph.D.	Morava River Basin, s.e.
Selection of the so-called medium climate change scenario for water management for the Odra River Basin	Ing. A. Vizina, Ph.D.	Odra River Basin, s.e.
Selection of the so-called medium climate change scenario for water management for the Vltava River Basin	Ing. A. Vizina, Ph.D.	Vltava River Basin, s.e.

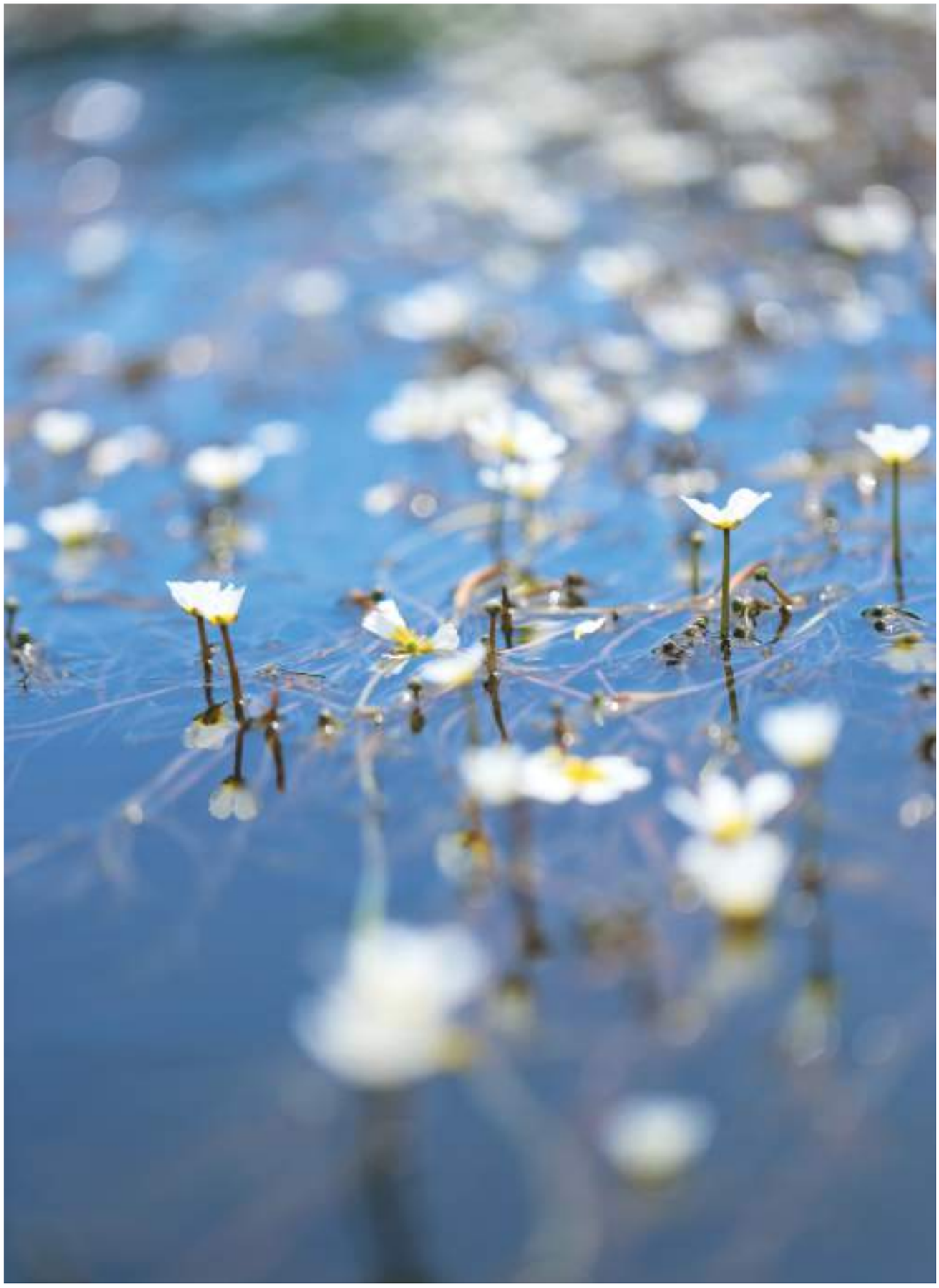
Contract name	Responsible researcher	Submitter
Creation of software for calculation of evaporation from the water surface for the conditions of the Czech Republic	Ing. A. Beran, Ph.D.	Technology Agency of the CR
Development of a hydraulically suitable overflow for measuring small flows	Ing. J. Hlom	Technology Agency of the CR
Development of methods and devices – participation	Ing. R. Kožín	Technology Agency of the CR
Research of methods of water footprint assessment by LCA approach	Mgr. M. Martínková	Ministry of the Environment
Research into the effect of albedo on evaporation from the water surface	Ing. A. Beran, Ph.D.	Ministry of the Environment
Elaboration of selected chapters of the Plan of the sub-basin Ohře, lower Elbe	RNDr. H. Prchalová	Ohře River Basin, s.e.
Processing of data on raw water quality of groundwater and surface water for the purposes of the Nitrates Directive	Ing. A. Hrabánková	Department of Agriculture
Processing of documents and design of the Sub-basin Plan	RNDr. H. Prchalová	VRV, a.s.
Branch of Analysis and Assessment of Environment Components		
Analysis of raw and wastewater samples for determination of volumetric tritium activity of NPP	Ing. B. Sedlářová	Czech Power Company
Membership in the NORMAN group	Ing. E. Juranová	Ministry of the Environment
Evaluation of changes in the regime and quality of groundwater in NPP Temelín	RNDr. D. Marešová, Ph.D.	Czech Power Company
Innovative methods for detection of ultra-low concentrations of radionuclides	Ing. E. Juranová	Ministry of Interior
Concept of a new system for modeling the spread of radionuclides	Ing. E. Juranová	Technology Agency of the CR
LR – determination of drugs in surface waters	Ing. V. Očenášková	Elbe River Basin, s.e.
LR – determination of tritium in surface waters	Ing. B. Sedlářová	Elbe River Basin, s.e.
Monitoring of the Jihlava River in the vicinity of NPP Dukovany (EDU)	RNDr. H. Mlejnková, Ph.D.	Czech Power Company
Possibilities of water recreation in the capital city of Prague	RNDr. H. Mlejnková, Ph.D.	Prague City Hall
NPP – technical advice	RNDr. D. Marešová, Ph.D.	Nuclear Research Institute Řež, a.s.
New procedures for treatment and stabilization of sewage sludge from small municipal sources	Ing. J. Kratina, Ph.D.	Technology Agency of the CR
Content of radioactive substances in the water reservoir – Orlík	RNDr. D. Marešová, Ph.D.	Vltava River Basin, s.e.
Wastewater as a diagnostic medium of the capital city of Prague	Ing. V. Očenášková	Prague City Hall
Support for the activities of the Testing Laboratory of Technologies and Components of the Environment	Ing. E. Juranová	Ministry of the Environment

Contract name	Responsible researcher	Submitter
Assessment of the impact of NPP ETE on surface water bodies	Ing. E. Juranová	Temelín II Power Plant, a.s.
MMKV radiation monitoring network	Ing. B. Sedlářová	Ministry of the Environment
Cooperation on border waters with Austria	RNDr. H. Mlejnková, Ph.D.	Ministry of the Environment
Tritium tent in surface waters affected by wastewater from NPP Temelín	Ing. B. Sedlářová	Vltava River Basin, s.e.
Systems for on-line measurement of artificial radioactivity in surface waters during a nuclear power plant accident with remote data transmission	Ing. B. Sedlářová	National Radiation Protection Institute
Provision of a permanent and emergency component of the national monitoring network (RMS)	Ing. B. Sedlářová	SONS
Introduction of a method for the determination of C-14	Ing. B. Sedlářová	Ministry of the Environment
Branch of Water Protection and Informatics		
GIS – data warehouse maintenance	Ing. V. Levitus	Ministry of the Environment
Operation of HEIS WRI and ensuring publicity of projects	Ing. P. Vyskoč	Ministry of the Environment
Summary evaluation of the results of the water management balance	RNDr. R. Filippi	Vltava River Basin, s.e.
Water management and water supply systems and preventive measures to reduce the risks of drinking water supply	Ing. P. Vyskoč	Ministry of Interior
Use of Earth remote sensing methods for condition monitoring and quality of bathing places in the Czech Republic	Ing. V. Maťašovská	Technology Agency of the CR
Development of a simulation model for the Želivka river basin and data management	Ing. J. Picek	Ministry of Interior
Branch of Water Technology and Wastes		
Accredited sampling and analysis of wastewater samples from WWTPs	Ing. A. Kólová	Nuclear Research Institute Řež, a.s.
Evaluation of the impact of point sources and proposals of measures	Ing. M. Váňa	Ministry of Interior
Options for selecting a suitable activated carbon for PPCP removal RSSCT tests	Ing. M. Váňa	Ministry of the Environment
Waste	Ing. D. Vološinová	Prague City Hall
Waste and its prevention – practical procedures and activities in the implementation of the obligations of the Regional Waste Management Plan of the Capital City of Prague	Ing. D. Vološinová	Prague City Hall
Requirements for permitting and control of WWTP operation in the Czech Republic and abroad	Ing. J. Kučera	Ministry of the Environment
Gray water footprint	Mgr. L. Stejskalová	Ministry of the Environment

Contract name	Responsible researcher	Submitter
Technical and economic optimization of tertiary technologies for the removal of PPCPs from wastewater	Ing. M. Váňa	Technology Agency of the CR
Technology of separation of specific pollutants from rainwater	Ing. M. Váňa	ASIO, s.r.o.
Water for Prague	RNDr. J. Fuksa, CSc.	Ministry of the Environment
Research in the field of air emissions from WWTPs and greenhouse gas production	Ing. L. Smetanová	Ministry of the Environment
Research in the field of management of hazardous substances into the environment	Ing. D. Vološinová	Ministry of the Environment
Brno Branch		
Analyzes and publication of data from BIOSUCHO and Vita-Min projects	Mgr. M. Straka, Ph.D.	Ministry of the Environment
Historical water management objects, their value, function and significance for the present time	Ing. M. Dzuráková	Ministry of Culture – program NAKI II.
Monitoring of surface runoff and erosion hazards in the Husí Goose brook and Litava river basins	Mgr. M. Caletka	Ministry of the Environment
Monitoring of the effects of the R2 Kriváň – Lovinobaňa, Tomášovce expressway on the environment – monitoring of biological elements of surface water quality	RNDr. D. Němejcová	HBH Projekt
Design of an effective monitoring, diagnostics and maintenance procedure to ensure the water management functions of water reservoirs	Ing. K. Drbal, Ph.D.	Prague City Hall
Notification of vulnerability and possibilities of supporting the natural functions of the landscape in the conditions of changed climate in large specially protected areas	Mgr. J. Kroča	Technology Agency of the CR
Optimization of automatic irrigation systems for the use of treated wastewater – measures to reduce the risks of drought and eutrophication of surface water sources	Ing. M. Rozkošný, Ph.D.	Technology Agency of the CR
Continuation of monitoring the cleaning effect of the façade root treatment plant model	Ing. M. Rozkošný, Ph.D.	Ministry of the Environment
Procedures for solving the quality of the aquatic environment within the monument care	Ing. M. Rozkošný, Ph.D.	Ministry of Culture – program NAKI II.
Prediction of the possible occurrence of hazardous chemical substances in accidents and floods, the risk of leakage of substances harmful to water and preventive measures – the basis for the emergency plan	Ing. S. Juráň	Prague City Hall
Preparation of materials for proposals of adaptation measures in the Březová spring	Mgr. D. Honek	Ministry of the Environment
Publications on the topic of microplastics, internship at a professional workplace	RNDr. D. Němejcová	Ministry of the Environment
Publications on flood issues	Ing. K. Drbal, Ph.D.	Ministry of the Environment
Publication of summary faunal works	Mgr. J. Kroča	Ministry of the Environment
Sustainability of projects	Mgr. P. Štěpánková, Ph.D.	Ministry of the Environment

Contract name	Responsible researcher	Submitter
Sustainability of R & D & I projects and fulfillment of DKRVO in the field of extensive technologies	Ing. M. Rozkošný, Ph.D.	Ministry of the Environment
Drying of streams and biodiversity of running waters: influence of natural conditions and anthropogenic interventions	Mgr. M. Straka, Ph.D.	Masaryk University
Ostrava Branch		
Clean water – a healthy city: strange substances in groundwater, surface and waste water as a result of human activity	RNDr. P. Soldán, Ph.D.	Prague City Hall
NAVAROSO expert information system	RNDr. P. Soldán, Ph.D.	Technology Agency of the CR
Evaluation of the state of surface water bodies	Ing. T. Mičaník, Ph.D.	AQUATIS, a.s.
Methodology of derivation of biologically available concentrations of selected metals	Ing. T. Mičaník, Ph.D.	Ministry of the Environment
Proposal for optimization of equipment for physical processing of waste by electrostatic field	Ing. T. Sezima, Ph.D.	Ministry of the Environment
Prevention	Ing. R. Kořínek, Ph.D.	Prague City Hall
Study of pesticide input into the VN Švihov using new sampling techniques and removal of organic substances from sorption filters under ozonation by highly efficient chemical destruction	Ing. T. Mičaník, Ph.D.	Prague City Hall
Tower reservoirs – identification, documentation, presentation, new use	Ing. R. Kořínek, Ph.D.	Ministry of Culture – program NAKI II.
Improving the monitoring of biological quality of drinking water	RNDr. P. Soldán, Ph.D.	Prague City Hall
Branch of Applied Ecology		
Dyje 2020 – THAYA 2020	Ing. J. Musil, Ph.D.	Morava River Basin, s.e.
Evaluation of pollution sources and their impact on the recreational potential of water in the urban environment	Mgr. P. Rosendorf	Prague City Hall
Hydraulic, hydromorphological and biological research of changes in experimental shoots in 2019 – Improvement of navigation conditions on the Elbe in the section Ústí nad Labem – state border of the Czech Republic / Germany PSD	Mgr. E. Bouše	AQUATIS, a.s.
Methodology for assessing the condition of protected areas defined in accordance with the Framework Directive on waters for the protection of habitats or species	Mgr. P. Rosendorf	Technology Agency of the CR
Monitoring of Přepeře-Jizera DP km 76.456	Ing. J. Musil, Ph.D.	Akcent Bohemia, a.s.
Fish monitoring 2019–2023, part 2	Ing. J. Musil, Ph.D.	AOPK CR
Fish monitoring 2019–2023, part 4	Ing. J. Musil, Ph.D.	AOPK CR
Fish catches at VN Skalka	Ing. J. Musil, Ph.D.	Ohře River Basin, s.e.
Protection of critical infrastructure – Želivka water source – from the effects of PPCP and pesticides in conditions of prolonged drought	Mgr. P. Rosendorf	Ministry of Interior
Support of the natural environment and the occurrence of freshwater pearl mussels in the Malše river basin	Ing. V. Kladivová	Ministry of the Environment

Contract name	Responsible researcher	Submitter
Strengthening and protection of the freshwater pearl mussel population in the Šumava National Park	RNDr. Z. Hořická, Ph.D.	Beleco, z.s.
Prediction of the danger of non-native fish and crayfish and optimization of eradication methods of invasive species in the EPSILON program	RNDr. J. Svobodová	Technology Agency of the CR
Preparation of sheets of measures and sites of surface agricultural pollution for sub-basin plans	Mgr. P. Rosendorf	Vltava River Basin, s.e.
Recreational potential of water in Prague – state and prospects	Mgr. P. Rosendorf	Prague City Hall
Revitalization of two stages in Nová Rola – DP monitoring	Ing. J. Musil, Ph.D.	Ohře River Basin, s.e.
Vilémov Fish Crossing – monitoring of fish migrations	Ing. J. Musil, Ph.D.	REKO Praha, a.s.
Testing of model types of revitalization measures	Mgr. E. Bouše	Technology Agency of the CR
Impact of acidification, recovery from acidification and climate change on the biodiversity of mountain lakes and reservoirs	RNDr. Z. Hořická, Ph.D.	Ministry of the Environment
Research of hyporheic biofilms with respect to juvenile freshwater pearl mussels, their nutritional requirements and sufficient oxygen saturation of interstitial water	Bc. R. Čablová	Ministry of the Environment



ABSTRACTS OF PROJECTS

Branch of Hydraulics, Hydrology and Hydrogeology

Project title:
Analysis of adaptation measures to mitigate the impacts of climate change and urbanization on the water regime in the area of outer Prague

Contracting authority:
Prague City Hall

Duration:
2018–2020

Project team:
Ing. Anna Hrabánková, RNDr. Josef V. Datel, Ph.D.,
Ing. Adam Vizina, Ph.D., Ing. Pavel Balvín

Description:
With the territorial development of the capital city of Prague, there are changes in natural conditions in its territory. As the still free areas or agricultural land are gradually built up, changes occur in the hydrological conditions of individual streams and groundwater.

In 2019, work continued on creating a sufficient database for the main output – the map portal. The work focused on the analysis of changes in development and land use, the size of the storage space and the permeability of the environment. An educational module was also developed. The collection of hydrological data in pilot areas also continued, and hydrological extremes were captured during monitoring. The possibilities of application of the proposed measures were assessed in accordance with the zoning plan. Within the catalog of measures, the list of individual measures was divided into seven categories, so that the catalog of measures met the conditions for their application in the outskirts of Prague. Regular quality monitoring at the site of installed water meter profiles in pilot river basins also continued. Individual selected indicators are continuously evaluated and these results will be used as a basis for the developed simulation model of water quality depending on precipitation-runoff characteristics, taking into account seasonality.

Project title:
Evaluation of shore infiltration potential at the Ivančice locality – Hydraulic model of groundwater flow

Contracting authority:
Union of water supply and sewerage Ivančice

Duration:
2019

Project team:
doc. RNDr. Zbyněk Hrkal, CSc., Mgr. David Rozman

Description:
The confluence area of the Jihlava and Rokytná rivers represents an important source of quality drinking water for the Ivančice Water Supply and Sewerage Association. At present, the average consumption is around 10 l / s, however, the theoretical potential for use is significantly higher. Despite the decrease in effective precipitation totals, this catchment area is able to make intensive use of induced sources of bank infiltration. The aim of the model study was therefore to assess the potential for further development of collection, to quantify it and to show specific technical possibilities, including technological and natural limits. Based on an agreement with the end user of the results, representatives of the Ivančice Water Supply and Sewerage Association, various variants of using the structure were simulated while maintaining the existing collection facilities and at the same time during the version of the additional implementation of new facilities.

Project title:
Potential use of dry reservoirs in water management in the landscape

Contracting authority:
Technology Agency of the Czech Republic,
Ministry of the Environment of the CR

Duration:
2019–2021

Project team:
Ing. Pavel Balvín (TGM WRI, p.r.i.), Ing. Petr Smrž (VD TBD, a.s.), Ing. Jiří Švancara (Aquatis, a.s.)

Description:
The aim of the project is to assess the possibilities of increasing water retention in the landscape and influencing the hydrological regime at the outflow from reservoirs through partial changes in the use of existing dry reservoirs by creating a permanent

reservoir of a smaller extent. This goal will be achieved through four main results consisting of the creation of a database of dry reservoirs, a map of dry reservoirs expressing the possibilities of potential changes, methodology for assessing dry reservoirs in terms of possible changes in their use and a detailed assessment of selected dry reservoirs with regard to changes in their use. The project is solved in the consortium of TGM WRI, p.r.i., VD TBD, a.s., and Aquatis, a.s.

Project title:
VD Vranov – reconstruction of NE control valves, physical model

Contracting authority:
Morava River Basin, s.e.

Duration:
2019

Project team:
Ing. Jan Hlom, Ing. Pavel Balvín, Ing. Zdeněk Bagal,
Veronika Táboříková

Description:
The aim of the research was to verify the functionality of the newly designed segmental end control valves of the lower outlets of the Vranov Waterworks and their interaction with the crown safety overflow and the subsequent cascade. As part of the research, two physical models were built – a model of one lower outlet (in the scale of 1:14.68) and a model of the dam body (in the scale of 1:55). Within the research on the physical model of the bottom outlet, the main goal was to determine the capacity of the bottom outlet in relation to the water level in the tank, the degree of flooding with the bottom water in the broth and the degree of opening of the segmental closure. The model of the dam body was used to assess the spatial flow in the broth during the transfer of water through the overflow fields, or at the interaction of currents from the lower outlets and overflow fields. Furthermore, the consumption curve of the safety spillway was verified on the model of the dam body. The project was solved for the needs of Morava River Basin, s.e., with regard to the considered reconstruction of the existing lower closures of the lower outlets.

Project title:
Influence of small reservoirs on groundwater level and overall hydrological balance with emphasis on dry periods

Contracting authority:
Technology Agency of the Czech Republic, program BETA2,
Ministry of the Environment of the CR

Duration:
5/2019–12/2021

Project team:
Ing. Adam Beran, Ph.D., Ing. Roman Kožín,
RNDr. Josef V. Datel, Ph.D.

Description:
The main goal of the project is to assess the impact of small reservoirs on the hydrological balance and its components in various spatial scales. The assessment will be carried out in the vicinity of small water reservoirs, in source river basins and in river basins with systems of ponds and small water reservoirs. The hydrological balance is focused on determining the effect of small reservoirs on groundwater levels, evaporation and runoff. Activities are based on monitoring of selected hydrological quantities on small reservoirs, analysis of the immediate vicinity of small reservoirs through remote sensing data, estimation of hydrological balance components by hydrological models together with description of uncertainties, estimation of physical and geographical characteristics of small reservoirs and affected river basins, regional analysis of MVN characteristics. The research is intended to contribute to a comprehensive and quantitative assessment of the positive and negative aspects associated with the presence, operation and construction of small reservoirs near settlements and in the agricultural landscape.

Branch of Analysis and Assessment of Environment Components

Project title:
New procedures for treatment and stabilization of sewage sludge from small municipal sources

Contracting authority:
Technology Agency of the Czech Republic, Epsilon program

Duration:
01/2017–04/2020

Project team:
Ing. Josef Kratina, Ph.D., Ing. Hana Hudcová, Ph.D.,
Ing. Miloš Rozkošný, Ph.D.

Description:
The primary idea of the project is to use all sources of organic matter and nutrients available in our conditions. These resources can then be safely returned to the soil ecosystem. The aim of this project is therefore to simplify and economically streamline the process of treatment and stabilization of sewage sludge from small municipal sources of pollution (WWTP up to 1,000 PE) at the place of their origin and their subsequent use. The system is designed for the needs of small municipalities that do not have sludge management implemented in the place of wastewater treatment, and must therefore address the treatment of sewage sludge and organic material generated during wastewater treatment in other ways.

Project title:
Municipal wastewater as a diagnostic medium of the capital city of Prague

Contracting authority:
Prague City Hall

Duration:
2018–2020

Project manager:
Ing. Věra Očenášková

Description:
Municipal wastewater contains a complex mixture of chemicals, including human metabolites – biomarkers. Quantitative measurement of these specific substances will provide information on, for example, diet, population health, disease incidence, alcohol consumption, drugs, and exposure of the population to environmental contaminants, such as pesticides. In addition to illegal substances (e.g. methamphetamine, THC, cocaine) and some drugs (tramadol, diazepam), the project also monitors metabolites of alcohol (ethyl sulphate), nicotine (cotinine and trans-3-hydroxycotinin) and pesticides. Monitoring took place for two years at selected locations in the sewerage network of the capital city of Prague. The purpose of the project is to obtain objective data, i.e. also data from that part of the population that was not included in the questionnaire actions on the monitored topic, does not have health problems associated with e.g. the use of illegal substances, etc. The aim is to obtain current data mainly on drug consumption in individual parts of Prague as well as other substances, which are monitored in the project.

Project title:
Possibilities of water recreation in the territory of the capital city of Prague (from history to the present)

Contracting authority:
Prague City Hall

Duration:
2018–2020

Project manager:
RNDr. Hana Mlejnková, Ph.D.

Description:
The task of the project "Possibilities of water recreation in the capital city of Prague (from history to the present)" is to examine the current state and possibilities of water recreation in Prague and their potential, to map the development of water recreation in Prague from the end of the 19th century to the present. the potential of hitherto actively unused water areas and to increase citizens' awareness of Prague's recreational opportunities.

In 2019 the activity II was focused on the survey and monitoring of places potentially suitable for swimming in the territory of Prague. Out of approximately 150 places found, 45 were selected, where the water quality was monitored in the summer season 2019 and their condition and potential were evaluated. An indicative evaluation procedure was proposed to assess the water quality of these sites. The results are presented in the form of a web map browser, located at http://www.dibavod.cz/vodni-rekreace-praha, which describes and locates all bathing options in Prague, including operated swimming pools and pools with links to current websites. The monitored profiles contain information from monitoring from 2018–2019.

Project title:
Cooperation on border waters with Austria

Contracting authority:
Ministry of the Environment of the Czech Republic

Duration:
2019

Project manager:
RNDr. Hana Mlejnková, Ph.D.

Description:
As part of the activities carried out as Support for the Performance of State Administration for the Ministry of the Environment, tasks related to water quality were provided, resulting from the meeting of the Czech-Austrian Boundary Water Commission. The issue was resolved in accordance with the assignments approved at the 26th and 27th sessions of the Czech-Austrian Commission for Boundary Waters, established on the basis of the Agreement between the Czechoslovak Socialist Republic and the Republic of Austria on the regulation of water management issues in border waters. Activities aimed at solving current issues concerning the water quality of border streams with Austria were provided – participation of a water quality expert in meetings of the Czech-Austrian Boundary Water Commission, coordination of border water monitoring on all major streams (Dyje, Malše, Lužnice, etc.) in cooperation with the River Basin District companies according to the Czech-Austrian Boundary Water Quality Monitoring Program, evaluation of border water quality, evaluation of Czech-Austrian interlaboratory comparative tests and updating of the Czech-Austrian Border Water Quality Monitoring Program. Attention was again focused on the issue of wastewater discharge from the Austrian chemical plant Jungbunzlauer in Pernhofen to the Dyje. The solution to the situation is not yet complete.

Project title:
Provision of a permanent and emergency component of the national radiation monitoring network (RMS)

Contracting authority:
SUJB

Duration:
permanent order

Project manager:
Ing. Barbora Sedlářová

Description:
In connection with the Atomic Act No. 263/2016 Coll. and the related Decree No. 360/2016 Coll., on the monitoring of the radiation situation, is provided by TGM WRI, p.r.i., on behalf of the Ministry of the Environment and SUJB, the activities of the permanent and emergency RMS units in cooperation with water management laboratories. In the period of monitoring under normal radiation situations, the development of the content of radioactive substances in surface and drinking water, sediments, waterworks sludge and fish biomass in selected profiles was monitored in 2018. An increased occurrence of tritium in comparison with the background was found in the Vltava profile in Prague-Podolí and in the final profiles of the Elbe and Moravia due to the discharge of wastewater from the Temelín NPP and the Dukovany NPP. The monitoring results are continuously transmitted to the RMS Information System within the competence of SUJB.

Branch of Water Protection and Informatics

Project title:
Use of remote sensing methods for monitoring the condition and quality of bathing places in the Czech Republic

Contracting authority:
Technology Agency of the Czech Republic, program Zéta II.

Duration:
03/2019–02/2021

Project manager:
Ing. Václava Maťašovská

Description:
Given that the current method of monitoring the quality of bathing water in the Czech Republic is based only on a combination of laboratory evaluation of point samples and visual assessment at sampling points, these surveys are carried out due to financial and time demands with a frequency of no more than once a week, however, only once a month. Thus, it is clear that monitoring in many cases does not provide a sufficient overview of heterogeneity and development over time within the entire monitored water area. Also, the evaluation does not include all water areas in the Czech Republic used for swimming.

The aim of the project is to use a combination of satellite data obtained from freely available results of earth surface sensing programs and data obtained from field and laboratory surveys using relevant methods, GIS and statistical tools to find a correlation between them and then describe the generalized relationship between them. Thanks to some properties of data obtained from remote sensing of the Earth (timeliness, area and repeatability of analyzes), relatively easy monitoring of bathing water status can be achieved throughout the Czech Republic without the need for direct contact with the monitored localities.

The results of the solved project will be used mainly by the Regional Hygiene Stations (KHS) and other relevant bodies in the annual update of the List of Bathing Waters. One of the types of output is a workshop planned in the final phase of the project, where KHS employees will be acquainted with the achieved results and instructed on working with them. In addition to KHS, users of project results can also be other organizations involved in monitoring, evaluation and management of bathing waters or the general public. The final information on the status and quality of bathing waters will be presented to users not only in an online form as a web map application, but also in the form of a popularization-educational publication "Atlas of bathing places". Work procedures and results obtained during the project will be described in professional articles published in specialized periodicals.

In the course of 2019, the following activities were implemented on the project: analysis of available information sources and selection of suitable input data, selection of suitable SW for their processing and research by combinations of suitable remote sensing methods and their testing. An archive of satellite images with the affected localities has been created (since 2017), on which the pre-processing phase and the subsequent calculation of selected vegetation indices take place. The first stage of field surveys and subsequent laboratory work was also carried out, which was provided by the co-investigator of the project (State Health Institute) and their results were submitted for validation of the results of analyzes from remote sensing data.

Project title:
Water management and water supply systems and preventive measures to reduce the risks of drinking water supply

Contracting authority:
Ministry of Interior of the Czech Republic

Duration:
07/2019–12/2022

Project manager:
Ing. Petr Vyskoč

Description:
The aim of project VI20192022159 of the BV III/1-VS program of the Ministry of the Interior is to create tools (software, specialized public database) to assess risks to drinking water supply caused by water scarcity due to drought and to assess possible preventive measures to mitigate these risks related to water management systems. and water systems. More information about the project is published at https://heis.vuv.cz/datovesady/projekty/rzv. The initial stage of the project (July to December 2019) was focused on the general specification of the project solution procedure, identification of the necessary information and data and integration of data into the working purpose geodatabase.

Project title:
Summary evaluation of the results of the water management balance of the current and future state of surface water in the sub-basins of the Upper Vltava, Berounka, Lower Vltava and other tributaries of the Danube

Contracting authority:
Vltava River Basin, s.e.

Duration:
06/2019–02/2020

Project manager:
Ing. Renata Filippi

Description:
The subject of the study is a summary evaluation of the results of the water management balance of the current and future state of surface water treated in the years 2006 to 2017, focused on changes in balance assessment, changes in input data (requirements for abstractions and discharges, minimum flows, handling rules and hydrological data) and changes in evaluation methods and criteria. In 2020, the overall evaluation will be supplemented by information sheets of individual control profiles.

Branch of Water Technology and Wastes

Project title:
Technology of separation of specific pollutants from rainwater

Contracting authority:
Technology Agency of the Czech Republic

Duration:
2018–2020

Project team:
Ing. Miroslav Váňa, Ing. Jana Čejková, Ing. Anna Kólová

Description:
The main goal of the project is the development of technology, resp. technical solution for the removal of pollutants from rainwater flushes with a focus on PAHs. The project considers a technology that primarily removes undissolved substances and thus specific pollution that is adsorbed on undissolved substances.

The main goal for 2019 was to complete testing on the physical model. Physical model tests were performed to verify the capacity and dependence of undissolved substance removal efficiency on the flow rate and served to further optimize the physical model. Subsequently, the model was transferred to the operational scale. In the coming period, the testing of the prototype in the field and the related optimization of the prototype will take place, i.e. especially the technical modifications that will result from the testing.

Project title:
Reporting according to Articles 15 and 17 of Council Directive 91/271/EEC

Contracting authority:
Ministry of the Environment of the CR

Duration:
2019 (long-term activity)

Project manager:
Ing. Jana Čejková

Description:
The task of 2019 was to process and verify data on municipal sources of wastewater pollution. The data collected is used to inform the European Commission on the status of municipal and wastewater treatment from agglomerations above 2,000 PE in accordance with Articles 15 and 17 of Council Directive 91/271/EEC concerning urban waste water treatment.

Project title:
Technical and economic optimization of tertiary technologies for the removal of PPCPs from wastewater

Contracting authority:
Technology Agency of the Czech Republic

Duration:
2017–2019

Project team:
Ing. Miroslav Váňa, Ing. Jiří Kučera, Ing. Lenka Matoušová, Ing. Anna Kólová

Description:
The project dealt with the development and verification of technology that would enable the separation of some specific pollutants (PPCPs – Pharmaceuticals and Personal Care Products) from already treated wastewater using tertiary treatment. The use of a tertiary filter has the potential to improve the quality of the effluent at the effluent, thus enabling the reuse of the treated effluent.

The year 2019 was the last year of the project. This year, an advanced tertiary filter was in operation (pilot plant) at a real WWTP, as was the case in 2018. Samples from the effluent from individual types of activated carbon continued to be taken and evaluated on an ongoing basis. The actual operation of the advanced filtration equipment and analysis of the samples provided important information and helped to produce a prototype and utility model of the equipment, which were the main goals of the project in 2019. The results also helped clarify some issues regarding adsorption of specific pollutants on granular activated carbon. The results were used to create papers that were presented at professional conferences. A workshop entitled Tertiary Wastewater Treatment with regard to the removal of pharmaceuticals and personal care products was also organized, where not only the professional public became acquainted with the issues addressed by the project. The workshop was organized in the premises of TGM WRI, p.r.i.

Project title:
Waste and its prevention – practical procedures and activities in the implementation of the obligations of the Regional Waste Management Plan of the Capital City of Prague

Contracting authority:
Prague City Hall

Duration:
2018–2020

Project team:
Ing. Dagmar Vološinová, Ing. Robert Kořínek, Ph.D.

Description:
The project consists of two interrelated parts, which are solved in parallel. The content of the first part is the monitoring of waste management in the region of the Capital City of Prague with the aim of evaluating and modeling the current state of "waste services". Part of the work is the evaluation of the efficiency of sorting and thus the fulfilment of the obligations of the Waste Management Plan of the Capital City of Prague. The second part of the project is focused on the issue of waste prevention.

In 2019, the solution of the project followed the monitoring of waste services together with the analysis of mixed municipal waste (SKO) in the same areas as in 2018. At the same time, the evaluation of existing measures in the field of waste prevention in the Capital City of Prague continued. The effectiveness of the proposed waste prevention measures (with a focus on reducing municipal waste production – waste prevention and reducing mixed municipal waste production – prevention + strengthening of waste sorting and recycling) was continuously evaluated with regard to the results of mixed municipal waste monitoring in selected localities, the actual composition of municipal waste and the performed socio-demographic studies focusing on the area of municipal waste collection. Documents for the elaboration of the document Verified Procedures for the Implementation of Preventive Measures in Practice in 2016–2025 with a focus on the specific territory of the Capital City of Prague and the document Verified Procedure for Monitoring the Composition of SKO and the Purity of Separated Waste were collected.

Brno Branch

Project title:
Drying of streams and biodiversity of running waters: influence of natural conditions and anthropogenic interventions

Contracting authority:
Technology Agency of the Czech Republic

Duration:
2018–2021

Project team:
Mgr. Michal Straka, Ph.D., RNDr. Denisa Němejcová,
Mgr. Martina Poláková

Description:
The aim of the project is to evaluate the impact of drying of watercourses and related phenomena on the biodiversity of model groups of aquatic organisms. Emphasis is placed primarily on capturing the effects of measures that are commonly implemented on streams and in their river basins. In particular, the influence of accompanying line elements (e.g. shore vegetation, changes in the hydromorphology of the flow), point structures (obstacles in the flow, stages, reservoirs) and changes in the surface characteristics of the river basin (land use, targeted area interventions) are monitored. All these measures have an effect on aquatic organisms and this effect can be deepened / dampened by increasingly frequent periods of zero flow, when many streams dry regularly. Emphasis in monitoring is placed on monitoring biological components in selected river basins. However, the project also monitors a number of physical-chemical parameters, stream morphology and hydrogeological characteristics.

Based on the acquired knowledge, a methodology will be developed, which will summarize the list of endangered taxa and factors that pose risks to their protection. Recommendations for habitat management of target species and communities and evaluation of possible measures in the river basin will be presented.

The main research workplace of the project is Masaryk University, TGM WRI, p.r.i., participates in the project as a secondary beneficiary.

Project title:
Identification of vulnerabilities and possibilities of supporting natural landscape functions in the conditions of changed climate in large specially protected areas

Contracting authority:
Technology Agency of the Czech Republic, program Epsilon II.

Duration:
2017–2019

Project team:
Mgr. Jiří Kroča, Ing. Lucie Vysloužilová, Mgr. Marek Polášek, Ph.D.

Collaborating organizations: University of Ostrava, Faculty of Science (principal investigator), EKOTOXA, s.r.o.

Description:
The aim of the project was to identify the risks resulting from the predicted climate changes with impacts on the landscape and its functions in the model area of the Beskydy Protected Landscape Area. Based on the identified sensitivity and vulnerability of the landscape, identification of the main problems and subsequent design of variants of appropriate adaptation measures and appropriate farming models to support the main functions of the landscape and thus create conditions for the existence of valuable habitats and species in climate change. Within the TGM WRI, p.r.i., The issue of the impact of climate change on aquatic organisms was addressed.

During the solution period, data from hitherto neglected habitats (2017) were supplemented within the field work, the basic physical-geographical parameters of the monitored habitats were determined and sub-communities were defined with the determination of diagnostic species of these communities (2018). In the course of 2019, the realized niches of individual species were determined and by comparing the current climatic parameters with the predicted climate model, based on the CHMI data sets, a change in the communities of the monitored groups for 2040, 2060 and 2100 was predicted.

The outputs of the project will be generalized and will provide professional support and documents to public administration authorities for decision-making and conceptual activities in ensuring effective nature protection in large specially protected areas taking into account climate change.

Project title:
Optimization of automatic irrigation systems for the use of treated wastewater – measures to reduce the risks of drought and eutrophication of surface water sources

Contracting authority:
Technology Agency of the Czech Republic

Duration:
2017–2019

Project team:
Ing. Miloš Rozkošný, Ph.D., Ing. Hana Hudcová, Ph.D.,
Ing. Pavel Sedláček, Ing. Michaela Mrvová

Description:
The project supported by the Technology Agency of the Czech Republic is solved in cooperation with Dekonta, a.s., (Beneficiary) and TGM WRI, p.r.i., (co-beneficiary). The aim of the project is to develop an innovative automated system for the use of treated wastewater with residual concentrations of nutrients for irrigation of energy crops or fruit trees and its testing in pilot plant conditions. It includes the design and testing of an optimal method of irrigation with regard to i) reducing the consumption of clean water for irrigation; (ii) reduction of residual concentrations of nutrients, in particular phosphorus; iii) reduction of effluents from WWTPs to recipients during drought; (iv) restriction of the input of harmful substances, however, including xenobiotics. The developed procedure is to be an alternative to the introduction of chemical precipitation of phosphorus, especially for small point sources of pollution and wastewater treatment systems and for nature-friendly (extensive) wastewater treatment systems.

In 2019, the solution of a project aimed at verifying the usability and verifying the possibilities of automated irrigation management by treated wastewater from small sources of pollution in areas with plantings of fast-growing woody plants and fruit trees was completed.

During the project, two pilot plants of irrigation systems were implemented in different climatic conditions (Central Bohemia, Poohří and Eastern Moravia, White Carpathians) with plantings of representatives of these groups of trees (basket willow, selected varieties of apple and cherry). Both pilot plants tested and verified the settings of automatic control of irrigation doses and irrigation interval, verified measurements of selected quantities for monitoring the effect of irrigation on the soil environment, sampling of incoming water and seepage water, sampling of soils and tree biomass to determine environmental contamination by irrigation with purified wastewater compared to irrigation with unpolluted water. The monitored contaminants included microbiological indicators, selected elements and heavy metals, salinity indicators, representatives of drugs and endocrine disruptors. Climatic characteristics were monitored on an ongoing basis.

Part of the work was the processing of planned outputs: functional samples of automatic control systems (with the application of utility model protection), processing of patent search for automated irrigation systems, processing of literature search on wastewater recycling by irrigation, conducting a questionnaire survey among water authorities on the issue and publication of part results.

Project title:
Joint Danube Survey 4

Contracting authority:
MKOD, Ministry of the Environment of the Czech Republic

Duration:
2019–2020

Project team:
RNDr. Denisa Němejcová, Ing. Hana Hudcová, Ph.D.,
Jaroslav Sova, Mgr. Michal Straka, Ph.D., Ing. Pavel Sedláček,
Milan Svoboda, Mgr. Jiří Kroča, Mgr. Eva Hanáková,
Mgr. Marek Polášek, Ph.D., Ing. Tereza Švestková,
Mgr. Martina Poláková (TGM WRI, p.r.i.),
Ing. Ivana Beděrková (Ministry of the Environment)

Description:
The largest international river expedition of the year – the Joint Danube Survey 4 (JDS4) was launched in 13 countries in the Danube basin, including the Czech Republic, in June 2019. The previous three joint Danube surveys took place in 2001, 2007 and 2013. The main purpose of these expeditions is to ensure:

- reliable and mutually comparable information on selected indicators of water quality and the state of ecosystems of the Danube River, including its main tributaries in a short period of time,
- obtain data for indicators that are not normally monitored and analyzed in monitoring programs,
- collect information on environmental variables and aquatic organisms in a format that is easily comparable between regions and countries,
- to raise public awareness of the status and quality of the Danube water and of ongoing efforts to protect and restore river ecosystems.

The actual course of the JDS is coordinated by the Secretariat of the International Commission for the Protection of the Danube River (ICPD). Participation and coordination of work at the national level is ensured by the Department of Water Protection of the Ministry of the Environment through the national coordinator and staff of the TGM WRI, p.r.i.

In the Fourth Joint Danube Survey, national teams sampled four different matrices – surface water, sediments, sediments and individual biota components (phytobenthos, phytoplankton, zooplankton, macrozoobenthos and fish) – each with its own list of parameters to be determined in analytical laboratories. Furthermore, special monitoring was performed by expert international teams (e.g. e-DNA analyzes or microbiological monitoring).

The results of JDS4 will support the preparation of the 3rd International Danube River Basin Plans (2021), screening for the spread of invasive alien species, harmonization of sampling methods of biological quality components used in various Danube countries, identification of specific pollutants and emergent in the Danube River Basin, sediment quality survey, hydromorphological evaluation, screening quality of river groundwater, testing of new methods (e.g. use of e-DNA analyzes and DNA analysis of biota samples, microplast sampling in surface waters and their analysis), specific research (zooplankton, microbial analyzes, isotopes, ecotoxicology, etc.). The obtained data will also allow an interesting comparison of the development of quality and condition of water and its communities in the long term.

Ostrava Branch

Project title:
Clean water – a healthy city: Foreign substances in groundwater, surface water and wastewater as a result of human activity

Contracting authority:
Prague City Hall

Duration:
01/2018–06/2020

Project team:
RNDr. Přemysl Soldán, Ph.D., Ing. Tomáš Mičaník, Ph.D., Ing. Stanislav Juráň, Ing. Věra Očenášková

Description:
The aim of the project is to assess the level of occurrence of foreign substances in various types of water and river sediments and based on this knowledge to assess the purity of water used to meet the needs of the population of the capital city of Prague and large parts of Central Bohemia.

A comprehensive solution to the issue is ensured by carrying out professional and research work within four thematic concepts, two of which are solved under the guidance of the employees of the Ostrava Branch. It is about:

- Study of pesticide input into the Švihov (Želivka) water reservoir using new sampling techniques and removal of organic substances from sorption filters under ozonation by highly efficient chemical destruction
  - In 2019, research of the spatiotemporal dynamics of the introduction of foreign substances into the Švihov NPP continued by evaluating the results of passive water sampling at tributaries to this largest water reservoir in the Czech Republic and at the raw water inlet to the Želivka WWTP. Within this project, model tests of sorption, desorption and breakdown of selected types of sorption fillings were finalized, the use of which is expected to be treated for treated water in the GAU filtration facility, which were performed by E&H services, a.s.
- Improving the monitoring of biological quality of drinking water
  - In 2019, continuous monitoring of the biological quality of raw water supplied to the treatment plant and also treated water took place. Problems with the death of monitoring organisms in both types of water have been successfully eliminated. Intensive aeration was applied to raw water and automatic thiosulphate dosing was introduced for treated water, thus cancelling the negative effect of chlorination. The problem with unwanted cracking of glass chambers by their custom production from thicker glass was solved.

Project title:
NAVAROSO expert information system

Contracting authority:
Technology Agency of the Czech Republic

Duration:
01/2017–12/2020

Project team:
RNDr. Přemysl Soldán, Ph.D., Ing. Jiří Šajer

Description:
The project was focused on the creation of a database expert system for the IRS, CEI and river basin managers, operating on stationary and mobile devices. During the construction of this system, the principles given by the Methodology of the procedure for declaring emergency situations on streams, which was certified by the Ministry of the Environment, were respected. The system provides cross-linked data needed to quickly obtain information on possible causes of water quality deterioration, procedures for determining the type of pollution and estimating its spread in a watercourse. This will make water protection more effective both in the area of mitigation of the negative effects of pollution by faster detection of its causes and in the prevention of possible pollution by more accurate and faster available information on its potential sources in the river basin. The main output of the project is software.

Project title:
Tower reservoirs – identification, documentation, presentation, new use

Contracting authority:
Ministry of Culture of the CR

Duration:
2018–2022

Project team:
Ing. Robert Kořínek, Ph.D., Ing. Alena Kristová, Jakub Citterbard

Description:
The research project is focused on a comprehensive research of the development of tower reservoirs in the Czech Republic from the earliest mentions of these buildings to the present. The aim of the project is to create a record of tower reservoirs and detailed documentation of selected objects.

In 2019, based on the ongoing identification and registration, the basic version of the tower reservoir database was completed, which is a publicly accessible web application used to store the collected data and at the same time for their clear presentation. Within the framework of publishing activities, the basic technical terminology was defined and the basic typological groups of the affected objects were determined. Research activities in archival and literary sources and in-situ surveys of objects continued to a large extent. Construction and technical surveys and geodetic surveys were also carried out at selected reservoirs, and proposals for possible new uses were carried out at selected already non-functional buildings.

An important event in 2019 was the implementation of the Conference on Tower Reservoirs with international participation. Here were presented 8 professional contributions of the research team, 3 contributions from abroad (Poland, Slovakia) and 5 contributions focused on the implemented conversions of tower reservoirs. The conference was attended by 55 people.

Project title:
Waste and its prevention – practical procedures and activities in the implementation of the obligations of the Regional Waste Management Plan of the Capital City of Prague: Verification and implementation of methods and procedures for the implementation and evaluation of measures for waste prevention

Contracting authority:
Prague City Hall

Duration:
2018–2020

Project team:
Ing. Robert Kořínek, Ph.D., Ing. Martin Durčák,
Ing. Tomáš Sezima, Ph.D.

Description:
During the third and fourth stages of the solution of Concept II, the evaluation of current measures in the field of waste prevention in the territory of the Capital City of Prague was completed. The effectiveness of the proposed waste prevention measures (focusing on reducing the production of municipal waste and reducing the production of mixed municipal waste, including strengthening the sorting and material utilization of waste) continued to be evaluated with regard to the results of SKO monitoring in selected localities (Concept I), monitoring waste services, the actual composition of municipal waste and socio-demographic studies focused on the area of municipal waste collection. Materials were continuously collected for the elaboration of the document Verified Procedures for the Implementation of Preventive Measures in Practice in the Years 2016–2025, focusing on the specific territory of the Capital City of Prague.

Branch of Applied Ecology

Project title:
DYJE 2020 – THAYA 2020

Contracting authority:
Interreg Austria-Czech Republic,
European Regional Development Fund

Duration:
2016–2020

Project team:
Ing. Jiří Musil, Ph.D., et al.

Description:
The main goal of the project is the bilateral harmonization of water management and nature and landscape protection of the Podyjí border area. Sub-objectives with the involvement / co-operation of the project partner TGM WRI, p.r.i., include: 1) harmonization of monitoring and evaluation of ecological status, 2) determination of the target fish community in relation to the strategy of restoration of migration through the Dyje river basin, 3) harmonization of fisheries management in national parks including 4) dead wood management design and 5) biological evaluation of the pilot connection of the river branch.

The Dyje river basin represents a cross-border Czech-Austrian territory, with the occurrence of significant water works on the part of the Czech Republic (Vranov, Znojmo, Nové Mlýny) and the national parks NP Podyjí and NP Thayatal. The main goal of the project is the bilateral harmonization of strategies and approaches in the areas of water management and nature and landscape protection, including active cross-border cooperation with a link to coordinated regional development and achieving the required quality of environment and ecosystem services of this border region. The results of the project include several cross-border mechanisms and elements of green infrastructure, which will be used by watercourse managers (Povodí Moravy, s.e., via Donau) and nature and landscape protection authorities, including both native parks. The solution of the project was extended until 2022.

Title:
Prediction of danger of non-native fish and crayfish and optimization of eradication methods of invasive species

Contracting authority:
Technology Agency of the Czech Republic

Duration:
2017–2020

Project team:
RNDr. Jitka Svobodová, Ing. Jiří Picek, Mgr. Silvie Semerádová, Mgr. Eva Balcarová, Ph.D., Eva Svobodová, Ing. Jiří Musil, Ph.D., Ing. Tereza Barteková, Ing. Miroslav Barankiewicz, Mgr. Petr Vlašánek, Ph.D.

Description:
The main goal of the project is to streamline the control of invasive species of fish and crayfish in the Czech Republic and thus reduce their negative impacts on the aquatic environment. The output of the project are certified methodologies for control and eradication of selected invasive crayfish and fish and selection of the most suitable procedure for their eradication / regulation. Another output is to create application software based on the developed methodologies, which will connect all the necessary information in the form of suitably designed databases and which will work on all available relevant data using the environment of GIS tools. The software will facilitate users' decisions on how to best intervene against invasive species in specific localities. For the software to work properly, the missing data on the occurrence of invasive species and, in the case of crayfish, on the prevalence of non-native crayfish by crayfish (Aphanomyces astaci) as well as possible eradication / regulatory procedures (mechanical, biomanipulation and chemical procedures) need to be supplemented.

As part of the project, the mobile application "Crayfish in the Czech Republic" was completed in 2019 to obtain up-to-date information on the occurrence of invasive as well as native crayfish in the Czech Republic. This software output was designed due to the very rapid spread of mainly invasive crayfish species in recent years. The mobile application will be an important complement to the most efficient operation of the "Software to support the selection of appropriate methods for the eradication of invasive fish and crayfish". The mobile application also includes a identification key, according to which it is possible to determine whether it is the original protected crayfish or an invasive species. In 2019, testing of invasive crayfish sites for the presence of Aphanomyces astaci DNA continued. 13 localities with invasive crayfish were newly tested, of which 7 confirmed the occurrence of crayfish plague. The data will be used in the software and after the end of the project they will be transferred to the AOPK CR finding database. The results of environmental DNA testing at sites with invasive crayfish were also processed and prepared for publication in the professional journal Neobiota. The article "Simultaneous detection of native crayfish and invasive crayfish and the crayfish plague pathogen in a wide range of habitats in Central Europe" was prepared in collaboration with

Norwegian colleagues from the Faculty of Science, Charles University. An article dealing with crayfish plague "Crayfish plague in the Czech Republic: outbreaks from novel sources and testing for chronic infections" was also prepared with colleagues from the Faculty of Science, Charles University, and was sent to the Journal of Invertebrate Pathology.

Testing of selected biocides for the eradication of invasive fish and crayfish was completed and trial testing of the regulation of invasive species in natural conditions was performed. For crayfish, testing of regulation took place in localities with high priority, i.e. in sites of European importance declared under NATURA 2000 with the occurrence of, for example, freshwater pearl mussels. As part of raising awareness and preventing the introduction of invasive species and informing the public, two articles dealing with crayfish were published in Rybářství magazine in 2019 ("Can you distinguish crayfish in nature?" And "How to prevent the spread of crayfish plague"). Further information on the course of the project solution is available on the project website heis.vuv.cz/projekty/raci2017.

Project title:
Evaluation of the influence of floating Ploučnice and proposal of possible conditions of regulation

Contracting authority:
Ministry of the Environment of the Czech Republic

Duration:
2019

Project team:
RNDr. Zuzana Hořická, Ph.D., Mgr. Kamila Tichá, Ph.D.,
Bc. Radka Čablová, Ing. Věra Kladivová

Description:
The main goal of the task was to evaluate the impact of navigating small vessels on the ecosystem of the river Ploučnice, focusing on natural habitat 3260 Lowland to mountain watercourses with vegetation of Ranunculion fluitantis and Callitricho Batrachion, which is protected by the European important locality Horní Ploučnice rafting.

We supplemented this method by recording the behavior of the crews of sailing ships, which made it possible to describe the types of disturbances of the riverbed (bottom and banks) and evaluate their frequencies. Quantitative results were supported by the description and photographic documentation of various types of damage to the banks and bottoms by paddlers during the rafting of a part of the river in meanders below Boreček. The results were supplemented by an analysis of all other available data related to the biota of this part of the stream. The well-flowed section between Stráž pod Ralskem and Brennský Mlýn is located in EVL Horní Ploučnice and from Boreček also in the Kokořínsko Macha Region. From the results of 2019, the limits of tolerable boating operation were determined: a maximum of 4 boats per hour at a level of 33/15 cm (Stráž pod Ralskem / Mimoň) and smaller.

At higher water levels (≥ 34/15.5 cm) it is possible to increase the number of ships to 5 or 6. In conclusion, it was strongly recommended to introduce regulation of flotation in the section from the Ploučnice Gorge to Brennský Mlýn and last but not least to support even distribution of ships in the flow, i.e. smooth sailing without stopping and so-called reconciliation.

Project title:
Methodology for assessing the status of protected areas designated under the Water Framework Directive for the protection of habitats or species

Contracting authority:
Technology Agency of the Czech Republic

Duration:
2018–2020

Project team:
Mgr. Pavel Rosendorf, RNDr. Hana Janovská,
Ing. Anna Antoňová, RNDr. Jitka Svobodová,
Ing. Věra Kladivová, RNDr. Ladislav Havel, CSc.,
RNDr. Jitka Horáčková, Ph.D., Ing. Lenka Smetanová,
RNDr. Zuzana Hořická, Ph.D., et al.

Description:
The main goal of the project is to develop a monitoring methodology and a methodology for assessing the condition of protected areas designated for the protection of habitats and species. The methodologies that will be created in the project are necessary to meet the requirements of the Water Framework Directive and will be used for the purpose of establishing a uniform framework for the process of monitoring and evaluating the status of the protected areas and will provide a basis for streamlining their protection. At the same time, it will enable the fulfillment of the objectives of Directive 92/43/EEC while preventing the deterioration of habitats and species associated with the aquatic environment at the level of individual sites of European importance and will positively contribute to improving the state of biodiversity in the Czech Republic / EU.

As part of the project, a detailed evaluation of data on water quality and the status of biological components in watercourses and reservoirs in the Czech Republic, which are also the subject of protection for sites of European importance for the Natura 2000 system, was gradually carried out in 2019 which have not yet been monitored. The data were evaluated and based on the results from reference and best available sites, environmental objectives were set for selected general physicochemical indicators and selected biological components. Based on the results of the project, two methodologies were developed: Methodology for monitoring protected areas designated for the protection

of habitats and species associated with water and Methodology for assessing the status of protected areas designated for the protection of habitats and species associated with water. The aim of both methodologies is to supplement, adjust and unify the procedures for monitoring and evaluating the status of sites of European importance which have been included in the Register of Protected Areas under the Water Framework Directive and whose objects of protection are tied to the aquatic environment and occur permanently or at least in a part of the year.

Project title:
Recreational potential of water in Prague – state and prospects, activity I: Evaluation of pollution sources and their influence on recreational potential of water in urban environment

Contracting authority:
Prague City Hall

Research time:
2018–2020

Project team:
Mgr. Pavel Rosendorf, Ing. Jiří Picek, Mgr. Daniel Fiala, RNDr. Ladislav Havel, CSc., RNDr. Blanka Desortová, CSc., Mgr. Silvie Semerádová, Ing. Lenka Smetanová, RNDr. Renata Filippi, Ing. Jiří Dlabal, et al.

Description:
The main goal of the project and its activity I is a detailed survey of important river basins of Prague streams and reservoirs in order to identify key sources of pollution of point and area character, which negatively affect the state of water in the capital city of Prague, as well as in parts of river basins that extend into the Central Bohemian Region. The obtained data will make it possible, using previously developed software tools, to analyze river basins of interest in order to identify the main sources of pollution that prevent the improvement of water quality in selected localities and prioritize or propose appropriate measures to improve their ecological status and strengthen their recreational potential.

As part of the project, a detailed survey of selected river basins of important Prague streams was carried out in 2019 with regard to existing sources of water pollution by phosphorus as a key element in the eutrophication of water reservoirs and streams. Sampling at the effluent from wastewater treatment plants, from streams of agricultural catchments and samples for the determination of retentions and transformations in selected water reservoirs and ponds were performed repeatedly. Based on existing data on the structure of watercourses and reservoirs from DIBAVOD and HEIS WRI and on current data on the river network and other water elements from the City of Prague, a detailed model of the river network was updated and incorporated into the detailed simulation model VSTOOL.EUTRO, specifically adapted for use in the territory of Prague and part of the Central Bohemian Region. The model was filled with current data on pollution sources and simulations of the spread and transformation of phosphorus pollution were performed. From the results, rankings of the significance of sources to the key evaluation profiles on the river network were compiled and sample simulations were performed for variants of reducing the load of phosphorus from point sources. In most river basins, discharged wastewater from various types of wastewater treatment plants and municipalities was identified as the decisive source of pollution. Preparations are currently underway to present the results to relevant stakeholders.

MEMBERSHIP IN COMMISSIONS AND BOARDS

Institutional

- Ad-hoc expert group "Nutrients" of the International animals against cruelty Commission for the Protection of the Elbe
- NORMAN Association
- Czech-Polish Commission for Boundary Waters
- Czech-Austrian Boundary Water Commission
- Czech-Slovak Commission for Boundary Waters
- EurAqua
- Expert group SW (Surface water) MKOL
- Water Planning Commission
- Commission for Fish Movements AOPK CR
- International Commission for the Protection of the Elbe (Data Management Working Group – DATA)
- International Commission for the Protection of the Danube River (Information Management Working Group; GIS Expert Group – IMGIS EG)
- International Commission for the Protection of the Oder against Pollution (G5 Working Group – Data Management)
- Interdepartmental Commission Water – Drought
- National Drought Coalition
- NRC (National Reference Centre) for Water Emissions in the Czech Republic
- Expert commission for work with experimental animals according to § 17 paragraph 1 or § 26 of Act No. 246/1992 Coll. to protect against maltreatment
- Working group for priority axis 1A of the Operational Program Environment 2014–2020
- Working Group (TPS) PO 3–3A (Waste) of the Environment Operational Program 2014–2020
- European Commission ECOSTAT Working Group
- POV Working Committee for the Implementation of the Flood Directive (PS KPOV) established by the Ministry of the Environment
- Waste Management Board
- Standing Committee of Saxony Czech-German Boundary Waters Commission
- Standing Committee of the Bavarian Czech-German Boundary Water Commission
- Working Group Data & Information Sharing (DIS) under the Common Implementation Strategy of the Water Framework Directive
- Working group Chemicals under the Common Implementation Strategy of the WFD

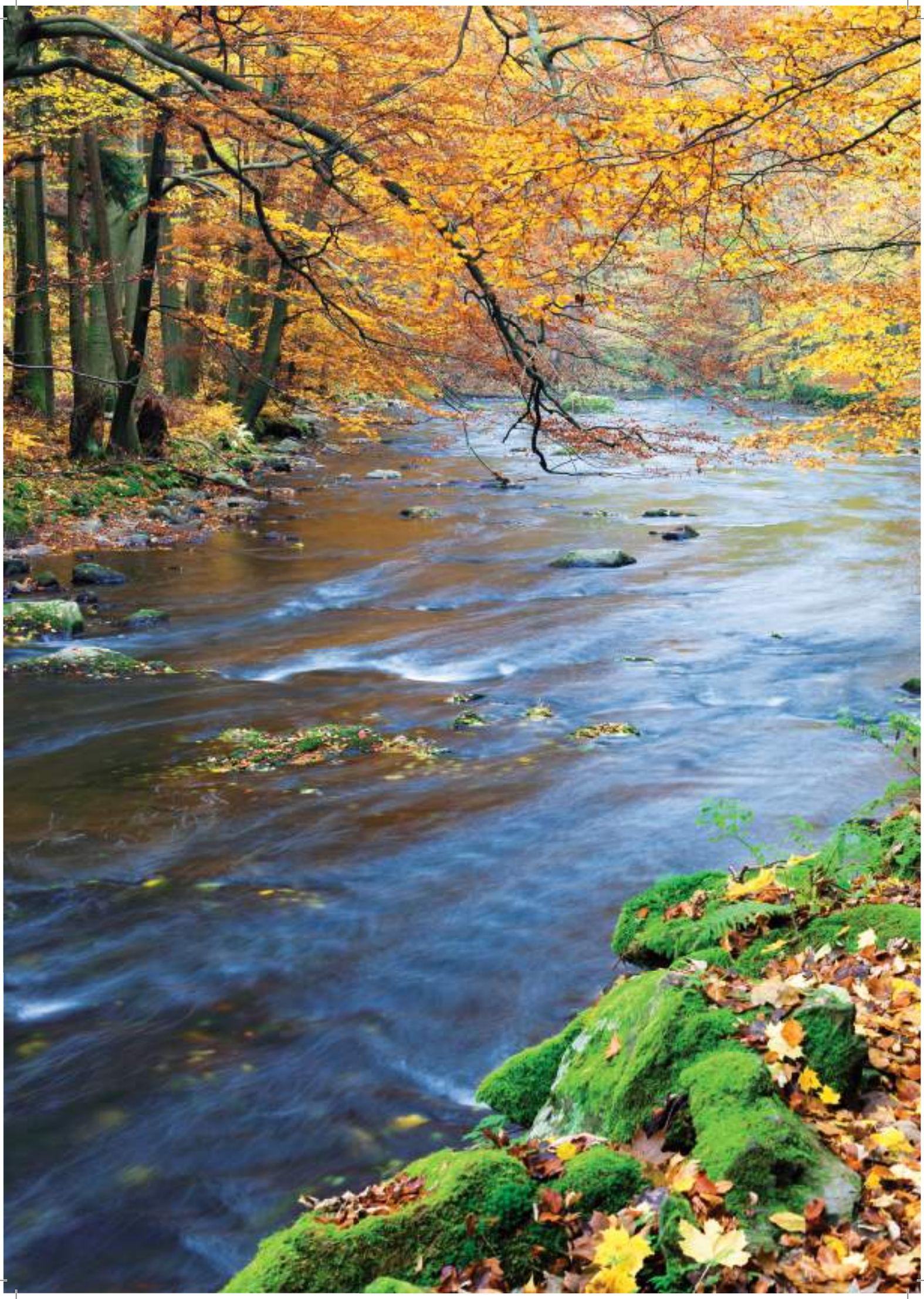
Individual

- Ing. Libor Ansorge, Ph.D. (member) Entecho Editorial Board
- Ing. Pavel Balvín (member) Technical Standardization Commission No. 45
- RNDr. Josef V. Datel, Ph.D. (Chairman) Czech Association of Hydrogeologists
- RNDr. Josef V. Datel, Ph.D. (Chairman) Czech Committee of the IAH (International Association of Hydrogeologists), z.s.
- RNDr. Josef V. Datel, Ph.D. (member) Nitrates Committee at the EC in Brussels
- RNDr. Blanka Desortová, CSc. (member) Czech Algological Society
- RNDr. Blanka Desortová, CSc. (member) Editorial board of the magazine ŽIVA
- Ing. Karel Drbal, Ph.D. (member) Supervisory Board of UVKZ AV (CzechGlobe), Brno
- Ing. Karel Drbal, Ph.D. (member) Scientific Board of BUT FAST Brno
- Ing. Martin Durčák (member) Working Group "Water Planning / RBMP" at the International Commission for the Protection of the Oder against Pollution
- Ing. Martin Durčák (member) Working Group "WFD Control Group" at the International Commission for the Protection of the Oder against Pollution
- Ing. Roman Dvořak (member) Standardization Commission TNK No. 104 in Czech Agency for Standardization
- Ing. Tomáš Fojtík (member) Czech Cartographic Society
- RNDr. Josef K. Fuksa, CSc. (member) Czech Ramsar Committee – an advisory body of the Minister of the Environment
- RNDr. Josef K. Fuksa, CSc. (member) Commission of the Ministry of Education, Youth and Sports for the assessment of international projects KONTAKT, INTEREXCELENCE and INTER-Action
- RNDr. Josef K. Fuksa, CSc. (member) Government Council for Sustainable Development – Head of the Water Working Group
- RNDr. Josef K. Fuksa, CSc. (member) Committee for Water, Landscape and Diversity of the Council of the Government of the Czech Republic for Sustainable Development
- RNDr. Ladislav Havel, CSc. (member) Technical Standardization Commission No. 104
- Ing. Anna Hrabánková (member) Nitrates Committee at the EC in Brussels
- doc. RNDr. Zbyněk Hrkal, CSc. (member) Czech Committee of the IAH (International Association of Hydrogeologists), z.s.
- Mgr. Lucie Jašíková, Ph.D. (member) Czechoslovak Microbiological Society
- Ing. Jiří Kučera (member) Czech Water Association
- RNDr. Diana Marešová, Ph.D. (member) Technical Standardization Commission No. 104
- Ing. Tomáš Mičaník, Ph.D. (chairman) Expert group CVTVHS, z.s., Wastewater – water purity
- Ing. Tomáš Mičaník, Ph.D. (member) WG Chemicals Working Group at the European Commission, DG Environment, ENV.C.1 – Clean Water
- RNDr. Hana Mlejnková, Ph.D. (member) Czechoslovak Microbiological Society
- RNDr. Hana Mlejnková, Ph.D. (member) Expert group CVTVHS, z.s., Wastewater – water purity
- Ing. Jiří Musil, Ph.D. (member) American Fisheries Society

- Ing. Jiří Musil, Ph.D. (member) Commission for Fish movements AOPK CR
- Ing. Lubomír Petružela, CSc. (member) Committee for the Coordination of Regulation of Water Supply and Sewerage
- Ing. Pavel Richter, Ph.D. (member) Czech Society for Landscape Ecology
- Ing. Miloš Rozkošný, Ph.D. (member) Czech Water Association
- Mgr. David Rozman (member) Czech Committee of the IAH (International Association of Hydrogeologists), z.s.
- Ing. Barbora Sedlářová (member) Czech Chemical Society, Nuclear Chemistry Expert Group
- Ing. Barbora Sedlářová (member) Expert group CVTVHS, z.s., Wastewater – water purity
- Ing. Barbora Sedlářová (member) Technical standardization Commission No. 104
- Ing. Lenka Smetanová (member) Czech Water Association
- RNDr. Přemysl Soldán, Ph.D. (Chairman) Working Party "Accidental pollution" at the International Commission for the Protection of the Oder against Pollution
- Mgr. Kateřina Sovová, Ph.D. (member) Czechoslovak Microbiological Society
- Ing. František Sýkora (member) Working Group "Monitoring" (GM) at the International Commission for the Protection of the Oder against Pollution
- Mgr. Jan Šťastný, Ph.D. (member) Czech Algological Society
- Ing. Miroslav Váňa (member) Czech Water Association
- Ing. Adam Vizina, Ph.D. (member) Editorial Board of Meteorological Reports
- Mgr. Aleš Zbořil (member) Czech Cartographic Society

Members of the Czech Limnological Society:

- Ing. Miroslav Barankiewicz
- Ing. Tereza Barteková
- Mgr. Michal Bílý, Ph.D.
- Bc. Radka Čablová
- RNDr. Blanka Desortová, CSc.
- Mgr. Daniel Fiala
- RNDr. Josef K. Fuksa, CSc.
- RNDr. Ladislav Havel, CSc.
- RNDr. Zuzana Hořická, Ph.D.
- RNDr. Hana Janovská
- Mgr. Pavel Kožený
- RNDr. Hana Mlejnková, Ph.D.
- RNDr. Denisa Němejcová
- Mgr. Martina Poláková
- Mgr. Marek Polášek, Ph.D.
- Ing. Pavel Richter, Ph.D.
- Mgr. Pavel Rosendorf
- Mgr. Ondřej Simon, Ph.D.
- Mgr. Michal Straka, Ph.D.
- RNDr. Jitka Svobodová



ECONOMICS AND FINANCE

In 2019, we intensively continued to renew the equipment, especially at the institute's branches, specifically to a greater extent at the Ostrava Branch, but also at the Prague workplace, with the aim of securing a wider range of possible orders and increasing the quality of our work for both government and the private sector.

The year 2019 followed the year 2018 mainly by fulfilling the long-term concept of development – DKRVO, responsible use of a sufficient amount of institutional support and involvement in new projects, even within the international cooperation INTERREG. We managed to stabilize the work team and develop its qualities through increased support for education. Part of the funds from institutional support was set aside to support internal grants in order to support creative activities and find new projects.

Projects such as the Pole of Growth II, projects of the Ministry of the Environment in the fight against drought and support for the performance of state administration continued. A significant part of the sources of financing again consists of competed projects of the Technology Agency of the Czech Republic, the Ministry of Agriculture, the Ministry of the Interior, the Ministry of Education, Youth and Sports and other providers of special-purpose funds for R&D.

In the area of commercial and other activities, we also increased the initiative and expanded the volume of commercial orders to the edge of the capacity of TGM WRI, p.r.i. We also approached the management and use of assets, where the funds obtained were used primarily to cover the costs associated with the celebrations of the 100th anniversary of TGM WRI, p.r.i.

A very important project launched in 2019 is the introduction of a new QI information and control system, where, however, our ideas and requirements for suppliers have not yet been fully met.

Thanks to responsible management, we managed to create a positive economic result, which will be transferred partly to the reserve fund and partly to the asset reproduction fund.

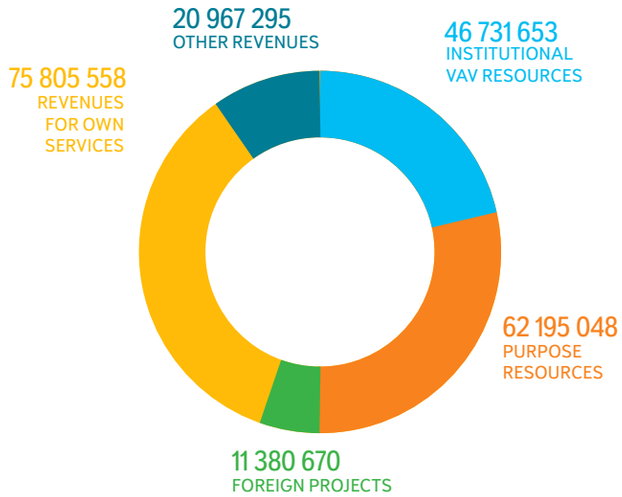
A recurring shortcoming, which also applies to 2019, is still considerable diversity in the tender conditions of individual providers, especially state entities, unequal assessment of administrative acts by providers, different views on cost reporting and, in many cases, ever-increasing bureaucracy. These negative facts are reflected in the unnecessary increase in administration, including personnel security, not only in our country, but certainly also on the part of providers. At the same time, a possible solution would be a uniform nationwide system for all involved components, clear and easy to control.

In evaluating 2019, we must not forget the responsible approach of the founder, which helps our development and fulfill the mission of a public research institution.

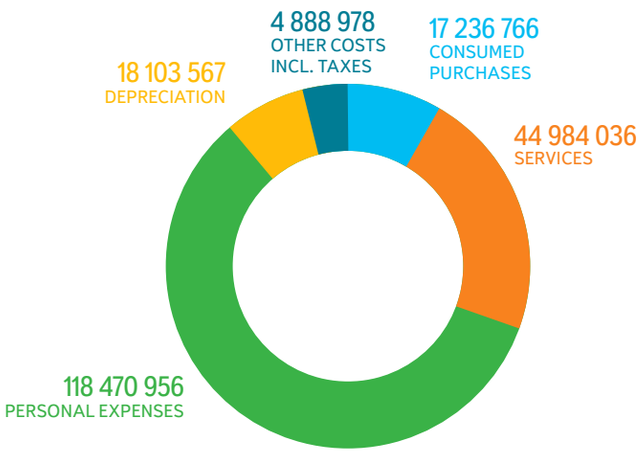
In accordance with Act No. 341/2005 Coll., on Public Research Institutions, the budget for 2019 was compiled as balanced, in the amount of 226,495,000 CZK. Total revenues in 2019 amounted to CZK 217,080,224, total costs amounted to CZK 203,684,303, resulting in a positive pre-tax profit of CZK 13,395,921. A proposal for the transfer of the positive economic result for 2019 to the reserve fund in the amount of CZK 7,395,921 and to the asset reproduction fund in the amount of CZK 6 million is submitted to the competent authorities of TGM WRI, p.r.i.

Revenues were not fulfilled mainly from the Pole of Growth, in the amount of approximately CZK 7 million and also for international INTERREG projects in the amount of CZK 2.5 million. In both cases, the revenues were transferred to the following period, i.e. 2020, with the consent of the provider.

Revenue structure in CZK



Cost structure in CZK



PERSONAL DATA

Activities in employment relationships

In 2019, the head of the Ostrava Branch, Ing. Petr Tušil, Ph.D., MBA, and from May 1, RNDr. Přemysl Soldán, Ph.D.

In 2019, a job evaluation of employees was initiated, the essence of which is to determine whether in the evaluated period the work and personal conduct of the evaluated employee was in accordance with the demands and requirements for the work performed within the given position. The result of the evaluation is the award of a regular remuneration, which is reflected in the monthly salary of the evaluated employee for a specified period.

As of 31st December 2019, TGM WRI, p.r.i., had a total of 193.40 employees working in the average registered recalculated number. Of the total number of employees, research and professional staff accounted for 83%, of which 130.23 researchers and 26.99 professional staff accounted for the average registered recalculated number, and overhead and operational staff accounted for 17%.

Table 1. Division of employees by age and sex – physical condition on 31st December 2019

Age	Men	Women	Total	%
Up to 25 years	2	6	8	3.48
26–35 years	26	30	56	24.35
36–45 years	29	28	57	24.78
46–55 years	23	24	47	20.43
56–65 years	17	27	44	19.13
66 years and more	14	4	18	7.83
Total	**111**	**119**	**230**	**100**

The average age was 45.81 years, reaching 47.12 for men and 44.59 for women.

Table 2. Division of employees by highest educational attainment and sex – physical condition on 31st December 2019

Achieved education	Men	Women	Total	%
Basic	0	2	2	0.87
Qualified	6	2	8	3.48
Secondary vocational education	0	1	1	0.43
Complete secondary general	2	3	5	2.17
Full secondary vocational	17	32	49	21.30
Bachelor	2	6	8	3.48
University	58	59	117	50.87
Doctoral	26	14	40	17.40
Total	**111**	**119**	**230**	**100**

Table 3. Division of employees by length of employment and sex – physical condition on 31st December 2019

Duration	Men	Women	Total	%
Up to 5 years	42	49	91	39.57
6–10 years	7	3	10	4.35
11–15 years	21	21	42	18.26
16–20 years	17	19	36	15.65
over 20 years	24	27	51	22.17
Total	**111**	**119**	**230**	**100**

OTHER REQUIRED INFORMATION

Information on measures for elimination of imperfections of management and their fulfilment

No measures have been imposed to remedy the deficiencies in management.

Information about facts that occurred after the balance sheet date and are significant for the fulfilment of the purpose of the institution

No events significant for the fulfilment of the purpose of the institution occurred after the balance sheet date.

Activities in a field of environmental protection

Given that the subject of the institute's activities is closely related to current environmental issues, its activities are also focused primarily on this area – especially on research into aquatic ecosystems and their links in the landscape and related environmental risks and waste management and packaging.

The Institute places particular emphasis on caring for the environment and maintaining sustainable development. This care includes efforts to save energy, and the sorting of waste materials, care for greenery and other events is ensured and fully implemented.

Provision of information

In 2019, TGM WRI, p.r.i., processed a total of 10 requests for information, of which 9 in the sense of general professional information, and 1 in the sense of Act No. 106/1999 Coll., on Free Access to Information, as amended. No information was provided relating to Act No. 123/1998 Coll., on the right to information on the environment, as amended.

The provision of information contributes to the creation of more interconnected feedback from TGM WRI, p.r.i., with the professional and lay public. Most requests for information were related to professional issues, inquiries were directed mainly to the field of water management (hydrological assessments, water protection, dams, wetlands, microplastics in water and information to combat drought).

The development of the number of requests for information in the years 2017 to 2019 is shown in Table 4. The total number of requests for information for 2019 is comparable to the previous year.

Organizational units abroad

T. G. Masaryk Water Research Institute, p.r.i., has no branch abroad.

Table 4. Overview of the number of requests for information in 2017 to 2019

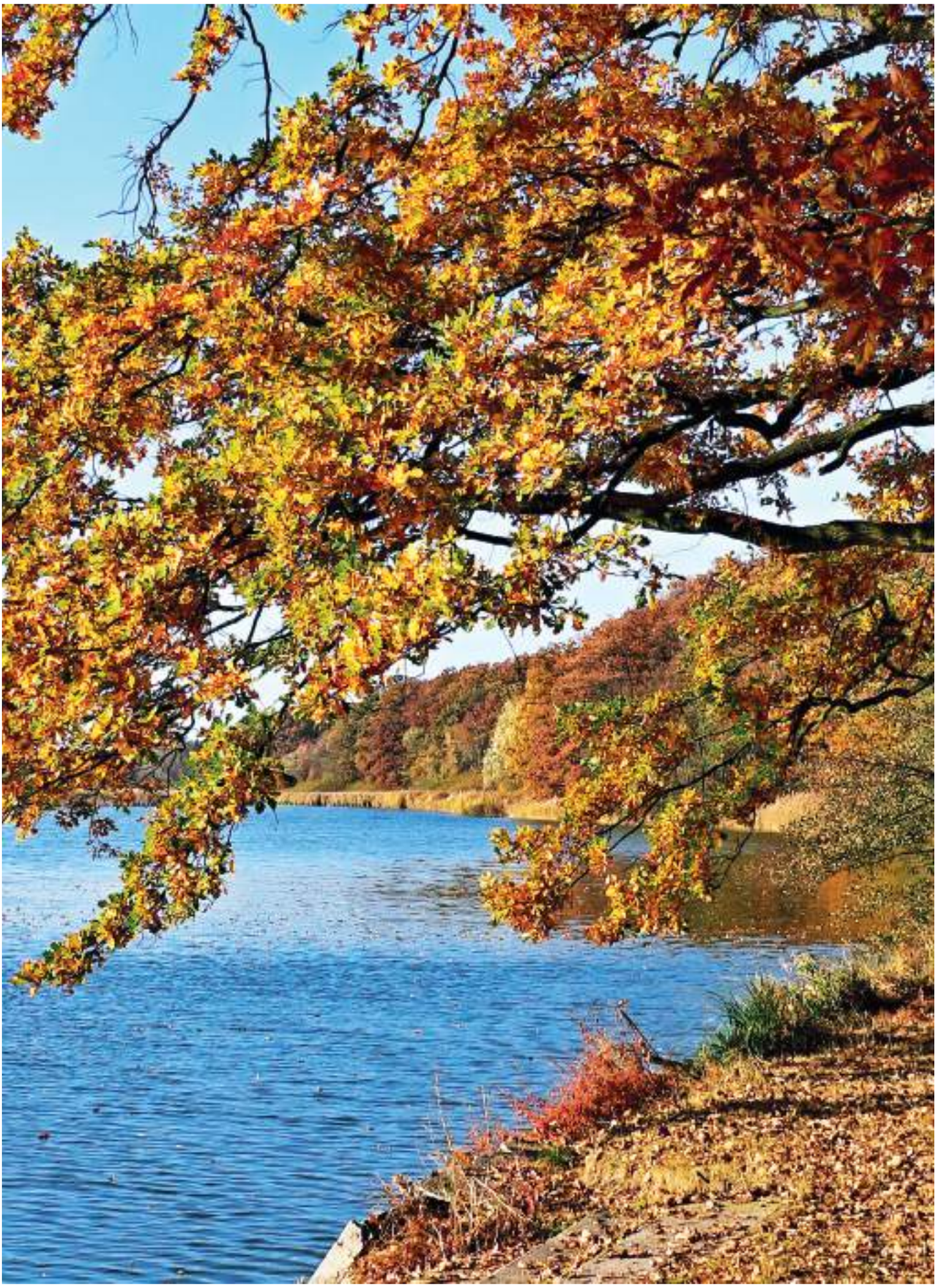
Year	Total number of applications	Number of applications according to the Act. No. 106/1999 Coll.	Number of applications according to the Act No. 123/1998 Coll.	Number of requests for provision professional information
2017	2	1	0	1
2018	10	2	0	8
2019	10	1	0	9

Supposed development of the organization in 2020

It can be expected that the year 2020 will also be one of the most economically demanding, especially in terms of winning contracts. During the year, several projects such as the Pole of Growth will end, but these ending projects will be replaced by new projects from the Environment for Life program as reflected in the Budget for 2020. TGM WRI, p.r.i., of course also this year will focus its activities on the tasks arising from its core mission, i.e. in particular on:

- research of aquatic ecosystems and related environmental risks, as well as waste and packaging management,
- professional support of the state administration in the field of hydrosphere and waste and packaging management, based on research.

The activities of the institute are focused not only on the ongoing solution of research projects, grants, commercial contracts, but above all on the acquisition of other projects within all relevant calls and competitions. Attention will be focused on projects funded by the EU and other domestic providers supporting research and development in the field of water and waste. It is necessary to focus extremely intensively on commercial contracts – the only source of funds for the already generally universally required co-financing of subsidy titles.



PUBLISHING AND EDITION ACTIVITIES

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ZPRÁVA NEZÁVISLÉHO AUDITORA O OVĚŘENÍ ROČNÍ ÚČETNÍ ZÁVĚRKY k 31.12.2019

účetní jednotky

Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce

NBG spol. s r.o.

ZPRÁVA NEZÁVISLÉHO AUDITORA
O OVĚŘENÍ ROČNÍ ÚČETNÍ ZÁVĚRKY k 31.12.2019

účetní jednotky

Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce

určená pro

ZŘIZOVATELE INSTITUCE

Obsah zprávy:

Přílohy:

Účetní výkazy:

- ROZVAHA v plném rozsahu k 31.12.2019
- VÝKAZ ZISKU A ZTRÁTY v plném rozsahu k 31.12.2019
- PŘÍLOHA k účetní závěrce v plném rozsahu k 31.12.2019
- VÝROČNÍ ZPRÁVA za rok 2019

NBG spol. s r.o.

1. Právní skutečnosti

Příjemce

Název instituce:	Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce
Sídlo:	Praha 6, Podbabská 2582/30, PSČ 160 00
IČ:	000 20 711
Právní forma:	Veřejná výzkumná instituce

Účetní jednotka

Název instituce:	**Výzkumný ústav vodohospodářský T. G. Masaryka veřejná výzkumná instituce**
Sídlo:	Praha 6, Podbabská 2582/30, PSČ 160 00
IČ:	000 20 711
Ředitel:	Ing. Tomáš Urban, Na Petynce 607/62, 169 00 Praha 6 ředitel instituce
Právní forma:	Veřejná výzkumná instituce
Registrace:	Rejstřík veřejných výzkumných institucí vedený Ministerstvem školství, mládeže a tělovýchovy, Karmelitská 529/5, Malá Strana, 118 12 Praha 1
Zřizovatel:	ČR Ministerstvo životního prostředí, se sídlem Vršovická 65, Praha 10, PSČ 100 10

NBG spol. s r.o.

ZPRÁVA NEZÁVISLÉHO AUDITORA

Zřizovateli instituce

Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce

Výrok bez výhrad

Provedli jsme audit přiložené účetní závěrky účetní jednotky **Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce** („Instituce") sestavené na základě českých účetních předpisů, která se skládá z rozvahy k 31.12.2019, výkazu zisku a ztráty za rok končící 31.12.2019 a přílohy této účetní závěrky, která obsahuje popis použitých podstatných účetních metod a další vysvětlující informace. Údaje o Instituci jsou uvedeny v příloze této účetní závěrky.

Podle našeho názoru účetní závěrka podává věrný a poctivý obraz aktiv a pasiv účetní jednotky Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce k 31.12.2019 a nákladů a výnosů a výsledku jejího hospodaření za rok končící 31.12.2019 v souladu s českými účetními předpisy.

Základ pro výrok

Audit jsme provedli v souladu se zákonem o auditorech a standardy Komory auditorů České republiky (KA ČR) pro audit, kterými jsou mezinárodní standardy pro audit (ISA) případně doplněné a upravené souvisejícími aplikačními doložkami. Naše odpovědnost stanovená těmito předpisy je podrobněji popsána v oddílu Odpovědnost auditora za audit účetní závěrky. V souladu se zákonem o auditorech a Etickým kodexem přijatým Komorou auditorů České republiky jsme na Instituci nezávislí a splnili jsme i další etické povinnosti vyplývající z uvedených předpisů. Domníváme se, že důkazní informace, které jsme shromáždili, poskytují dostatečný a vhodný základ pro vyjádření našeho výroku.

Ostatní informace uvedené ve Výroční zprávě

Ostatními informacemi jsou v souladu s § 2 písm. b) zákona o auditorech informace uvedené ve výroční zprávě mimo účetní závěrku a naši zprávu auditora. Za ostatní informace odpovídá ředitel Instituce.

Náš výrok k účetní závěrce se k ostatním informacím nevztahuje. Přesto je však součástí našich povinností souvisejících s ověřením účetní závěrky seznámení se s ostatními informacemi a posouzení, zda ostatní informace nejsou ve významném (materiálním) nesouladu s účetní závěrkou či s našimi znalostmi o účetní jednotce získanými během ověřování účetní závěrky nebo zda se jinak tyto informace nejeví jako významně (materiálně) nesprávné. Také posuzujeme, zda ostatní informace byly ve všech významných (materiálních) ohledech vypracovány v souladu s příslušnými právními předpisy. Tímto posouzením se rozumí, zda ostatní informace splňují požadavky právních předpisů na formální náležitosti a postup vypracování ostatních informací v kontextu významnosti (materiality), tj. zda případné nedodržení uvedených požadavků by bylo způsobilé ovlivnit úsudek činěný na základě ostatních informací.

Na základě provedených postupů, do míry, již dokážeme posoudit, uvádíme, že

- ostatní informace, které popisují skutečnosti, jež jsou též předmětem zobrazení v účetní závěrce, jsou ve všech významných (materiálních) ohledech v souladu s účetní závěrkou a
- ostatní informace byly vypracovány v souladu s právními předpisy.

Dále jsme povinni uvést, zda na základě poznatků a povědomí o Instituci, k nimž jsme dospěli při provádění auditu, ostatní informace neobsahují významné (materiální) věcné nesprávnosti. V rámci uvedených postupů jsme v obdržených ostatních informacích žádné významné (materiální) věcné nesprávnosti nezjistili.

Odpovědnost ředitele Instituce za účetní závěrku

Ředitel Instituce odpovídá za sestavení účetní závěrky podávající věrný a poctivý obraz v souladu s českými účetními předpisy a za takový vnitřní kontrolní systém, který považuje za nezbytný pro sestavení účetní závěrky tak, aby neobsahovala významné (materiální) nesprávnosti způsobené podvodem nebo chybou. Při sestavování účetní závěrky je ředitel Instituce povinen posoudit, zda je Instituce schopna nepřetržitě trvat a pokud je to relevantní, popsat v příloze účetní závěrky záležitosti týkající se jejího nepřetržitého trvání a použití předpokladu nepřetržitého trvání při sestavení účetní závěrky, s výjimkou případů, kdy ředitel plánuje zrušení Instituce nebo ukončení její činnosti, resp. kdy nemá jinou reálnou možnost, než tak učinit.

Za dohled nad procesem účetního výkaznictví v Instituci odpovídá ředitel.

Odpovědnost auditora za audit účetní závěrky

Naším cílem je získat přiměřenou jistotu, že účetní závěrka jako celek neobsahuje významnou (materiální) nesprávnost způsobenou podvodem nebo chybou a vydat zprávu auditora obsahující náš výrok. Přiměřená míra jistoty je velká míra jistoty, nicméně není zárukou, že audit provedený v souladu s výše uvedenými předpisy ve všech případech v účetní závěrce odhalí případnou existující významnou (materiální) nesprávnost. Nesprávnosti mohou vznikat v důsledku podvodů nebo chyb a považují se za významné (materiální), pokud lze reálně předpokládat, že by jednotlivě nebo v souhrnu mohly ovlivnit ekonomická rozhodnutí, která uživatelé účetní závěrky na jejím základě přijmou.

Při provádění auditu v souladu s výše uvedenými předpisy je naší povinností uplatňovat během celého auditu odborný úsudek a zachovávat profesní skepticismus. Dále je naší povinností:

- Identifikovat a vyhodnotit rizika významné (materiální) nesprávnosti účetní závěrky způsobené podvodem nebo chybou, navrhnout a provést auditorské postupy reagující na tato rizika a získat dostatečné a vhodné důkazní informace, abychom na jejich základě mohli vyjádřit výrok. Riziko, že neodhalíme významnou (materiální) nesprávnost, k níž došlo v důsledku podvodu, je větší než riziko neodhalení významné (materiální) nesprávnosti způsobené chybou, protože součástí podvodu mohou být tajné dohody, falšování, úmyslná opomenutí, nepravdivá prohlášení nebo obcházení vnitřních kontrol ředitelem.

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- Seznámit se s vnitřním kontrolním systémem Instituce relevantním pro audit v takovém rozsahu, abychom mohli navrhnout auditorské postupy vhodné s ohledem na dané okolnosti, nikoli abychom mohli vyjádřit názor na účinnost vnitřního kontrolního systému.
- Posoudit vhodnost použitých účetních pravidel, přiměřenost provedených účetních odhadů a informace, které v této souvislosti ředitel Instituce uvedl v příloze účetní závěrky.
- Posoudit vhodnost použití předpokladu nepřetržitého trvání při sestavení účetní závěrky ředitelem a to, zda s ohledem na shromážděné důkazní informace existuje významná (materiální) nejistota vyplývající z událostí nebo podmínek, které mohou významně zpochybnit schopnost Instituce trvat nepřetržitě. Jestliže dojdeme k závěru, že taková významná (materiální) nejistota existuje, je naší povinností upozornit v naší zprávě na informace uvedené v této souvislosti v příloze účetní závěrky, a pokud tyto informace nejsou dostatečné, vyjádřit modifikovaný výrok. Naše závěry týkající se schopnosti Instituce trvat nepřetržitě vycházejí z důkazních informací, které jsme získali do data naší zprávy.
Nicméně budoucí události nebo podmínky mohou vést k tomu, že Instituce ztratí schopnost trvat nepřetržitě.
- Vyhodnotit celkovou prezentaci, členění a obsah účetní závěrky, včetně přílohy a dále to, zda účetní závěrka zobrazuje podkladové transakce a události způsobem, který vede k věrnému zobrazení.

Naší povinností je informovat ředitele mimo jiné o plánovaném rozsahu a načasování auditu a o významných zjištěních, která jsme v jeho průběhu učinili, včetně zjištěných významných nedostatků ve vnitřním kontrolním systému.

Auditorská společnost

NBG, spol. s r. o.
Na Pankráci 1618/30, 140 00 Praha 4
Registrace: MS v Praze - oddíl C, vložka 34055
Číslo oprávnění Komory auditorů ČR 134

Realizační tým:

Statutární auditor: Ing. Tomáš Brumovský
číslo oprávnění KA ČR 0587

Asistent: Ing. Petr Holada

V Praze dne 20. dubna 2020

NBG, spol. s r.o.
Ing. Tomáš Brumovský
jednatel společnosti

Ing. Tomáš Brumovský
statutární auditor

PŘÍLOHY

ROZVAHA

ROZVAHA dle 504/2002 Sb. ve znění pro rok 2016

Obchodní firma nebo název účetní jednotky

Výzkumný ústav vodohospodářský T. G. VVI

Sídlo nebo bydliště účetní jednotky

Podbabská 2582/30
Praha 6
160 00

místo podnikání

k 31. 12. 2019

v tisících Kč

IČ	0	0	0	2	0	7	1	1

Označ.	AKTIVA		Řádek číslo	Účetní období: stav k prvnímu dni	Účetní období: k poslednímu dni
A.	Dlouhodobý majetek celkem	A.I.+...+A.IV.	001	329 610	340 982
A. I.	Dlouhodobý nehmotný majetek celkem	A.I.1+...+A.I.x	002	48 991	51 672
A. I. 1.	Nehmotné výsledky výzkumu a vývoje	účet 012	003		
2.	Software	účet 013	004	44 549	46 318
3.	Ocenitelná práva	účet 014	005	204	0
4.	Drobný dlouhodobý nehmotný majetek	účet 018	006	2 653	1 245
5.	Ostatní dlouhodobý nehmotný majetek	účet 019	007		
6.	Nedokončený dlouhodobý nehmotný majetek	účet 041	008	1 585	4 109
7.	Poskytnuté zálohy na dlouhodobý nehmotný majetek	účet 051	009		
A. II.	Dlouhodobý hmotný majetek celkem	A.II.1+...+A.II.x	010	717 721	732 645
A. II. 1.	Pozemky	účet 031	011	11 776	11 776
2.	Umělecká díla, předměty a sbírky	účet 032	012	100	100
3.	Stavby	účet 021	013	432 833	432 956
4.	Hmotné movité věci a jejich soubory	účet 022	014	243 572	258 835
5.	Pěstitelské celky trvalých porostů	účet 025	015		
6.	Dospělá zvířata a jejich skupiny	účet 026	016		
7.	Drobný dlouhodobý hmotný majetek	účet 028	017	29 332	26 218
8.	Ostatní dlouhodobý hmotný majetek	účet 029	018		
9.	Nedokončený dlouhodobý hmotný majetek	účet 042	019	108	2 731
10.	Poskytnuté zálohy na dlouhodobý hmotný majetek	účet 052	020	0	29
A. III.	Dlouhodobý finanční majetek celkem	A.III.1+...+A.III.x	021		
A. III. 1.	Podíly - ovládaná nebo ovládající osoba	účet 061	022		
2.	Podíly - podstatný vliv	účet 062	023		
3.	Dluhové cenné papíry držané do splatnosti	účet 063	024		
4.	Zápůjčky organizačním složkám	účet 066	025		
5.	Ostatní dlouhodobé zápůjčky	účet 067	026		
6.	Ostatní dlouhodobý finanční majetek	účet 069	027		
A. IV.	Oprávky k dlouhodobému majetku celkem	A.IV.1+...+A.IV.x	028	-437 102	-443 355
A. IV. 1.	Oprávky k nehmotným výsledkům výzkumu a vývoje	účet 073	029		
2.	Oprávky k software	účet 073	030	-38 679	-40 491
3.	Oprávky k ocenitelným právům	účet 074	031	-204	0
4.	Oprávky k drobnému dlouhodobému nehmotnému majetku	účet 078	032	-2 653	-1 245
5.	Oprávky k ostatnímu dlouhodobému nehmotnému majetku	účet 079	033		
6.	Oprávky ke stavbám	účet 081	034	-150 373	-158 905
7.	Oprávky k samostatným hmotným movitým věcem a souborům hmotných movitých věcí	účet 082	035	-215 861	-216 497
8.	Oprávky k pěstitelským celkům trvalých porostů	účet 085	036		
9.	Oprávky k základnímu stádu a tažným zvířatům	účet 086	037		
10.	Oprávky k drobnému dlouhodobému hmotnému majetku	účet 088	038	-29 332	-26 217
11.	Oprávky k ostatnímu dlouhodobému hmotnému majetku	účet 089	039		
B.	Krátkodobý majetek celkem	B.I.+...+B.IV.	040	62 702	82 433
B. I.	Zásoby celkem	B.I.1+...+B.I.x	041	57	22
B. I. 1.	Materiál na skladě	účet 112	042	57	22
2.	Materiál na cestě	účet 119	043		

Označ.	AKTIVA		Číslo řádku	Účetní období	
				stav k prvnímu dni	k poslednímu dni
3.	Nedokončená výroba	účet 121	044		
4.	Polotovary vlastní výroby	účet 122	045		
5.	Výrobky	účet 123	046		
6.	Mláďata a ostatní zvířata a jejich skupiny	účet 124	047		
7.	Zboží na skladě a v prodejnách	účet 132	048		
8.	Zboží na cestě	účet 139	049		
9.	Poskytnuté zálohy na zásoby	účet 314	050		
B. II.	Pohledávky celkem	B.II.1+...+B.II.9	051	9 721	9 679
B. II. 1.	Odběratelé	účet 311	052	9 166	8 987
2.	Směnky k inkasu	účet 312	053		
3.	Pohledávky za eskontované cenné papíry	účet 313	054		
4.	Poskytnuté provozní zálohy	účet 314 - 1, 31	055	483	571
5.	Ostatní pohledávky	účet 315	056		25
6.	Pohledávky za zaměstnanci	účet 335	057	2	83
7.	Pohledávky za institucemi sociálního zabezpečení a veřejného zdravotního pojištění	účet 336	058		
8.	Daň z příjmů	účet 341	059	70	0
9.	Ostatní přímé daně	účet 342	060		
10.	Daň z přidané hodnoty	účet 343	061		
11.	Ostatní daně a poplatky	účet 345	062	0	13
12.	Nároky na dotace a ostatní zúčtování se státním rozpočtem	účet 346	063		
13.	Nároky na dotace a ostatní zúčtování s rozpočtem orgánů územních samosprávných celků	účet 348	064		
14.	Pohledávky za společníky sdruženými ve společnosti	účet 366	065		
15.	Pohledávky z peněžních terminovaných operací a opcí	účet 373	066		
16.	Pohledávky z vydaných dluhopisů	účet 375	067		
17.	Jiné pohledávky	účet 378	068		
18.	Dohadné účty aktivní	účet 388	069		
19.	Opravná položka k pohledávkám	účet 391	070		
B. III.	Krátkodobý finanční majetek celkem	B.III.1+...+B.III.x	071	49 945	60 853
B. III. 1.	Peněžní prostředky v pokladně	účet 211	072	109	131
2.	Ceniny	účet 213	073	22	24
3.	Peněžní prostředky na účtech	účet 221	074	49 814	60 698
4.	Majetkové cenné papíry k obchodování	účet 251	075		
5.	Dluhové cenné papíry k obchodování	účet 253	076		
6.	Ostatní cenné papíry	účet 256	077		
7.	Pentze na cestě	účet 261	078		
B. IV.	Jiná aktiva celkem	B.IV.1+...+B.IV.x	079	2 979	11 879
B. IV. 1.	Náklady příštích období	účet 381	080	401	695
2.	Příjmy příštích období	účet 385	081	2 578	11 184
	AKTIVA CELKEM	A+B	082	392 312	423 395

Označ.	PASIVA		Číslo řádku	Účetní období	
				stav k prvnímu dni	k poslednímu dni
A.	Vlastní zdroje celkem	A.I.+...+A.III.	001	363 021	382 266
A. I.	Jmění celkem	A.I.1.+...+A.I.4.	002	355 294	370 786
A. I. 1.	Vlastní jmění	účet 901	003	332 503	343 719
2.	Fondy	účet 911	004	22 791	27 067
3.	Oceňovací rozdíly z přecenění finančního majetku a závazků	účet 921	005		
A. II.	Výsledek hospodaření celkem	A.II.1.+...+A.II.4.	006	7 727	11 480
A. II. 1.	Účet výsledku hospodaření	účet +/-963	007	xxxxxxxxxxxx	11 480
2.	Výsledek hospodaření ve schvalovacím řízení	účet +/-931	008	7 727	xxxxxxxxxxxx
3.	Neuzavřený zisk, neuhrazená ztráta minulých let	účet +/-932	009		
B.	Cizí zdroje celkem	B.I.+...+B.IV.	010	29 291	41 129
B. I.	Rezervy celkem	B.I.1.+...+B.I.4.	011		
B. I. 1.	Rezervy	účet 941	012		
B. II.	Dlouhodobé závazky celkem	B.II.1.+...+B.II.4.	013		
B. II. 1.	Dlouhodobé úvěry	účet 951	014		
2.	Vydané dluhopisy	účet 953	015		
3.	Závazky z pronájmu	účet 954	016		
4.	Přijaté dlouhodobé zálohy	účet 955	017		
5.	Dlouhodobé směnky k úhradě	účet 958	018		
6.	Dohadné účty pasivní	účet 389	019		
7.	Ostatní dlouhodobé závazky	účet 959	020		
B. III.	Krátkodobé závazky celkem	B.III.1.+...+B.III.4.	021	28 561	40 186
B. III. 1.	Dodavatelé	účet 321	022	2 031	1 001
2.	Směnky k úhradě	účet 322	023		
3.	Přijaté zálohy	účet 324	024	0	285

Označ.	PASIVA		číslo řádku	Účetní období	
				stav k prvnímu dni	k poslednímu dni
4.	Ostatní závazky	účet 325	025		
5.	Zaměstnanci	účet 331	026	5 358	6 278
6.	Ostatní závazky vůči zaměstnancům	účet 333	027		
7.	Závazky k institucím sociálního zabezpečení a veřejného zdravotního pojištění	účet 336	028	3 007	3 621
8.	Daň z příjmů	účet 341	029	0	797
9.	Ostatní přímé daně	účet 342	030	834	1 105
10.	Daň z přidané hodnoty	účet 343	031	3 138	5 880
11.	Ostatní daně a poplatky	účet 345	032	5	0
12.	Závazky ze vztahu k státnímu rozpočtu	účet 346	033	14 335	20 974
13.	Závazky ze vztahu k rozpočtu orgánů územních samosprávných celků	účet 348	034		
14.	Závazky z upsaných nesplacených cenných papírů a podílů	účet 367	035		
15.	Závazky ke společníkům sdruženým ve společnosti	účet 368	036		
16.	Závazky z peněžních termínovaných operací a opcí	účet 373	037		
17.	Jiné závazky	účet 379	038	-203	167
18.	Krátkodobé úvěry	účet 231	039		
19.	Eskontní úvěry	účet 232	040		
20.	Vydané krátkodobé dluhopisy	účet 241	041		
21.	Vlastní dluhopisy	účet 249	042		
22.	Dohadné účty pasivní	účet 389	043	56	78
23.	Ostatní krátkodobé finanční výpomoci	účet 249	044		
B. IV.	Jiná pasiva celkem	B.IV.1+...+B.IV.4	045	730	943
B. IV. 1.	Výdaje příštích období	účet 383	046	730	943
2.	Výnosy příštích období	účet 384	047		
	PASIVA CELKEM	A.+B.	048	392 312	423 395

Okamžik sestavení: 6.4.2020	Podpisový záznam statutárního orgánu účetní jednotky:
Právní forma účetní jednotky:	Ing. Urban Tomáš
Předmět činnosti nebo účel: Ostatní výzkum a vývoj v oblasti přírodních a technických věd Ostatní výzkum a vývoj v oblasti přírodních a technických věd	

VÝKAZ ZISKU A ZTRÁTY

VZZ dle 504/2002 Sb. ve znění pro rok 2019

k 31.12.2019

Od: 1.1.2019 Do: 31.12.2019

v tisících Kč

IČ 0 0 0 2 0 7 1 1

místo pro otisk razítka

Obchodní firma nebo název účetní jednotky

Výzkumný ústav vodohospodářský T. G. VVI

Sídlo nebo bydliště účetní jednotky

Podbabská 2582/30
Praha 6
160 00

Označ.	VÝKAZ ZISKU A ZTRÁTY		Číslo řádku	Běžné období Hlavní	Hospodářská	Celkem
A.	Náklady	A.I.+...+A.VIII.	001	194 539	11 061	205 600
A. I.	Spotřebované nákupy a nakupované služby	A.I.1+...+A.I.4	002	57 401	4 820	62 221
A. I. 1.	Spotřeba materiálu, energie a ostatních nesklladovaných dodávek	účty 501, 502, 503	003	15 917	1 320	17 237
2.	Prodané zboží	účet 504	004			
3.	Opravy a udržování	účet 511	005	5 954	285	6 239
4.	Náklady na cestovné	účet 512	006	2 785	151	2 936
5.	Náklady na reprezentaci	účet 513	007	76	709	785
6.	Ostatní služby	účet 518	008	32 669	2 355	35 024
A. II.	Změna stavu zásob vlastní činnosti a aktivace	A.II.1+...+A.II.4	009	-139	0	-139
A. II. 7.	Změna stavu zásob vlastní činnosti	účty 581, 582, 583, 584	010			
8.	Aktivace materiálu, zboží a vnitroorganizačních služeb	účty 571, 572	011			
9.	Aktivace dlouhodobého majetku	účty 575, 576	012	-139	0	-139
A. III.	Osobní náklady	A.III.1+...+A.III.4	013	113 335	5 136	118 471
A. III. 10.	Mzdové náklady	účet 521	014	82 157	3 739	85 896
11.	Zákonné sociální pojištění	účet 524	015	27 270	1 220	28 490
12.	Ostatní sociální pojištění	účet 525	016			
13.	Zákonné sociální náklady	účet 527	017	3 908	177	4 085
14.	Ostatní sociální náklady	účet 528	018			
A. IV.	Daně a poplatky	A.IV.1+...+A.IV.4	019	249	35	284
A. IV. 15.	Daně a poplatky	účty 531, 532, 538	020	249	35	284
A. V.	Ostatní náklady	A.V.1+...+A.V.4	021	4 433	200	4 633
A. V. 16.	Smluvní pokuty, úroky z prodlení, ostatní pokuty a penále	účty 541, 542	022	403	0	403
17.	Odpis nevymožitelné pohledávky	účet 543	023			
18.	Náhradové úroky	účet 544	024			
19.	Kursové ztráty	účet 545	025	92	66	158
20.	Dary	účet 546	026			
21.	Manka a škody	účet 548	027			
22.	Jiné ostatní náklady	účet 549	028	3 938	134	4 072
A. VI.	Odpisy, prodaný majetek, tvorba a použití rezerv a opravných položek	A.VI.1+...+A.VI.4	029	17 318	786	18 104
A. VI. 23.	Odpisy dlouhodobého majetku	účet 551	030	17 318	786	18 104
24.	Prodaný dlouhodobý majetek	účet 552	031			
25.	Prodané cenné papíry a podíly	účet 553	032			
26.	Prodaný materiál	účet 554	033			
27.	Tvorba a použití rezerv a opravných položek	účty 556, 559	034			
A. VII.	Poskytnuté příspěvky	A.VII.1+...+A.VII.4	035	109	1	110
A. VII. 28.	Poskytnuté členské příspěvky a příspěvky zúčtované mezi organizačními složkami	účty 581, 582	036	109	1	110
A. VIII.	Daň z příjmů	A.VIII.1+...+A.VIII.4	037	1 833	83	1 916
A. VIII. 29.	Daň z příjmů	účet 591	038	1 833	83	1 916
	Náklady celkem		039	194 539	11 061	205 600
B.	Výnosy		040	203 266	13 814	217 080
B. I.	Provozní dotace	B.I.1+...+B.I.4	041	119 920	0	119 920
B. I. 1.	Provozní dotace	účet 691	042	119 920	0	119 920
B. II.	Přijaté příspěvky	B.II.1+...+B.II.4	043			
B. II. 2.	Přijaté příspěvky zúčtované mezi organizačními složkami	účet 681	044			
3.	Přijaté příspěvky (dary)	účet 682	045			
4.	Přijaté členské příspěvky	účet 684	046			
B. III.	Tržby za vlastní výkony a za zboží	účty 601, 602, 603	047	64 246	11 947	76 193

Označ.	VÝKAZ ZISKU A ZTRÁTY		Číslo řádku	Běžné období		
				Hlavní	Hospodářská	Celkem
B. IV.	Ostatní výnosy	B.IV.1+...+B.IV.x	048	19 100	1 867	20 967
B. IV. 5.	Smluvní pokuty, úroky z prodlení, ostatní pokuty a penále	účty 641, 642	049			
6.	Platby za odepsané pohledávky	účet 643	050			
7.	Výnosové úroky	účet 644	051	24	1	25
8.	Kurzové zisky	účet 645	052	0	7	7
9.	Zúčtování fondů	účet 648	053	2 344	68	2 412
10.	Jiné ostatní výnosy	účet 649	054	16 732	1 791	18 523
B. V.	Tržby z prodeje majetku	B.V.1+...+B.V.x	055			
B. V. 11.	Tržby z prodeje dlouhodobého nehmotného a hmotného majetku	účet 652	056			
12.	Tržby z prodeje cenných papírů a podílů	účet 653	057			
13.	Tržby z prodeje materiálu	účet 654	058			
14.	Výnosy z krátkodobého finančního majetku	účet 655	059			
15.	Výnosy z dlouhodobého finančního majetku	účet 657	060			
	Výnosy celkem		061	203 266	13 814	217 080
C.	Výsledek hospodaření před zdaněním	B. - A.I.+...+A.VIII.x + D. +/-	062	10 560	2 836	13 396
D.	Výsledek hospodaření po zdanění	B. - A. + D. +/-	063	8 727	2 753	11 480

Okamžik sestavení: 8.4.2020	Podpisový záznam statutárního orgánu účetní jednotky:
Právní forma účetní jednotky:	Ing. Urban Tomáš
Předmět činnosti nebo účel: Ostatní výzkum a vývoj v oblasti přírodních a technických věd Ostatní výzkum a vývoj v oblasti přírodních a technických věd	

Výzkumný ústav
vodohospodářský
T. G. Masaryka
veřejná výzkumná instituce

Příloha k účetní závěrce za rok 2019

I. Obecné údaje

Popis účetní jednotky

název účetní jednotky: Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce

a) sídlo: Podbabská 2582/30, Praha 6, Česká republika
b) IČ: 00020711
c) právní forma: veřejná výzkumná instituce
d) rozvahový den: 31.12.2019
e) zřizovatel: Ministerstvo životního prostředí České republiky se sídlem Vršovická 65, Praha 10, 100 100, ČR
f) účel zřízení:
   - výzkum stavu, užívání a změn ekosystémů a jejich vazeb v krajině a souvisejících environmentálních rizik, hospodaření s odpady a obaly
   - odborná podpora ochrany vod, protipovodňové prevence a hospodaření s odpady a obaly, založená na uvedeném výzkumu

Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce, je zapsána v rejstříku veřejných výzkumných institucí vedeném Ministerstvem školství, mládeže a tělovýchovy ČR ke dni 1. ledna 2007.

Orgány účetní jednotky ke dni 31.12.2019

a) Ing. Tomáš Urban, ředitel

   Je statutárním orgánem a rozhoduje ve všech věcech veřejné výzkumné instituce, pokud nejsou zákonem svěřeny působnosti rady instituce, dozorčí rady nebo zřizovatele.

b) Rada VÚV T. G. Masaryka, v.v.i. ve složení:

Ing. Anna Hrabánková – interní členka a předsedkyně
Výzkumný ústav vodohospodářský T.G. Masaryka, veřejná výzkumná instituce Praha
Ing. Petr Tušil, Ph.D, MBA. – interní člen a místopředseda do 30. 4. 2019
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce, pobočka Ostrava
Ing. Miriam Dzuráková – interní členka
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce, pobočka Brno
Ing. Jiří Kučera – interní člen a místopředseda do 1. 5. 2019
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce,
Ing. Adam Vizina, Ph.D. – interní člen
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce,
Ing. Jaroslav Benes – externí člen
Povodí Vltavy, s.p. Praha

VÚV TGM Výzkumný ústav vodohospodářský T. G. Masaryka veřejná výzkumná instituce

Doc. Ing. Aleš Havlík, CSc. – externí člen
České vysoké učení technické, fakulta stavební, Praha
Ing. Jaroslav Kinkor – externí člen
Český hydrometeorologický ústav, Praha
Mg. Vít Kodeš, Ph.D. – externí člen
Český hydrometeorologický ústav, Praha

c) dozorčí rada VÚV T. G. Masaryka, v.v.i. ve složení:

Ing. Jan Landa – předseda,
Ministerstvo životního prostředí ČR, 1.náměstek ministra – ředitel sekce úřadu ministerstva
Ing. Berenika Peštová Ph. D.,
Ministerstvo životního prostředí ČR
Ing. Vladimír Sassman,
Ministerstvo životního prostředí ČR
Mgr. Ladislav Faigl
Ministerstvo zemědělství ČR
RNDr. Jan Daňhelka, Ph. D.
Český hydrometeorologický ústav
Ing. Roman Dvořák,
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce,

Osobní náklady

		Běžné účetní období v Kč, není-li uvedeno jinak
Zaměstnanci	průměrný evidenční přepočtený počet zaměstnanců	193,40
	z toho řídících pracovníků	14
Mzdové náklady	mzdové náklady celkem (bez OON)	85 895 908
	z toho řídících pracovníků	10 114 590
	OON	1 782 969
Sociální a zdravotní pojištění	sociální a zdravotní pojištění celkem	28 489 885
	z toho řídících pracovníků	3 417 742
Příděl sociálního fondu		1 674 207
Rada VÚV T. G. Masaryka, v.v.i.	odměny členům Rady VÚV T. G. Masaryka, v.v.i.	80000
	sociální a zdravotní pojištění	27040
Dozorčí rada VÚV T. G. Masaryka, v.v.i.	odměny členům Dozorčí rady VÚV T. G. Masaryka	70000
	sociální a zdravotní pojištění	23660
Bývalé statutární orgány a dozorčí orgány	vzniklé či sjednané penzijní závazky bývalých členů vyjmenovaných orgánů	—
	sociální náklady	—

Účetní jednotka neposkytla v roce 2019, které jsou statutárním orgánem, členům statutárních či jiných řídících dozorčích orgánů žádné půjčky, úvěry, zajištění jak v peněžní, tak nepeněžní formě. Nejsou známy žádné skutečnosti o účasti členů statutárních, kontrolních nebo jiných orgánů účetní jednotky a jejich rodinných příslušníků v osobách, s nimiž účetní jednotka uzavřela ve vykazovaném období obchodní smlouvy nebo jiné smluvní vztahy.

Účetní jednotka ke dni účetní závěrky nevykazuje žádné závazky a pohledávky vůči propojeným osobám.
Výzkumný ústav vodohospodářský T. G. Masaryka, v.v.i, je plátcem daně z přidané hodnoty s měsíčním zdaňovacím obdobím.
Příloha je zpracována v souladu se zákonem č. 563/1991 Sb. o účetnictví, v platném znění, a vyhláškou č. 504/2002 Sb., kterou se stanoví obsah účetní závěrky pro účetní jednotky, u kterých hlavním předmětem činnosti není podnikání, pokud účtují v soustavě podvojného účetnictví, v platném znění. Údaje vycházejí z účetních písemností účetní jednotky (účetní doklady, účetní knihy a ostatní účetní písemnosti) a z dalších podkladů, které má účetní jednotka k dispozici. Hodnotové údaje jsou vykázány v celých korunách českých, pokud není uvedeno jinak.

II. Informace o použitých účetních metodách, obecných účetních zásadách a způsobech oceňování

Předkládaná účetní závěrka byla zpracována v souladu se zákonem č. 563/1991 Sb. o účetnictví, v platném znění, a s vyhláškou č. 504/2002 Sb., kterou se stanoví obsah účetní závěrky pro účetní jednotky, u kterých hlavním předmětem činnosti není podnikání, pokud účtují v soustavě podvojného účetnictví, v platném znění.

Při stanovení rozsahu a způsobů vedení účetnictví se účetní jednotka řídí zákonem č. 563/1991 sb., kterou se stanoví obsah účetní závěrky pro účetní jednotky, u kterých hlavním předmětem činnosti není podnikání, pokud účtují v soustavě podvojného účetnictví, v platném znění.

Obecné informace
Účetní jednotka vede podvojné účetnictví v plném rozsahu. Účetním obdobím je kalendářní rok.
V souladu § 29 zákona č. 341/2005 Sb. a § 20 zákona č. 563/1991 Sb. o účetnictví, v platném znění je VÚV T. G. Masaryka, v.v.i., povinen mít účetní závěrku ověřenou auditorem.
Účetní data se zpracovávají s použitím účetního programu ORSOFT firmy ORTEX, spol. s r.o., se sídlem Hradec Králové, Resslova 935/3, PSČ 500 02.
Účetní záznamy se uchovávají v sídle účetní jednotky.

Změny v účetní metodice
Ve sledovaném účetním období nedošlo k podstatným změnám způsobu oceňování, postupu odpisování a postupu účtování oproti předcházejícímu účetnímu období.
Účetní jednotka plně respektuje účetní metody a nedošlo k odchýlení od těchto metod ve smyslu §7 odst. 5 zákona č. 563/1991 Sb., o účetnictví v platném znění.

Účtování a ocenění zásob
Pořízení a úbytek zásob se účtuje: pracoviště Praha – způsobem A, pracoviště Brno a Ostrava – způsobem B.

Způsob ocenění zásob:
- pořízení od jiných subjektů – pořizovací cenou
- vytvořených vlastní činností – vlastními náklady
- pořízených bezúplatně, nalezených zásob, přebytků – reprodukční cenou

Zásoby stejného druhu jsou vedeny v ceně zjištěné váženým aritmetickým průměrem z pořizovacích cen nebo vlastních nákladů. Vyskladnění zásob se oceňuje v cenách, v nichž jsou zásoby oceněny na skladě.

Ocenění dlouhodobého hmotného a nehmotného majetku

NBG, spol. s r.o.
Na Pankráci 1658/30, 140 00 Praha
DIČ: CZ60587368, email: nbg@nbg.cz
Tel.: 234633231, Fax: 234633231

Dlouhodobým hmotným majetkem se rozumí majetek, jehož cena je vyšší než 40.000 Kč a doba použitelnosti delší než 1 rok.
Dlouhodobým nehmotným majetkem se rozumí majetek, jehož cena je vyšší než 60.000 Kč a doba použitelnosti delší než 1 rok.
Způsob ocenění dlouhodobého hmotného a nehmotného majetku:

- pořízeného od jiných subjektů – pořizovací cenou
- vytvořeného vlastní činností – vlastními náklady
- pořízeného bezúplatně, nalezeného – reprodukční cenou

Ocenění podílů a cenných papírů
Podíly a cenné papíry nejsou evidovány

Odpisování

a) v r. 2019 drobný hmotný majetek s pořizovací cenou do 40.000 Kč při jeho zařazení do užívání byl jednorázově účtován do nákladů na účet 501 – Spotřeba materiálu. Drobný hmotný majetek s pořizovací cenou do 1.000 Kč a majetek s pohyblivým el. přívodem pod 1.000 Kč byl po předchozím zaevidování v operativní evidenci veden na podrozvahových účtech
b) v r. 2019 drobný nehmotný majetek s pořizovací cenou do 60.000 Kč při jeho zařazení do užívání byl jednorázově účtován do nákladů na účet 518 – Ostatní služby. Drobný nehmotný majetek s pořizovací cenou od 1.000 Kč byl po předchozím zaevidování v operativní evidenci veden na podrozvahových účtech
c) v r. 2019 účetní jednotka pokračovala v účetním odepisování dlouhodobého hmotného a nehmotného majetku, převedeného na ni zřizovatelem, způsobem započatým příspěvkovou organizací

Pro odpisování dlouhodobého investičního majetku jak převedeného zřizovatelem, tak i nabytého od r. 2007 se používal způsob rovnoměrného odpisování. Účetní odpisy se účtovaly měsíčně.
Daňové odpisy účetní jednotka uplatňuje pouze z dlouhodobého investičního majetku pořízeného od 1. 1. 2007 z vlastních zdrojů. Majetek je zatříděn do odpisových skupin dle přílohy č. 1 k zákonu č. 586/1992 Sb., o daních z příjmů, v platném znění.

d) Drobný dlouhodobý hmotný a nehmotný majetek evidovaný k 1. 1. 2007 na účtech 028 a 018 se účtuje na těchto účtech i nadále až do jeho vyřazení

Přepočet údajů v cizí měně na českou měnu
Pro přepočet údajů v cizích měnách na českou měnu se používal denní kurz ČNB. Pro přepočet pohledávek vyjádřených v cizí měně a evidovaných k rozvahovému dni byl použit kurz ČNB k 31. 12. 2019.

Opravné položky
Účetní jednotka netvořila v r. 2019 opravné položky.

Výzkumný ústav vodohospodářský T. G. Masaryka
veřejná výzkumná instituce

III. Doplňující informace k rozvaze a k výkazu zisku a ztráty

Významné položky aktiv a pasiv

Rozpis položky Samostatné movité věci a soubory movitých věcí

Skupina	Běžné účetní období		Minulé účetní období	
	PC (účet 022)	Oprávky (účet 082)	PC (účet 022)	Oprávky (účet 082)
Stroje, přístroje a zařízení	215 092 237	180 909 135	199 863 686	180 270 286
Výpočetní technika	17 420 465	15 339 694	18 836 921	15 801 096
Dopravní prostředky	12 044 213	8 363 624	10 802 006	7 872 885
Inventář	12 128 634	11 884 350	11 919 258	11 919 258
Předměty z drahých kovů	2 149 998	---	2 149 998	---
CELKEM	**258 835 548**	**216 496 804**	**243 571 869**	**215 860 524**

V běžném účetním období účetní jednotka uvedla do provozu dlouhodobý hmotný a nehmotný majetek v celkové pořizovací ceně **17 602 279 Kč**. Z evidence byl likvidací vyřazen dlouhodobý hmotný a nehmotný majetek v celkové pořizovací ceně **5 557 561 Kč**.

Významné položky výkazu zisku a ztráty

Jelikož dlouhodobý hmotný a nehmotný majetek pořízený z vlastních zdrojů používá účetní jednotka pro všechny své činnosti, byly odpisy tohoto majetku zahrnuty do režijních nákladů a rozpuštěny mezi všemi činnostmi níže popsaným způsobem.

Rozpouštění režijních nákladů

Jako rozvrhová základna pro rozdělení režijních nákladů mezi jednotlivými činnostmi pro účely zpracování účetní závěrky za rok 2019 posloužily přímé osobní náklady.

Ve výsledku byly režijní náklady rozpuštěny v poměru:

- hlavní činnost: 79,42%
- další činnost: 16,24%
- jiná činnost: 4,34%

Rozpis provozních a investičních dotací z veřejného rozpočtu

Účel dotace	Poskytovatel	Druh dotace (provozní/investiční)	Běžné účetní období v Kč	Minulé účetní období v Kč
Institucionální podpora na dlouhodobý koncepční rozvoj výzkumné organizace	MŽP ČR	neinvestiční	46 369 321	46 098 671
Účelová na VVaI	MZe, TA ČR, MV ČR, Min. kultury, GA ČR, ČRA, MŽP	neinvestiční	77 990 913	29 075 027
Ostatní	Cíl 3, Interreg, MHMP, OPŽP, NF aj.	neinvestiční	13 381 333	59 980 291
Dotace provozní celkem			**137 741 567**	**135 153 989**
Institucionální podpora na dlouhodobý koncepční rozvoj výzkumné organizace	MŽP	investiční	25 000 000	24 000 000
Účelová na VVaI, ostatní		investiční	0	70 000
Dotace investiční celkem			**25 000 000**	**24 070 000**

Výzkumný ústav vodohospodářský T. G. Masaryka
veřejná výzkumná instituce

Rozpis majetku zatíženého zástavním právem
Účetní jednotka nemá k datu závěrky hmotný a nehmotný majetek zatížený zástavním právem, popř. u nemovitostí věcným břemenem.

Přehled majetku s výrazně rozdílným tržním a účetním ohodnocením
Hodnota majetku je vyjádřena v historických cenách, jelikož k tržnímu ocenění majetku v r. 2019 nedošlo. Tržní ohodnocené se zjišťuje vždy při prodeji majetku.

Rezervy
V uplynulém účetním období nebyly čerpány a tvořeny rezervy.

Rozpis dlouhodobých bankovních úvěrů
Účetní jednotka neměla v účetním období dlouhodobé bankovní úvěry.

Pohledávky z obchodního styku po lhůtě splatnosti

Počet dnů	Běžné účetní období/z obchodního styku/Kč		Minulé účetní období/z obchodního styku/Kč	
	tuzemské	zahraniční	tuzemské	zahraniční
do 90 dnů	6 540	---	-------	---
91 – 180 dnů	---	---	---	---
181 – 360 dnů	---	---	---	---
nad 360 dnů	-----	---	49 849	---

Závazky po lhůtě splatnosti

Počet dnů	Běžné účetní období/z obchodního styku/Kč		Minulé účetní období/z obchodního styku/Kč	
	tuzemské	zahraniční	tuzemské	zahraniční
do 90 dnů	---	---	---	---
91 – 180 dnů	---	---	---	---
181 – 360 dnů	---	---	---	---
nad 360 dnů	---	---	---	---

Splatné závazky pojistného na sociální zabezpečení a příspěvku na státní politiku zaměstnanosti, veřejného zdravotního pojištění a evidované daňové nedoplatky u místně příslušných finančních orgánů

POJISTNÉ NA SOCIÁLNÍ ZABEZPEČENÍ A PŘÍSPĚVKU NA STÁTNÍ POLITIKU ZAMĚSTNANOSTI			
Závazek vůči	Částka v Kč	Datum vzniku	Splatnost
ČSSZ	2 529 356	31. 12. 2019	8. 1. 2020

POJISTNÉ NA VEŘEJNÉ ZDRAVOTNÍ POJIŠTĚNÍ			
Závazek vůči	Částka v Kč	Datum vzniku	Splatnost
VZP ČR	656 757	31. 12. 2019	8. 1. 2020
VoZP ČR	60 979	31. 12. 2019	8. 1. 2020
OZP	187 867	31. 12. 2019	8. 1. 2020
Česká průmyslová ZP	44 847	31. 12. 2019	8. 1. 2020
Revírní bratrská pokladna	28 495	31. 12. 2019	8. 1. 2020
ZPMV ČR	112 714	31. 12. 2019	8. 1. 2020

Výzkumný ústav
vodohospodářský
T. G. Masaryka
veřejná výzkumná instituce

DAŇOVÉ ZÁVAZKY VŮČI MÍSTNĚ PŘÍSLUŠNÝM FINANČNÍM ORGÁNŮM			
Závazek vůči	**Částka v Kč**	**Datum vzniku**	**Splatnost**
Daň vybíraná srážkou podle zvláštní sazby z příjmů fyzických osob	18 091	31. 12. 2019	8. 1. 2020
Daň z příjmů fyzických osob ze závislé činnosti a funkčních požitků	1 086 440	31. 12. 2019	8. 1. 2020
DPH, vlastní daňová povinnost	5 880 156	31. 12. 2019	24. 1. 2020

Všechny uvedené zakázky byly zaplaceny v r. 2020 ve lhůtě splatnosti.

Pohledávky a závazky, které vznikly v r. 2019 a u kterých zbytková doba splatnosti k 31. 12. 2019 přesahuje 5 let
Pohledávky a závazky, které vznikly v r. 2019 a u kterých zbytková doba splatnosti k 31. 12. 2019 přesahuje 5 let, nejsou k rozvahovému dni evidovány.

Závazky, které nejsou obsaženy v rozvaze
Účetní jednotka neeviduje závazky, které nejsou obsaženy v rozvaze.

Poskytnuté záruky
Účetní jednotkou nebyly poskytnuty žádné záruky.

Pronajatý majetek (vlastní) uvedený v rozvaze
Není evidován.

Pronajatý majetek (cizí) uvedený v rozvaze
Není evidován.

Drobný majetek neuvedený v rozvaze
Hodnota drobného majetku neuvedeného v rozvaze a evidovaného v operativní evidenci ke dni 31. 12. 2019 tvoří **46 863 601 Kč**.

Leasingy – finanční pronájem
Účetní jednotka neevidovala v účetním období smlouvy o finančním pronájmu (leasingové smlouvy).

Dary přijaté a poskytnuté
Účetní jednotka nepřijala a neposkytla ve sledovaném účetním období žádné dary.

Odložený daňový závazek nebo pohledávka
Účetní jednotka dle platné legislativy není povinná účtovat o odložené dani.

Výsledek hospodaření v tis. Kč

Výsledek hospodaření za rok 2019 celkem		11 480
Z toho	hlavní činnost	8 727
	vedlejší a jiná	2 753

Výzkumný ústav vodohospodářský T. G. Masaryka
veřejná výzkumná instituce

Vlastní kapitál v tis. Kč

	Stav k 31. 12. 2019	Stav k 31. 12. 2018
Vlastní jmění	343 719	332 503
Nerozdělený zisk/neuhrazená ztráta minulých let	—	—
Rezervní fond	22 147	19 420
Fond reprodukce majetku	3 608	2 135
Fond účelově určených prostředků	837	844
Sociální fond	475	392
Hospodářský výsledek běžného období po zdanění	11 480	7 727
Vlastní kapitál celkem	**382 266**	**363 021**

Vlastní jmění

Vlastní jmění účetní jednotky tvoří:

- majetek, který přešel na VÚV T. G. Masaryka, v.v.i. podle § 31 zákona č. 341/2005 Sb., o veřejných výzkumných institucích, snížený o závazky související s tímto majetkem a převedené na účetní jednotku zřizovatelem podle výše zmíněného zákona
- dlouhodobý majetek pořízený od 1. 1. 2007 z dotací
- dlouhodobý majetek pořízený od 1. 1. 2007 z vlastních zdrojů

Hodnotu vlastního jmění snižují účetní odpisy majetku pořízeného z vlastních zdrojů, které zároveň zvyšují fond reprodukce majetku a účetní odpisy majetku pořízeného z dotací, které současně zvyšují výnosy.

Fondy

V souladu se zákonem č. 341/2005 Sb., o veřejných výzkumných institucích, v platném znění tvoří účetní jednotka tyto fondy:

- rezervní fond
- fond účelově určených prostředků
- fond sociální
- fond reprodukce majetku

V roce 2019 se fond reprodukce majetku tvořil z účetních odpisů dlouhodobého majetku. Prostředky fondu se používaly na pořízení majetku, jeho technické zhodnocení, k financování oprav a udržování majetku.
V roce 2019 nedošlo k použití prostředků rezervního fondu.
Zdrojem sociálního fondu je základní příděl na vrub nákladů účetní jednotky ve výši 2% z ročního objemu nákladů zúčtovaných na mzdy, náhrada mzdy a odměny za pracovní pohotovost.

Významné události po datu účetní závěrky

U účetní jednotky nedošlo k významným událostem po datu vzniku účetní závěrky.

Zjištění základu daně z příjmu právnických osob a daňové povinnosti

V souladu s ustanovením zákona č. 586/1992 Sb., o daních z příjmu, ve znění pozdějších předpisů byly provedeny úpravy účetního výsledku hospodaření na základ daně z příjmu a byla zjištěna výsledná daňová povinnost za rok 2019
Tato daňová povinnost byla následně zaúčtována jako účetní případ roku 2019 a bude vypořádána ve stanoveném termínu v roce 2020.

Způsob vypořádání výsledku hospodaření za rok 2018

NBG spol. s r.o.
Na Pankráci 1618/30, 140 00 Praha 4
DIČ: CZ02567358 email: nbg@nbg.cz
Tel.: 234633211 Fax: 234633230

Výzkumný ústav
vodohospodářský
T. G. Masaryka
veřejná výzkumná instituce

Kladný hospodářský výsledek za rok 2018 ve výši 7 727 tis Kč byl v plné výši použit na naplnění rezervního fondu.

Návrh na vypořádání hospodářského výsledku roku 2019
Navrhuje se převod kladného hospodářského výsledku za rok 2019 ve výši 11 480 tis Kč po zdanění do rezervního fondu. O hospodářském výsledku za rok 2019 nebylo ke dni účetní závěrky příslušnými orgány účetní jednotky definitivně rozhodnuto.

V Praze dne: - 8 - 04 - 2020

Přílohu sestavil:

Ing. Jiří Fiala
vedoucí odboru ekonomiky

Statutární orgán účetní jednotky:

Ing. Tomáš Urban
ředitel

NBG spol. s r.o.
Na Poříční 1518/30, 140 00 Praha 4
DIČ: CZ62687368, email: nbg@nbg.cz
Tel.: 234633231, Fax: 234633230

Příloha k účetní závěrce za rok 2019
9

STATEMENT OF TGM WRI, P.R.I., COUNCIL ON THE ANNUAL REPORT 2019

Dozorčí rada
Výzkumného ústavu vodohospodářského T. G. Masaryka,
veřejné výzkumné instituce
Podbabská 30, 160 00 Praha 6

Vyjádření

Dozorčí rady Výzkumného ústavu vodohospodářského T. G. Masaryka,
veřejné výzkumné instituce,

k návrhu Výroční zprávy 2019

(ve smyslu § 19 odst. (1) písm. i) zákona č. 341/2005 Sb., o veřejných výzkumných institucích, ve znění pozdějších předpisů)

a k hospodaření VÚV TGM, v. v. i., v roce 2019

(ve smyslu § 19 odst. (1) písm. g) zákona č. 341/2005 Sb., o veřejných výzkumných institucích, ve znění pozdějších předpisů).

Dozorčí rada VÚV TGM, v. v. i., bere po projednání předložený návrh **Výroční zprávy 2019** na vědomí a doporučuje její schválení v Radě VÚV TGM, v. v. i. Všechny věcné dotazy byly uspokojivě zodpovězeny.

Dozorčí rada VÚV TGM, v. v. i., bere po projednání bez připomínek na vědomí **výsledky hospodaření VÚV TGM, v. v. i., v roce 2019** obsažené ve Výroční zprávě 2019. Všechny věcné dotazy byly uspokojivě zodpovězeny.

V Praze dne 13. května 2020

Ing. Jan Landa
předseda Dozorčí rady VÚV TGM, v. v. i.

Rada VÚV TGM, v. v. i.
zde

Vážený pan
Ing. Tomáš Urban
ředitel VÚV TGM, v. v. i.
zde

STATEMENT OF TGM WRI, P.R.I., SUPERVISORY BOARD ON THE ANNUAL REPORT 2019

Rada
Výzkumného ústavu vodohospodářského T. G. Masaryka,
veřejné výzkumné instituce

V Praze dne 3. 6. 2020

Č.j.: VÚV – 2020/01362

USNESENÍ RU/58/1

ve věci projednané na 58. zasedání Rady VÚV TGM, v. v. i.,

které se konalo dne 2. června 2020 v Praze.

Rada Výzkumného ústavu vodohospodářského T. G. Masaryka, v. v. i. schvaluje v souladu s § 18, odst. (2) písmene e) zákona č. 341/2005 Sb., ve znění pozdějších předpisů Výroční zprávu za rok 2019.

Pro: 8 Proti 0 Zdržel se: 0

USNESENÍ RU/58/2

ve věci projednané na 58. zasedání Rady VÚV TGM, v. v. i.,

které se konalo dne 2. června 2020 v Praze.

Rada Výzkumného ústavu vodohospodářského T. G. Masaryka, v. v. i. v souladu s § 18, odst. (2) písmene e) zákona č. 341/2005 Sb., ve znění pozdějších předpisů schvaluje bez výhrad Účetní závěrku za rok 2019.

Pro: 6 Proti: 2 Zdržel se: 0

Hlasující *Proti* uvedli tyto výhrady:

Závěrka obsahuje na více místech chybné roky a chyby ve jménech členů Rady.

Ing. Anna Hrabánková
předsedkyně Rady VÚV TGM, v. v. i.

Usnesení ze zasedání Rady VÚV TGM, v. v. i.
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