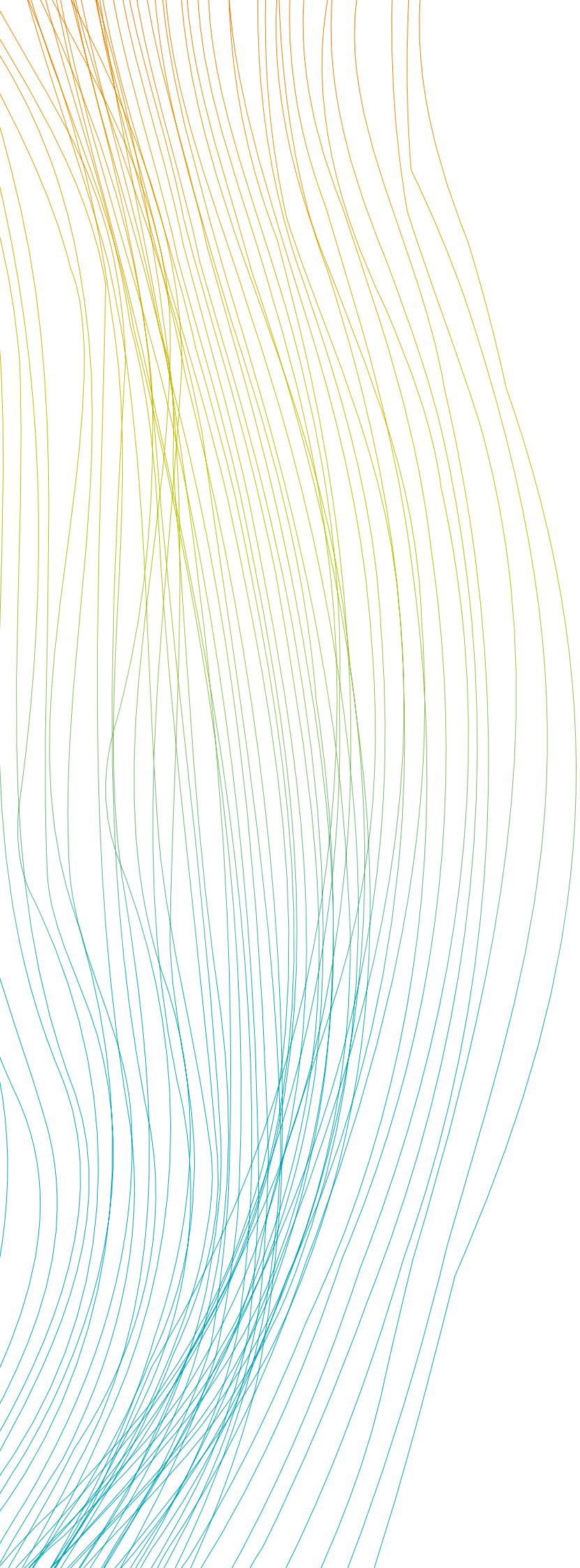
ANNUAL REPORT

2017



VÚV TGM

ANNUAL REPORT 2017

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

Prague 2018

Index

INTRODUCTION

In 2017, T. G. Masaryk Water Research Institute, public research institution (Institute), continued in direction set in previous years.

The most significant change was the change in the top management of the Institute, when Mgr. Mark Rieder, who was leading the Institute since mid-2007, won the tender for the director of the Czech Hydrometeorological Institute and left the Institute. In the last quarter of 2017, the Institute was directed by the Deputy Director for Research and Professional Activities Ing. Petr Bouška, Ph.D., on the basis of a mandate.

The decision-making on research support, experimental development and innovation from public funds was transferred from the Ministry of Education Youth and Sports to the Ministry of the Environment. Regarding the Institute, this change was very positive, because the Ministry of the Environment set criteria for evaluation that were closer to the focus of the Institute. Strategy for professional growth of the Institute for the next years was defined in the document The Long-term Development Concept of the Research Organization for the Period 2018–2022. The rules of development according to Methodology 17+ were also defined by the Ministry of the Environment.

Regarding the economy, 2017 ended successfully. The synergy of several factors even led to a positive economic result and a profit of CZK 18 million before tax. These factors were: economic measures from previous years, little investment and a short time to conclude large contracts. This surplus was used to supplement the reserve fund.

The revenue structure for 2017 confirmed the trend of a gradual increase in revenue from commercial contract as a tool to ensure the Institution's operation in the case of a lack of support from public resources. Increasing economic stability, however, is usually closely linked to increasing labour productivity and consequently decreasing the number of employees. This trend is also evident in the results of the Institute in 2017 and is visible both in the number of recalculated and physical employees, and is most evident in the gradual reduction of the research and expert employees. On the other hand, however, the prospect of sustaining labour productivity allowed a bulk increase in salaries for all employees by 8.9%, thus increasing the competitiveness of the Institute on the current work market.

The increase in the number of staff engaged in scientific and research activities and the creation of conditions for research, following the long-term development concept, remain the main task for management in the next years.

Last year was again characterized by hydrometeorological extremes. Predominantly, the drought phenomenon prevailed.

The key projects, processed in 2017, focused on drought management either directly by creating a concept of drought protection (ordered by the Ministry of the Environment) or indirectly through water management and water resources protection within the Pole of Growth project prepared for the Prague City Hall.

The long-term project of the Ministry of the Environment "Support to the performance of state administration" is also one of main projects in 2017. Through this project, the institute was involved in the activities of the Ministry at the national and, above all, international level.

The year 2017 was a period that was the stepping stone for getting the economic stability of the Institute and the condition for the possibility of further development.

Subsidies and contracts financed from public funds have allowed the normal scope of the Institute's professional activities to be maintained, and commercial contracts have ensured the necessary profitability.

It is important to thank employees at all levels and in all locations, including the former director, for achieving a result that is a sound basis for fulfilling tasks and resolutions that could not be realized in the past.

Ing. Tomáš Urban

the director of the public research institution

BASIC INFORMATION

Name	T. G. Masaryk Water Research Institute, public research institution
Address	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	Ministry of the Environment
Address of the founder	Vršovická 1442/65, 100 10 Prague 10
Identification number of the founder	00164801

Contacts

T. G. Masaryk Water Research Institute, public research institution
Podbabská 2582/30, 160 00 Prague 6
tel.: +420 220 197 111, info@vuv.cz, www.vuv.cz

Brno Branch

Mojmírovo nám. 16, 612 00 Brno-Královo Pole
tel.: +420 541 126 311, info.brno@vuv.cz

Ostrava Branch

Macharova 5, 702 00 Ostrava
tel.: +420 595 134 800, 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 a statutory body and decides on all matters of a public research institution unless it is legally entrusted to the council of the institution, the supervisory board or the founder,
- the Council of the TGM WRI, p. r. i.,
- Supervisory Board of the TGM WRI, p. r. i.

Institute bodies and their members

Third regular elections of the Council of the TGM WRI, p. r. i., took place in February and March 2017. The director of the institution resigned as of 30th September 2017, consequently a tender was announced and, on 8 November 2017 the winning candidate for the position of the director of the institution was selected and nominated to the founder. Ing. Tomáš Urban was appointed as the new director effective January 1st 2018. In 2017, a new deputy Director for Research and Professional Activities was appointed.

A. Director:
   - till 30th September 2017, Mgr. Mark Rieder (appointed as a director since 1st January 2014),
   - from 1st October 2017, Ing. Petr Bouška, Ph.D., was responsible for the management of the institution,
   - from 1st January 2018 Ing. Tomáš Urban.

B. The Council of the TGM WRI, p. r. i., with effect until 6th March 2017:
   - Ing. Petr Tušil, Ph.D., MBA (TGM WRI, p. r. i., Ostrava Branch) – chairman,
   - RNDr. Dana Baudišová, Ph.D. (TGM WRI, p. r. i., Prague) – deputy chairman,
   - Ing. Eduard Hanslík, CSc. (TGM WRI, p. r. i., Prague),
   - Ing. Anna Hrabánková (TGM WRI, p. r. i., Prague),
   - Ing. Jaroslav Beneš (River Board Povodí Vltavy, s. e., Prague),
   - Ing. Rut Bízková (self-employed, Prague),
   - Mgr. Vít Kodeš, Ph.D. (CHMI, Prague).

Elected in the 3rd round of the 3rd election on March 6, 2017:
   - of researchers at 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) – deputy chairman,
     - Ing. Miriam Dzuráková (TGM WRI, p. r. i., Brno Branch),
     - Ing. Jiří Kučera (TGM WRI, p. r. i., Prague),
     - Ing. Adam Vizina, Ph.D. (TGM WRI, p. r. i., Prague),
   - external members:
     - Ing. Jaroslav Beneš (River Board Povodí Vltavy, s. e., Prague),
     - Ing. Jaroslav Kinkor (Ministry of the Environment),
     - Mgr. Vít Kodeš, Ph.D. (CHMI, Prague),
     - doc. Ing. Aleš Havlík, CSc. (Czech Technical University, Prague)

Secretary of the Council of TGM WRI, p. r. i., was Ing. Michal Vaculík (TGM WRI, p. r. i., Prague). Secretary of the Council is Ing. Luděk Strouhal, Ph.D. (TGM WRI, p. r. i., Prague) with effect from 1st October 2017.

C. Supervisory Board TGM WRI, p. r. i.:
As of 1st January 2018, the Supervisory Board TGM WRI, p. r. i., was composed:
   - Ing. Jan Landa (Ministry of the Environment) – chairman,
   - prof. Ing. Jiří Wanner, DrSc. (Institute of Chemical Technology, Prague) – deputy chairman, membership ended on 15th October 2017,
   - Ing. Berenika Peštová, Ph.D. (Ministry of the Environment),
   - Ing. Vladimír Sassmann (Ministry of the Environment),
   - Mgr. Ladislav Faigl (Ministry of Agriculture),
   - prof. RNDr. Jakub Hruška, CSc. (Czech Geological Survey) – membership ended on 22nd June 2017,
   - Ing. Roman Dvořák (TGM WRI, p. r. i.) – membership extended for second term of office from 13th November 2017,
   - RNDr. Jan Daňhelka, Ph.D. (Czech Hydrometeorological Institute) – new member appointed on 13th November 2017.

Secretary of the Council of TGM WRI, p. r. i., was Ing. Michal Vaculík from TGM WRI, p. r. i., Prague.

The Report on activity of the Council of the TGM WRI, p. r. i., in 2017

The new members of the Council of the TGM WRI, p. r. i., were elected during the 3rd regular election, which took place in three rounds between 20th February and 6th March 2017. The members of the newly elected Council have become Ing. Anna Hrabánková, Ing. Petr Tušil, Ph.D., MBA, Ing. Miriam Dzuráková, Ing. Jiří Kučera, Ing. Adam Vizina, Ph.D., Ing. Jaroslav Beneš, Ing. Jaroslav Kinkor, Mgr. Vít Kodeš, Ph.D., and doc. Ing. Aleš Havlík, CSc. Ing. Anna Hrabánková was elected chairwoman and Ing. Petr Tušil, Ph.D., MBA, was elected deputy chairman.

Six meeting of the TGM WRI, p. r. i., Council (hereinafter refereed as "Council") took place in 2017, old Council met at first meeting, newly elected Council met at five meetings. The most important conclusions and resolutions of these meetings were as follows:

- In accordance with the Electoral Code of the Council D/R/Z011/120926 (hereinafter refereed as "Electoral Code") the Council through its chairperson announces the 3rd regular election of the Council, which will take place at workplaces Praha, Brno and Ostrava.

- Resolution No. RU/44/3: The Council elects the chairwoman of the Council Ing. Anna Hrabánková and deputy chairman of the Council Ing. Petr Tušil, Ph.D., MBA.

- Resolution No. RU/46/1: The Council approved the internal regulation Electoral Code of the Council of the Water Research Institute, p. r. i.

- Resolution No. RU/46/2: The Council approved the 2015 Annual Report in accordance with section 18, Article (2), letter e) of Act No. 341/2005 Coll., about public research institutions, as amended. The financial statements for 2016 were also approved.

- Resolution No. RU/46/4: The Council approved proposed budget of the Institute for the 2017 period in accordance with section 18, Article (2), letter e) of Act No. 341/2005 Coll., about public research institutions, as amended.

- Resolution No. RU/47/1: The Council acknowledges of the resignation of the director Mgr. Mark Rieder on 30th September 2017 and it will request the Minister of the Environment Mgr. Richard Brabec on the appointment of the person in charge of the management until the appointment of the new director of the Institute, by letter.

- Resolution No. RU/47/2: The Council approves the dates for the implementation of the selection procedure for the appointment of the Director of the Institute; the contact person for providing further information is Ing. Luděk Strouhal, Ph.D.

- Resolution No. RU/48/1: The Council performed: 1) in accordance with Section 18, paragraph (2) h) of Act No. 341/2005 Coll. Announcement of the selection procedure for the post of director of the Institute (2nd October 2017), 2) the election of the candidate to the director of the Institute on the basis of the result of the selection procedure by voting. The Council of the Institute proposes, in accordance with Section 18, paragraph (2), h) of Act No. 341/2005 Coll., to appoint the selected candidate to the founder as a new director on the basis of the result of the vote. Of the six nominees, Ing. Tomáš Urban was elected by majority of votes.

The proceedings are made from every meeting. After ten days of approval procedure by members of the Council and by the director of TGM WRI, p. r. i., the proceedings are at disposal to all employees in internal information database of the Institute.

The Report on Activity of the Supervisory Board of the TGM WRI, p. r. i., in 2017

In 2017, four meetings of the Supervisory Board took place on 7th March, 8th June, 22nd September and 20th November. The most important conclusions follow. Director of TGM WRI, p. r. i., Mgr. Mark Rieder participated at meetings on 7th March, 8th June and on 22nd September. Deputy Director for Research and Professional Activities Ing. P. Bouška, Ph.D., participated at the meeting on 20th November. Ing. P. Bouška, Ph.D., was appointed to manage the Institute from 1st October 2017 until the appointment of the new Director of the Institute.

The Supervisory Board, after discussion, considered:

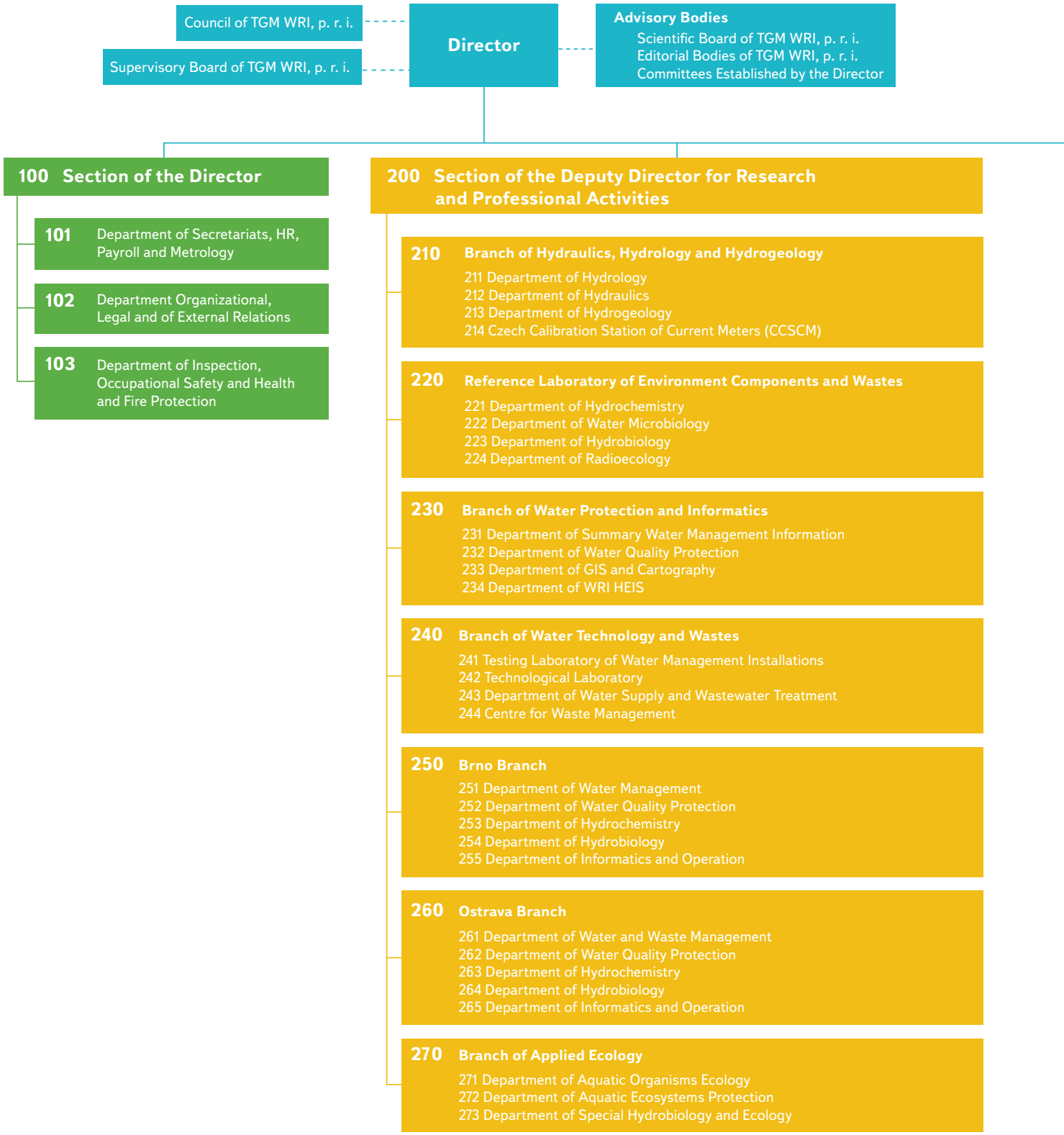
- the Draft of 2016 Annual report and recommended its approval by the Council of TGM WRI, p. r. i.,
- results of economic activities of TGM WRI, p. r. i., in 2016 that are described in 2016 Annual Report with no objection,
- the Draft of the budget of TGM WRI, p. r. i., for 2017.

The Report on activity of the Supervisory Board of the TGM WRI, p. r. i., in 2016 was processed and transferred to be included in 2016 Annual Report.

The Supervisory Board presented the Report about its tenth year of activity (from 1st June 2016 to 31st May 2017) to the founder and Mgr. Mark Rieder within the meaning of paragraph 19 Article (1), letter l) of Act No. 341/2005 Coll., as amended.

The Supervisory Board also dealt with current issues of TGM WRI, p. r. i., activities, e.g. results of the 3rd regular election of the Council of the Institute, the economic management of TGM WRI, p. r. i., in 2017, the issues associated with appointment of Mgr. Mark Rieder as a director of the Czech Hydrometeorological Institute and appointment of a new member RNDr. Jan Daňhelka in stead of prof. RNDr. Jakub Hruška, CSc., whose 2nd term of membership ended on 22nd June 2017. Term of membership of prof. Ing. Jiří Wanner, DrSc., ended on 15th October 2017. At all meetings in 2017, the Supervisory Board dealt with theft (sale) of buildings and land at Horní Soběšovice (cadastral zone) that are owned by TGM WRI, p. r. i.

ORGANIZATIONAL STRUCTURE



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

It focuses on tasks in the field of hydrology and hydraulics of surface and groundwater. It focuses on issues regarding quantification and protection of water resources, study of water flow in natural and artificial environment, development and application of methods of measurement and monitoring of parameters of water movement in watercourses, reservoirs and rock environment, as well as of hydroecology. The branch performs expert activity (including expert opinions) and participates in many of national and international projects.

In the field of hydrology, comprehensive research is being carried out to investigate the impact of climate change on hydrological conditions and water resources, including the identification of adaptation measures. The water balance model BILAN is developed continuously. Other water balance, hydraulic and transport models are implemented in research of quantity and quality of surface and groundwater. The research is also focused on the study of extreme phenomena – floods and drought, including the evaluation of current situations. Importantly, the anthropogenic influence of the landscape water regime and its consequences, the hydrological aspects of revitalization of landscape and river systems and relationships of hydrological conditions and protection of ecosystems are evaluated.

The branch is also engaged in research in the field of hydraulics, for example by verifying the operation and functionality of existing and new water structures by means of physical hydraulic models, by conducting hydraulic assessments of bridges and passes on watercourses and by determining floodplains using mathematical modelling. The activities are also focused on the design of preventive measures against floods, the determination of minimum residual flow rates in watercourses and at water structures, the assessment of flash floods and optimization of warning systems.

Another important part of research in the branch is study in the field of hydrogeology. The comprehensive research is carried out regarding the quantity and quality of groundwater; the monitoring of groundwater is carried out including the micropollutants in natural waters. Methodological and conceptual tools are developed for groundwater protection, evaluation of non-point pollution and revision of vulnerable zones according to the Nitrate Directive. Artificial infiltration and induced sources of groundwater are studied. The interaction of surface and groundwater is evaluated and assessment of groundwater effects on terrestrial ecosystems is carried out. Surveys, remediation and monitoring of environmental accidents and contaminated sites, including ecological risk assessments, are carried out.

The branch also operates Czech Calibration Station for Current Meters. It is accredited by the Czech Accreditation Institute and it provides calibration of current-meters of free level water in accordance with CSN ISO 3455.

REFERENCE LABORATORY FOR THE ENVIRONMENT COMPONENTS AND WASTES

The branch Reference Laboratory for the Environment Components and Wastes is a research centre that focuses on water quality studies. It investigates the occurrence and behaviour of substances in various components of the hydrosphere and their effects on ecosystems and human health. The branch 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 the departments allows comprehensive research of the status of the hydrosphere and its processes.

An integral part of the branch is the laboratories of each department. The laboratories are one of the two parts of the Testing Laboratory of Technologies and Environment Components of TGM WRI, p. r. i. The fundamental mission of the laboratory is the provision of data for highly qualified solutions of research projects in development and verification of methods for identifying and evaluation of changes in water quality that occur at water use or protection of water. The branch participates in research projects and provides data for monitoring programs of national importance. It focuses also on development and implementation of new analytical methods and procedures.

The branch has highly qualified professional staff, it is equipped with state-of-the-art instrumentation and has a high quality laboratory and technical laboratory facilities. Therefore, the laboratory can perform chemical, microbiological, hydrobiological and radiological analysis in water and other matrices. Determinations are performed according to standard procedures and according to newly developed methods. It also focuses on a range of unique determinations such as illegal substances (drugs) or very low tritium concentrations.

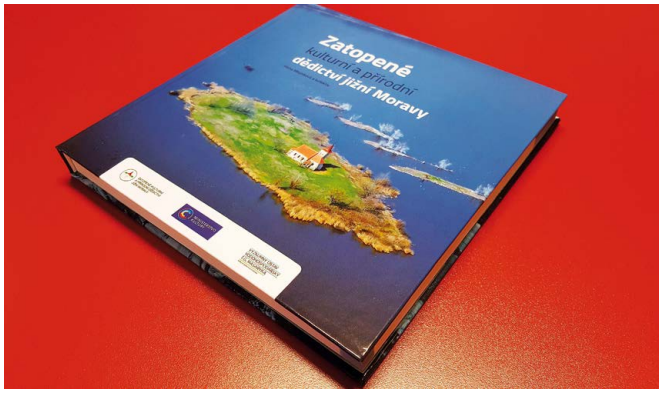
The results of experimental research are applied in own applied research projects as well as they are used by researchers from other research units of the Institute and external customers.

BRANCH OF WATER PROTECTION AND INFORMATICS

The traditional activity of the branch is the support of the projects in the Institute regarding informatics. The support is provided by the development and operation of TGM WRI, p. r. i., Hydroecological Information System (HEIS VUV). The other branch activity is the management of DIBAVOD including the activities connected to using of geographic information systems. Other activity was annual preparation of Summary water balance assessment of the main river basins of the Czech Republic according to the Decree of Ministry of Agriculture No. 431/2001 Coll., which provided the results of the analysis of the use of water resources and the water use requirements in terms of quantity and quality in spatial units that are not covered by the water management balances by the River Boards (Povodí, s. e.).

The branch carried out the support for the state administration (the management of the selected registers ISVS-VODA, preparation of the EC reporting according to Water Framework Directive and support of the reporting in international commissions ICPER, ICPDR and ICPO). The data were collected for Report on Water Management Status in the Czech Republic (the Ministry of the Environment). The branch participated in the project Procedures for Compilation and Verification of Water Footprint according to International Standards (Ministry of Agriculture, programme KUS), the project Assessing the Impact of Drought on Water Use and RESIBIL – The Balance of Water Resources in Eastern Part of Czech-Saxon Border Region and Review of Potential of Their Long-term Use supported by European Fund for Regional Development from Programme Collaboration Czech Republic-Free State of Saxony 2014–2020. The project "Flooded cultural and natural heritage of Southern Moravia" was completed (Ministry of Culture).

Another activity were the update of water resource protection zones, Bathing Waters Reporting and preparation of cartographic outputs in connection to Operation Programme Environment. The staff of the branch participated in following projects via data support and development of software for calculation and publishing: "Prediction of the hazards of non-native fish and crayfish and optimization of eradication methods of invasive species" (TH02030687), "Protection of Critical Infrastructure – Želivka water resource against the effects of PPCP and pesticides in the conditions of long-term drought (VI20172020097)", "Procedures for compilation and verification of water footprint according to international standards" (QJ1520322), "Utilization of artificial and natural structures for revitalization and increase of biological and morphological diversity of Prague streams" which is a part of the project "Water for Prague" (CZ.07.1.02/0.0/0.0/16_023/0000118). The branch also participated in water management balance of current and projected status for catchments of Vltava River and Ohře River, solutions of drought impacts on water use and processing supporting water management studies in connection with preparation of construction of the New Nuclear Facility at Dukovany.



BRANCH OF WATER TECHNOLOGY AND WASTES

The Branch of Water and Wastes Technology deals with a wide range of research topics ranging from water supply, wastewater treatment to waste research. Two departments (Testing Laboratory of Water Management Installations and Technological Laboratory) are involved in Testing Laboratory for Water Technology and Environmental Components of TGM WRI, p. r. i. (Testing Laboratory). The Testing laboratory is the Testing laboratory No. 1492 accredited by CAI according to CSN EN ISO/IEC 17025:2005.

The Testing laboratory of Water Management Installations performs tests for the effectiveness of domestic waste water treatment plants, light liquids separators and grease traps according to accredited test procedures described by technical standards. It is also able to offer customers other ways to test water management equipment according to their needs.

The Technology Laboratory provides analytical background for the Testing laboratory of Water Management Installations and in the area of basic chemical analysis as well as for researchers from other research branches of the Institute. It also offers its services to external customers.

The Department of water supply and wastewater treatment is focused primarily on water treatment and wastewater treatment, in recent years mainly on the issues of micro-pollutants, their occurrence, transformation and possibilities of their removal. The department, in cooperation with other departments of the Institute, deals with the impacts of discharged wastewater on the recipients, especially during drought, and the effects of artificial snow on the landscape.

The Centre for Waste Management is another part of the branch. It conducts research on waste management and also deals with commenting on legislative proposals on waste.

BRNO BRANCH

The activity of the Brno Branch is focused in long term on solving the issues caused by hydrologic extremes: floods and droughts. All activities aim to cover the whole range of issues and in the context of the various methods of monitoring the causative phenomena, the research of their modelling, the parametrization, the evaluation and the proposals of a set of measures at hydrological units. The set of measures covers a whole range of types of individual protection elements from structural changes to proposals for adjusting legislation or methods of financing for the relevant types of public services.

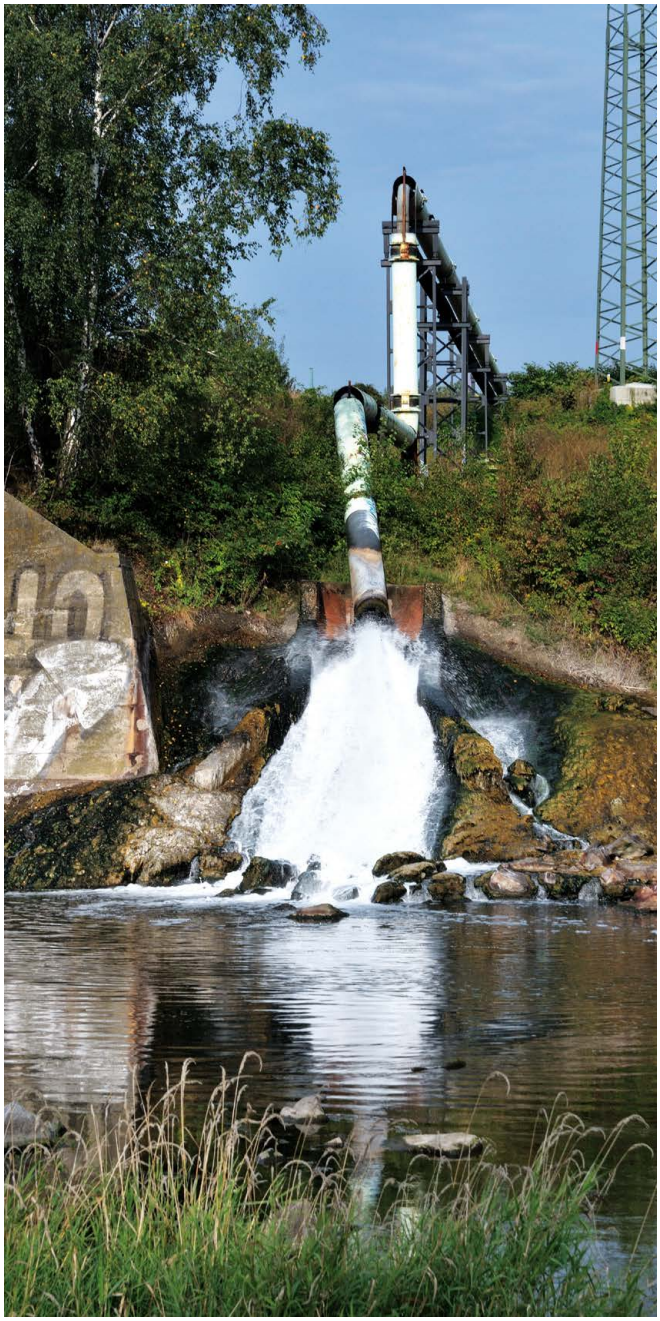
Water quality is a broad topic that is also dealt with in the Brno Branch. Specifically, the branch carries out theoretical and practical processing of the issue of monitoring and evaluation of the quality of aquatic environment from the point of view of hydrochemistry, hydrobiology and microbiology, which also leads to the design and application of suitable technologies for improvement of water quality. This relates to long-term research into the use of artificial wetlands and extensive technologies for the treatment of waste and other contaminated waters (root waste water treatment plants, soil filters, stabilization tanks, etc.).

OSTRAVA BRANCH

The activity of the branch is focused in long term on research, development and expert activities related to the protection and use of the water component of the environment with a predominant orientation on the Odra River basin. The activity is mainly focused on research into changes in water quality in the watercourses and in the reservoirs of the Odra River basin, water purification technology and water resources management. The branch supervises the activities regarding the toxicity in the frame of water quality monitoring and processes of water quality changes concerning their physical, chemical and biological characteristics. The branch participates in the coordination and activities of the Institute in the framework of surveying and evaluation of the status of surface waters and protected areas. In addition, the staff of the branch deals with water planning issues and the updating of related legislation.

The laboratory departments (Department of Hydrochemistry and the Department of Hydrobiology) carry out chemical, biological and bacteriological analyses of waters and test of acute and chronic toxicity, including genotoxic analyses. In 2017, the Testing Laboratory of Hydrochemical and Hydrobiological Analyzes of TGM WRI, p. r. i., Ostrava Branch received the Certificate of Accreditation (No. 1702) from Czech Accreditation Institute. The scope of accreditation covers chemical and biological testing of water, aqueous extract of waste, sediments, suspended sediments, soil, sludge, including sampling of surface water and wastewater. The testing laboratory received an extension of Certificate of good laboratory practice No. 436 issued by ASLAB.

In 2017, the activity of the branch was also focused on participation in public tenders in the field of research on water protection, status and changes in water ecosystems and in the field of other activity. The range of projects is therefore very diverse and it is given by requirements of the contracting authorities (Operational Program Prague – Pole of Growth of the Czech Republic, Technology Agency of the Czech Republic, Ministry of the Interior, Ministry of Agriculture, Ministry of Culture and Ministry of Education, Youth and Sports).



BRANCH OF APPLIED ECOLOGY

The Branch of Applied Ecology focuses primarily on monitoring and assessing the development of natural and anthropologically affected aquatic ecosystems and their biological components. The activity focuses on the research of selected species, groups and communities of animals and plants, their requirements on the status and level of pollution of the aquatic environment, tolerance to a wide spectrum of anthropogenic influences and methods of their protection in natural and anthropologically affected aquatic ecosystems. The branch 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 extent of anthropogenic threat to the aquatic environment and the effectiveness of different types of measures. It also focuses on the development of monitoring procedures and sampling devices for monitoring water, pollution sources and biological components of aquatic ecosystems. An integral part of the branch activity is the implementation of research results into practice and legislation (new approaches and methodologies), including consultation and assessment activities.

The Branch of Applied Ecology is organized in three departments – the Department of Aquatic Organisms Ecology, the Department of Aquatic Ecosystems Protection and the Department of Special Hydrobiology and Ecology.

The Department of Aquatic Organisms Ecology deals with the identification and assessment of anthropogenic influences and the study of their impacts on aquatic ecosystems with a special focus on fish communities and the design, development and evaluation of corrective actions to mitigate the impact of various civilization factors. Specific research focuses on the impact of river network fragmentation on fish migration, the study of migratory behaviour of selected species, and the development and use of automated monitoring systems for migration assessments. In addition, the research and activities of the branch focus

on the issue of non-native and invasive fish species and other aquatic animals in aquatic ecosystems and the environmental risks associated with the operation of hydropower plants.

The Department of Aquatic Ecosystems Protection is engaged in research into anthropogenic effects on the aquatic environment and related aquatic ecosystems. An important part of the activity is related to the assessment of the impact of non-point and point sources of pollution on the quality of water and the biological component of the aquatic environment, including research of eutrophication and assessment of eutrophication potential of sources. An important part of the activity of the department is the research of the influence of hydromorphological conditions of the environment on water ecosystems and individual biological components. A new research area is water footprint and life cycle assessment (LCA). Activities include the development of methodologies and procedures to provide expert support for the preparation of river basin management plans and the assessment of the status of water bodies and protected areas.

Department of Special Hydrobiology and Ecology deals with applied water research in the field of ecology and preservation/conservation biology aimed at legislatively specially protected aquatic organisms (macrophytes, molluscs and other invertebrates) and management of protected areas. Other areas of research include ecology of springs and oligotrophic catchments, processes of formation of detritus in running waters, relations between surface and groundwater in terms of their physico-chemical and biological parameters, study of the aquatic environment of specially protected areas (SPAs) including the European protected areas with an emphasis on the Natura 2000 priority areas, the development of environmentally friendly technologies for protected aquatic organisms with special demands and also the impact of anthropogenic acidification and recovery from acidification to chemistry and revitalization of mountain water.

ASLAB

ASLAB – Centre for Assessing Proficiency of Laboratories is a part of TGM WRI, p. r. i. ASLAB is authorized in accordance with the mandate of Ministry of the Environment to carry out the state delegated powers (Provision No. 12/06, ref. No. 7081/M/06):

- organization of intralaboratory proficiency testing in the field of environmental laboratory analyses,
- assessment of professional competence of hydro-analytic laboratories in the area of environmental research and protection in accordance with the quality management system CSN EN ISO//IEC 17025 – the output is the Certificate of the correct operation of the laboratory which, according to Act No. 150/2010 Coll., Decree No. 123/2012 Coll. and Government Order No. 143/2012 Coll., is one of the conditions for fulfilling the requirements for an authorized laboratory, including drinking water and swimming pools (Act No. 258/2000 Coll., as amended by Act No. 253/2005 Coll.),
- acting as a National Inspection Authority on good laboratory practice in the area of chemical substances and chemical preparations in accordance with the Act No. 350/2011 Coll. and Regulation No. 163/2012 Coll., Code, as amended.

Significant proportion of ASLAB activities falls to proficiency testing (PT) that forms the fundamental level of external supervision over hydro-analytic laboratories. In 2017, in total 262 laboratories from the Czech Republic and Slovakia participated in programs organized by ASLAB.

ASLAB continues to new and prepared legislation with new testing methods or reference to such methods and creates the methodologies of proficiency testing in these new areas with aim to implement them in programmes of ASLAB. ASLAB prepares the laboratories for the changes that follow from the new or updated legislation and their further verification.

ASLAB granted Certificate on Good Laboratory Practice to 11 newly assessed laboratories in 2017, 50 such certificates were in force by 31st December 2017. In the area of good laboratory practice, ASLAB checked by 31st December five testing devices.

ASLAB activities include also cooperation in developing of new regulations of the Ministry of the Environment, technical standards and documents concerning the assessment of laboratories. The objective is the support of the state administration, evaluation of data created by ASLAB activities and to transmit data created elsewhere in the activities of ASLAB. ASLAB produces technical reports on all its activities. The reports are stored in the archive of ASLAB.

THE ACTIVITIES OF INSTITUTE

T. G. Masaryk Water Research Institute, p. r. i., was included to the Register of public research institutions, administered by the Ministry of Education, Youth and Sports, on 1st January 2007.

The activities of the Institute are based on the founding deed of the public research institutions given by Provision No. 12/06 of the Ministry of the Environment from 12th December 2006, as amended by Provision No. 2/11 of the Ministry of the Environment on publication of the full wording of the founding deed from 31st May 2011.

The fundamental mission of the institution is:

- research of the status of aquatic ecosystems and their relations in landscape and connected environmental hazards and on issues of waste and packaging management,
- expert support for protection of waters, flood prevention and waste and packaging management, based on performed research.

Securing the mission of the Institute takes place both in the area of main and other activities of the institution according to its founding deed.

The main activity includes:

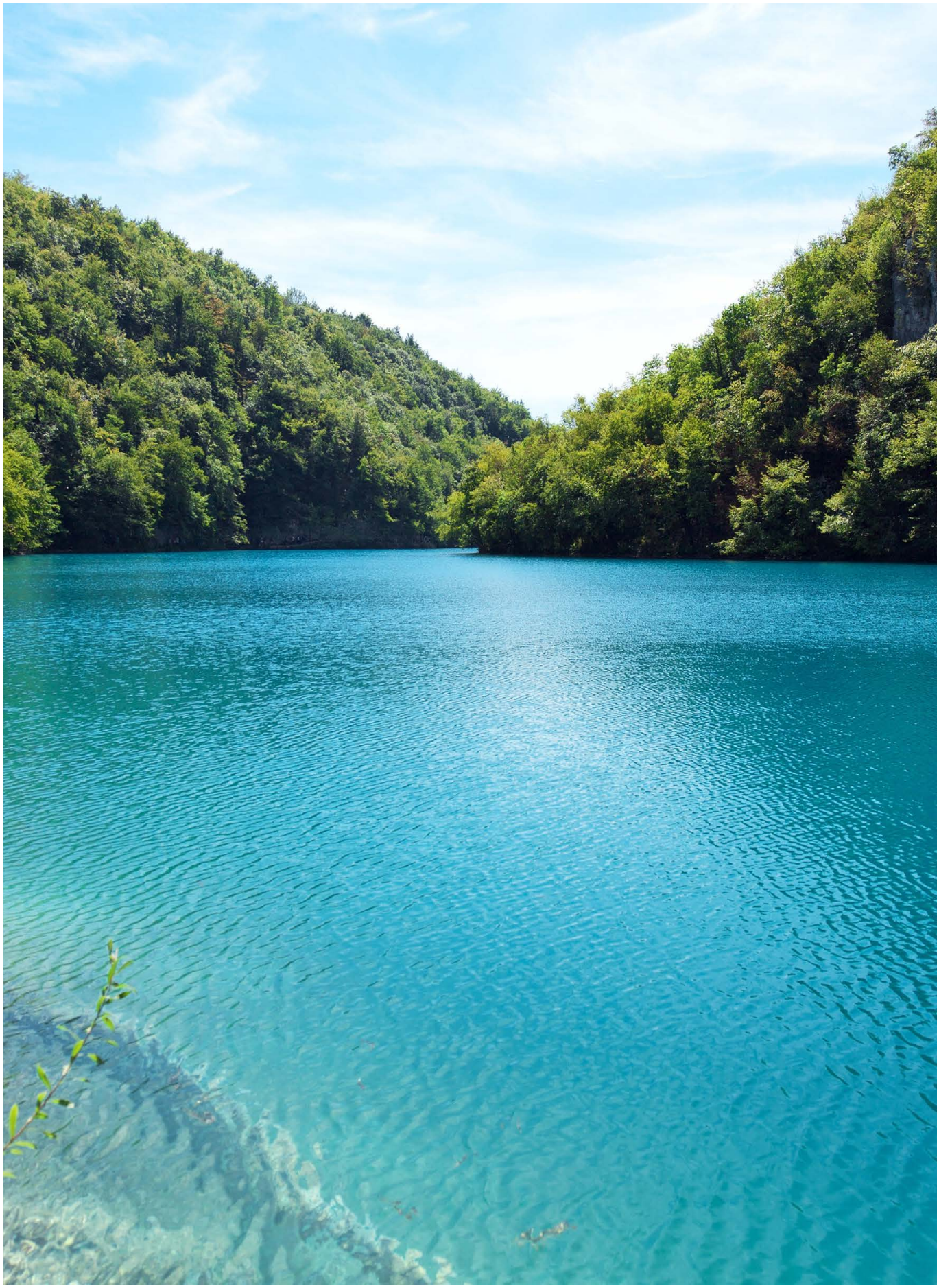
- hydrological, hydrogeological and hydraulic research,
- research of water resources, protection of water and protection of river basins,
- research in water chemistry, toxicology and radiology,
- research in water biology and microbiology,
- research of processes caused by water pollution and elimination of pollution,
- research of the status of water and water bodies and protection of aquatic ecosystems,
- research of methods for identification and evaluation of water status,
- research of ecological relations of water in a landscape,
- research of monitoring methods, field measurements and sampling techniques including technical instruments,
- research of methods in analytical chemistry including technical instruments,
- research of methods for information processing, development and use of databases including geographical information systems,
- economic research in relation to water and its use as a component of the environment,
- research in remediation of river systems and aquatic remediation of damaged landscape,
- research for selection of water biotopes suitable for renewal or remediation and management of databases of relevant sites,
- research for protection against harmful impacts of water,
- research in water management planning, water balance and use of water,
- research in waste management, composition and quality of waste, including dangerous waste and its impact on aquatic environment,
- research of risks of landfills and contaminated sites for the water environment,
- research of management of packaging and packaging waste,
- research, development, application and evaluation of technological methods for waste management including assessment of waste production and waste management,
- development of research infrastructure.

Within its additional activity the Institute ensures:

- expert opinions, positions, assessments and analyses in the area of the main activity,
- observations, field measurements, sample analyses, chemical analyses in the area of the main activity,
- international cooperation, activities in a framework of relevant thematic strategies in the area of the main activity,
- cooperation with universities, institutes of the Academy of Sciences and other research institutions in the area of the main activity,
- publishing and dissemination of information in the area of the main activity,
- proposing of parameters of good ecological status of water,
- proposing of programmes for reduction of pollution of surface water by dangerous harmful substances and priority dangerous substances,
- assessment of sensitive and vulnerable zones, as well as surface water suitable for life and reproduction of native fish species and other aquatic fauna, protected areas of natural accumulation of water and bathing surface water,
- proposing and monitoring of areas of natural accumulation of water in the area of the main activity,
- proposing protection measures for water resources,
- maintaining registry of watercourses and water reservoirs, protection zones of water supply reservoirs and water supply groundwater resources,
- maintaining thematic water management cartography,
- assessment and evaluation of surface water and groundwater regime in relation to status of use of water resources,
- determination of minimum residual flows and minimum groundwater levels,
- expert support to preparation of district river basin management plans,
- operation of reference laboratories for all components of the environment,
- proficiency testing of hydroanalytical laboratories for chemical, biological, microbiological, toxicological and radiochemical analytical methods and organizing intercalibration laboratory testing in the area of the environment,
- methodological guidance for hydroanalytical laboratories and unification of their practices,
- expert support to prevention of major accidents involving chemical substances and preparations,
- participation in operating the permanent and emergency component of the national radiation monitoring network,
- development and operation of the evaluation system of status and potentials of water bodies and reference conditions of water bodies,
- establishment and operation of monitoring network for observation of surface water and groundwater except their quantity,
- strategic and organizational provisions of activities for evaluation and assessment of status of surface water and groundwater,
- maintaining and updating registries of water of public administration information system,
- assessment of technologies and evaluation of operation of technological installations for water treatment and wastewater treatment,
- evaluation of effectiveness of remediation measures of river systems,
- expert support to the international cooperation of CR within the framework of bilateral and multilateral agreements and conventions in the area of water protection,
- preparation of background documents necessary for meeting the obligations towards the European Union and documents included in reports on implementation of directives in the area of water protection and waste management according to the requirements of the European Community,
- evaluation of waste management methods for individual waste types,
- operating the waste management information systems and maintaining registry of production and management of waste and packaging,
- evaluation of analytical methods and quality of waste, evaluation of efficiency of waste treatment technologies including dangerous waste,
- carrying out the function of the National inspection authority for proper laboratory practice,

- expert support to updating and evaluation of waste management plans,
- provision of information on the status of the environment in the area of waste management,
- carrying out the function of the expert institution for professional and registering activities,
- operating the calibration center for hydraulic measurements,
- carrying out the function of the center for evaluation of competency for calibration of measuring instruments for water discharge in conditions of free water level,
- carrying out the function of the workflow measuring instrument of free water level,
- operation of a Testing laboratory for water management equipment.

Apart from the above listed functions, the Institute carries out also other activities according to Provision No. 12/06 of the Ministry of the Environment in compliance with the relevant Trade Certificates.



THE MAIN ACTIVITY

In 2017, the activities of the Department of Hydraulics, Hydrology and Hydrogeology focused on, among other things, the solution of drought issues. Nowadays, water shortages and droughts are rapidly growing in an increasing number of affected areas, and in some cases they are at the level of a natural disaster with massive impacts. Regarding drought there is a significant increase in its frequency in some areas including Central Europe. This phenomenon is closely related to the process of global climate change. The problem of securing water resources is already beginning to manifest itself in regions where the population has not yet been aware of the drought, but it is beginning to experience it more intensely. Moreover, the impact of drought and water scarcity on the population and industry in recent years has been favourably influenced by the drop in water consumption of about half that of the 1990. However, the mitigating effect of this development is gradually disappearing. In 2015, problems with supply of population were reported in municipalities with insufficient water resources, and the impact of drought on agricultural production, forestry, where the impacts of this phenomenon usually show first, and other economic sectors, have grown significantly. An increase in the number of days with lack of water in the key period for the production of most of the crops was observed between 1961–1990 and 1991–2016. In the future, therefore, it can be expected that the existing water resources will not be sufficient, not only in terms of the potentially decreasing available water but also in terms of the unsatisfactory water quality. TGM WRI, p. r. i., has been carried out research of drought related issues for more than ten years for these reasons and it points out this problem, which is already beginning to manifest. Recently, they were supportive studies which were the basis for the draft "Concept for protection against drought effects for the territory of the Czech Republic", in the following areas:

- analysis of past experience of dry seasons,
- hydrological balance of water quantity during a drought period in the Czech Republic,
- analysis of shortage volumes in surface and groundwater bodies,
- assessing the impact of drought on water use,
- analysis of status of protection of surface and groundwater bodies, specifics for drought periods,
- evaluation of the impacts of drought in bodies of surface water to water and water-bound organisms,
- drought impacts on water quality, analysis of current situation and its causes,
- potential of application of nature-friendly measures for water retention in the landscape and improvement of ecological status of water bodies,
- methodology of processing of Operation plans for drought control,
- comparison of the effects and impacts of the construction of new water reservoirs and the spectrum of semi-technical measures,
- hydrological and water management aspects of water transfers and of interference with the hydrographic network during drought,
- water balance assessment of water resources regarding needs of irrigation systems.

The results and outcomes of each activity are available at http://www.suchovkrajine.cz and http://sucho.bilan.cz. In addition, research on drought and water scarcity deals with assessment of individual localities for the accumulation of surface water in the project "Compensation of negative climate change impacts on water supply and ecosystems using the localities for potential accumulation of surface water" supported by Technology Agency of the Czech Republic (TA CR). The assessment is carried out using the BILAN hydrological balance model (http://bilan.vuv.cz) and the water management model WATERES (http://lapv.vuv.cz). The results of impacts of climate change on water regime in the Czech Republic are available at http://rscn.vuv.cz.

In the branch Reference Laboratory for the Environment Components and Wastes, the Department of Hydrochemistry focused on the project TD03000017 "Criteria and requirements for the competence of persons authorized to sample water" of TA CR (programme OMEGA). For the external customer PP servis, a. s., the department determined residues of selected pesticides were determined in hop crops, heads and granules. The department provided the analyses of samples for the other units of the Institute and also for external costumers. The important activity were the analyses of selected drugs and their metabolites in surface and municipal wastewater and technical preparation of eligibility testing in the area of the basic chemical analysis for the ASLAB. The Department of Microbiology focused on two project supported by TA CR (programme OMEGA): TD03000215 "Quality and assessment of surface water" and TD03000155 "Conditions for the transposition and implementation of a risk analysis system for drinking water supply in the Czech Republic"(in cooperation with The National Institute of Public Health). The department provided the analyses of samples for the other units of the Institute and also for external costumers. Sample analyses on assimilable organic carbon in waters from different water treatment plants formed a significant part of the

activity. The important activity of the department was the technical preparation of final report in the area of microbiology for ASLAB. The Department of Hydrobiology dealt with the task "Hydrochemical water monitoring" in the project Vita-Min No. 100266035 (contracting authority was the Ústí nad Labem Region). The department provided the analyses of samples for the other units of the Institute and also for external costumers. The significant portion of activity was the provision of expert data and assessment of the results of eligibility testing in the field of microbiology for ASLAB. The Department of Radioecology dealt with the studies focused on occurrence and behavior of natural and synthetic radionuclides bellow a source of pollution, at uninfluenced monitoring sites in water samples, samples of sediments, in atmospheric precipitation and water treatment plants. The department prepared data for assessing the impact of new nuclear sources on the hydrosphere. The department performs the activities of the permanent component of the national Radiological Monitoring Network in the normal and emergency radiological situation in cooperation with River Boards, state enterprises (Povodí, s. e.); the activities are based on a contract between Ministry of the Environment and the State Office for Nuclear Safety. The department provided the analyses of samples for the other units of the Institute and also for external costumers. The significant portion of activity of the department was the provision of expert data and assessment of the results of eligibility testing in the field of radiology for ASLAB.

At the end of 2017, the project "Quality and assessment of surface water" (TD03000215) was successfully completed. The project was supported by the TA CR (Omega programme). The main objective was to amend the 19 year old standard ČSN 75 7221 Water quality – Classification of surface water quality. The subject of the amendment was to take into account the requirements for the current level of surface water protection, both in terms of pollution indicators and the level of permissible pollution. The scope of the indicators has been revised: from 46 to 65 (70 including dissolved forms of selected metals). The limit values of the quality classes were also revised. The text was extended, especially in the annex section: in addition to the method of calculation of characteristic value that remains unchanged, additional necessary calculations were added. An informative Annex B is newly included. It contains a brief characterization of individual water quality indicators or their groups for easier orientation of representatives of self-governing units at the level of municipalities and the general public. The standard newly enables the indicative determination of water quality for lower numbers than which is required for classification. The revised standard ČSN 75 7221 Water quality – Classification of surface water quality was issued by the Czech Office for Standards, Metrology and Testing in November 2017. Several experts from TGM WRI, p. r. i., participated in the elaboration of this standard (experts in microbiology, radiology, hydrobiology and chemical pollution of water).

The branch of Water Protection and Informatics participates in many research projects, e.g. the field of development and subsequent application of computational models focused mainly on water management simulation calculations of the quantity and quality of surface waters (e.g. in projects "Protection of Critical Infrastructure – Želivka water resource against the effects of

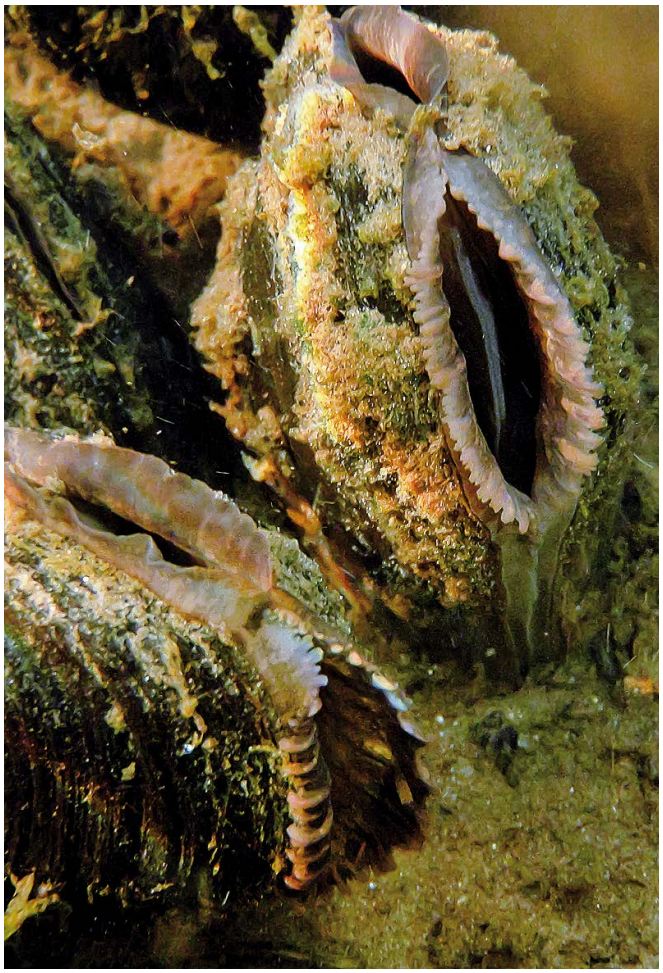
PPCP and pesticides in the conditions of long-term drought" – VI20172020097, the project supported by the KUS programme of the Ministry of Agriculture "Increasing water resources availability in selected areas of Karlovy Vary Region" – QJ1520318 and "Procedures for Compilation and Verification of Water Footprint according to International Standards" – QJ1520322). The branch is also focused on development of tools and models for decision support (e.g. in the project "Prediction of the hazards of non-native fish and crayfish and optimization of eradication methods of invasive species" – TH02030687). Other activity of the branch is data support of research projects and provision of publicity (websites of projects).

Research in the Branch of Water Technology and Wastes was focused on occurrence on PPCP substances in waters, their transformation and removal in 2017. Specifically, we examined the pharmaceuticals including antibiotics, hormones and additives that are added to soaps and perfumes (scents) and some of their intermediate products. We dealt with this topic in many research projects, e.g. in the catchment of Švihov reservoir on Želivka River. Here, the main sources of these substances are specified from individual wastewater treatment plants. Further, we study the possibilities of removing PPCP while filtering of pretreated wastewater through activated carbon. We also investigate the possibilities of removing polycyclic aromatic hydrocarbons from precipitation water in the roads by filtration. Simultaneously, other research topics are dealt with: anthropogenic impacts on water quality at flow through urban area – Vltava River in Prague, impacts of drought on the watercourses as recipients of treated wastewater, composition of mixed municipal waste from different localities (housing estates, garden suburb, mixed area) and impacts of artificial snow on the water regime and landscape.

Regarding flood related issues, the Brno Branch focuses on topic how to improve the drainage conditions in catchments, where the production on agricultural land is significantly represented, and so the soil layers can be lost by increased erosion. Simultaneously, urbanized sites that are exposed to the dangers of torrential rainfall are also observed. The potential consequences of such torrential rains are mainly losses of human lives and also losses of property. The choice of a suitable set of measures in hydrological units is the desired result. Currently, pilot areas in the basins of Morava River, Odra River and Vltava River are studied in research projects. An important part of activity of the branch is research in the field of hydrobiology, focusing on development of evaluation of ecological status and water quality. Currently, these procedures are applied as part of monitoring and prediction of drought. The branch also deals with the development and testing of water treatment technologies in joint projects with commercial entities. Specific research activity is the comprehensive theoretical and practical elaboration of the issue of the quality of the environment of the water elements of cultural monuments and historical settlements in the context of monument care and considering the impact of possible climate changes. Specific projects have been dealt with since 2012 with the support of the Ministry of Culture of the Czech Republic, with the help of experts from other institutions (National Heritage Institute, Institute of Vertebrate Biology of the Academy of Sciences of the Czech Republic, etc.).

In 2017, a three-year project aimed at creating a database expert system for Integrated Rescue System, Czech Environmental Inspectorate and river basin administrators (Povodí, s. e.) was launched at the Ostrava Branch. The system will be operating on stationary and mobile devices. At the same time, cooperation was carried out to complete the amendment to the ČSN 75 7221 Water Quality – Classification of Surface Water Quality, which replaces the previous standard (valid for 19 years) with a new standard that would take into account the requirements of the current level of protection of surface water, both in terms of pollution indicators and the permissible levels of pollution. Furthermore, the long-term tasks for support of the state administration in the areas of water and waste management, according needs of the founder the Ministry of the Environment of the Czech Republic. The branch also participated in preparation of documents for update of Framework Program for Monitoring, especially regarding the new requirements and inputs of European legislation. At the same time, the tasks were fulfilled which emerged from the conclusions of the commissions on cooperation on border waters with Poland. In 2017, the activity of the branch regarding support to the participation of the Czech Republic in the activities of the International Commission for the Protection of the Odra River against Pollution focused on requirements of processing of supporting data required for working groups G1 – WFD, GM – Monitoring, GP – Planning and G3 – Accidental Contamination. In 2017, the professional support of legislative regulations consisted primarily analysis of selected legislative provisions relating to accidental water pollution and updating of selected sub-statutory regulations. First proposal of methodological procedure for evaluation of long-term trends of concentrations of priority substances in sediments was processed in project Expert support of monitoring and evaluation of status of surface waters and groundwater. Ongoing collaboration on the project "Compilation and proposal of the concept of protection against impacts of drought in the Czech Republic using implemented measures" was an integral part of activity of the branch. The project was carried out in the frame of tasks and activities to support the state administration in the field of water management for the Ministry of the Environment of the Czech Republic.

An important research topic, which has been dealt with in the Branch of Applied Ecology for more than 15 years, is the issue of eutrophication of surface waters and the identification of the importance of individual sources of pollution that cause surface water eutrophication. Eutrophication of surface inland waters is closely related to the intake of phosphorus. However, with regard to the outflow of water by large rivers outside the Czech Republic, attention has also been paid in recent years to the dynamics and sources of total nitrogen as a major factor in the eutrophication of the marine environment.



After 2000, the first intensive research on water eutrophication sources focused on the issue of phosphorus inputs from agricultural land. Surveys have led to the surprising finding that at usual rainfall-runoff situations, the phosphorus yield from agricultural soils across the Czech Republic is relatively low and it is only slightly higher than from catchments with natural forest. This is due to a significant decline in phosphorus fertilization in the early 1990s and a gradual decline in the supply of agricultural land by this important nutrient. These important results of the TGM WRI, p. r. i., research were confirmed later by other studies prepared by the Biology Centre of the Academy of Sciences of the Czech Republic or Research Institute for Soil and Water Conservation. Further research in this area has then focused on assessing the significance of erosion as an important process of releasing and transporting phosphorus from farmland to water. Research into the significance of erosion phosphorus in surface waters, with special emphasis on water reservoirs was carried out in cooperation with Czech Technical University in Prague and Biology Centre of the Academy of Sciences of the Czech Republic. The manifestations of eutrophication in water reservoirs are best seen by the increase of cyanobacteria and algae and a number of accompanying negative phenomena. Research has confirmed that in the absolute amount of phosphorus input, erosion is crucial in most areas. However, the eutrophication effect is reduced by a large proportion of particulate, non-reactive forms of phosphorus that do not support the development of autotrophs in aquatic ecosystems. All the aforementioned research results led to the formulation and subsequent verification of the hypothesis of eutrophication potential of pollution sources. The eutrophication potential of pollution sources is understood as an indicator that allows comparing different types of anthropogenic phosphorus sources in given catchment with respect to the emitted quantity and forms of phosphorus, the location in the catchment and the seasonality of the pollution input. The eutrophication potential thus determines the overall significance of the sources and allows for a hierarchical ranking of sources for the subsequent selection and application of appropriate measures in the catchment.

The theory of eutrophication potential has been verified on other types of pollution sources, especially on point sources of urban wastewater in large river basins. Research proved that the percentage of eutrophication effective phosphorus from point sources is very high, and these sources are absolutely critical for the subsequent development of cyanobacteria and algae in water reservoirs and watercourses in most of the assessed river basins. From these primary researches, there was only a small step towards the development of a simulation model that allows assessment of the eutrophication significance of individual sources of pollution with respect to the selected water reservoir or any site on the river network. Model VSTOOLS.EUTRO was developed in cooperation with Povodí Ohře, s. e., and Czech Technical University in Prague. The model is currently used in several larger river basins (Ohře and Vltava). Its adjustment for detailed use in small catchments is planned.

Long-term results in water eutrophication research led to invitation for branch experts to several project teams that have been involved in the evaluation of large river basins in the Czech Republic and by participation in the ad hoc expert group "Nutrients" of the International Commission for the Protection of the Elbe River. The results of the monitoring of nutrient (phosphorus and nitrogen) concentrations throughout the Elbe basin were evaluated by this group. Joint Czech-German Strategy for nutrient management in international river basin district will be published at the end of 2018. It should become an important methodical impulse for overall reduction of nutrient intake in this international river basin district.

Publications in journals

In 2017, the employees of the Institute were authors or co-authors of 54 contributions in scientific journals. The absolute majority of the other contributions were published in peer reviewed journals, 26 contributions were published in proceedings. Six contributions were published in journals with IF (Ecotoxicology, Water Air Soil Pollution, Journal of Radioanalytical and Nuclear Chemistry, Journal of Hydrology and Hydromechanics, Hydrological Processes).

Monographs and other publications

TGM Water Research Institute published in 2017 four monographs:

- Ansorge, L. et al.: Methodology of Construction of Water Footprint in accordance with ISO 14 046 (in Czech);
- Baudišová, D.: Methods of Microbiological Analysis of Water (manual for hydroanalytical laboratories) (in Czech);
- Polášek M. et al.: RIVERCHANGE. Monitoring dlouhodobých změn biologické diverzity tekoucích vod v období klimatické změny: návrh, realizace a implementace do veřejného informačního systému ARROW (in Czech);
- Polášek M. et al.: RIVERCHANGE. Monitoring of long-term changes in the biodiversity of running waters at the time of climate change: proposal, implementation and incorporation into the ARROW public information system.

Results with legal protection and technically implemented results

In 2017, many technically implemented research results have been created in the Institute. One utility model was registered *Technological superstructure of waste water treatment plant*.

Two software applications were also created. One of them was the *Application for the construction and verification of the water footprint in accordance with international standards*. The application is designed to perform water footprint calculations: On the basis of the description (definition) of a given system (large systems can be broken down into subsystems) and relevant data on water use, the water footprint is determined in several steps. The second application is the *Software tool for assessing hydromorphology of aquatic ecosystems and proposed measures in relation to biological components*. The aim of the software is to analyse the position of divergence of a given locality from the potential of dynamic water flow equilibrium (100% – maximally achievable potential, comparative status) on a defined section of the drainage network in the catchment area through a multi-criteria analysis of the data in the environment of web application. On the basis of the obtained results, it is possible to propose measures to ensure a good hydromorphological status of water (60% of the potential of dynamic water flow equilibrium) or to approximate as closely as possible to this status. The key benefit is the fact that the proposed system of measures addresses the requirements for good ecological status of waters within the hydromorphological component (Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy, the so-called Water Framework Directive). This method provides an assessment of the impact of the proposed measures on the hydromorphological status of the watercourse and the floodplain, the determination of the basic project parameters of the measures to achieve a good hydromorphological status of water**,** the determination of the appropriate extent of the mitigation measures in the case of damage caused by the deterioration of the hydromorphological status of the water and determination of types of measures in localities where good hydromorphological status of waters is not achieved. The methodology also allows for a comparison of the evaluated localities with respect to the status of water flow hydromorphology and the operational monitoring of the localities. The aim of the methodology is to provide the interested persons and entities with an operational assessment of the project documentation and assessment of realized interventions in watercourses and floodplains from the viewpoint of influencing the hydromorphological status of waters according to the Water Framework Directive. The application is designed for a wide range of users: from designers and employees of River Boards (Povodí, s. e.) to students or research organizations. The software is developed in two versions: the first is a freely available version with a web user interface and a second one is a comprehensive model (HMF Tools), including all tools and procedures. The comprehensive HMF Tools module enables automated hydromorphological flow and flow quality calculation across river systems and includes a tool for calculating the hydromorphological quality of hydromorphological parameters.

International cooperation in research

The project RESIBIL (Amount and use of groundwater in of Czech-Saxon border region) is carried out in international cooperation. The objective of the project Methodology of Construction of Water Footprint in accordance with ISO 14 046 is to evaluate the possibilities of long-term use of groundwater in Czech-Saxon border region and resilience of water resources regarding climate changes and extreme weather fluctuations. Main project output will be the decision-making system. This system will contribute to the optimization of the use of groundwater resources in terms of their sensitivity to climate change and changes in landscape water regime.

International research also takes place in the field of hydrology and hydraulics. Cooperation takes place, for example, within international projects FRIEND (Flow Regimes from International Experimental and Network Data). The project RAINMAN (Integrated Heavy Rain Risk Management) is carried out in the Institute. The project is financed by EU funds – INTERREG CENTRAL EUROPE. Further collaboration takes place with Undesanstalt für Gewässerkunde on the project Elberegime 2100. The project is focused on anthropogenic influence on water regime in Elbe River basin. Other example is collaboration with University Koblenz-Landau focused on groundwater fauna.

Furthermore, the project of foreign development assistance in Moldova is focused on some aspects of implementation of European Directive 91/271/EEC. Cooperation take place with the Moldavian Ministry of Agriculture, Local Development and Environment, and the State Environmental Inspectorate of Moldova. The project is financed by Czech Development Agency.

Another examples of international cooperation are:

- project Interreg Malsemuschel (ATCZ37 Malsemuschel, 2017–2021) – support for the natural environment and the occurrence of the Freshwater Pearl Mussel (Margaritifera margaritifera) in the catchment of Malše River,
- EEA project, CZ axis 2 Preparation of a Strategy to Mitigate the Effects of Fragmentation of River Networks in the Czech Republic (EHP-CZ02-OV-1-016-2014), in cooperation with Norwegian Institute for Nature Research (NINA),
- EEA project, CZ axis 2 Monitoring of Natura 2000 sites as a tool for effective management and protection of autochthonous crayfish populations (EHP-CZ02-OV-1-007-2014), in cooperation with Norwegian Institute for Nature Research (NINA),
- project Interreg Dyje2020/Thaya2020, project partners are important water management institutions (Povodí Moravy, s. e., Via Donau, both national parks (National Park Thayatal, National Park Podyjí) and protection authorities (Umweltbundesamt)), the main objective of the project is creation cross-border strategies, concepts and partial methodological documents.

Informal cooperation with foreign experts takes place even after the official closing of Czech Austrian projects Dyje Thaya and Pro-For. The activity in the frame of project sustainability also take place.

Presentation at international meetings of experts

The employees of the Institute participated in international experience exchange.

They participated in 13 international conferences and had 20 oral presentations, conference proceedings or posters. The most important conferences were e.g.:

- 5th International conference on sustainable development 2017,
- 10th Symposium for European freshwater Sciences,
- 44th IAH 2017,
- INSINUME 2017,
- IRCSEEME 2017,
- ITISE 2017,
- IWA Specialist Conference: Sustainable Wastewater Treatment and Resources Recovery: Research, Planning, Design and Operation,
- LSC 2017,
- XXVII. Conference of the Danubian Countries on Hydrological Forecasting and Hydrological Bases of Water Management etc.

Important national meetings of experts

In 2017, employees of TGM WRI, p. r. i., organized or participated in preparation of more than 20 conferences, seminars and workshops. They presented more than 25 contributions in the form of lectures, presentations or posters.

Examples are:

- 22. Cartographic Conference,
- conference GIS Esri,
- Fishponds 2017,
- Groundwater in Waterworks Practice 2017,
- Groundwater in Water Law Management XIII.,
- Hydroanalytics 2017,
- Landscape Engineering 2017,
- Radiological methods in Hydrosphere 17.,
- Water 2017,
- Watercourses 2017,
- Water Reservoirs 2017,
- Waterworks Biology 2017,
- XXV. Consultation days for water radiological laboratory workers etc.

Employees of TGM WRI, p. r. i., organized in 2017 many seminars, e.g.: Expert working seminar to comment on the proposal for the Concept of Drought Protection for the Territory of the Czech Republic with the participation of the members of the advisory body and the executive committee of the VODA SUCHO interdepartmental commission and the closing seminar of the RIVERCHANGE project.

Employees of TGM WRI, p. r. i., also moderate conferences; examples are: Water in urbanized landscape, Current water management issues: Pollutants of modern times, etc.

ADDITIONAL AND OTHER ACTIVITY

Support for the state administration

Support for the state administration and projects within the competence of the Ministry of Environment (26 partial projects in total) were important component of the additional and other activity of the Institute in 2017. Most attention is focused on technical support in the implementation and reporting of selected EU directives and international cooperation in the field of water, on data and expert support to the Ministry of the Environment as a central water office.

In 2017, the significant portion of activity was dedicated to the update of protection zones of water resources and to support of activities in planning process in water management.

International cooperation took place in international commissions for water protection and on transboundary water:

- support of participation of Czechia in activities of the International Commission for the Protection of the Elbe River (ICPER), support of participation of Czechia in activities of the International Commission for the Protection of the Danube River (ICPDR), support of participation of Czechia in activities of the International Commission for the Protection against Pollution of the Odra River (ICPO),
- expert support of expert groups set up by the European Commission,
- support of participation of Czechia of the Standing Committee for Saxony and the Standing Committee for Bavaria of the Czech-German Commission for Transboundary Waters,
- cooperation on border waters with Slovakia, with Austria and with Poland.

The operation and publishing of data of selected databases of information system ISVS and summary information on water management

This topic is focused on creation of the selected expert supporting documents for needs of the Ministry of Environment. It is necessary to collect and processed these supporting documents with regard to the requirements of section 108 of the Act No. 254/2001 Coll., on the waters, as amended (the Water Act). That are in particular the documents that are necessary to ensure the role of the Ministry of Environment as a central water office. Specifically, these are:

- data collection for recording under the responsibility of the Ministry of the Environment pursuant to the relevant section 21 of the Water Act,
- elaboration of documents for aggregate water balance according to section 22 of the Water Act,
- processing of comprehensive information on the waters of the Czech Republic,
- provision of web services for informing the public about the activities in a bilingual version, including the processing of expert texts placed on the web,
- implementation proposal and information support for the system for managing, updating and sharing data from the water resources protection zones.

Expert support of legislation in the field of water management, expert support to the reporting for EU and support of implementation of European legislation in the field of water protection

In 2017, expert support included collection and processing of documents relevant to Czechia due to the implementation of the provisions of the relevant EU directives and their amendments, which are motivated mainly by the need to solve the implementation of the current requirements and comments of the EC within the framework of the legislation, as well as taking account of some new approaches and methodologies used within the new water planning cycle in the Czech Republic.

That are mainly the following directives and legislative regulations: 2000/60/EC (the Water Framework Directive), 2006/7/EC (bathing water), 2006/44/EC (surface water requiring protection or improvement to support fish life), 2006/11/EC (dangerous substances), 2007/60/EC (floods), 91/271/EEC (urban wastewater treatment), 91/676/EEC (protection of waters against pollution caused by nitrates from agricultural sources), 2008/105/EC (environmental quality standards), 2009/90/EC (technical specifications for chemical analysis and monitoring of water status), Government Regulation No. 401/2015 Coll. on indicators and values of permissible surface water and waste water pollution, details of the permit to discharge wastewater into surface water and sewage systems, and sensitive areas, Government Order No. 57/2016 Coll., on indicators and values of acceptable pollution of

waste waters and on details of the permit to discharge waste waters into groundwater, 49/2011 Coll. on the definition of surface water bodies, Decree No. 450/2005 Coll., on essential elements of the use of harmful substances and essential elements of the emergency plan, the method and scope of accident reporting, their amelioration and elimination of their harmful effect (request for so-called ECOAUDIT) etc.

The update of protection zones of water resources

The objective of this project was to update the spatial data of water resource protection zones (WRPZ) and the protective zones of the water reservoirs (PZWR) determined by Decree No. 137/1999 Coll. in such way that the resulted layer would contain only zones their validity and accuracy was verified by the water authority (regional authority (RA) or the municipality with extended competence (MEC)). A scan of the relevant water decision (measures of a general nature) is attached to each zone. The total number of WRPZ polygons was increased from approximately 12 000 to 17 466 by this project in 2015–2017. The data were provided by water authorities of MECs and departments of spatial planning, the state enterprises Povodí, water and sewerage operators, Forest Management Institute, State Administration of Land Surveying and Cadastre and mayors of municipalities. The oldest version of the database consisted approximately 1000 polygons of PZWR. The final version contains 1466 PZWR polygons. More information on the project is published on the website of TGM WRI, p. r. i., http://www.dibavod.cz/aktualizace-ochrannych-pasem.

Support to the planning process in water management

In 2017, the project focused on activities and supporting documents related to preparation of river basin management plans for third management cycle. The task was divided into 2017 in the following activities:

- support in processing of conceptual supporting documents for process of water management planning for third management cycle,
- cooperation in the development and updating of methodological procedures,
- cooperation in the revision of legislation,
- an analysis of the procedure for the application of the exemptions under Article 4.7 of the WFD and the issue of assessing the impact of the intention on the status of the water body concerned,
- an analysis of the current definition of heavily modified water bodies (HMWBs) and the identification of good and maximum ecological potential in relation to mitigation measures. Cooperation on the revision of the methodology and updating of the HMWB definition, discussion and approval of the HMWB delimitation process, cooperation on the creation and definition of mitigation measures for the HMWB,
- analysis of the current approach in identifying significant influences and determining the significance of these influences, updating/creating relevant methodological documents,
- analysis of the time schedule and work program for the preparation of the 2nd planning cycle and the proposal of the Update of the time schedule and the work program for the preparation of the 3rd planning cycle, including cooperation in the discussion and approval between the Ministry of Environment and the Ministry of Agriculture, definition of partial tasks and deadlines,
- measures to achieve environmental objectives under WFD,
- cooperation on the review of the monitoring framework program on the basis of findings from processing data for the reporting of river basin management plans to European Commission, optimization proposal,
- participation in meetings within organizational structures of the Commission for planning,
- expert support in implementation of measures of adopted National River Basin Management Plans for 2nd management cycle.

Methods and results reflected in standards and legislation

The Institute staff was also significantly involved in the preparation of guidelines, legislation and standardization in 2017.

The Institute staff prepared around ten methodological documents in 2017. Examples are: Methodology of support of Freshwater Mussel (*Margaritifera margaritifera*), Methodology of criteria and requirements for the persons authorized to sample water, Methodology of construction of water footprint in accordance with ISO 14046. The Institute also participated in preparation of standard CSN 75 7221 Water quality – Classification of surface water quality. This standard replaces previous, 19 year old standard. The objective of the amendment to the standard was to take into account the requirements for the current level of surface water protection, both in terms of pollution indicators and the level of permissible pollution.

The staff of the Institute participated in the preparation of the standard CSN 757613 Water Quality–Determination of total volume activity Alpha using the fast method. Further, they participated in the preparation of the standard CSN 757615 Water Quality–Determination of Radium 226. This standard will be published in 2018.

In total 19 standards was evaluated in the frame of cooperation with Technical standards committees.

Consulting and expert activity including support for the state administration

Consulting and expert activity is an important form of the direct application of research results. In 2017, 17 expert opinions of building plans were prepared for different categories of constructions within the framework of the construction of a new transport infrastructure in terms of applying the requirements of Article 4.7 of the Water Framework Directive 2000/60/EC, mainly for Road and Motorway Directorate, SUDOP, a. s., the Railway Infrastructure Administration and České přístavy, j. s. c.

Consulting services were permanently provided in various areas for local authorities, non-governmental organizations, and specialized laboratories and also for the public. Example of such activity is the consulting in the area of using of artificial wetlands and extensive technologies of the water treatment etc.

TGM WRI, p. r. i., ensure the activity of the Coordinator of the National Report of the Czech Republic for the Convention on Nuclear Safety SONS. Comments on the National Report of the Czech Republic for the purposes of the Nuclear Safety Convention 2016 were processed. The staff of the Institute, prepared the expert report No. 18 "Assessment of change in run-off on slopes due to deposition of soil", which was drawn up on the basis of an order from the District Court in Cheb for the purposes of legal proceedings in the private dispute between the hotel operator and the construction company. The subject of the report was the assessment of the impact of the construction company's activity in the area above the hotel facilities in Mariánské Lázně.

An opponent review of project report of LE14010 – Cross-border flood risk management was created. The project was supported by the Ministry of Education Youth and Sports.

The Institute provided methodological support for finishing of "Správa o hodnotení vplyvov pri výstavbe diaľničného úseku D1 Prešov západ – Prešov juh" (Report on assessment of impacts during the construction of the D1 motorway section Prešov West – Prešov South) regarding the expert knowledge on waters.

Other activities

An important part of the activity of the Institute includes also collaboration with universities. The staff of the Institute presented a series of lectures at e.g. Faculty of Environmental Sciences of Czech University of Life Sciences, Faculty of Natural Sciences of Charles University, Faculty of Natural Sciences of Masaryk University, Faculty of Arts of Charles University, VSB-Technical University of Ostrava, Faculty of Natural Sciences of Ostrava University, Mendel University in Brno and at Brno University of Technology.

The employees of the Institute provide consultations and are supervisors of bachelor and master diploma theses and dissertations (e.g. Faculty of Natural Sciences of Charles University, Czech University of Life Sciences, Czech Technical University). Students can participate in excursions organized by the staff of the Institute, e.g. the Seminar on Hydroecological Information System (HEIS VUV) was organized for students of the Faculty of Civil engineering of the Czech Technical University in Prague. Students can participate in practical training in the Institute. The employees of the Institute also act as members of the state examination commissions at Charles University, Czech University of Life Sciences and Czech Technical University. The employees of the Institute participate also in secondary education by leading the expert practice in chemical laboratory of the Academician Heyrovský Secondary Industrial School of Chemistry, Ostrava.

LIST OF PROJECTS

Title	Project manager	Client
Branch of Hydraulics, Hydrology and Hydrogeology		
Reconstruction and extension of the Central Wastewater Treatment Plant	Ing. P. Balvín	Prague City Hall
Goal 3 – Transboundary collaboration Saxony – RESIBIL	doc. RNDr. Z. Hrkal, CSc.	European Regional Development Fund
China – Safety of wasteponds for the extraction and treatment of uranium	RNDr. J. Datel, Ph.D.	Nuclear Research Institute Řež, a. s.
Erosion, remote sensing of semi-natural measures in catchments and on watercourses	Ing. L. Strouhal, Ph.D.	Ministry of the Environment
Interreg heavy rain risk management	Ing. P. Balvín	Ministry of the Environment
Calibration of hydrometric propellers	Ing. A. Trávníčková	CHMI
Compensation of negative climate change impacts on water supply and ecosystems using the localities for potential accumulation of surface water	Ing. R. Kožín	Technology Agency of the CR ALFA 2014
The proposal of the online system Drought Management	Ing. A. Vizina	Ministry of the Environment
New nuclear facility at Nuclear Power Plant Temelín including transferring power to the Kočín substation (Nuclear Power Plant Temelín)	RNDr. J. Datel, Ph.D.	Nuclear Research Institute Řež, a. s.
Water resource protection zones	RNDr. J. Datel, Ph.D.	Ministry of the Environment
Support of activities in the process of the River Basin Management Planning	RNDr. H. Prchalová	Ministry of the Environment
Support of long-term planning in the field of water management on the territory of the Krkonoše Mountains National Park with an emphasis on solving the problem of influence of technical snow on the decrease of flow	Mgr. P. Treml	Technology Agency of the CR
Support at fulfillment of conditions to placement for the New Nuclear Facility at Nuclear Power Plant Temelín	RNDr. J. Datel, Ph.D.	Energopruzkum Praha, s. r. o.
Support to the state administration in the field Water	Ing. A. Vizina, Ph.D.	Ministry of the Environment
Impact assessment of using of water from Mohelno water reservoir	RNDr. J. Datel, Ph.D.	Nuclear Research Institute Řež, a. s.
Assessment of the measures using BILAN tools	Ing. A. Beran	Ministry of the Environment
Assessment of minimum total and base flows considering water use and other impacts	Ing. R. Vlnas	Povodí Vltavy, s. e.
Preparation of a methodology for developing drought management plans	Ing. A. Vizina, Ph.D.	Ministry of the Environment
Hydrological and hydrogeological monitoring in vicinity of the new nuclear facility of Dukovany Nuclear Power Plant (hydrological year 2017)	Mgr. D. Rozman	Nuclear Research Institute Řež, a. s.
Retention potential of spring regions in relation to hydrological extremes – Verification of hypothesizes on outflow formation by model MIPs	Ing. Šárka Blažková, DrSc.	Charles University in Prague – Grant Agency of the CR
Revision of vulnerable zones for Nitrate Directive including support to monitoring	Ing. A. Hrabánková	Ministry of the Environment
Solving drought issues in 2017	Ing. A. Vizina, Ph.D.	Ministry of the Environment
Preparation of draft concept of protection against drought impacts in the Czech Republic	Ing. M. Nesládková	Ministry of the Environment
Creation of type plan "Long-term Drought"	Ing. R. Vlnas	Ministry of the Environment
Collaboration on a physical modeling research of the adjustment of the water duct bellow the Navigation Step Decin	Ing. P. Balvín	CTU in Prague
Controlled artificial infiltration	doc. RNDr. Z. Hrkal, CSc.	Ministry of the Environment

Title	Project manager	Client
Warning system for the Prague water supply network against micro-pollutant pollution, including software for flow and PPCP concentration prediction	Ing. A. Hrabánková	Prague City Hall
Šanov water reservoir, Senomaty water reservoir – hydrological data assessment and operational hydrological monitoring	Ing. L. Kašpárek	Povodí Vltavy, s. e.
The influence of water reservoirs on Flood 2013	Ing. P. Balvín	BFG Koblenz-Germany
Calculation of hydrological balance	doc. Ing. M. Hanel, Ph.D.	Ministry of the Environment
Calculation of indicators	Ing. R. Vlnas	Ministry of the Environment
The elaboration of a comprehensive factual research of existing technical documents dealing with water and water management in the Hradec Králové Region	RNDr. J. Datel, Ph.D.	Hradec Králové Region
Increasing water resources availability in selected areas of Karlovy Vary Region	Ing. A. Beran	Ministry of Agriculture
Processing of the water balance of current and prospective status of groundwater in sub-basins Upper Vltava, Berounka, Lower Vltava and other Danube tributaries	RNDr. H. Prchalová	Povodí Vltavy, s. e.
Reference Laboratory of Environment Components and Wastes		
Waste water analysis – 24 Hour samples	Ing. V. Očenášková	Prison Service of the CR
Evaluation of changes in regime and quality of groundwater at the Nuclear Power Plant Temelín	Ing. E. Hanslík, CSc.	Czech Power Works, a. s.
Criteria and requirements for the competence of persons authorized to sample water	Ing. A. Petránová	Technology Agency of the CR
Quality and assessment of surface water	RNDr. D. Baudišová, Ph.D.	Technology Agency of the CR
Laboratory analyzes and tests – determination of drugs and their metabolites in surface waters	Ing. V. Očenášková	Povodí Labe, s. e.
Laboratory analyzes and tests – tritium determination in surface waters	Ing. B. Sedlářová	Povodí Labe, s. e.
The monitoring of total atmospheric deposition	Ing. A. Petránová	The Krkonoše Mountains National Park
New procedures for the treatment and stabilization of sewage sludge from small municipal sources	Ing. A. Petránová	Technology Agency of the CR
New nuclear facility at Nuclear Power Plant Temelín including transferring power to the Kočín substation	Ing. E. Hanslík, CSc.	Nuclear Research Institute Řež, a. s.
The content of radioactive substances in the Orlík water reservoir	Ing. E. Hanslík, CSc.	Povodí Vltavy, s. e.
Site remediation (removal of contamination)– Nuclear Research Institute Řež	Ing. E. Hanslík, CSc.	Nuclear Research Institute Řež, a. s.
Conditions for the transposition and implementation of a risk analysis system for drinking water supply in the Czech Republic	RNDr. D. Baudišová, Ph.D.	Technology Agency of the CR
Radiation Monitoring Network Water contamination monitoring sites	Ing. E. Hanslík, CSc.	Ministry of the Environment
Determination of tritium in surface water influenced by waste water discharged from Temelín Nuclear Power Plant	Ing. B. Sedlářová	Povodí Vltavy, s. e.
Determination of pesticides in crops hop	Ing. V. Očenášková	PP servis, a. s.
Systems for on-line measurement of artificial radioactivity in surface waters in case of accident of a nuclear power station with remote data transmission	Ing. E. Hanslík, CSc.	National Radiation Protection Institute
Development of contamination by radioactive substances in the Ploučnice River	Ing. E. Hanslík, CSc.	DIAMO, s. e.
Support to activities of the permanent and emergency component of nationwide Radiation Monitoring Network	Ing. E. Hanslík, CSc.	SONS
Branch of Water Protection and Informatics		
Updating of water resource protection zones	Ing. H. Nováková, Ph.D.	Ministry of the Environment
Water balance, audit and evaluation in the field of water quantity and quality	Ing. J. Dlabal	Ministry of the Environment
Data support to state administration in water management and preparation of cartographic outputs in relation to Operational Programme Environment	Ing. T. Fojtík	Ministry of the Environment
Data support to state administration in water management and preparation of cartographic outputs	Ing. T. Fojtík	Ministry of the Environment

Title	Project manager	Client
Monitoring of the impact of the Dukovany Nuclear Power Plant on the quality of water in the Jihlava River	RNDr. H. Mlejnková, Ph.D.	Czech Power Works, a. s.
The support of the representation of the Czech Republic in activities of the International Commission for the Protection of the Elbe River (ICPER)	Ing. M. Kalinová	Ministry of the Environment
The support of the participation of the Czech Republic in activities of the Czech-German Commission for Cross-Border Water	Ing. M. Kalinová	Ministry of the Environment
Pole of Growth I. – Water for Prague	Mgr. A. Zbořil	Prague City Hall
Reporting of emissions from water management	Mgr. S. Semerádová	Ministry of the Environment
Bathing waters reporting – update of the delimitation	Ing. T. Fojtík	Ministry of the Environment
Cooperation with Austria on transboundary waters	RNDr. H. Mlejnková, Ph.D.	Ministry of the Environment
Creation of web application	Ing. T. Fojtík	Ministry of the Environment
Water management balance of surface water quantity in subbasins Upper Vltava, Berounka and Lower Vltava	Ing. P. Vyskoč	Povodí Vltavy, s. e.
Calculation of water management balance	Ing. P. Vyskoč	Ministry of the Environment
Development of simulation model for the catchment of Želivka River and data management	Ing. J. Picek	Ministry of Interior
Reporting for the EC in accordance with Article 15 of the Water Framework Directive	Ing. P. Vyskoč	Ministry of the Environment
Report on the state of water management in the Czech Republic – comprehensive preparation of documents in the area of competence of the Ministry of the Environment	Ing. J. Dlabal	Ministry of the Environment
Branch of Water Technology and Wastes		
Accredited collection and analysis of samples of wastewater from wastewater treatment plants	Ing. M. Beránková	Nuclear Research Institute Řež, a. s.
Harmonization of Legislation with the EU Directive for Waste Water Management	Ing. J. Kučera	Czech Development Agency
Impact assessment of point sources and proposals of measures	Ing. J. Kučera	Ministry of Interior
Activity of Testing Laboratory of water management facilities	Ing. J. Čapková	Joint contract
Reporting under Articles 15 and 17 of Council Directive 91/271/EEC	Ing. J. Čapková	Ministry of the Environment
River flow in urban area – determination and optimization of anthropogenic pressures	RNDr. J. Fuksa, CSc.	Prague City Hall
Technical and economical optimization of tertiary technologies for the removal of PPCP from waste water	Ing. M. Váňa	Technology Agency of the CR
The development of a Methodology for testing of activated carbon on the Želivka Water Treatment Plant for the purposes of the selection of type of activated carbon on sorption filters for ionization in the production of drinking water	Ing. M. Váňa	Želivka Water Treatment Plant
Brno Branch		
Hydrochemical water monitoring – Vita-Min	RNDr. D. Němejcová	Bioanalytika CZ, s. r. o.
Intercalibration for assessment of biological components	RNDr. D. Němejcová	Ministry of the Environment
Monitoring of long-term changes in biological diversity of running waters during climate change	RNDr. D. Němejcová,	Ministry of the Environment
Monitoring the quality of water and biota before and after the implementation of nature-friendly measures in a catchment area and in watercourses	RNDr. D. Němejcová	Ministry of the Environment
Notification of vulnerability and support of natural landscape functions in conditions of changed Climate in large special areas of conservation	Mgr. J. Kroča	Technology Agency of the CR
New approaches to optimization of territorial integrated protection systems	Ing. K. Drbal, Ph.D.	Ministry of Agriculture
The expert support for the evaluation and mitigation of flood risks	Ing. K. Drbal, Ph.D.	Ministry of the Environment
Optimization of automatic irrigation systems for the use of treated waste water – measures to reduce drought risks and eutrophication of surface water sources	Ing. M. Rozkošný, Ph.D.	Technology Agency of the CR

Title	Project manager	Client
Support for the revision of the procedures of evaluation of material flood damage in the Czech Republic	Mgr. P. Štěpánková, Ph.D.	Ministry of the Environment
Expert support of the Czech Republic's participation in the International Commission for the Danube River Protection	Ing. S. Juráň	Ministry of the Environment
Procedures for solving the quality of the aquatic environment in the context of heritage care	Ing. M. Rozkošný, Ph.D.	Ministry of Culture
Cooperation with the Slovak Republic on transboundary waters	Ing. S. Juráň	Ministry of the Environment
Study of runoff conditions and comprehensive proposals for measures in the part of the catchment of the Želivka – Švihov reservoir	Ing. K. Drbal, Ph.D.	Prague City Hall
System of Water Management Infrastructure Monitoring and Maintenance	Mgr. P. Štěpánková, Ph.D.	Ministry of Agriculture
Evaluation of seminatural measures, catalog of measures	Ing. M. Dzuráková	Ministry of the Environment
Ostrava Branch		
Cost-effectiveness analysis	Ing. T. Sezima, Ph.D.	Ministry of the Environment
Expert information system NAVAROSO	RNDr. P. Soldán, Ph.D.	Technology Agency of the CR
Assessment of ecological and chemical status of surface water for the period 2013–2015	Ing. P. Tušil, Ph.D.	Joint contract
Professional support of legislative regulations in the field of water management	Ing. T. Mičaník, Ph.D.	Ministry of the Environment
Expert support for monitoring and assessment of surface and groundwater status	Ing. M. Durčák	Ministry of the Environment
Support to the participation of the Czech Republic in the activities of the International Commission for the Protection of the Odra River against Pollution	Ing. P. Tušil, Ph.D.	Ministry of the Environment
Project assessment in relation to No. 4. (or 4.7) Directive 200/60/EC, Humpolec rest area, km 88.3 on the left	Ing. R. Kořínek, Ph.D.	Highway and Road Directorate
Assessment of the project in relation to Article 4 of Directive 2000/60/EC	Ing. P. Tušil, Ph.D.	Joint contract
The assessment of the construction of D35 Opatovice-Ostrov	Ing. T. Sezima, Ph.D.	Highway and Road Directorate
Cooperation in transboundary waters with Poland	Ing. M. Durčák	Ministry of the Environment
Elaboration of expert opinion on the impact assessment on water bodies for the project Completion of the 1st railway corridor in section Lanžhot (CZ) – Kúty (SR)	Ing. T. Sezima, Ph.D.	SZDC
Branch of Applied Ecology		
Update of the simulation model of surface water quality and its adaptation to the new legislation and new data sources in sub-basins Upper Vltava, Berounka, Lower Vltava and other Danube tributaries	Mgr. P. Rosendorf	Povodí Vltavy, s. e.
Detailed monitoring of chemistry in European significant site Šumava and national natural monument Blanice	Ing. V. Kladivová	Nature Conservation Agency of the Czech Republic
Dyje 2020 – THAYA 2020	Ing. J. Musil, Ph.D.	Povodí Moravy, s. e.
Hydraulic monitoring and biological assessment of migration permeability of Water Duct Děčín and Water Work Geesthacht	Ing. J. Musil, Ph.D.	Directorate of Waterways of CR
Hydrological, hydromorphological and biological exploration of changes in experimental measures in 2016	Ing. J. Musil, Ph.D.	Directorate of Waterways of CR
Hydraulic, hydromorphological and biological research of changes in experimental measures in 2017 – Improvement of navigation conditions on the Elbe in section Ústí n. Labem-the border of the Czech Republic/Germany-Navigation Step Děčín	Mgr. E. Bouše	Directorate of Waterways of CR
Comprehensive localization and Categorization of non-point agricultural pollution localities threatening the quality of water from the concentrated surface runoff and from sub-surface sources of pollution (drainage water) in the catchment area of the Upper Vltava, Berounka, Lower Vltava, other tributaries of the Danube and subcatchment of Želivka	Mgr. P. Rosendorf	Povodí Vltavy, s. e.
Fish meat security in freshwaters and aquaculture of the Czech Republic: Do we know what we are eating?	Ing. J. Musil, Ph.D.	Technology Agency of the CR

Title	Project manager	Client
Monitoring and evaluation of the concentration of polyaromatic hydrocarbons (PAHs) in surface waters in vicinity of Nuclear Power Plant Dukovany – 1st stage	Mgr. P. Rosendorf	Nuclear Research Institute Řež, a. s.
Protection of Critical Infrastructure – Želivka water resource against the effects of PPCP and pesticides in the conditions of long-term drought	Mgr. P. Rosendorf	Ministry of Interior
Support for the natural environment and the occurrence of the Freshwater Pearl Mussel in the catchment of Malše River	Ing. V. Kladivová	Ministry of the Environment
Strengthening and protection of the population of the Freshwater Pearl Mussel in Šumava National Park	RNDr. Z. Hořická, Ph.D.	Beleco, z. s.
Estimation of the influence of the new nuclear facility at Nuclear Power Plant Dukovany on bodies of surface and groundwater	Mgr. P. Rosendorf	Nuclear Power Plant Dukovany II.
Procedures for compilation and verification of water footprint according to international standards	Ing. L. Ansorge, Ph.D.	Ministry of Agriculture
Prediction of the hazards of non-native fish and crayfish and optimization of eradication methods of invasive species in Programme EPSILON	RNDr. J. Svobodová	Technology Agency of the CR
Software tools for evaluation of aquatic ecosystems – link to biological components	Mgr. P. Kožený	ŠINDLAR
Preparation of a Strategy to mitigate the effects of fragmentation of river networks in the Czech Republic	Ing. J. Musil, Ph.D.	Norway Grants-Ministry of the Environment-Nature Conservation- Agency of the Czech Republic
Utilization of artificial and natural structures for revitalization and increase of biological and morphological diversity of Prague streams	Mgr. P. Kožený	Prague City Hall
Expert support at discussions and implementation of results of water management studies for the needs of EIA of new nuclear facility at Nuclear Power Plant Dukovany	Mgr. P. Rosendorf	Nuclear Research Institute Řež, a. s.
ASLAB Centre for Assessing Proficiency of Laboratories		
ASLAB Accreditation	Ing. R. Dvořák	Joint contract
Courses – Good Laboratory Practice	Ing. P. Finger	Ministry of the Environment

ABSTRACTS OF PROJECTS

BRANCH OF HYDRAULICS, HYDROLOGY AND HYDROGEOLOGY

Project title:
Increasing water resources availability in selected areas of Karlovy Vary Region

Contracting authority:
Ministry of Agriculture

Duration:
4/2015–12/2018

Project team:
Ing. Adam Beran, doc. Ing. Martin Hanel, Ph.D., Ing. Adam Vizina, Ph.D., Ing. Petr Vyskoč, Ing. Libor Ansorge, Ph.D., and River Board Povodí Ohře, s. e.

Description:
The objective of the project is a development of certified methodology for proposal of adaptation measures leading to increasing reliability of water resources in the periods of water stress using existing infrastructures as much as possible. The methodology will be validated at pilot catchments in Karlovy Vary Region. The proposed methodology will be useful for river basin administrators (Povodí, s. e.), water companies or other important water users or water authorities and regional authorities. It will support the sustainable development of water resources under conditions of climate change in water management planning. The methodology will be accompanied by the appropriate software to facilitate its application, in particular with regard to the classification of the measures proposed in the river basin district plans. Construction and validation the methodology will be based on a pilot application for the territory of the Karlovy Vary Region.

In 2017, one of the project activities was focused on assessment of water balance and water demand. The tool was the method of simulation modelling of storage function of water management system. The simulation model was streamlined and evaluation of provision of water supplies and minimum flow rates under current hydrological conditions. The assessment of the prospective status including the potential impacts of climate change and the effect of the inclusion of new elements in the water management system (proposed water reservoirs and water transfers) will continue in 2018. Monitoring continues at gauges built in 2016. A first assessment of water flow was carried out (time series of approximately 1.5 year).

Project title:
RESIBIL – The balance of water resources in Eastern part of Czech-Saxon border region and review of potential of their long-term use

Contracting authority:
European Regional Development Fund

Duration:
2016–2019

Project team:
doc. RNDr. Zbyněk Hrkal, CSc., Mgr. Pavel Eckhardt, Mgr. David Rozman, RNDr. Eva Novotná, RNDr. Vratislav Nakládal, Mgr. Marta Martínková, Ph.D.

Description:
The project objective of the project is to evaluate the possibilities of long-term use of groundwater resources in Czech-Saxon border region and stability of water resources against changes caused by climate changes and extreme weather fluctuations such as drought. Project will provide a system of consequent models – comprehensive decision-making system. It will be possible to make a reliable conclusion on availability of groundwater storages, on their sensitivity to extreme climate changes (e.g. impacts of drought), on the possibilities of their use and on adaptation measures in connection with the changed water regime and the water balance in the landscape.

Project title:
Solving drought issues

Contracting authority:
Ministry of the Environment

Duration:
2017–2018

Project team:
Ing. Adam Vizina, Ph.D., RNDr. Josef V. Datel, Ph.D., Ing. Miriam Dzuráková, Ing. Adam Beran, RNDr. Denisa Němejcová, Ing. Viktor Levitus, doc. Ing. Martin Hanel, Ph.D., Ing. Radek VInas, Ing. Anna Hrabánková, Ing. Tomáš Sezima, Ph.D., Ing. Tomáš Mičaník, Ph.D., Ing. Milena Forejtníková, Ing. Petr Vyskoč, RNDr. Hana Prchalová, Ing. Jiří Dlabal (TGM WRI, p. r. i.), Ing. Petr Pavlík (Czech University of Life Sciences), CzechGlobe, Czech Technical University, et al.

Description:
The public contract is focused on research activities aiming at improving the readiness of the Czech Republic for the increasingly frequent and intensive drought episodes. Activities can be divided into four main areas:

1. The creation of a draft of "Concept of Protection against Drought Consequences for the Territory of the Czech Republic" – this draft was ordered by Government Resolution 620/2015 to Ministry of the Environment and Ministry of Agriculture.

2. The construction of the online drought management system including the follow-up operational plans – several major shortcomings have been identified in the drought 2015: lack of legislation, impossibility of evaluation of drought and water scarcity intensity, lack of awareness of competent authorities or the public, lack of communication with the largest customers, missing methodological procedures, how to deal with the situation. All the aforementioned shortcomings are addressed within this part of the contract.

3. Support to a comprehensive solution to drought issues including determination of the effectiveness of nature-friendly measures – one of main tasks of the Department of Water Protection of the Ministry of the Environment is to promote a comprehensive way of dealing with drought and floods. This partial task is also focused on the fulfilment of the Government Resolution No. 727 of 24 August 2016: the Department of Water Protection of Ministry of the Environment was assigned to propose a comprehensive approach to nature-friendly measures in the catchment area of four water reservoirs (Pěčín, Vlachovice, Šanov and Senomaty). Activities are directed to the application of nature friendly and partially technical measures that will be modelled using the balance and physical models and evaluated from the perspective of effectiveness and costs. The aim is to find the most appropriate solution in the form of a comprehensive set of measures, which is still missing.

4. Extension of the monitoring system and increasing of system performance at low flow rates during a drought episode – Monitoring includes both partial construction and design of the monitoring network, and comprehensive monitoring at two sites. Monitoring will begin before the individual measures are implemented in order to assess their impact over time.

Project title:
Compensation of negative climate change impacts on water supply and ecosystems using the localities for potential accumulation of surface water

Contracting authority:
Technology Agency of the CR

Duration:
7/2014–12/2017

Project team:
doc. Ing. Martin Hanel, Ph.D., Ing. Roman Kožín, Ing. Ladislav Kašpárek (TGM WRI, p. r. i.), doc. Ing. Petr Máca, Ph.D., Ing. Petr Bašta (Czech University of Life Sciences)

Description:
The main objective of the project was to provide a more accurate data basis for the General Plan of protected localities for surface water accumulation, and for the third cycle of the river basin management plans update. This refinement consists of the data replenishment from the non-observed localities and evaluation of storage function security for the individual protected localities (potential reservoirs). In addition, the results were summarized in the form of specialized maps reflecting a vulnerability of the individual catchments and security of the storage function of particular potential reservoirs. The individual procedures were been generalized in the methodology used for the comprehensive assessment of security of the storage function of potential reservoirs with respect to climate change. In addition, the impact of near-natural retention and storage measures was been assessed. The procedures were been encapsulated into a software package that is other project output.

Project title:
Reconstruction and extension of the Central Wastewater Treatment Plant in Prague

Contracting authority:
Prague City Hall, Strategic Investment Department

Duration:
2016–2017

Project team:
Ing. Pavel Balvín, Ing. Miroslava Benešová, Ing. Zdeněk Bagal, Ing. Jan Hlom

Description:
The subject of the research is to determine the hydraulic variables and proposal of measures in the area of the Troja wally. The results were obtained on two physical models in scale 1 : 70 and 1 : 75. The results will be used as the basis for the refinement of the flood protection model of the city of Prague in Troja wally. The project has unequivocally demonstrated the indispensability of physical modelling as a modelling tool, which has still an irreplaceable role.

REFERENCE LABORATORY OF ENVIRONMENT COMPONENTS AND WASTES

Project title:
Determination of drugs and their metabolites in surface waters

Contracting authority:
Povodí Labe, s. e.

Duration:
2017

Principal investigator:
Ing. Věra Očenášková

Description:
Determination of drugs and metabolites in surface waters according to customer requirements.

Project title:
Conditions for the transposition and implementation of a risk analysis system for drinking water supply in the Czech Republic

Contracting authority:
Technology Agency of the CR

Duration:
2016–2017

Principal investigator:
RNDr. Dana Baudišová, Ph.D.

Description:
The main objective of the project is to help public authorities in public health (Ministry of Health) to implement an optimal transposition of the amendment to the EU Drinking Water Directive. The project ensures that Czech legislation is professionally sound and based on the needs of water producers in the Czech Republic. Introducing risk analysis into practice will lead to increased drinking water safety.

Project title:
Criteria and requirements for the competence of persons authorized to sample water

Contracting authority:
Technology Agency of the CR (program Omega)

Duration:
2016–2017

Principal investigator:
Ing. Alžběta Petránová

Description:
Sampling of water and liquid sludge is part of the systematic process of monitoring the quality of water in the environment. According to the Water Act (§ 92), the analyses of samples taken may be carried out only by authorized laboratories whose operation is governed by strict internationally recognized standards as defined in the Technical Standard EN ISO/IEC 17025. While sampling, it is necessary to meet the requirements of the technical standards of the ISO 5667 series, which require the availability of both qualified sampling personnel and, in particular, competent persons able to ensure sampling of water and liquid sludge (i.e., plan, manage and implement all related procedures).

The certified "Methodology of Criteria and Requirements for the Persons Authorized to Sample Water" was created in the project. It defines "Water Sampling Specialist". According to the National Qualifications Framework, this is a professional qualification of the qualification level 3.

This methodology defines the recommended qualification standard for the given professional specialization and also presents comprehensive educational materials for acquiring the necessary knowledge and competencies of these persons. The methodology can also be used by applicants for a "water sampling manager" personal certificate, or for those who carry out the training and education of sampling personnel.

The content of the methodology is based on detailed knowledge of the theoretical and practical aspects of the given issue and its parts have been subject to verification in application practice. Particular attention is paid here to the methodology of sampling, the necessary tools and the equipment of the sampling personnel, the formal documentation tools and the requirements for ensuring the safety and protection of health at work in the field. As the methodology conceives the water sampling process in a comprehensive way, it can be applied not only in the education and training of sampling personnel but also as a methodical aid to their daily practice and of sampling managers.

Project title:
Monitoring and evaluation of changes in regime and quality of surface water and groundwater at the Nuclear Power Plant Temelín

Contracting authority:
CEZ, a. s.

Duration:
2000–2017

Principal investigator:
Ing. Eduard Hanslík, CSc.

Description:
The monitoring and assessment of impacts of nuclear power plant Temelín (NPP Temelín) on environment was carried out. The client was CEZ Group; the project activities followed the

conclusions of discussions on impacts of changes in buildings on the environment (EIA). Outputs represent a new reference level before the completion of a new nuclear power facility at NPP Temelín.

Project title:
Site remediation (removal of contamination) – Nuclear Research Institute Řež

Contracting authority:
Nuclear Research Institute Řež, a. s.

Duration:
2017

Principal investigator:
Ing. Eduard Hanslík, CSc.

Description:
The project objective is the monitoring and the evaluation of the effects of remediation of impacts of past contamination on the environment. The effects of remediation of impacts of past contamination at the Nuclear Research Institute Řež on the hydrosphere and other components of the environment were monitored. These are part of the bases for the assessment of the effectiveness of remedial measures taken in the framework of the Implementation project of the remediation activities.

BRANCH OF WATER PROTECTION AND INFORMATICS

Project title:
Updating of water resource protection zones in the Czech Republic

Contracting authority:
Ministry of the Environment

Duration:
2015–2017

Principal investigator:
Ing. Hana Nováková, Ph.D.

Description:
The project objective is to update the spatial data of water resource protection zones (WRPZ) and the protective zones of the water reservoirs (PZWR) in such way that the resulted layer would contain only zones their validity and accuracy was verified by the water authority (regional authority (RA) or the municipality with extended competence (MEC)). A scan of the relevant water decision (measures of a general nature) will be attached to each zone. In 2017, the communication with water authorities continued to obtain the data for update of WRPZ. The water authorities were informed about the approaching end of the project and the consequences of not having the necessary documents.

During the year, evidence from 72 MECs was obtained. 16 inputs from agricultural entities were collected and incorporated. An export from the water editor of the Ministry of Agriculture was inspected and any changes were reflected in the database. The documents of all 47 drinking water reservoirs were obtained from river basin administrators (Povodí, s. e.). Project ended in November 2017. In total, data from 5 regional authorities were obtained. Individually, data from 135 MECs were edited. The total number of polygons of zones in resulting databases is 17.466 WRPZs and 1.466 PZWRs. Contracting authority requested only the export of validated and valid zones with attached scanned document. It means 14.373 WRPZ polygons and 1.457 PZWR polygons. The editing of zones was finished on 22nd November 2017. The resulting database, with the document scans, was handed over to the Ministry of the Environment on 6 DVDs on 29th November 2017.

Project title:
Cooperation with Austria on transboundary waters

Contracting authority:
Ministry of the Environment

Duration:
2017 (long-term activity)

Principal investigator
RNDr. Hana Mlejnková, Ph.D.

Description:
The project is a part of the activities carried out within the framework of the long-term state administration support for the Ministry of the Environment. In 2017, the activities are set at meetings of the Czech-Austrian Commission for transboundary waters. Specifically, the activities were given by the Protocols from the 23rd meeting and from the 24th meeting of the Czech-Austrian Commission for transboundary waters. The Commission was established based on the Treaty between the Czechoslovak Socialist Republic and Austria on Water Management Issues on Transboundary Waters. Activities carried out in 2017 were focused on securing long-term activities and addressing topical issues at border watercourses with Austria. The activities in 2016 were: active participation of water quality expert at meetings of the Czech-Austrian Commission for transboundary waters, coordination of monitoring of boundary waters on all important watercourses (Dyje, Malše, Lužnice, etc.) in cooperation with the river basin administrators (Povodí, s. e.) according to updated Programme of Monitoring of Quality of Czech-Austrian Transboundary waters for 2017, evaluation of the quality in border watercourses in 2017, evaluation of Czech-Austrian inter-laboratory exams of validity of analytical methods and update of Programme of Monitoring of Quality of Czech-Austrian Transboundary waters for 2018. In 2016, activities continued in relation to the issue of the production and discharge of wastewater from the Austrian chemical plant Jungbunzlauer in Pernhofen into the Dyje River in September 2016. In 2017, the intensive monitoring was carried out in order to evaluate objectively the impact of the discharge on Dyje River.

Project title:
Monitoring of the impact of the Dukovany Nuclear Power Plant on the quality of water in the Jihlava River in 2016

Contracting authority:
Czech Power Works, a. s.

Duration:
2015–2018

Principal investigator:
RNDr. Hana Mlejnková, Ph.D.

Description:
The programme of monitoring of the impact of the Dukovany Nuclear Power Plant (NPP) on water quality is focused on implementation of the inspecting long-term monitoring in the Jihlava River and in the Dalešice-Mohelno reservoir system in order to assess the impact of discharge of waste water from the Dukovany NPP on surface water quality. The monitoring is based on the contract with CEZ. In 2017, the monitoring was carried out in same extent as in previous years. Thanks to that, the measured data are continuous and it is possible to evaluate trends of water quality in long term. Monitoring in 2017 followed on previous monitoring that is ongoing since 2002. The monitoring was focused on the physic-chemical, chemical, biological and radioactive water indicators at representative monitoring sites. The localization of these sites allows to compare the water quality above the outlet of wastewater from NPP Dukovany and bellow the system Dalešice – Mohelno – NPP Dukovany. In 2017, the long-term input of pollution was confirmed from the upper part of the catchment of Jihlava River into the Dalešice reservoir. It was also confirmed that the water quality in the Mohelno reservoir is influenced by the outlet of wastewater from the NPP Dukovany which is manifested in particular by increased conductivity, reflecting the content of inorganic electrolytes and tritium. A significant problem was again the increase in nitrogen content in the form of nitrates, which is the potential for eutrophication of surface water. Biological monitoring has not proved the direct impact of wastewater on surface water quality. The results of long-term systematic monitoring of water quality, trends and links between pollution and the quality of the water in a major water management system will be evaluated at the end of 2018 over a five-year time horizon.

Project title:
The support of the representation of the Czech Republic in activities of the International Commission for the Protection of the Elbe River (ICPER)

Contracting authority:
Ministry of the Environment

Duration:
2017 (long-term activity)

Project team:
Ing. Marie Kalinová, Mgr. Pavel Rosendorf, RNDr. Hana Prchalová, et al.

Description:
The aim of the project is to provide expert support for ICPER activities in certain fields, the preparation of documents and participation of the TGM WRI, p. r. i., employees at the activities of the ICPER expert groups. In 2017, the TGM WRI, p. r. i., participated mainly at the activities of expert group Surface Water (SW), expert group Nutrients (NP) and expert group Groundwater (GW). The employees of the other organizations (Povodí, s. e., CHMI, etc.) participate also in activities of expert groups. Main task of the expert groups was in 2017 preparation of the Strategy for nutrient management in international river basin district, update of the International Programme of the Elbe River monitoring, elaboration of the document the Strategy of the International Label Measurement Program, preparation of the Water Quality Report in the Elbe and its tributaries for the period 2013–2018 and detailed monitoring of PCB in sediments along the Elbe as a result of contamination from 2015.

Project title:
The support of the participation of the Czech Republic in activities of the Czech-German Commission for Cross-Border Water (Permanent Committee Saxony and Permanent Committee Bavaria)

Contracting authority:
Ministry of the Environment

Duration:
2017 (long-term activity)

Project team:
Ing. Marie Kalinová, Ing. Věra Kladivová, Mgr. Pavel Eckhardt, et al.

Description:
The objective of the project is a long term provision of expert materials to Ministry of the Environment for cooperation on cross-border water and a support of activity of both the Permanent Committees. The issues are solved in Czech-German expert groups, alternatively in direct collaboration of Czech and German experts. Employees of TGM WRI, p. r. i., participate on preparation of expert materials for meetings of expert groups and superior bodies of this cooperation. The project activities are diverse: from conceptual and methodological documents to solving of specific problems of individual localities, the procedures of the Water Framework Directive are implemented on border waters. Employees of other organizations (Povodí, s. e., CHMI, etc.) also participate in this activity. In 2017, the experts from TGM WRI, p. r. i., participated in direct collaboration of Czech and German expert institutions on solution of the problems of cross-border water bodies, the quality of surface water and groundwater protection. The differences in assessment of the status of common bodies of surface water origin as a consequence of different range of monitoring and of implementation of different methodologies, especially when applying environmental quality standards. In the Bavarian section, the activity was focused on a common solution to problematic locations: protection of Margaritifera margaritifera and Unio crassus in the area of town Aš (Asch), water protection against eutrophication in the lake Dračí jezero (Drachensee) in the catchment of Kouba, issues of nutrient pollution in the Skalka reservoir on Ohře river, mercury pollution in the Ohře River and in Reslava River and joint inspections of selected border watercourses.

BRANCH OF WATER TECHNOLOGY AND WASTES

Project title:
River flow in urban area – determination and optimization of anthropogenic pressures

Contracting authority:
Prague City Hall

Duration:
2017–2018

Project team:
RNDr. Josef K. Fuksa, CSc., Ing. Václav Šťastný, Ing. Lenka Matoušová, et al.

Description:
The two-year project (2017–2018) addresses the anthropogenic pressures on water quality in the Vltava River (pollution in general, the influence of tributaries and the outflow of sewage) in order to optimize and improve the integration of the river into the life of the city.

Project title:
Activity of Testing Laboratory of Water Management Installations in 2017

Duration:
permanent activity

Project team:
Ing. Jana Čapková, Ing. Martina Beránková, Vojtěch Mrázek, Ing. Martin Novák

Description:
The Testing Laboratory of Water Management Installations is a part of the Testing Laboratory of Technologies and Environmental Components in TGM WRI, p. r. i., which is accredited by the Czech Accreditation Institute under the number 1492. The Testing Laboratory of Water Management Installations tests mainly treatment efficiency of domestic waste water treatment plants (WWTP) according to the CSN EN 12566-3. Since 2014, it is possible to test treatment efficiency of domestic waste water treatment plants behind septic tank according to the

CSN EN 12566-6. We also do accredited tests of separators for light liquids (according to the CSN EN 858-1.) and grease separators (according to the CSN EN 1825-1) in the testing laboratory. It is also possible to test different water management installations according to customer's requirements in a non-accredited way.

In 2017, five devices were tested in the testing laboratory. The accredited testing was completed for one domestic WWTP according to the CSN EN 12566-3 and for one grease trap according to CSN EN 1825-1, chap. 8.5. The testing in unaccredited regime was completed for one WWTP (system septic, filter). Currently there are two WWTPs in the testing phase (in an accredited regime).

Project title:
Reporting under Articles 15 and 17 of Council Directive 91/271/EEC in 2017

Contracting authority:
Ministry of the Environment

Duration:
ongoing activity

Principal investigator:
Ing. Jana Čapková

Description:
The project aim is to create a complete basis for checking the status of fulfillment of the articles No. 15 and 17 Council Directive No. 91/271/EEC in the Czech Republic.

In 2017, the project was focused on processing and verification of data on municipal sources of wastewater pollution. The collected data are used to inform European Commission about the status and treatment of urban wastewater from agglomerations above 2 000 PE in accordance with Articles 15 and 17 of Council Directive No. 91/271/EEC concerning urban waste water treatment.

Project title:
Harmonization of legislation with the EU Directive for Waste Water Management

Contracting authority:
Czech Development Agency

Duration:
2016–2018

Project team:
Ing. Jiří Kučera, RNDr. Josef K. Fuksa, CSc., Mgr. Daniel Fiala, Ing. Hana Nováková, Ph.D., Ing. Jana Čapková

Description:
Within the framework of foreign development assistance in Moldova, a proposal is prepared for delimitation of agglomerations under Directive 91/271/EEC on urban waste water treatment in cities with more than 10 000 inhabitants (data from 24 cities were processed in 2017) and drafting demarcation of sensitive areas under the same Directive. In 2017, a one-week study visit of a delegation from Moldova was organized. The participants were acquainted with the process of permitting and controlling wastewater discharges (including meetings with various stakeholders) and examples of specific solutions for urban sewage treatment plants. Within the framework of the training organized at the Ministry of Agriculture, Local Development and Environment, the participants from the staff of the State Environmental Inspectorate and water supply and sewerage operators were acquainted with the problems of designing and operating urban sewage treatment plants.

Project title:
Technical and economical optimization of tertiary technologies for the removal of PPCP from waste water

Contracting authority:
Technology Agency of the CR

Duration:
2017–2019

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

Description:
The aim of the project is to develop and verify the technology suitable for tertiary waste water treatment from some specific pollutants (PPCP – Pharmaceuticals and Personal Care Products) from the pretreated waste water, which will allow the re-use of the treated waste water.

In 2017, a preparatory phase was conducted: a review of literature dealing with PPCP removal was carried out, followed by a detailed update of the tertiary treatment issues, especially the filtration of waste water through activated carbon.

For the screening of the current situation on the existing waste water treatment plants, three sites (treatment plants) were selected for sampling and analysis of the 24-hour mixed samples on the inlet and outlet. Consequently, designing was started. The output of this activity is the basis for the production of the tertiary filter.

BRNO BRANCH

Project title:
Hydrochemical monitoring of waters

Contracting authority:
BIOANALYTIKA CZ, s. r. o. / Ústí nad Labem Region

Duration:
2/2017–1/2018

Project team:
RNDr. Denisa Němejcová, RNDr. Blanka Desortová, CSc., Mgr. Michal Straka, Ph.D., RNDr. Ladislav Havel, CSc., Mgr. Marek Polášek

Description:
The aim was to add knowledge about water quality and its recovery in selected small water bodies created as a result of mining activities in the Ústí nad Labem Region in connection with the results obtained from the previous project VODAMIN. The project VODAMIN dealt with the problems of mine and old water, due to the absence of conceptual management of hydric reclamation of residual pits. TGM WRI, p. r. i., processed a part aimed at obtaining a data base on the biological recovery of small water reservoirs and pools of phytoplankton, zooplankton and benthic invertebrates. In total, 24 monitoring sides (divided in 4 types) was observed in 10 phases of sampling campaigns. Analysis was performed of samples of phytoplankton, zooplankton and benthic invertebrates. The results were prepared and submitted in the form of test reports and at the final conference of the Saxon-Czech project "Vita Min" – Living with Mining to the contracting authority. Project website is http: //www.vitamin project.eu/en/index.html.

Project title:
Notification of vulnerability and support of natural landscape functions in conditions of changed climate in large special areas of conservation

Contracting authority:
Technology Agency of the CR

Duration:
2017–2019

Principal investigator:
Mgr. Jiří Kroča

Description:
The main objective of the project is to identify risks arising from predicted climate change with impacts on the landscape and its functions in the model area of the Protected Landscape Area of Beskydy. Based on the identified sensitivity and vulnerability of the landscape, identification of the main problems and the subsequent design of suitable adaptation measures and suitable management models will be carried out in order to support the main functions of the landscape and thus to create conditions for the existence of valuable habitats and species in conditions of changed climate.

The outputs of the project will be generalized and will provide expert support and background to public authorities for decision-making and conceptual work to ensure effective protection of nature in large-scale, specially protected areas, taking into account climate change.

The year 2017 was the first year of the project. The main objective for TGM WRI, p. r. i., was to select model groups of temporary fauna in watercourses, to carry out a review of historical data (by 2002), and to update recent biotope data that has not yet been investigated on the basis of previous adult determination studies. Plecoptera and Trichoptera were chosen as model groups. 16 localities where the adult trapping was carried out using the Malaise trap (April–December) were monitored and measurements of the basic physical and chemical parameters of the aquatic environment were carried out (April to December with a planned follow-up until the end of March 2018). At four localities in the national nature monument Skalická Morávka, Malaise's traps remained installed and will be removed at the end of March/April 2018. From the data collected, a "checklist" of the area of interest was compiled for the two monitored groups.

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

Contracting authority:
Technology Agency of the CR

Duration:
2017–2019

Principal investigator:
Ing. Miloš Rozkošný, Ph.D., Ing. Hana Hudcová,
Ing. Radek Novotný

Description:
The project, supported by the Czech Technology Agency, is dealt with in cooperation with Dekonta, a. s. (recipient) and TGM WRI, p. r. i. (co-recipient). The aim of the project is the development of an innovative automated system of utilization of pretreated waste water with residual nutrient concentrations for irrigation of energy crops or fruit tree plantations and its testing in pilot plant conditions. It includes designing and testing of optimal irrigation methods with regard to i) reducing the consumption of clean water for irrigation; ii) reduction of residual concentrations of nutrients, in particular phosphorus; (iii) limiting discharges from WWTPs to dry landfill recipients; (iv) the limitation of the input of harmful substances, including xenobiotics. The developed approach is aimed to be an alternative to introducing

chemical phosphorus precipitation, especially for small point sources of pollution and wastewater treatment systems, and for nature-friendly (extensive) wastewater treatment systems.

The year 2017 was the first year of the project. The research focused mainly on sampling and analysis of sewage water of municipal WWTPs of selected municipalities, including the detection of microbial contamination, the salting of waters and the determination of the content of selected drugs and hormonal substances whose water is used in research. The activity was directed on the design and realization of semi-operative irrigation systems with automatic control for the growth of selected fast growing trees and fruit trees, which will be operated with connection to the treated waste water and the comparative surface water in the next years. Control systems will be part of the systems; they will be tested on a laboratory scale in the first year.

Another project activity was focused on the processing of literature review on the issue of wastewater recycling by irrigation, the processing of review of patents regarding automated irrigation systems and the implementation of a questionnaire survey among the water authorities on the issue of permitting the use of treated wastewater during irrigation.

Project title:
System of Water Management Infrastructure Monitoring and Maintenance

Contracting authority:
Ministry of Agriculture

Duration:
2015–2018

Project team:
Mgr. Pavla Štěpánková, Ph.D., Mgr. Martin Caletka, et al.

Description:
The aim of the project is to implement a system which will allow effective control of monitoring and maintenance of water structures and watercourses in order to ensure the fulfilment of their basic purposes in a sustainable manner. The project leader is the firm VARS, a. s. (Ing. Robert Knap et al.), the project partners are TGM WRI, p. r. i., Brno University of Technology (Faculty of civil engineering (doc. Ing. Aleš Dráb, Ph.D. et al.). The project is financed by programme KUS of the Ministry of Agriculture.

System of water management infrastructure monitoring and maintenance will be based on the central register of the main asset of the water reservoirs and modifications of watercourses. The river basin administrators (Povodí, s. e.) maintains such registers.

The reference status of a given water reservoir will be determined based on available data (longitudinal and transverse cross sections and other in detail described technical components of a structure). These components will be converted to a digital terrain model. The digital terrain will be a reference model of water reservoir structure (summary of data describing the design/projected parameters).

The current (new) status of water reservoir will be determined using sonar devices (multi-ray sonar for continuous measurements of bottom, sub-bottom profiler and side-scan). The procedure for import of the current digital terrain model and sediment layers (measured by modern technologies and combined approaches) will be implemented in the system.

The differential comparison of given states and the change of bottom will be determined (localization of sedimentation zones and potential erosion. The morphological changes will be evaluated together with mathematical modelling with regard to the process dynamics and their influence on the fulfilment of the water reservoirs purposes. Based on that information, the effectiveness of maintenance and recommended solutions will be determined; alternatively, the intervention prediction will be carried out.

The system will be equipped with a web interface so that it will be accessible to the person acquiring monitoring data, as well as to the administrators of monitored water bodies and other authorized users.

The system and partial methodologies will be developed and verified on the data obtained at three pilot reservoirs with different type of using (drinking water reservoir, production of energy power, flood protection) and at three watercourses sections with different types of treatments and flow characteristics (weir reservoir, regulated flow without the influence of baffle device with earth dikes and regulated flow without the influence of baffle device in urbanized area).

Project title:
Study of run-off conditions and comprehensive proposals for measures in the part of the catchment of the Želivka – Švihov reservoir

Contracting authority:
Prague City Hall

Duration:
2017–2018

Project team:
Ing. Karel Drbal, Ph.D. et al.

Description:
The project aims at detailed proposals for anti-erosion and flood control measures in the catchment of the Želivka – Švihov water reservoir. These proposals will become the basis for subsequent comprehensive land-use adjustments. Adjustments to drainage and mitigation of erosion in the catchment will contribute to improvement of the security of drinking water supply to the population of Prague. So far, the following activities have been

carried out: analytical part of the solution, field investigations and selection of sites for hydrobiology monitoring. The project is funded by the Operational Program Prague, Pole of Growth I.

The project is focused on the catchment of the Želivka – Švihov reservoir: there are areas with a high degree of erosion hazard (about 130 km^2) that were identified in previous research, detailed proposals for measures are being prepared in these areas. These proposals will then be the basis for the launch of comprehensive land consolidation.

The interaction of anti-erosion and flood control measures with the quality of the aquatic environment, water ecosystems and the elimination of pollution transport is evaluated simultaneously with the search for a set of measures.

In 2017, the analytical part of the solution was carried out: pilot areas were selected on the basis of completed background data and field surveys. These are two hydrological units: catchment of the Bělá River and the catchment of Želivka River above the confluence with Bělá. Both catchments have a similar character in terms of relief and land cover, and both represent areas where adjustment of drainage is necessary. The town of Pelhřimov, a significant point source of pollution lies in the catchment area of the Bělá River.

For the whole pilot area, basic analyses have been carried out. They provided the identification of sites that are threatened by erosion the most. The creation of the proposals of comprehensive anti-erosion and flood control measures focused mainly on these sites. The proposal considers and, on a more detailed scale, evaluates the relevance and suitability of proposed elements from previous projects and from territorial documentation. The localized measures and new proposals will be verified and further finalized in the field in next project period.

The original intention of the project was to include a significant technical element of the protective measure in the set of activities and the elaboration of the implementation project. The assumption was that such a measure is already conceived in the plans of the joint facilities as one of the main outputs of completed comprehensive land adjustments (CLAs). However, after examining the existing proposals for measures in currently completed CLAs, such a technical element was not found. Similarly, the possibilities were examined of finding a suitable facility among the existing elements in the pilot area. Such facility would fulfil the idea by the addition or after the change of the purpose by subsequent reconstruction. As this eventuality was not successful, the search for the necessary protective measures proposed in the cadastral registers without completed CLAs was also proceeded. The proposals of reservoirs from the project Strategy for protection against the negative impacts of floods and erosion phenomena in the Czech Republic become the basis. In the pilot area, two reservoirs in the catchment of the Olešná were selected from these sources regarding the flood control function. Olešná is a right-hand tributary of the Bělá River. A detailed study of this concept of reservoirs will be carried out in the next project phase.

OSTRAVA BRANCH

Project title:
Expert information system NAVAROSO

Contracting authority:
Technology Agency of the CR

Duration:
2017–2019

Principal investigator:
RNDr. Přemysl Soldán, Ph.D.

Description:
Project is focused on creation of a database expert system for components of Integrated Rescue System, Czech Environmental Inspectorate and river basin administrators (Povodí, s. e.). The system will be working on stationary and mobile devices. The principles given in Methodology of process of announcements of emergency situations on watercourses are respected during construction of the system. The methodology was certified by the Ministry of the Environment. The system will provide cross-referenced data needed to quickly obtain information on possible causes of water quality degradation, procedures for determining the type of pollution and estimation of its spreading in the watercourse. This will make water protection more effective regarding mitigation of the negative effects of pollution by faster detection of its causes and also regarding the prevention of possible pollution by more accurate and faster information on its potential resources in given catchment.

Project title:
Professional support of legislative regulations in the field of water management

Contracting authority:
Ministry of the Environment

Duration:
2017–2021

Principal investigator:
Ing. Tomáš Mičaník, Ph.D.

Description:
The project is focused on preparation of documents, studies and expert opinions for creation of new legislative regulations and their updating, including the preparation and updating subordinate regulations. In 2017, the project was particularly focused on the amendment to the Methodical Instruction on the Implementation of Technical Inspections of Water Structures Declared pursuant to Section 15a of Act No. 254/2001 Coll. (Water Act) and to review existing environmental quality standards for selected specific pollutants listed in Table 1c of Annex 3 to Government Decree No. 401/2015 Coll. following the procedure recommended by the European Commission.

Project title:
Expert support for monitoring and assessment of surface and groundwater status

Contracting authority:
Ministry of the Environment

Duration:
2017–2021

Principal investigator:
Ing. Martin Durčák

Description:
In 2017, the partial aims of the project were the following activities:

cooperation with the Czech Hydrometeorological Institute during the update of the Framework Program for Monitoring;

professional support in solving the problem of bioavailability of selected metals using BLM models (Biotic Ligand Models);

elaboration of a proposal of the Methodology for the derivation of biologically available concentrations of selected metals for the needs of assessment of chemical status of bodies of surface water;

professional support of the participation of representatives of the Czech Republic and participation in selected working groups (WG Chemicals, WG Groundwater) for implementation of the WFD and its daughter directives on the assessment and monitoring of the status of surface and groundwater and the elaboration of selected documents to solve the tasks that arise from the activity of these working groups. Part of the solution was also the co-ordination of co-operation with selected expert bodies in the preparation of documents for the amendment of selected methodological procedures and cooperation with the Department of Water Protection of the Ministry of the Environment.

Project title:
Support to the participation of the Czech Republic in the activities of the International Commission for the Protection of the Odra River against Pollution (MKOOpZ)

Contracting authority:
Ministry of the Environment

Duration:
2017–2021

Principal investigator:
Ing. Petr Tušil, Ph.D., MBA, Ing. Martin Durčák,
RNDr. Přemysl Soldán, Ph.D., RNDr. Hana Prchalová

Description:
Activity regarding the proposal of a timetable and work schedule to ensure the preparation and implementation of the 3rd phase of planning in International Odra River Basin District (ORBD). Co-operation in the implementation of work activities in the working group G3 – Accidents in the preparation and provision of emergency drills for the cross-border disposal of serious pollution of border waters. At the same time, a joint exercise was held, in which a report was transmitted between the international early-warning headquarters. Work activities within the working sub-group GM – Monitoring were focused on testing a professional concept "Basic Technical Concept: ICPO GeoPortal Application – International Monitoring Stations – Odra". In the working subgroup of GP – Planning, the draft of a strategy of supraregional significant water management problems was elaborated in the ORBD.

Project title:
Cooperation in transboundary waters with Poland

Contracting authority:
Ministry of the Environment

Duration:
2017–2021

Principal investigator:
Ing. Martin Durčák

Description:
In 2017, the partial aims of the project were the following activities:

preparation and elaboration of relevant documents requested from the Czech side in the framework of the working groups Implementation of the WFD and Hydrologists and Hydrogeologists (expert group) for the area Police nad Metují – Kudowa Zdrój, Adršpach – Krzeszów and catchments of Upper and Middle Stěnava River including joint measurements of surface water at the border;

continuous monitoring of selected gauges of groundwater and surface water in the area of the Polická pánev;

preparation of documents and expert opinions for the meetings of the Czech-Polish Commission for Transboudary Waters.

Branch of Applied Ecology

Project title:
Protection of Critical Infrastructure – Želivka water resource against the effects of PPCP and pesticides in the conditions of long-term drought

Contracting authority:
Ministry of Interior

Duration:
2017–2020

Project team:
Mgr. Pavel Rosendorf, Mgr. Daniel Fiala, Ing. Jiří Kučera, Ing. Miroslav Váňa, Ing. Jiří Picek (TGM WRI, p. r. i.), Ing. Lenka Vavrušková, Ing. Zuzana Nováková, Ing. Bohdana Tláskalová (PVK, a. s.), Ing. Petr Pěkný, Libor Rambousek (Želivská provozní, a. s.), et al.

Description:
The main objective of the project is to define the main threats connected with the input of selected pesticides and PPCP substances into the surface water in the catchment of the Švihov water reservoir. The threats are defined for the Želivka water resource as an example of critical infrastructure. The main objective is also to conduct research of hazardous substances which can due to their properties threaten the quality of raw water that is treated in Hulice in water works. These substances can further penetrate into drinking water with the risk of acute or chronic exposure to the supplied population. The aim of the research is also to use the modelling tools to evaluate the risks associated with the propagation of selected substances in surface waters and water reservoirs in periods of long-term drought and water scarcity. An important objective of the project will be definition of appropriate measures to reduce the risk of hazardous substances penetration into the river basin waters and to propose modifications to the technology limiting the occurrence of these substances in treated water, including their testing in pilot plant conditions.

In 2017, the gathering and evaluation of available data and other published information (articles, reports) was carried out. The focus was on the occurrence of substances from the group of pesticides and PPCP (especially pharmacies) in the catchment of Švihov water reservoir.

The information was supplemented by a summary evaluation of the occurrence of selected substances from the group of pesticides in the Czech Republic, based on the results of the assessment of the status of water bodies from river basin district plans. On the basis of the analysis carried out, an additional screening monitoring of pesticides was carried out in the immediate surroundings of the Švihov reservoir, which supplemented the existing monitoring of the Povodí VItavy, s. e., which takes place in the Želivka basin at a monthly interval. A total of 10 localities were selected on small tributaries to the Švihov reservoir and these sites were sampled in three campaigns in the period with the expected higher occurrence of hazardous substances in the run-off.

For the monitoring of substances from the group of drugs (pharmaceuticals), suitable sources of pollution for screening monitoring were identified in the catchment of the Švihov water reservoir. The selection included a wide range of sources from small municipalities without wastewater treatment infrastructure with free discharges of sewage into the recipient, municipalities with classical sewage disposal to mechanically-biological wastewater treatment plants (WWTPs), municipalities with special health facilities such as retirement homes or long-term hospitals and municipalities equipped with root wastewater treatment plants. During the three campaigns, 24 hour sampling of sewage samples was performed in all 19 selected municipalities using automatic sampling or manual sampling. In municipalities with sewage treatment plants, inflows into WWTPs and outflows from WWTPs were sampled to detect possible transformation of the monitored substances. In the town of Pelhřimov, besides the WWTP, there were also selected free outlets and outflow from the home for seniors.

In 2017, the preparation and later also operation of modelling units with charcoal granular filling were started in the Želivka water works. Želivská provozní, a. s., provided a technical proposal of semi-operational filtration units with granular activated charcoal in cooperation with PVK, a. s. These proposed model

units will be subsequently used to verify the sorption process in the real conditions of Želivka water works on different types of granular activated carbon. Within several years of operation of these model columns, the data on exhaustion of the sorption load will be obtained in addition to operational information on the effectiveness of the removal of selected hazardous substances from the pesticide and drug groups. During the year 2017, four model columns with four different types of granular activated carbon were assembled.

Project title:
Utilization of artificial and natural structures for revitalization and increase of biological and morphological diversity of Prague streams

Contracting authority:
Prague City Hall

Duration:
2017–2018

Project team:
Mgr. Pavel Kožený, RNDr. Hana Janovská, Mgr. Daniel Fiala, Mgr. Pavel Rosendorf, Ing. Jiří Picek, Ing. Jiří Musil Ph.D., Mgr. Eduard Bouše, RNDr. Jitka Svobodová, Mgr. Tereza Beránková, Ph.D.

Description:
The aim of the project is to improve the ecological status of the streams in the territory of Prague by improving their shape structure and distribution of habitats for aquatic organisms. Objects mimicking the function of natural so called river wood riverbed are being developed and tested as a main tool for the improvement of the morphological status of the stream. The activities are focused on the watercourses in the territory and in the administration of the Prague City Hall. Upon completion of the project, commercial use of individual types of objects is expected. They will be protected as utility models.

At the beginning of 2017, a survey of the hydromorphological status of the 3rd grade and 4th grade streams (according to Strahler) was conducted on the territory of Prague. Experimental sites (stream Šárecký, stream Dalejský, Rokytka) were selected in cooperation with the Department of Environmental Protection of the Prague City Hall. Here, spring sampling of macrozoobenthos was carried out both in the part intended for the insertion of river wood objects and in the comparative part. Samples of macrozoobenthos were also taken from several other larger streams (Radotínský, Libušský, Kunratický, Botič). The hydromorphological characteristics of a channel were measured on the experimental and comparative sections. In the autumn, the ichthyological survey of experimental and comparative sites was carried out. In October, according to the proposal of project team and in cooperation with the employees of the Department of Environmental Protection of the Prague City Hall, the river wood objects were inserted into three experimental sites of Prague streams. Repeated ichthyological research proved that fish prefer the newly created habitats at some of these sites. Water quality was also monitored at experimental sites and in four other streams at macrozoobenthos sampling sites. In the catchment area of several selected streams a one-time screening was conducted focusing on the identification of sources of pollution from point sources and the development of water quality in the longitudinal profile of the watercourse.

Project title:
Fish meat security in freshwaters and aquaculture of the Czech Republic: Do we know what we are eating?

Contracting authority:
Technology Agency of the CR

Duration:
2015–2016

Project team:
Ing. Jiří Musil, Ph.D., Bc. David Štrunc, Ing. Tereza Barteková, RNDr. Zuzana Hořická, Ph.D.

Description:
The project has the following objectives: (1) to review (monitored, potentially dangerous) pollutants in fish, (2) to propose legislative and updated methodological approaches/monitoring requirements, (3) to collect and consolidate existing data on the load of fish from the waters and aquaculture in the Czech Republic. The issue of pollutants in fish was elaborated in the form of two methodologies focusing on (1) monitoring (list of pollutants and indicator fish species, monitoring network) as well as on (2) possibilities of biomanipulation: targeted fisheries management, with the aim to limit selected risk pollutants in the affected localities. Existing information on the pollution of fish were visualized in the form of a web portal, with the aim of making them available to both public authorities and professionals and to the general public.

Project title:

Support for the natural environment and the occurrence of the Freshwater Pearl Mussel (Margaritifera margaritifera) in the catchment of Malše River

Contracting authority:
Ministry of the Environment

Duration:
2017–2020

Project team:
Ing. Věra Kladivová, Mgr. Ondřej Simon, RNDr. Zuzana Hořická, Mgr. Jitka Horáčková

Description:
The aim of the project is to strengthen the population of the critically endangered Freshwater Pearl Mussel in the border Malše River by planting young individuals, to describe precisely the reasons why the species does not reproduce for a long time in the locality and to create bases for improving water purity and reducing erosion throughout the international catchment.

The project is supported under the Interreg Austria Czech Republic program. The aim is to support the creation of cooperation between municipalities, forest administrations, fishermen and conservationists in Bohemia and Austria, linked to the interest of the Freshwater Pearl Mussel, as a clearing indicator of a clean river. In 2017 the TGM WRI, p. r. i., selected contractors (5× tenders) for the breeding and care of the pearl mussels, genetic analyses, support of the host species – hatching eggs directly in Malše and the tributaries, work in hyporheic zone for selection of habitats for young pearl mussels and on bioindicative assessment of the state of the river basin. In 2017 the first phase of bioindications was carried out and the first pearl mussels were reared in Malše River. TGM WRI, p. r. i., project team processed the synthesis of cross-border data, a mapping of the bottom and banks of the border Malše River (the current state of the catchment of a significantly meandering watercourse) in cooperation with other activities in the project area. Based on these activities, extensive screening has been carried out on both sides of the border, and since June, a regular monitoring of water chemistry has been carried out on 26 sites throughout the project area (from the spring in Sandl to the confluence with Tichá). Continuous measurement of temperature and exposure is ongoing at these sites. More information about the progress of the project is available on the project site https://www.at-cz.eu/cz/ibox/po- 2/atcz37_malsemuschel.

Project title:
Procedures for compilation and verification of water footprint according to international standards

Contracting authority:
Ministry of the Agriculture

Duration:
2015–2017

Project team:
Ing. Libor Ansorge, Ph.D., Ing. Jiří Dlabal (TGM WRI, p. r. i.), Mgr. Pavel Hrubý, Ing. Martin Harák (TÜV SÜD Czech)

Description:
The aim of the project was to facilitate the implementation of the international standard ISO 14046 into Czech practice through the creation of a methodology for the assessment of the water footprint and methodology for independent verification of the water footprint. Another objective of the project was the creation of a supporting software tool. A part of the project was also the testing of the processes of the construction and verification of the water footprint in several pilot studies, which were carried out in cooperation with partners from the Czech industry.

In 2017 pilot studies and both methodologies were finalized. The methodologies passed the certification process at the Ministry of the Environment during December 2017. The project website (https://vodnistopa.vuv.cz) provides both information on the achieved project results and a web application aimed at making available the regionalized values of the characterization factors for the selected characterization methods used in the assessment of water scarcity footprint. Publicity and edification of project was implemented by organization of the workshop on water footprint in corporate sector, participation in international conferences in the Czech Republic and Italy and publication of several expert papers in Czech and foreign professional journals.

MEMBERSHIP IN COMMISSIONS AND BOARDS

Institutional

- Ad-hoc group of experts "Nutrients" of the International Commission for the Protection of the Elbe River
- Czech delegation in Czech-Germany Commission for transboundary waters
- Czech-Austrian Commission for transboundary waters
- Expert group SW (surface water) of the International Commission for the Protection of the Elbe River (MKOL)
- Expert group in Czech-Slovak Commission for transboundary waters
- Commission for fish passes of the Nature Conservation Agency of the Czech Republic
- International Commission for the Protection of the Elbe River
- International Commission for the Protection of the Danube River
- International Commission for the Protection of the Odra River against Pollution
- NRC (National Reference Centre) for Water Emissions in Czech Republic
- Expert Commission for Working with Experimental Animals according to Section 17 (1) or Section 26 of Act No. 246/1992 Coll. to protect animals against cruelty
- Working group for Priority Axis 1 A of the Operational Program Environment 2014–2020
- Working group (TPS) Priority Axis 3 – 3 A (Waste) of the Operational Program Environment 2014–2020
- Working committee KPOV of the Commission for Water Planning for Implementation of the Floods Directive (PS KPOV) established by the Ministry of the Environment
- Council of Waste Management
- Standing Committee Saxony Czech-Germany Commission for transboundary waters
- Selection Committee of the Ministry of Agriculture of the Czech Republic for Operation Programme Fisheries
- Working Group Data & Information Sharing (DIS) under the Common Implementation Strategy of the Water Framework Directive
- Work Committee of the Water Planning Commission for Waters implementation of the Water Framework Directive (RSV KPOV)
- Standing Committee Bavaria of the Czech-German Commission for border waters
- Czech-Polish Commission for Border Waters
- Czech Science and Technology Water Management Company

Individual

- Ing. Pavel Balvín (member): Technical Standards Commission No. 45
- RNDr. Dana Baudišová, Ph.D. (member): commission "Water Quality" of the Czech Office for Standards, Metrology and Testing (Technical Standards Commission 4), technical commission of the Czech Accreditation Institute
- RNDr. Josef V. Datel, Ph.D. (chairperson): Czech Committee of IAH (International Association of Hydrogeologists)
- Ing. Karel Drbal, Ph.D. (member): Scientific Council of the Faculty of Civil Engineering of the Brno University of Technology
- Ing. Karel Drbal, Ph.D. (member): Supervisory Board of the Global Change Research Institute of the Czech Academy of Sciences (CzechGlobe), Brno
- RNDr. Josef K. Fuksa, CSc. (member): Czech Limnological Society
- RNDr. Josef K. Fuksa, CSc. (chairperson): Czech Ramsar Committee – advisory body of the Minister of the Environment
- RNDr. Josef K. Fuksa, CSc. (member): Water, Landscape and Biodiversity Committee of the Czech Government Council for Sustainable Development
- RNDr. Josef K. Fuksa, CSc. (member): Commission for the assessment of international projects KONTAKT, INTER EXCELENCE and INTER-Action of the Ministry of Education, Youth and Sports
- Ing. Eduard Hanslík, CSc. (chairperson): Subcommission No. 4 (radiological methods) of the Technical Standards Commission No. 104
- RNDr. Diana Marešová, Ph.D. (member): Subcommission No. 4 (radiological methods) of the Technical Standards Commission No. 104
- Ing. Tomáš Mičaník, Ph.D. (chairperson): Expert Group on Wastewater – Water Purity at the Czech Science and Technology Water Management Association
- Ing. Tomáš Mičaník, Ph.D. (member): working group WG Chemicals at European Commission, DG Environment, ENV.C.1 – Clean Water
- Ing. Barbora Sedlářová (member): Subcommission No. 4 (radiological methods) of the Technical Standards Commission No. 104
- RNDr. Přemysl Soldán, Ph.D. (member): international organization EurAqua
- Ing. Petr Tušil, Ph.D., MBA (member): Expert Group on Wastewater – Water Purity at the Czech Science and Technology Water Management Association
- Ing. Adam Vizina, Ph.D. (member): Editorial board of the Meteorological Bulletin

ECONOMICS AND FINANCE

In 2017, we witnessed a major shift in funding of the Institute. The Institute could begin to exploit its potential thanks to success in major projects such Operational Programme Prague – Pole of Growth of the Czech Republic and project of the Ministry of the Environment focused on drought issues and in some other projects of domestic and foreign providers of dedicated funds. It should not be forgotten that several projects have been carried out in frame of other activity that resulted in savings in overhead costs. The revolving loan, without which we have not been able to imagine the past few years, is paid in full and in the near future we will certainly not have to use it. We are ready to fill the reserve fund and ensure good conditions for entry to the next year.

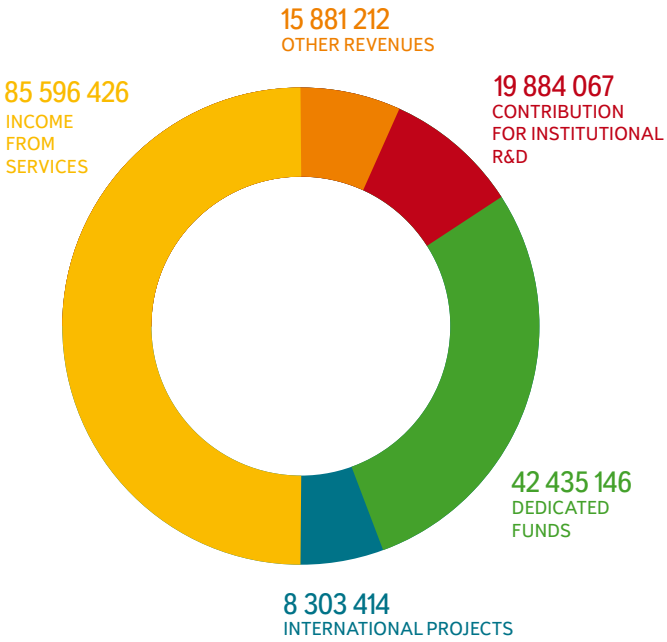
The only negative aspect is that some contracts have been disproportionately assessed and are still delayed. This fact lead to the situation that we had to work in cost-saving regime till until the conclusion of the contracts due to uncertainty. The funds provided could no longer be effectively spent and in resulted in a relatively high economic result.

Also this year, many different factors occurred: large heterogeneity in the procurement documents of providers, unequal assessment of administrative tasks by providers, e.g. selection procedures and, in some cases, unnecessary bureaucracy.

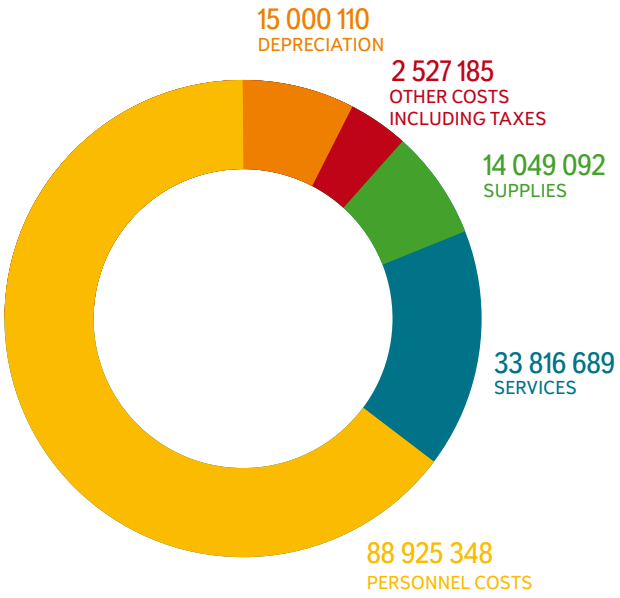
We assess very positively the responsible approach of the founder, which helps our development and the fulfilment of the mission of the public research institution.

The budget of CZK 183 487 thousand for 2017, was created balanced in accordance with Act No. 341/2005 Coll., on public research institutions. Total revenues amounted in 2017 to CZK 172 400 236.54 CZK and costs reached CZK 154 318 422.95. Consequently, the total outcome of the Institute's activities was represented by the end-of-year result of CZK 18 081 840.59 in surplus before tax and 15 703 400.59 CZK after tax. The proposal to transfer the whole positive outcome in 2017 in reserve fund was submitted to the relevant bodies of the Institute.

Revenue structure



Cost structure



PERSONAL DATA

Activities in employment relationships

The director of the institution Mgr. Mark Rieder resigned as of 30th September 2017.

Ing. P. Bouška, Ph.D., was appointed to manage the Institute until the appointment of the new Director of the Institute. Ing. Tomáš Urban was appointed as the new director effective January 1st 2018.

In total 183.56 employees worked in TGM WRI, p. r. i., in 2017 (31th December 2017) in the average recorded recalculated state. The research and expert employees constituted 84% (108.40 research workers and 44.19 expert workers) and operational employees constituted 16% of total employees number.

Table 1. Employees structure according to age and sex – physical state by 31st December 2017

Age	Men	Women	Total	%
21–30 years	7	13	20	9.38
31–40 years	31	26	57	26.76
41–50 years	32	25	57	26.76
51–60 years	14	26	40	18.77
61–70 years	12	15	27	12.67
71–80 years	8	2	10	4.69
80 and more	2	0	2	0.93
Total	**106**	**107**	**213**	**100**

The average age was 46.95 years, the men average age was 47.48 and women average age was 46.42 years.

Table 2. Employees structure according to achieved education and sex – physical state by 31st December 2017

Education level	Men	Women	Total	%
Basic school	0	3	3	1.41
Apprenticeship	5	2	7	3.29
Completed secondary general	0	1	1	0.47
Completed secondary technical	19	33	52	24.41
Bachelor	2	3	5	2.35
Master	55	51	106	49.76
Doctoral	25	14	39	18.31
Total	**106**	**107**	**213**	**100**

Table 3. Employees structure according to a length of employment and sex – physical state by 31st December 2017

Duration	Men	Women	Total	%
Up to 5 years	30	28	58	27.23
6–10 years	17	12	29	13.62
11–15 years	17	25	42	19.72
16–20 years	25	18	43	20.19
over 20 years	17	24	41	19.24
Total	**106**	**107**	**213**	**100**

OTHER REQUIRED INFORMATION

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

No measures to elimination of imperfections of management were assigned.

Information on things that come to pass after the balance sheet day and are important for fulfilment of the purpose of the institution

No things important for fulfilment of the purpose of the institution come to pass after the balance sheet day.

Activities in a field of environmental protection

Regarding the fact that the type of activity of the Institute is closely connected with topical environmental issues, its operation is focused primarily on this sector: mainly on research of aquatic ecosystems and their relations in landscape and connected environmental hazards and on issues of waste and packaging management.

The Institute lays stress primarily on care of the environment and permanently sustainable development. This care includes the effort of energy saving. The waste is separated to full extent, vegetation is cared about and other relevant activities take place.

Provision of information pursuant to Act No. 106/1999 Coll., On Free Access to Information

Number of requests for information submitted and number of decisions rejecting a request

In 2017, TGM WRI, p. r. i., received one request for information pursuant to Act No. 106/1999 Coll. The request was "dealt with "within the statutory time limit.

Number of appeals lodged against the decision and number of complaints filed pursuant to Section 16a of the Act

Over year 2017, TGM WRI, p. r. i., did not register a petition for appeal or stiffness against a decision issued pursuant to Section 16a of the Act.

Copy of essential parts of each judgment of the court

In 2017, no lawsuit was filed concerning the provision of information pursuant to Act No. 106/1999 Coll.

Organizational units abroad

T. G. Masaryk Water research Institute, p. r. i., has no organizational units abroad.

Supposed development of the organization in 2018

It can be expected that also the 2017 year will be economically very challenging mainly from point of view of winning contracts of all kinds. TGM WRI, p. r. i., will naturally focus its activity on tasks following from its fundamental mission i.e. mainly on:

- research of aquatic ecosystems and their relations in landscape and connected environmental hazards and on issues of waste and packaging management,
- expert support for the state administration in the field of hydrosphere and waste and packaging management, based on performed research.

The activity of the Institute is focused not only on continuing research projects, grants, commercial projects, but mainly on winning of other projects in the frame of all relevant calls and competitions. The attention is focused of projects financed from resources of EU and also national funders supporting the research and development in sector of water and waste. It's necessary to focus with exceptional intensity on commercial contracts – the only source of financial funds for already absolutely generally requested co-financing in grants.

PUBLISHING AND EDITION ACTIVITIES

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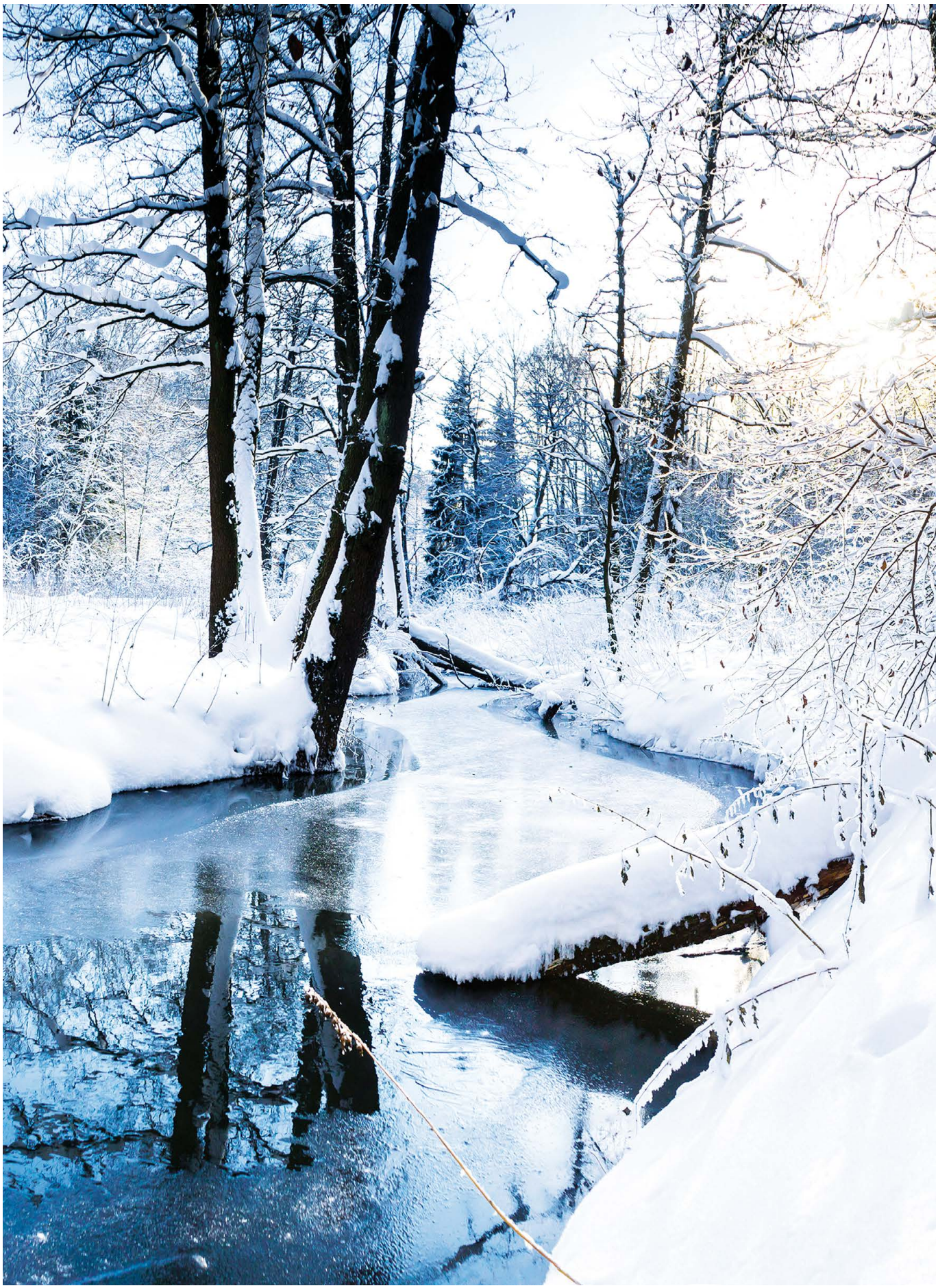

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Journal

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NBG spol. s r.o.

ZPRÁVA NEZÁVISLÉHO AUDITORA O OVĚŘENÍ ROČNÍ ÚČETNÍ ZÁVĚRKY k 31.12.2017

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 31.12.2017

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 31.12.2017
- VÝKAZ ZISKU A ZTRÁTY v plném rozsahu k 31.12.2017
- PŘÍLOHA k účetní závěrce v plném rozsahu k 31.12.2017
- VÝROČNÍ ZPRÁVA za rok 2017

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
Ředitelé a osoba pověřená řízením:	Mgr. Mark Rieder, Novosuchdolská 120/15, 165 00 Praha 6 ředitel instituce do 30.9.2017 Ing. Petr Bouška, Ph.D., Mimoňská 642/6, 190 00 Praha 9 pověřen řízením od 1.10.2017 do 31.12.2017 Ing. Tomáš Urban, Na Petynce 607/62, 169 00, Praha 6 ředitel instituce od 1.1.2018
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 00

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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 31.12.2017, výkazu zisku a ztráty za rok končící 31.12.2017 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 31.12.2017 a nákladů a výnosů a výsledku jejího hospodaření za rok končící 31.12.2017 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.

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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 25. dubna 2018

NBG, spol. s r.o.
Na Pankráci 1618/30, 140 00 Praha 4
DIČ: CZ62587358, email: nbg@nbg.cz
Tel.: 234633231 Fax: 234633230

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

NBG, spol. s r.o. IČO 62587358 NBG č. oprávnění Komory auditorů České republiky 134 Na Pankráci 1618/30, 140 00 Praha 4

Ing. Tomáš Brumovský
statutární auditor

PŘÍLOHY

Sestaveno podle vyhl. Č. 504/2002 Sb. v platném znění

ROZVAHA
v plném rozsahu

(v celých tisících Kč)

ke dni 31.12.2017

IČ
00020711

OKEČ:

Název, sídlo a právní forma účetní jednotky

Výzkumný ústav vodohospodářský T.G.Masaryka, v.v.i.
Podbabská 2582/30
Praha 6

Účetní jednotka doručí:
1x příslušnému finančnímu orgánu

		Stav k prvnímu dni účetního období	Stav k poslednímu dni účetního období
		1	2
AKTIVA	001		
A. Dlouhodobý majetek celkem součet řádků 3+11+22+30	002	328 923	317 578
I. Dlouhodobý nehmotný majetek celkem součet ř. 004 až 010	003	46 567	44 718
1.Nehmot. výsledky výzkumu a vývoje (012)	004		
2.Software (013)	005	43 307	41 695
3.Ocenitelná práva (014)	006	204	204
4.Drobný dlouhodobý nehmotný majetek (018)	007	3 056	2 819
5.Ostatní dlouhodobý nehmotný majetek (019)	008		
6.Nedokončený dlouhodobý nehmotný majetek (041)	009		
7.Poskytnuté zálohy na dlouhodobý nehmotný majetek (051)	010		
II. Dlouhodobý hmotný majetek celkem součet ř. 012 až 021	011	714 574	711 842
1.Pozemky (031)	012	11 802	11 802
2.Umělecká díla, předměty a sbírky (032)	013	100	100
3.Stavby (021)	014	430 718	430 900
4.Hmotné movité věci a jejich soubory (022)	015	238 795	236 637
5.Pěstitelské celky trvalých porostů (025)	016		
6.Dospělá zvířata a jejich skupiny (026)	017		
7.Drobný dlouhodobý hmotný majetek (028)	018	32 619	31 339
8.Ostatní dlouhodobý hmotný majetek (029)	019		
9.Nedokončený dlouhodobý hmotný majetek (042)	020	265	1 064
10.Poskytnuté zálohy na dlouhodobý hmotný majetek (052)	021	275	
III. Dlouhodobý finanční majetek celkem součet ř. 023 až 028	022		
1.Podíly - ovládaná nebo ovládající osoba (061)	023		
2.Podíly - podstatný vliv (062)	024		
3.Dluhové cenné papíry držené do splatnosti (063)	025		
4.Zápůjčky organizačním složkám (066)	026		
5.Ostatní dlouhodobé zápůjčky (067)	027		
6.Ostatní dlouhodobý finanční majetek (069)	028		
IV. Oprávky k dlouhodobému majetku celkem součet ř. 030 až 040	029	-432 218	-438 982
1.Oprávky k nehmotným výsledkům výzkumu a vývoje (-) (072)	030		
2.Oprávky k softwaru (-) (073)	031	-42 026	-41 175

		Stav k prvnímu dni účetního období	Stav k poslednímu dni účetního období
		1	2
3.Oprávky k ocenitelným právům (-) (074)	032	-204	-204
4.Oprávky k drobnému dlouhodobému (-) (078) nehmotnému majetku	033	-3 056	-2 819
5.Oprávky k ostatnímu dlouhodobému (-) (079) nehmotnému majetku	034		
6.Oprávky ke stavbám (-) (081)	035	-133 394	-141 913
7.Oprávky k samost. hmotným movit. (-) (082) věcem a souborům hmotných movitých věcí	036	-220 919	-221 532
8.Oprávky k pěstitelským celkům (-) (085) trvalých porostů	037		
9.Oprávky k základnímu stádu (-) (086) a tažným zvířatům	038		
10.Oprávky k drobnému dlouhodobému (-) (088) hmotnému majetku	039	-32 619	-31 339
11.Oprávky k ostatnímu dlouhodobému (-) (089) hmotnému majetku	040		
B. Krátkodobý majetek celkem součet řádků 42+52+72+80	041	28 534	86 981
I. Zásoby celkem součet ř. 043 až 051	042	426	58
1.Materiál na skladě (112)	043	60	58
2.Materiál na cestě (119)	044		
3.Nedokončená výroba (121)	045	366	
4.Polotovary vlastní výroby (122)	046		
5.Výrobky (123)	047		
6.Mladá a ostatní zvířata a jejich skupiny(124)	048		
7.Zboží na skladě a v prodejnách (132)	049		
8.Zboží na cestě (139)	050		
9.Poskytnuté zálohy na zásoby (316)	051		
II. Pohledávky celkem součet ř. 053 až 070 + 071	052	16 158	9 433
1.Odběratelé (311)	053	15 352	8 683
2.Směnky k inkasu (312)	054		
3.Pohledávky za eskontované cenné papíry (313)	055		
4.Poskytnuté provozní zálohy (314)	056	724	727
5.Ostatní pohledávky (315)	057	45	
6.Pohledávky za zaměstnanci (335)	058	33	23
7.Pohledávky za institucemi soc. zab. (336) a veř. zdravot. pojištění	059		
8.Daň z příjmů (341)	060		
9.Ostatní přímé daně (342)	061		
10.Daň z přidané hodnoty (343)	062		
11.Ostatní daně a poplatky (345)	063		
12.Nároky na dotace a ostatní zúčtování (346) se státním rozpočtem	064		
13.Nároky na dotace a ostatní zúčtování (348) s rozp. orgánů územ. samospr. celků	065		
14.Pohledávky za společníky sdruženými (358) ve společnosti	066		
15.Pohledávky z pevných term. operací (373) a opcí	067		
16.Pohledávky z vydaných dluhopisů (375)	068		
17.Jiné pohledávky (378)	069		

		Stav k prvnímu dni účetního období	Stav k poslednímu dni účetního období
		1	2
18.Dohadné účty aktivní (388)	070	4	
19.Opravná položka k pohledávkám (-) (391)	071		
III. Krátkodobý finanční majetek celkem součet ř. 073 až 079	072	7 910	73 432
1.Peněžní prostředky v pokladně (211)	073	148	196
2.Ceniny (213)	074	50	17
3.Peněžní prostředky na účtech (221 - 225)	075	7 712	73 219
4.Majetkové cenné papíry k obchodování (251)	076		
5.Dluhové cenné papíry k obchodování (253)	077		
6.Ostatní cenné papíry (256)	078		
7.Peníze na cestě (+/-) (262)	079		
IV. Jiná aktiva celkem součet ř. 081 až 082	080	4 040	4 058
1.Náklady příštích období (381)	081	808	941
2.Příjmy příštích období (385)	082	3 232	3 117
AKTIVA CELKEM ř.002 + 041	083	357 457	404 559
	084		
PASIVA	085		
A. Vlastní zdroje celkem součet řádků 87+91	086	336 739	342 340
I. Jmění celkem součet ř. 088 až 090	087	334 420	326 637
1.Vlastní jmění (901)	088	331 544	320 473
2.Fondy (911)	089	2 876	6 164
3.Oceňovací rozdíly z přecenění (921) finančního majetku a závazků	090		
II. Výsledek hospodaření celkem součet ř. 092 až 094	091	2 319	15 703
1.Účet výsledku hospodaření (+/-) (963)	092		15 703
2.Výsledek hospodaření (+/-) (931) ve schvalovacím řízení	093	2 319	
3.Nerozdělený zisk, neuhrazená (+/-) (932) ztráta minulých let	094		
B. Cizí zdroje celkem součet řádků 96 + 98 + 106 + 130	095	20 718	62 219
I. Rezervy celkem ř. 97	096		
1.Rezervy (941)	097		
II. Dlouhodobé závazky celkem součet ř. 99 až 105	098		
1.Dlouhodobé úvěry (951)	099		
2.Vydané dluhopisy (953)	100		
3.Závazky z pronájmu (954)	101		
4.Přijaté dlouhodobé zálohy (955)	102		
5.Dlouhodobé směnky k úhradě (958)	103		
6.Dohadné účty pasivní (z účtu 389)	104		
7.Ostatní dlouhodobé závazky (959)	105		
III. Krátkodobé závazky celkem součet ř. 107 až 129	106	18 432	56 474
1.Dodavatelé (321)	107	862	3 321
2.Směnky k úhradě (322)	108		
3.Přijaté zálohy (324)	109	207	
4.Ostatní závazky (325)	110		
5.Zaměstnanci (331)	111	4 425	4 741
6.Ostatní závazky vůči zaměstnancům (333)	112		

		Stav k prvnímu dni účetního období	Stav k poslednímu dni účetního období
		1	2
7.Závazky k institucím soc. zabezp. (336) a veř. zdravotního pojištění	113	2 431	2 666
8.Daň z příjmů (341)	114		2 378
9.Ostatní přímé daně (342)	115	583	711
10.Daň z přidané hodnoty (343)	116	4 984	3 937
11.Ostatní daně a poplatky (345)	117	2	
12.Závazky ze vztahu ke státnímu rozpočtu (346)	118	677	38 600
13.Závazky ze vztahu k rozpočtu orgánů (348) územních samosprávných celků	119		
14.Závazky z upsaných nesplacených (367) cenných papírů a podílů	120		
15.Závazky ke společníkům (368) sdruženým ve společnosti	121		
16.Závazky z pevných termínovaných (373) operací a opcí	122		
17.Jiné závazky (379)	123	174	120
18.Krátkodobé úvěry (231)	124	4 000	
19.Eskontní úvěry (232)	125		
20.Vydané krátkodobé dluhopisy (241)	126		
21.Vlastní dluhopisy (-) (255)	127		
22.Dohadné účty pasivní (z účtu 389)	128	87	
23.Ostatní krátkodobé finanční výpomoci (249)	129		
IV. Jiná pasiva celkem součet ř. 131 až 132	130	2 286	5 745
1.Výdaje příštích období (383)	131	698	802
2.Výnosy příštích období (384)	132	1 588	4 943
PASIVA CELKEM ř. 086 + 095	133	357 457	404 559

Sestaveno dne: 15.3.2018

Razítko: Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce Podbabská 30/2582, Praha 6

Podpis pověřené osoby:

Podpis osoby odpovědné za sestavení: Finka

Telefon:

Orsoft Finanční účetnictví 18.1

ORTEX spol. s r.o. Hradec Králové

Podle souborů: VYR - SRozPO16 (1); VYS - SSRozPO (1); SIR - SRRozvPO (1);

Varianta tisku: 44; Šablona OOMV: SvyXNO5u;

NBG, spol. s r.o.
Na Pankráci 1618/30, 140 00 Praha 4
DIČ: CZ62587358, email: nbg@nbg.cz
Tel.: 234633231, Fax: 234633230

VÝKAZ ZISKU A ZTRÁTY

v plném rozsahu

Sestaveno podle vyhl. č. 504/2002 Sb. v platném znění

31.12.2017

v tisících Kč

Účetní jednotka doručí:
1x příslušnému finančnímu orgánu

IČO
00020711

Název, sídlo a právní forma účetní jednotky

Výzkumný ústav vodohospodářský
T. G. Masaryka, v.v.i.
Podbabská 2582/30
Praha 6

Název ukazatele		číslo řádku	za účetní období celkem	
a		b	činnost	
A. NÁKLADY		x	hlav. a další (R)	jiná (R)
I. Spotřebované nákupy a nakupované služby	Součet ř. 002 až 007	1	42 836	3 004
1. Spotřeba materiálu, energie a ostatních neskladovaných dodávek	(501,502,503)	2	10 862	1 161
2. Prodané zboží	(504)	3		
3. Opravy a udržování	(511)	4	2 492	298
4. Náklady na cestovné	(512)	5	2 308	170
5. Náklady na reprezentaci	(513)	6	47	3
6. Ostatní služby	(518)	7	27 127	1 372
II. Změny stavu zásob vlastní činnosti a aktivace	Součet ř. 009 až 011	8	366	
7. Změna stavu zásob vlastní činnosti	(56)	9		
8. Aktivace materiálu, zboží a vnitroorganizačních služeb	(571)	10	366	
9. Aktivace dlouhodobého majetku	(57)	11		
III. Osobní náklady	Součet ř. 013 až 017	12	83 820	5 107
10. Mzdové náklady	(521)	13	60 593	3 693
11. Zákonné sociální pojištění	(524)	14	20 242	1 231
12. Ostatní sociální pojištění		15		
13. Zákonné sociální náklady	(525,526,527)	16	2 985	183
14. Ostatní sociální náklady	(528)	17		
IV. Daně a poplatky	ř. 019	18	212	40
15. Daně a poplatky	(531,532,538)	19	212	40
V. Ostatní náklady	Součet ř. 021 až 027	20	3 708	198
16. Smluvní pokuty, úroky z prodlení, ostatní pokuty a penále	(541,542)	21		
17. Odpis nedobytné pohledávky	(543)	22		
18. Nákladové úroky	(544)	23	128	8
19. Kursové ztráty	(545)	24	59	5
20. Dary	(546)	25		
21. Manka a škody	(548)	26		
22. Jiné ostatní náklady	(549)	27	3 521	185
VI. Odpisy, prodaný majetek, tvorba a použití rezerv a opravných položek	Součet ř. 029 až 033	28	14 139	861
23. Odpisy dlouhodobého majetku	(551)	29	14 139	861
24. Prodaný dlouhodobý majetek	(552)	30		
25. Prodané cenné papíry a podíly	(553)	31		
26. Prodaný materiál	(554)	32		
27. Tvorba a použití rezerv a opravných položek	(556,559)	33		
VII. Poskytnuté příspěvky	ř. 035	34	29	
28. Poskytnuté členské příspěvky a příspěvky zúčtované mezi organizačními složkami	(581,582)	35	29	
VIII. Daň z příjmů	ř. 037	36	2 241	137
29. Daň z příjmů	(591,595)	37	2 241	137
Náklady celkem	ř. 001+008+012+018+020+028+034	38	145 110	9 210

Název ukazatele		číslo řádku	za účetní období celkem	
a		b	činnost	
B. VÝNOSY		x	hlav. a další (R)	jiná (R)
I. Provozní dotace	**ř. 040**	**39**	**70 723**	
1. Provozní dotace	(691)	40	70 723	
II. Přijaté příspěvky	**Součet ř. 042 až 044**	**41**	**40**	
2. Přijaté příspěvky zúčtované mezi org. složkami	(681)	42		
3. Přijaté příspěvky (dary)	(682)	43	40	
4. Přijaté členské příspěvky	(684)	44		
III. Tržby za vlastní výkony a za zboží	**(601,602,604)**	**45**	**74 492**	**11 405**
IV. Ostatní výnosy	**Součet ř. 047 až 052**	**46**	**14 870**	**871**
5. Smluvní pokuty, úroky z prodlení, ostatní pokuty a penále	(641,642)	47		
6. Platby za odepsané pohledávky	(643)	48		
7. Výnosové úroky	(644)	49	4	
8. Kursové zisky	(645)	50	3	
9. Zúčtování fondů	(648)	51	1 723	71
10. Jiné ostatní výnosy	(649)	52	13 140	800
V. Tržby z prodeje majetku	**Součet ř. 054 až 058**	**53**		
11. Tržby z prodeje dlouhodobého nehmot. a hmot. majetku	(651)	54		
12. Tržby z prodeje cenných papírů a podílů	(653)	55		
13. Tržby z prodeje materiálu	(654)	56		
14. Výnosy z krátkodobého finančního majetku	(655)	57		
15. Výnosy z dlouhodobého finančního majetku	(652)	58		
Výnosy celkem	**ř. 039+041+045+046+053**	**59**	**160 125**	**12 276**
C. Výsledek hospodaření před zdaněním (+/-)	**ř.059 - ř.038**	**60**	**15 015**	**3 066**
D. Výsledek hospodaření po zdanění (+/-)	**ř.060 - ř.036**	**61**	**12 774**	**2 929**

Odesláno dne:

Razítko:

Podpis osoby odpovědné za schválení:

Ing. Tomáš Urban

Podpis osoby odpovědné za sestavení:

Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce Podbabská 30/2582, Praha 6

Telefon:
220197459

Email:
jiri.fiala@vuv.cz

Okamžik schválení:

Okamžik sestavení:
15.03.2018, 10:29:47

NBG, spol. s r.o.
Na Pankráci 1618/30, 140 00 Praha 4
DIČ: CZ62587358, email: nbg@nbg.cz
Tel.: 234633231 Fax: 234633230

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

Příloha k účetní závěrce za rok 2017

I. Obecné údaje

Popis účetní jednotky

a) název účetní jednotky: Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce
b) sídlo: Podbabská 2582/30, Praha 6, Česká republika
c) IČ: 00020711
d) právní forma: veřejná výzkumná instituce
e) rozvahový den: 31. 12. 2017
f) zřizovatel: Ministerstvo životního prostředí České republiky se sídlem Vršovická 65, Praha 10, 100 10, ČR
g) účel zřízení:
- výzkum stavu, užívání a změn vodních 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. 2017

a) Mgr. Mark Rieder, ředitel do 30.9. 2017
Ing. Petr Bouška, Ph.D., pověřen řízením, do 31.12.2017

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

b) Rada VÚV T. G. Masaryka, v. v. i. ve složení do 3. 4. 2017:

Ing. Petr Tušil, Ph.D, MBA. – interní člen a předseda
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce, pobočka Ostrava
RNDr. Dana Baudišová, Ph.D. – interní člen a místopředsedkyně
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce, Praha
Ing. Eduard Hanslík, CSc. – interní člen
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce, Praha
Ing. Anna Hrabánková – interní člen
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce, Praha
Ing. Jaroslav Beneš – externí člen
Povodí Vltavy, s.p., Praha
Ing. Rut Bízková – externí člen
Technologická agentura České republiky, Praha
Mgr. Vít Kodeš, Ph.D, – externí člen
Český hydrometeorologický ústav, Praha

c) Rada VÚV T. G. Masaryka, v. v. i. ve složení od 4. 4. 2017:

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
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
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce, Praha
Ing. Adam Vizina, Ph.D. – interní člen
Výzkumný ústav vodohospodářský T. G. Masaryka, veřejná výzkumná instituce, Praha
Ing. Jaroslav Beneš – externí člen
Povodí Vltavy, s.p.
doc. Ing. Aleš Havlík, CSc. – externí člen
České vysoké učení technické, fakulta stavební, Praha
Ing. Jaroslav Kinkor – externí člen
Ministerstvo životního prostředí České republiky, Praha
Mgr. Vít Kodeš, Ph.D.- externí člen
Český hydrometeorologický ústav, Praha

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

Ing. Jan Landa – předseda,
Ministerstvo životního prostředí ČR, I. náměstek ministra - ředitel sekce úřadu ministerstva
Ing. Berenika Peštová Ph.D.,
Ministerstvo životního prostředí ČR
Ing. Vladimír Sassmann,
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	183,56
	z toho řídících pracovníků	13,41
Mzdové náklady	Mzdové náklady celkem (bez OON)	63 065 123
	z toho řídících pracovníků	8 344 415
	OON	1 221 061
Sociální a zdravotní pojištění	Sociální a zdravotní pojištění celkem	21 472 253
	z toho řídících pracovníků	2 836 544
Příděl do sociálního fondu		1 258 833
Rada VÚV T.G.Masaryka,v.v.i.	Odměny členům Rady VÚV T. G. Masaryka, v.v.i.	--
	Sociální a zdravotní pojištění	--
Dozorčí rada VÚV T.G.Masaryka,v.v.i.	Odměny členům dozorčí rady VÚV T. G. Masaryka, v.v.i.	--
	Sociální a zdravotní pojištění	--
Bývalé statutární a dozorčí orgány	Vzniklé či sjednané penzijní závazky bývalých členů vyjmenovaných orgánů	--
	Sociální náklady	--

Účetní jednotka neposkytla v roce 2017 osobám, které jsou statutárním orgánem, členům statutárních nebo jiných řídících a dozorčích orgánů žádné půjčky, úvěry, zajištění jak v peněžní, tak v 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., o účetnictví, v platném znění a vyhláškou č. 504/2002 Sb., 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 s § 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,
pobočky Brno a Ostrava – způsobem B.
Způsob ocenění zásob:
- pořízených 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
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. 2017 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 od 1 000 Kč a majetek s pohyblivým el. přívodem pod 1000 Kč byl po předchozím zaevidování v operativní evidenci veden na podrozvahových účtech.

b) V r. 2017 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. 2017 účetní jednotka pokračovala v účetním odpisování 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.

e) 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. 2017.

Opravné položky

Účetní jednotka netvořila v r. 2017 opravné položky.

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	196 276 340	185 531 222	195 424 401	183 589 232
výpočetní technika	18 082 242	16 569 489	21 043 381	18 233 522
dopravní prostředky	8 192 301	7 495 318	8 241 091	7 160 917
inventář	11 935 728	11 935 728	11 935 728	11 935 728
předměty z drahých kovů	2 149 998	---	2 149 998	---
Celkem	**236 636 609**	**221 531 757**	**238 794 599**	**220 919 399**

V běžném účetním období účetní jednotka uvedla do provozu dlouhodobý hmotný a nehmotný majetek v celkové pořizovací ceně **3 129 072** Kč. Z evidence byl likvidací vyřazen dlouhodobý hmotný a nehmotný majetek v celkové pořizovací ceně **6 956 965** 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 2016 posloužily přímé osobní náklady.

Ve výsledku byly režijní náklady rozpuštěny v poměru:

- hlavní činnost 64,18 %
- další činnost 30,08 %
- jiná činnost 5,74 %

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Rozpis provozních a investičních dotací z veřejného rozpočtu

Účel dotace	Poskytovatel	Druh dotace (provozní, investiční)	Běžné účetní období, Kč	Minulé účetní období, Kč
Institucionální podpora na dlouhodobý koncepční rozvoj výzkumné organizace	MŽP ČR	neinvestiční	19 884 067	17 111 810
Účelová na VVaI	MZe, MŠMT, TA ČR, MV ČR, Min. kultury, GA ČR, ČRA, MŽP	neinvestiční	31 365 180	21 894 860
Ostatní	Cil 3, Interreg, MHMP, OPŽP, NF aj.	neinvestiční	19 473 379	13 880 000
Dotace provozní celkem			**70 722 626**	**52 886 670**
Institucionální podpora na dlouhodobý koncepční rozvoj výzkumné organizace	MŠMT ČR	investiční	2 700 000	4 500 000
Účelová na VVaI, ostatní		investiční	500 000	3 190 000
Dotace investiční celkem			**3 200 000**	**7 690 000**

Rozpis majetku zatíženého zástavním právem
Účetní jednotka nemá k datu uzávěrky 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. 2017 nedošlo. Tržní ohodnocení 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	45 137	--	285 967	--
91-180 dnů	--	--	9 849	--
181-360 dnů	--	--	--	--
nad 360 dnů	49 849	--	295 816	--

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	15 517	--	44 560	--
91-180dnů	--	--	--	--
181-360 dnů	--	--	--	--
nad 360 dnů	--	--	--	--

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

Závazek vůči	Částka, Kč	Datum vzniku	Splatnost
pojistné na sociální zabezpečení a příspěvku na státní politiku zaměstnanosti:			
ČSSZ	1 863 332	31. 12. 2017	8. 1. 2018
pojistné na veřejné zdravotní pojištění:			
VZP ČR	467 800	31. 12. 2017	8. 1. 2018
VoZP ČR	30 489	31. 12. 2017	8. 1. 2018
OZP	144 449	31. 12. 2017	8. 1. 2018
Česká průmyslová zdravotní pojišťovna	28 176	31. 12. 2017	8. 1. 2018
Revírní bratrská pokladna	30 289	31. 12. 2017	8. 1. 2018
ZP MV ČR	101 709	31. 12. 2017	8. 1. 2018
daňové závazky vůči místně příslušným finančním orgánům:			
daň vybíraná srážkou podle zvláštní sazby z příjmů fyzických osob	19 674	31. 12. 2017	8. 1. 2018
daň z příjmů fyzických osob ze závislé činnosti a z funkčních požitků	690 975	31. 12. 2017	8. 1. 2018
DPH, vlastní daňová povinnost	3 937 301	31. 12. 2017	24. 1. 2018

Všechny uvedené závazky byly zaplaceny v r. 2018 ve lhůtě splatnosti.

Pohledávky a závazky, které vznikly v r. 2017 a u kterých zbytková doba splatnosti k 31. 12. 2017 přesahuje pět let
Pohledávky a závazky, které vznikly v r. 2017 a u kterých zbytková doba splatnosti k 31. 12. 2017 přesahuje pět 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. 2017 tvoří **40 457 535** 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 v sledovaném účetním období žádné dary.

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

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Výsledek hospodaření

Výsledek hospodaření za r. 2017 celkem		
z toho:	z hlavní činnosti	-14 780 615
	z další činnosti	29 796 111
	z jiné činnosti	3 066 344

Vlastní kapitál

	Stav k 31. 12. 2017	Stav k 31. 12. 2016
Vlastní jmění	320 471 878	331 543 460
Nerozdělený zisk / neuhrazená ztráta minulých let	-	--
Rezervní fond	3 716 578	1 397 869
Fond reprodukce majetku	1 642 202	681 929
Fond účelově určených prostředků	564 448	563 918
Sociální fond	241 003	231 934
Hospodářský výsledek běžného období po zdaň.	15 703 401	2 318 709
Vlastní kapitál celkem	**342 339 510**	**336 737 819**

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 2017 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 r. 2017 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, náhrady mzdy a odměny za pracovní pohotovost.

Významné události po datu účetní závěrky
U účetní jednotky nedošlo k významným událostem po datu účetní závěrky.

Zjištění základu daně z příjmů 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 2017.
Tato daňová povinnost byla následně zaúčtována jako účetní případ roku 2017 a bude vypořádána ve stanoveném termínu v roce 2018.

Způsob vypořádání výsledku hospodaření za rok 2016
Kladný hospodářský výsledek za rok 2016 ve výši 2 318 709,48 Kč byl v plné výši použit na naplnění rezervního fondu.

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

Návrh na vypořádání hospodářského výsledku roku 2017
Navrhuje se převod kladného hospodářského výsledku za rok 2017 ve výši 15 703 400,59 Kč po zdanění do rezervního fondu.
O hospodářském výsledku za rok 2017 nebylo ke dni účetní závěrky příslušnými orgány účetní jednotky definitivně rozhodnuto.

V Praze dne 14. března 2018

Přílohu sestavila:

Ing. Jana Štrejnová
vedoucí odboru ekonomiky a řízení zakázek

Statutární orgán účetní jednotky:

Ing. Tomáš Urban
ředitel

STATEMENT OF TGM WRI, P. R. I., COUNCIL ON THE ANNUAL REPORT 2017

VÚV TGM

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 2017
(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 2017
(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 2017** 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 2017** obsažené ve Výroční zprávě 2017. Všechny věcné dotazy byly uspokojivě zodpovězeny.

V Praze dne 24. května 2018

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 2017

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

V Praze dne 22. 6. 2018

Č.j.: VÚV – 2018/01297

USNESENÍ RU/51/1

ve věci projednané na 51. zasedání Rady VÚV TGM, v. v. i.,

které se konalo dne 14. června 2018 v Praze.

Schválení usnesení proběhlo formou per rollam ve dnech 19. – 22. června 2018

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 2017 a účetní závěrku za rok 2017.

Hlasovali: Havlík, Vizina, Hrabánková, Beneš, Tušil, Kinkor, Dzuráková, Kučera, Kodeš

Pro: 9 Proti 0 Zdržel se: 0

USNESENÍ RU/51/2

ve věci projednané na 51. zasedání Rady VÚV TGM, v. v. i.,

které se konalo dne 14. června 2018 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 návrh na rozdělení kladného hospodářského výsledku za rok 2017.

Přítomni: Havlík, Vizina, Hrabánková, Beneš, Tušil, Kinkor

Pro: 6 Proti 0 Zdržel se: 0

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

Usnesení ze zasedání Rady VÚV TGM, v. v. i.
VÚV – 2018/01297 - 51. zasedání 14. 6. 2018

1 (celkem 1)

T. G. Masaryk Water Research Institute, public research institution

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Podbabská 2582/30, 160 00 Praha 6, Czech Republic, T: +420 220 197 111, info@vuv.cz, www.vuv.cz

Pobočka Brno | Brno Branch Department
Mojmírovo náměstí 16, 612 00 Brno-Královo Pole, Czech Republic, T: +420 541 126 311, info.brno@vuv.cz

Pobočka Ostrava | Ostrava Branch Department
Macharova 5, 702 00 Ostrava, Czech Republic, T: +420 595 134 800, info.ostrava@vuv.cz