

EU funded project

Hulla& Co. Human Dynamics KG

Environmental Protection of International River Basins

Preparation of methodological documentation for WFD compliant
monitoring programmes in support of implementation of the 2014 Water
Code of the Republic of Belarus
(THE UPPER DNIEPER BASIN)

FINAL REPORT

Prepared by

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contamination and environmental monitoring, Belarus
(former Republican Center on Radiation Control and Environmental
Monitoring)

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ABBREVIATIONS

CRICUWR.....	Central research institute for complex use of water resources
Pilot project.....	Preparation of methodological documentation for WFD compliant monitoring programmes in support of implementation of the 2014 Water Code of the Republic of Belarus
Minpriroda.....	Ministry of natural resources and environmental protection of the Republic of Belarus
Hydromet.....	Republican Center for hydrometeorology, control of the radioactive contamination and environmental monitoring, Minsk, Belarus
TCP.....	Technical Code of Practice (national)
EPIRB.....	International project “Environmental protection of the international river basins”

INTRODUCTION

The present final report is prepared by specialists of Republican Center for hydrometeorology, control of the radioactive contamination and environmental monitoring, Belarus (former Republican Center on Radiation Control and Environmental Monitoring, see the Annex_1) within the signed contract in the scope of EU funded project “Environmental Protection of International River Basins”.

WFD requires all Member States to prepare River Basin Management Plans and Programs of Measures, designed to prevent deterioration of aquatic ecosystems and to achieve at least good ecological and chemical status for all surface waters within river basin districts, whenever possible. The good status for each type of water body is defined by a set of biological, chemical and physical standards.

The Republic of Belarus has a Water strategy until 2020 year. One of the long-term strategic aims is harmonization water legislation according to requirements of WFD EU. In May 2014, President of the Republic of Belarus approved the new Water Code which contains the articles requiring the creation of Basin councils, the development of River basin management plans (RBMP) and providing hydromorphological, hydrochemical and hydrobiological monitoring of the surface water bodies.

Article 6 of the new Water Code declares: “Ecological status of the surface water bodies bases on hydrobiological features with using hydrochemical and hydromorphological features. Hydrobiological, hydrochemical and hydromorphological features are determined in the process of undertaking surface water monitoring within National system of the environmental monitoring in the Republic of Belarus”.

The objectives of the pilot project is preparation of five methodological documents, which can help in the realization above mentioned Article 6 of the new Water Code of the Republic of Belarus and will support the providing WFD compliant monitoring programmes in Belarus including pilot river Dnieper basin. National coordinative committee (NCC) approved as primarily the next needed methodological documents:

1. “Guidance standard on assessing the hydromorphological features of lakes”,
2. Technical code of practice “The procedure for the sampling and determination of hydrobiological parameters. Macrozoobenthos”,
3. Technical code of practice “The procedure for the sampling and determination of hydrobiological parameters. Phytoplankton (Phytobenthos)”,
4. Technical code of practice “The procedure for the sampling and determination of hydrobiological parameters. Phytoplankton”,
5. Technical code of practice “The procedure for the sampling and determination of hydrobiological parameters. Zooplankton”.

Experts of the Hydromet made the next steps according to the national rules in the sphere of the preparation and approval of the methodological documents:

1. First draft of methodological documents were prepared and sent to organizations involved in the undertaking surface water monitoring in Belarus.
2. All remarks were analyzed and second draft of methodological documents were prepared and reviewed at the first consultation meeting which was held on 6th August 2014.
3. Second draft of methodological documents iteratively were sent to the organizations involved in the undertaking surface water monitoring in Belarus.
4. Final methodological documents were discussed at the second consultation meeting which was held on 8th October 2014.
5. All received remarks were reviewed and final methodological documents were submitted to Ministry of natural resources and environmental protection of the Republic of Belarus.

6. The Ministry of natural resources and environmental protection of the Republic of Belarus reviewed and approved all five final methodological documents by the Order 27.11.2014 № 10-T.

More detailed information described in the chapters represent in the below.

1 Current methodological base of the surface water monitoring in Belarus

As today the main methodological document in the sphere of the surface water monitoring in Belarus is a TCP “The rules of observing the state of surface waters using hydrochemical and hydrobiological parameters” which describes main phases of undertaking the monitoring observations and contains the location monitoring sites for each river basins. This methodological document was approved in 2011 year.

Within 2012-2013 years some methodological documents in the sphere of the assessment status of river and lake ecosystems were prepared:

1. TCP “The rules for definition of the ecological status of river ecosystems”,
2. TCP “The rules for definition of the ecological status of lake ecosystems”,
3. TCP “The rules for definition of the chemical status of river ecosystems”,
4. TCP “The rules for definition of the chemical status of lake ecosystems”.

Above mentioned methodological documents used the next biological parameters for the assessment of the ecological status: phytoplankton, zooplankton, phytoperiphyton (phytobenthos), macrozoobenthos (macro-invertebrates). The current procedures of biological sampling and laboratory analyses are based on recommendations published in the former Soviet Union [1]. These recommendations are significantly different from EU standards and have no legal status in Belarus. Water legislation in EU has the next documents in this field:

1. EN 16698 Water quality. Guidance on quantitative and qualitative sampling of phytoplankton from inland waters,
2. EN ISO 10870:2012: Water quality. Guidelines for the selection of sampling methods and devices for benthic macroinvertebrates in fresh waters,
3. EN 15708:2009 Water quality. Guidance standard for the surveying, sampling and laboratory analysis of phytobenthos in shallow running water,
4. EN 15110:2006 Water quality; and Guidance standard for the sampling of zooplankton from standing waters.

Adaptation these methodological EU documents into water legislation and monitoring practice gives opportunity to provide compliance WFD hydrobiological and hydromorphological monitoring and assessment in the river basins of the Republic of Belarus including Upper Dnieper river basin.

Also two European hydromorphology standards were prepared and adopted into national water legislation in the same time:

1. EN 14614:2004 Water quality - Guidance standard for assessing the hydromorphological features of rivers,
2. EN 15843:2010 - Guidance standard on determining the degree of modification of river hydromorphology.

Prepared standards can be used in the hydromorphological survey and assessment of the rivers. At the same time in Belarus there are a lot of lakes and reservoirs. Monitoring basin programme is needed in the methodological document (standard) which could regulate process of the assessment hydromorphological features for lakes and reservoirs. Most effective solution is adopting into national water legislation the EU standard: EN 16039:2011 Water quality guidance standard on assessing the hydromorphological features of lake.

Belarus has a complicated procedure for development and including the new methodological documents into national legislation.

2 National procedure for development new methodological documents

National procedure for development new methodological documents in Belarus consists of few steps: preparation, development and confirmation / adoption.

First step is preparation to development, where technical tasks for standards and codes are developed according to the TCP 1.2-2004 “System for Technical Regulation and Standardization of the Republic of Belarus. Rules for Developing of Governmental Standards”, and are confirmed with State Committee of Standardization. Notifications for governmental standard development start are developed and put in Internet site of State Committee of Standardization according to the TCP 1.8-2008 “System for Technical Regulation and Standardization of the Republic of Belarus. Rules for Developing of Notifications for Technical Reglements, Technical Codes, and Governmental Standards”. Structure and content for developing documents, list of requirements, list of organization that will examine documents are listed in technical tasks for standards and technical codes development.

Next (second) step is development of standards and technical codes, where it is developed documents in first redaction, explanatory notes and notifications for development of governmental standard according to the TCP 1.9-2007 “System for Technical Regulation and Standardization of the Republic of Belarus. Rules for Adoption of International, Regional and National Standards of other Countries as Governmental Standards”, TCP 1.5-2004 “System for Technical Regulation and Standardization of the Republic of Belarus. Rules for construction, presentation, design and contents of technical codes and governmental standards”, TCP 1.2-2004 “System for Technical Regulation and Standardization of the Republic of Belarus. Rules for Developing of Governmental Standards”. Then developed documents and explanatory notes to them are sent to the follow organizations and authorities from list in technical tasks:

- Ministry of natural resources and environmental protection of the Republic of Belarus;
- Republican center of analytical control and environmental monitoring;
- Republican hydrometeorological center;
- National Institute for Standardization and Certification;
- Belarusian State Technical University;
- Brest State Technical University;
- Central Research Institute for Complex Use of Water Resources.

Listed organizations and authorities could examine documents during 60 days, give remarks and proposition. Then it is carried out analyze of remarks and proposition, that in turn will the base for developing second redaction of documents which will send to the organization and authorities that gave remarks. This process continues until all feedbacks would positive.

Final methodological documents submit to Ministry of natural resources and environmental protection of the Republic of Belarus for confirmation. It starts last step of developing (step of confirmation / adoption) for TCP.

The standard needs in additional step. After confirmation special dossier is developed and sent to normalize control and technical expertize to National Institute for Standardization and Certification according to TCP 1.2-2004 “System for Technical Regulation and Standardization of the Republic of Belarus. Rules for Developing of Governmental Standards”. After positive conclusion of normalize control and technical expertize documents are considered as developing and National Institute for Standardization and Certification carries out the registration them and sent to State Committee of Standardization for adoption with special resolution.

3 Short description of the process the development new methodological documents

3.1 “Guidance standard on assessing the hydromorphological features of lakes”

Development of the standard was based on the EU standard EN 16039: 2011 “Water quality - Guidance standard on assessing the hydromorphological features of lakes” and some other documents in the sphere of the surface water monitoring [1-18]. Standard describes the protocol description of the physical parameters of the lake systems, including their morphometry (size and shape of the lake basin and its relationship to watershed tributaries), as well as characteristic morphological and hydrological features that affect the functioning of the system. Prepared standard has the next structure:

- 1 Scope
- 2 Normative references
- 3 Terms and definitions
- 4 Principle
- 5 Requirement to surveys
- 6 Features for survey and assessment
- 7 Reporting hydromorphological assessment and classification
- 8 Training and quality assurance for survey and assessment
- Annexe A (informative) Lake types defined by mode of formation
- Annex B (informative) Lake shore and bottom natural and artificial substrates
- Annex C (informative) Definitions and formulae for lake morphometric parameters
- Annex D (informative) Equipment required for a field-based hydromorphological survey
- Annex E (informative) List of factors relevant to assessing hydrological regime
- Annex F (informative) Explanatory to LHS method
- Annex G (informative) Remote sensing and GIS for lake hydromorphology data capture.

The table 1 shows the results of consideration of all comments on the draft standard.

Table 1.

Part of governmental standard	Stakeholder, letter number and date	Note and/or proposition	Conclusion of author
Whole project	Brest state technical university, letter without number	Note and/or proposition are absent	Take into account
Whole project	Minpriroda, letter dated 11.08.2014 № 12-2-4/228-II	Note and/or proposition are absent	Take into account
Whole project	CRICUWR, letter dated 23.07.2014 № 6-8/603	Note and/or proposition are absent	Take into account
Whole project	Republican center of the analytical control in the field of the environmental protection, letter dated 18.07.2014 № 08-1-9/515	Note and/or proposition are absent	Take into account
Article 3,	Byelorussian national	Term «beach» by implication is more	Proposal was accepted

Part of governmental standard	Stakeholder, letter number and date	Note and/or proposition	Conclusion of author
paragraph 3.9	technical university, letter dated 12.07.2014 № 361	gone with “sandbank” (GOST 19179)	partly. Term «beach» is used in limnology literature
Article 3, paragraph 3.10	Republican hydrometeorological center, letter dated 07.08.2014 № 08-96	Catchment can't be “flow of sediment into lake”	Proposal was accepted
Article 3, paragraph 3.17	Byelorussian national technical university, letter dated 12.07.2014 № 361	We propose follow redaction: eulittoral zone: Section of lake shore located between the high average annual and the low average annual water levels	Proposal was accepted
Article 3, paragraph 3.19	Byelorussian national technical university, letter dated 12.07.2014 № 361	Should precise the definition	Proposal was accepted
Article 3, paragraph 3.21	Republican hydrometeorological center, letter dated 07.08.2014 № 08-96	“interfering” is incomprehensible	Proposal was accepted
Article 3, paragraph 3.22	Byelorussian national technical university, letter dated 12.07.2014 № 361	We propose follow redaction: Physical and hydrological characteristics of the lake, including underground physical processes, the result of which they are part	Proposal was accepted
Article 3, paragraph 3.23	Byelorussian national technical university, letter dated 12.07.2014 № 361	Mistake in using of term «dense». Proposed follow redaction: hypolimnion: Bottom layer of water column with high density in thermal stratified lake	Proposal was accepted
Part 3, clause 3.25	Republican hydrometeorological center, letter dated 07.08.2014 № 08-96	Should precise term «ice phenology»	Proposal was accepted.
Article 3, paragraph 3.25	Byelorussian national technical university, letter dated 12.07.2014 № 361	We propose d follow redaction: ice phenology: Description of duration and timing of freeze-up and melting	Proposal was accepted
Article 3, paragraph 3.26	Byelorussian national technical university, letter dated 12.07.2014 № 361	We propose follow redaction: - outcrop: < 0,001 km ² ; - islet: from 0,001 to < 0,01 km ² ; - island: from 0,01 to < 1 km ² ; - large island: > 1 km ² ;	Proposal was accepted
Article 3, paragraph 3.40	Byelorussian national technical university, letter dated 12.07.2014 № 361	We propose follow redaction: outflow condition: Character of water outflow, which may be natural or modified increased or decreased, and may also be called engineering constructions	Proposal was accepted
Explanatory note	Republican hydrometeorological center, letter dated 07.08.2014 № 08-96	It is rational to send standard to organisations that practice limnology	Take into account. Standard was sent to organisations which involved in the lake

Part of governmental standard	Stakeholder, letter number and date	Note and/or proposition	Conclusion of author
			monitoring
Explanatory note, part 8	Republican hydrometeorological center, letter dated 07.08.2014 № 08-96	Date of taking into force is mistake	Proposal was accepted
Bibliography	Republican hydrometeorological center, letter dated 07.08.2014 № 08-96	To include follow sources in Bibliography: TCP 17.10.01-01-2012 «Environmental protection and nature use. Hydrometeorological activity. Terms and definitions»; Chebotarev A. Hydrological dictionary. Leningrad, hydrometeoizdat, 1978 – 308 P. International hydrological dictionary. Geneve-Paris, WMO, 1992 – 413 P.	Proposal was rejected. Bibliography consists of only these sources reference which used in the text of standard (TCP 1.9-2007)

First draft of methodological document was discussed at the first consultation meeting which was held on 6th August 2014. The final version of the hydromorphological standard was discussed at the second consultation meeting on 8th October 2014. Standard was approved by Minpriroda (letter 12-2-5 dated 02.12.2014) and was sent to State Committee of Standardization for expertize and registration in the database of the national standards. Planned date of taking into force the prepared standard is 1.09.2015. This standard gives opportunity to provide compliant WFD EU hydromorphological monitoring for lakes and to satisfy the requirements of the article 6 new Water Code of the Republic of Belarus.

3.2 Technical code of practice “The procedure for the sampling and determination of hydrobiological parameters. Macrozoobenthos”

According to the TCP “The rules for definition of the ecological status of river ecosystems” ecological status for rivers defines with using next biological parameters: macrozoobenthos (macroinvertebrates) and phytoperiphyton (phytobenthos). Procedure of the sampling macroinvertebrates needs in the document which gives clear and compliant WFD EU definition to all steps of sampling and laboratory analyses.

Development of the document was based on the EU standard EN ISO 10870:2012 “Water quality. Guidelines for the selection of sampling methods and devices for benthic macroinvertebrates in fresh waters” and other literature [7, 19-25]. TCP sets out the technical methods of selection of high-quality samples of macrozoobenthos and identifies biological indicators of river ecosystems on the basis of criteria to characterize the changes in the structural characteristics of communities of macrozoobenthos under different anthropogenic load.

Prepared document has the next structure:

- Introduction
- 1 Sphere of application
- 2 Normative references
- 3 Terms and definitions
- 4 General Provisions
- 5 Procedure for selection of high-quality samples of macrozoobenthos
- 6 Order analysis and preservation of samples of macrozoobenthos
- 7 The procedure for determining taxonomic composition and calculation of

hydrobiological indicators
Appendix A (normative) Form labels to hydrobiological samples
Bibliography

The main proposals from stakeholders regarding the project of the document are presented in the table 2.

Table 2.

Part of TCP	Stakeholder, number of letter and date	Note and/or proposal	Conclusion of author
Whole TCP	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	Taking account the fact that in the presented draft TCP establishes requirements to the methods of preservation of samples, we consider appropriate to develop this document in the format of the standard	Proposal was rejected. Article 6 presented in the new edition
		"commitment" of Appendix B should be replaced by "featured"	Proposal was rejected. Appendix B "Form of the act of sampling hydrobiological samples" was excluded from the document
		To unify the terms "macrozoobenthos" and "zoobenthos"	Proposal was accepted
		Add section "Equipment, auxiliary materials, reagents"	Proposal was rejected. List of used equipment, auxiliary materials and reagents described in the text of the document
		To specify the procedure for preparation of 4% dissolved formalinum, conditions and period of storage	Proposal was accepted
		To specify the conditions and terms of storage of samples	Proposal was accepted
	CRICUWR, №6-8/528 letter dated 27.06.2014	To add the articles "Measuring tools, accessories, reagents and materials", "Preparation of working solutions"	Proposal was rejected. List of used equipment, auxiliary materials and reagents given in the text of document
		The depth of sampling is already determined in TCP 17.13-04-2011, so specifying it in the document is unnecessary.	Proposal was rejected. The depth of sampling macrozoobenthos is not determined in TCP 17.13-04-2011
		"l" and "litres" should be replaced to "dm ³ "	Proposal was accepted
	Article 2	CRICUWR, №6-8/528 letter dated 27.06.2014	To add in article 2 "Normative references" the standard ISO 17025
Article 3	CRICUWR, №6-8/528 letter dated	To exclude from article 3 "Terms and definitions" the next terms:	Proposal was rejected. In accordance with

	27.06.2014	"hydrobiological indicators of the status of surface water bodies", "sediment", "point of observation", "river ecosystem", "ecological status of surface water object", "benthic invertebrates", because they are defined in other documents (for example TCP 17.13-04-2011)	paragraph 3 of the TCP 1.5-2004, if it is necessary, it is allowed to repeat the definition of the term specified in another standard
		To add the specific definitions of the next terms: "quality test", "taxonomic composition", "taxonomy definition"	Proposal was accepted
		To add the term "stationary point of observation"	Proposal was accepted
Article 3, paragraph 3.3	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	We propose the follow text for paragraph 3.3: "3.3 macrozoobenthos: a collection of benthic animals living on the surface and in the thickness of the sediments involved in the processes of transformation of substances using the energy coming from outside"	Proposal was accepted
Article 4	Institute for nature management, National academy of sciences, Belarus, letter №220/01-16/701 dated 08.07.2014	To exclude the term "quality test"	Proposal was rejected. The definition of "qualitative test of macrozoobenthos" is given in article 3 "Terms and definitions"
Article 4, paragraph 4.2	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	In paragraph 4.2, after the words "State observation network" to add the words "of the status of surface waters"	Proposal was accepted
	CRICUWR, letter №6-8/528 dated 27.06.2014	To correct the name of the state network	Proposal was accepted
	Brest State Technical University, letter dated 30.06.2014	"Sampling of macrozoobenthos" should be replaced by the following text: "when undertaking monitoring of surface water, produced..."	Proposal was accepted
Article 4, paragraph 4.3	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	We propose follow redaction: "these works are carried out by test (laboratory) centers accredited by the National accreditation system of the Republic of Belarus in order to establish compliance with standard ISO 17025"	Proposal was accepted
	CRICUWR, letter №6-8/528 dated 27.06.2014	The text "these works" should be replaced by "sampling"	Proposal was accepted

Article 5	Institute for nature management, National academy of sciences, Belarus, letter №220/01-16/701 dated 08.07.2014	In article 5 the use of the term "quality test" is unacceptable, because the sampling should not be poor	Proposal was rejected. The definition of "qualitative test of macrozoobenthos" are given in article 3 "Terms and definitions"
Article 5, paragraph 5.4	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	In paragraph 5.4 the word "rod" should be replaced to word "handle".	Proposal was accepted
Article 5, paragraph 5.13	Institute for nature management, National academy of sciences, Belarus, letter №220/01-16/701 dated 08.07.2014	In paragraph 5.13 it is necessary to clarify what to do with the label before placing it in the bank (for example, wrap in cellophane so that it does not have a pulp)	Proposal was accepted
Article 7, paragraph 7.2	CRICUWR, letter №6-8/528 dated 27.06.2014	Paragraph 7.2 determines the using a specific software product, which is unacceptable	Proposal was rejected. Paragraph 7.2 in the document is given in accordance with established practice
Appendixes A and B	CRICUWR, letter №6-8/528 dated 27.06.2014	To exclude the Appendix B	Proposal was accepted
Bibliography	CRICUWR, letter №6-8/528 dated 27.06.2014	To exclude those sources from bibliography, links to which are absent in the texts of the document	Proposal was accepted

First draft of methodological document was discussed at the first consultation meeting which was held on 6th August 2014. The final version of the TCP was discussed at the second consultation meeting on 8th October 2014, was agreed by all stakeholders and submitted to Minpriroda. Minpriroda approved the TCP by the Decree on 27.11.2014 № 10-T. The date of taking into force the prepared methodological document (TCP) is 21.05.2015. This technical code establishes the procedure for sampling and identification of indicators on the structural characteristics of macrozoobenthos communities for river ecosystems. The prepared and approved document gives opportunity to provide compliant WFD EU hydrobiological monitoring (sampling) for rivers and to satisfy the requirements of the article 6 and 55 of new Water Code of the Republic of Belarus.

3.3 Technical code of practice “The procedure for the sampling and determination of hydrobiological parameters. Phytoperiphyton (Phytobenthos)”

Development of the document was based on the EU standard EN 15708:2009 “Water quality. Guidance standard for the surveying, sampling and laboratory analysis of phytobenthos in shallow running water” and other literature [7, 19-21, 26-27]. TCP sets out the technical methods of sampling and determination phytoperiphyton hydrobiological indicators of ecological condition (status) of river ecosystems on the basis of criteria to characterize the changes in the structural characteristics of communities phytoperiphyton under different anthropogenic load. Prepared document has the next structure:

- Introduction
2. Scope
3. References
4. Terms and definitions

5. General Provisions
 6. The sampling phytoperiphyton
 7. The procedure for determining sample phytoperiphyton
 8. The procedure for calculating biological indicators
- Appendix A (normative) Form labels to trial phytoperiphyton
- Bibliography

The main proposals from stakeholders regarding the project of the document are presented in the table 3.

Table 3.

Part of TCP	Stakeholder, number of letter and date	Note and/or proposal	Conclusion of author
Whole TCP	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	Taking into account the fact that the presented draft TCP establishes requirements to the methods of preservation of samples, we consider appropriate to develop this document in the format of the standard	Proposal rejected. Article 5 prepared in the new edition
		Appendix B should be "recommended"	Proposal was rejected. Appendix B was excluded
		To unify the terms phytoperiphyton and periphyton	Proposal was accepted
		Add section "Equipment, auxiliary materials, reagents"	Proposal was rejected. List of used equipment, auxiliary materials and reagents are described in the text of the document
		To specify the procedure for preparation of 40% dissolved formalinum, conditions and period of storage	Proposal was rejected. It is used purchased 40% technical formalin (according to GOST 1625-89)
Article 2	CRICUWR, letter №6-8/528 от 27.06.2014	To add the articles "Measuring tools, accessories, reagents and materials", "Preparation of working solutions"	Proposal was rejected. List of used equipment, auxiliary materials and reagents are given in the text of document
		The depth of sampling is already determined in TCP 17.13-04-2011, so specifying it in the document is unnecessary	Proposal was rejected. The depth of sampling of phytoperiphyton is not determined in TCP 17.13-04-2011
		"l" and "litres" should be replaced by "dm ³ "	Proposal was accepted
Article 2	CRICUWR, letter №6-8/528 от 27.06.2014	To add the standard ISO 17025 in article 2 "Normative references"	Proposal was accepted

Article 3	CRICUWR, letter №6-8/528 от 27.06.2014	To exclude the next terms from article 3 "Terms and definitions": "hydrobiological indicators of the status of surface water bodies", "sediment", "point of observation", "river ecosystem", "ecological status of surface water object", "benthic invertebrates", because they are defined in other documents (for example TCP 17.13-04-2011).	Proposal was rejected. In accordance with paragraph 3 of the TCP 1.5-2004, if it is necessary, it is allowed to repeat the definition of the term specified in another standard
		To add the specific definitions of the next terms: "quality test", "taxonomic composition", "taxonomy definition"	Proposal was rejected. In the present document these terms are not used
		To add the term "stationary point of observation"	Proposal was accepted
Article 4, paragraph 4.3	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	We propose the follow redaction of paragraph 4.3: "these works are carried out by test (laboratory) centers accredited by the National accreditation system of the Republic of Belarus in the order o establish compliance with standard ISO 17025"	Proposal was accepted
	CRICUWR, letter №6-8/528 от 27.06.2014	In paragraph 4.3, the phrase "these works are" should be replaced by "sampling"	Proposal was accepted
Article 5, paragraph 5.10	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	To add the terms of storage of samples	Proposal was accepted
Appendix	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	The word "date of selection" should be replaced by words "date of sampling"	Proposal was accepted
Appendixes A and B	CRICUWR, letter №6-8/528 dated 27.06.2014	To exclude the Appendix B	Proposal was accepted
Bibliography	CRICUWR, letter №6-8/528 dated 27.06.2014	To exclude those sources from bibliography, links to which are absent in the texts of the document	Proposal was accepted

First draft of methodological document was discussed at the first consultation meeting which was held on 6th August 2014. The final version of the TCP was discussed at the second consultation meeting on 8th October 2014, was agreed by all stakeholders and submitted to the Ministry of natural resources and environmental protection. Ministry of natural resources and environmental protection of the Republic of Belarus approved the TCP by the Decree on 27.11.2014 № 10-T. The date of taking into force the prepared methodological document (TCP) is 21.05.2015. This Technical Code establishes the procedure for sampling and identification of indicators on the structural characteristics of communities of phytoplankton for river ecosystems.

3.4 Technical code of practice “The procedure for the sampling and determination of hydrobiological parameters. Phytoplankton”

Development of this methodological document was based on the EU standard EN 16698 “Water quality. Guidance on quantitative and qualitative sampling of phytoplankton from inland waters” and other literature [7, 19-21, 28-29]. This document sets out the technical methods of sampling and determination of phytoplankton hydrobiological indicators of ecological condition (status) of lakes and reservoirs on the basis of criteria to characterize the changes in the structural characteristics of phytoplankton communities under different anthropogenic load. Prepared document has the next structure:

Introduction

1. Sphere of application
 2. Normative references
 3. Terms and definitions
 4. General provisions
 5. Order of Selection and preservation of phytoplankton samples
 6. Order of concentration phytoplankton samples
 7. The procedure for determining taxonomic composition, abundance and biomass of phytoplankton
 8. Procedure for calculating the hydrobiological indicators (phytoplankton)
- Appendix A (normative) Form labels to hydrobiological samples
- Bibliography.

The main proposals from stakeholders regarding the project of the document are presented in the table 4.

Table 4.

Part of TCP	Stakeholder, number of letter and date	Note and/or proposal	Conclusion of author
Whole TCP	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	Taking account the fact that the presented draft TCP establishes requirements to the methods of preservation of samples, we consider appropriate to develop this document in the format of the standard	Proposal was rejected. Article 5 is presented in new redaction
		Appendix B of the document should be "recommended"	Proposal was rejected. Appendix B excluded in the document
		To specify the conditions and terms of storage of samples	Proposal was accepted
		To add the article "Equipment, auxiliary materials, reagents"	Proposal was rejected. List of used equipment, auxiliary materials and reagents are described in the text of the document
	To specify the procedure for preparation of 40% dissolved formalinum, conditions and period of storage.	Proposal was rejected. It is used purchased 40% technical formalinum (according to GOST 1625-89)	
	CRICUWR, letter	To add the articles “Measuring tools,	Proposal was rejected.

	№6-8/528 dated 27.06.2014	accessories, reagents and materials”, “Preparation of working solutions”	List of used equipment, auxiliary materials and reagents is given in the text of document
		The depth of sampling is already determined in TCP 17.13-04-2011, so specifying it in the document is unnecessary	Proposal was rejected. The document gives link to TCP 17.13-04-2011
		"l" and "litres" should be replaced by "dm ³ "	Proposal was accepted
Article 2	CRICUWR, letter №6-8/528 dated 27.06.2014	To add in article 2 “Normative references” the standard ISO 17025	Proposal was accepted
Article 3	CRICUWR, letter №6-8/528 dated 27.06.2014	To exclude the next terms from article 3 “Terms and definitions”: "hydrobiological indicators of the status of surface water bodies", "sediment", "point of observation", "river ecosystem", "ecological status of surface water object", "benthic invertebrates", because they are defined in other documents (for example TCP 17.13-04-2011)	Proposal was rejected. In accordance with paragraph 3 of the TCP 1.5-2004, if it is necessary, it is allowed to repeat the definition of the term specified in another standard
		To add the specific definitions of the next terms: "quality test", "taxonomic composition", "taxonomy definition"	Proposal was accepted
		To add the term "stationary point of observation"	Proposal was accepted
Article 3, paragraph 3.5	Brest State Technical University, letter dated 30.06.2014	To add the text: "Species of composition and structure saprobionts serve as criteria for assessing the degree of contamination of the lake ecosystem"	Proposal was accepted
Article 4, paragraph 4.3	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	We propose follow redaction of paragraph 4.3: "these works are carried out by test (laboratory) centers accredited by the National accreditation system of the Republic of Belarus in the order to establish compliance with standard ISO 17025"	Proposal was accepted
	CRICUWR, letter №6-8/528 dated 27.06.2014	In paragraph 4.3, the phrase "these works are" should be replaced by "sampling"	Proposal was accepted
Article 7, paragraph 7.1	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	Paragraph 7.1 should be clarified by the literature which determines the taxonomic composition of phytoplankton communities	Proposal was accepted
Appendixes A and B	CRICUWR, letter №6-8/528 dated 27.06.2014	To exclude the Appendix B	Proposal was accepted
Bibliography	CRICUWR, letter №6-8/528 dated 27.06.2014	To exclude those sources from bibliography, links to which are absent in the texts of the document	Proposal was accepted
Explanatory note, part 6	Institute for nature management,	In part 6 "Sources of information" the list of sources should be arranged in the	Proposal was rejected. Part 6 "Sources of

National academy of sciences, Belarus, letter №220/01-16/701 dated 08.07.2014	alphabetical order	information" was prepared in accordance with requirement of TCP 1.5-2004
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This Technical Code establishes the procedure for sampling and identification of indicators on the structural characteristics of phytoplankton communities. First draft of methodological document was discussed at the first consultation meeting which was held on 6th August 2014. The final version of the TCP was discussed at the second consultation meeting on 8th October 2014, was agreed by all stakeholders and submitted to Minpriroda. Minpriroda approved the TCP by the Decree on 27.11.2014 № 10-T. The date of taking into force the prepared methodological document (TCP) is 21.05.2015.

3.5 Technical code of practice “The procedure for the sampling and determination of hydrobiological parameters. Zooplankton”

Development of the document was based on the EN 15110:2006 “Water quality. Guidance standard for the sampling of zooplankton from standing waters” and some other methodological documents [7, 19-21, 30-31]. Document sets out the technical methods of sampling zooplankton and identifying biological indicators of aquatic ecosystems of lakes and reservoirs on the basis of criteria to characterize the changes in the structural characteristics of zooplankton communities with different anthropogenic load.

Prepared document has the next structure:

Introduction

1. Scope

2. References

3. Terms and definitions

4. General provisions

5. Method and equipment for sampling zooplankton

6. The sampling zooplankton

7. The procedure for quantitative analysis of zooplankton samples

8. Procedure for determining the biological indicators

Appendix A (normative) Form labels to hydrobiological samples

Bibliography

The table 5 shows the results of consideration of all comments on the draft document.

Table 5.

Part of TCP	Stakeholder, number of letter and date	Note and/or proposal	Conclusion of author
Whole TCP	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	Taking into account the fact that the presented project of TCP establishes requirements to the methods of preservation of samples, we consider appropriate to develop this document in the format of the standard	Proposal was rejected. Article 6 was presented in new redaction
		Appendix B of the document should be "recommended"	Proposal was rejected. Appendix B was excluded from the document
		To unify the terms zooplankton and	Proposal was

		plankton.	accepted
		To add section "Equipment, auxiliary materials, reagents"	Proposal was rejected. List of used equipment, auxiliary materials and reagents is described in the text of the document
		To specify the procedure for preparation of 4% dissolved formalinum, conditions and period of storage	Proposal was accepted
		To specify the conditions and terms of storage of samples.	Proposal was accepted
	CRICUWR, letter №6-8/528 dated 27.06.2014	To add the articles "Measuring tools, accessories, reagents and materials"	Proposal was accepted
		The depth of sampling is already determined in TCP 17.13-04-2011, so specifying it in the document is unnecessary	Proposal was rejected. The depth of sampling is not determined in TCP 17.13-04-2011
		"l" and "litres" should be replaced by "dm ³ "	Proposal was accepted
Article 2	CRICUWR, letter №6-8/528 dated 27.06.2014	To add the standard ISO 17025 to article 2 "Normative references"	Proposal was accepted
Article 3	CRICUWR, letter №6-8/528 dated 27.06.2014	To exclude the next terms from article 3 "Terms and definitions": "hydrobiological indicators of the status of surface water bodies", "sediment", "point of observation", "river ecosystem", "ecological status of surface water object", "benthic invertebrates", because they are defined in other documents (for example TCP 17.13-04-2011)	Proposal was rejected. In accordance with paragraph 3.10.11 of the TCP 1.5-2004, if it is necessary, it is allowed to repeat the definition of the term specified in another standard
		To add the specific definitions of the next terms: "quality test", "taxonomic composition", "taxonomy definition"	Proposal was accepted
		To add the term "stationary point of observation"	Proposal was accepted
Article 3, paragraph 3.2	Brest State Technical University, letter dated 30.06.2014	To add the text: "Species of composition and structure saprobionts serve as criteria for assessing the degree of contamination of the lake ecosystem"	Proposal was accepted
Article 4	Institute for nature management, National academy of sciences, Belarus, letter №220/01-16/701 dated 08.07.2014	To exclude the term "quality test"	Proposal was rejected. The definition of "qualitative test of zooplankton" are given in article 3 "Terms and

			definitions"
Article 4, paragraph 4.2	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	In paragraph 4.2, to add the words "of the status of surface waters" after the words "State observation network"	Proposal was accepted
	CRICUWR, letter №6-8/528 dated 27.06.2014	In paragraph 4.2 to correct the name of the state network	Proposal was accepted
Article 4, paragraph 4.3	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	We propose the follow redaction of paragraph 4.3: "these works are carried out by test (laboratory) centers accredited by the National accreditation system of the Republic of Belarus in the order to establish compliance with standard ISO 17025"	Proposal was accepted
	CRICUWR, letter №6-8/528 dated 27.06.2014	In paragraph 4.3, the text "these works are" should be replaced by "sampling"	Proposal was accepted
Article 5	Institute for nature management, National academy of sciences, Belarus, letter №220/01-16/701 dated 08.07.2014	In article 5 the use of the term "quality test" is unacceptable, because the sampling should not be poor	Proposal was rejected. The definition of "qualitative test of zooplankton" are given in article 3 "Terms and definitions"
Article 5, paragraph 5.4	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	In paragraph 5.4 the word "rod" should be replaced by word "handle"	Proposal was accepted
Article 5, paragraph 5.13	Institute for nature management, National academy of sciences, Belarus, letter №220/01-16/701 dated 08.07.2014	In paragraph 5.13 it is necessary to clarify what to do with the label before placing it in the bank (for example, wrap in cellophane so that it does not have a pulp)	Proposal was accepted
Article 7, paragraph 7.1	Brest State Technical University, letter dated 30.06.2014	Write the following text «... should count on a certain part of the plankton and to recalculate the entire sample».	Proposal was accepted
Article 7, paragraph 7.6	Minpriroda, letter № 3-1-13/639 dated 10.07.2014	In paragraph 7.6 to indicate the literature which describes data about the individual masses of zooplankters	Proposal was accepted
Appendixes A and B	CRICUWR, letter №6-8/528 dated 27.06.2014	To exclude the Appendix B	Proposal was accepted
Bibliography	CRICUWR, letter №6-8/528 dated 27.06.2014	to exclude those sources from bibliography, links to which are absent in the texts of the document	Proposal was accepted

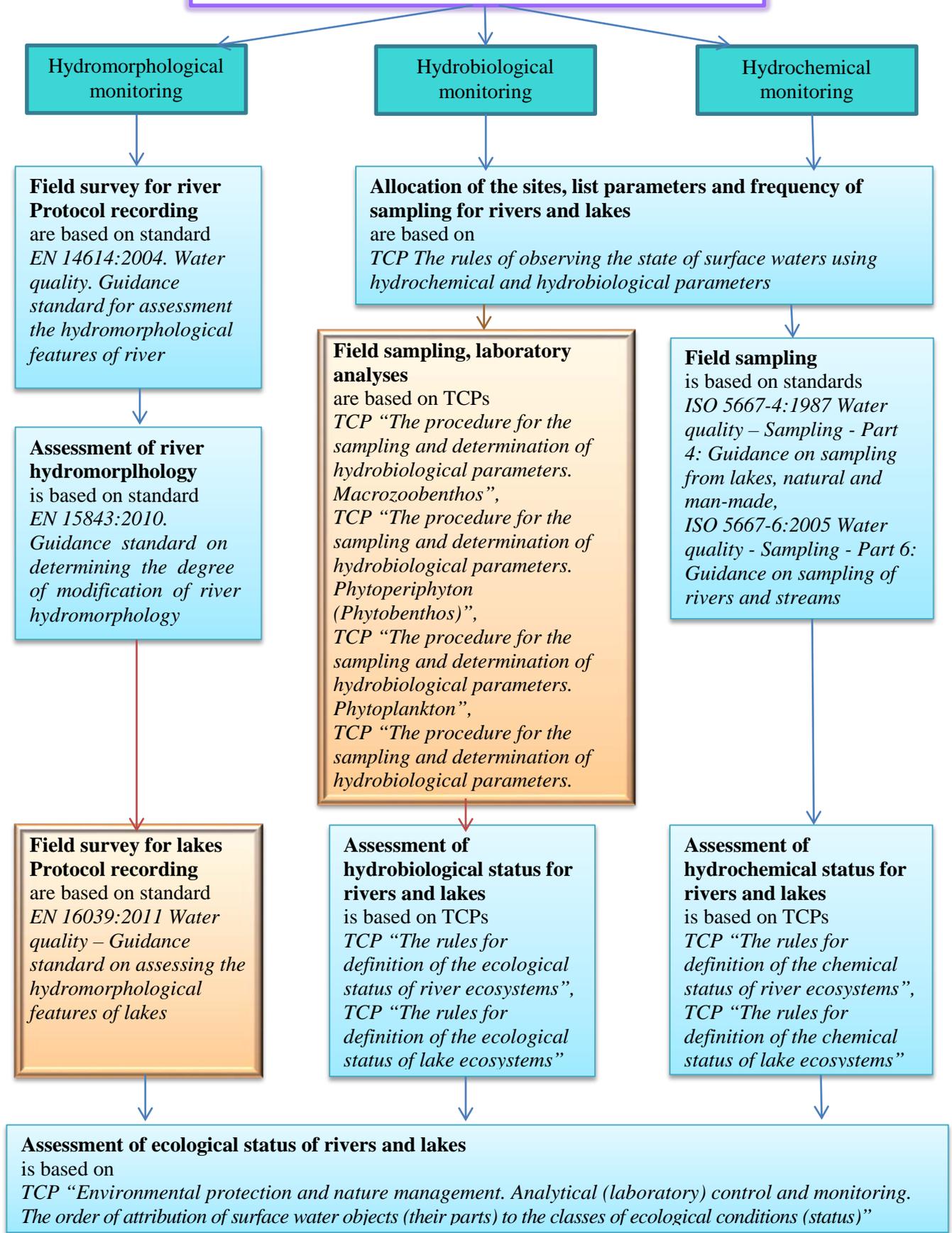
This Technical Code establishes the procedure for sampling and identification of indicators on the structural characteristics of zooplankton communities. First draft of methodological document was discussed at the first consultation meeting which was held on 6th August 2014. The final version of the TCP was discussed at the second consultation meeting on 8th October 2014, was agreed by all stakeholders and submitted to Minpriroda. Minpriroda approved the TCP by the Decree on 27.11.2014 № 10-T. The date of taking into force the prepared methodological document (TCP) is 21.05.2015.

Conclusion

Realization of the pilot project in the sphere of the surface water monitoring helps to make the significant step for design WFD compliant monitoring programme in Belarus. All prepared methodological documents within pilot project based on the EU standards. Also prepared hydromorphological standard for lakes and four prepared hydrobiological methodological documents will realize the articles of new Water Code of the Republic of Belarus in part of providing surface water monitoring for hydromorphological and hydrobiological features. Therefore the results of implementation of the pilot project is a legislative base for improvement availability and quality of data on the ecological and hydromorphological status of trans-boundary Upper Dnieper river basin, which is one of the specific objectives of the project EPIRB.

The new legislative base after implementation of the pilot project shows on the figure 1.

Water legislation in the field of surface water monitoring



Legend



Methodological documents functioning in Belarus before pilot project realization



Methodological documents developed within pilot project realization

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