

HJ

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Technical guideline for deriving nutrient criteria for lakes

湖泊营养物基准制定技术指南

(English Translation)

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Foreword

In order to implement the Environmental Protection Law of the People's Republic of China, the Law of the People's Republic of China on the Prevention and Control of Water Pollution and the Action Plan for Water Pollution Control, Scientific and standardized development of lake nutrient benchmarks, the development of this standard.

This standard specifies the procedures, methods and technical requirements for lake nutrient benchmarking.

Appendix A to Appendix D of this standard are normative appendices.

This standard is the first release.

This standard is a guiding standard.

This standard is organized by the Ministry of Environmental Protection Science and

Technology Standards Division.

The main drafting unit of this standard. China Environmental Science Research Institute (State Key Laboratory of Environmental Benchmarking and Risk Assessment).

This standard is approved by the Ministry of Environmental Protection on June 9, 2017.

This standard has been implemented since September 1, 2017.

This standard is explained by the Ministry of Environmental Protection.

Guidance on the development of lake nutrient benchmarks

1 Scope of application

This standard specifies the technical methods for the development of lake nutrient benchmarks, including nutrient benchmarking techniques, data collection and requirements, Candidate indicators and screening, benchmarking, benchmark validation and review, and nutrient benchmarking.

This standard applies to guide the development of regional lake nutrient benchmarks in China, and the reference to the development of reservoirs and individual lake nutrient reference can be implemented.

2 Normative reference documents

This standard refers to the terms of the following documents. For undated references, the valid version applies to this standard.

Water quality - Determination of total phosphorus - Ammonium molybdate spectrophotometric method HJ 636 Water quality - Determination of total nitrogen - Alkaline persulfate digestion - Ultraviolet spectrophotometric method Determination of chlorophyll content - Spectrophotometric method

3 Terms and definitions

The following terms and definitions apply to this standard.

Nutrient

Refers to the measurement, evaluation or prediction of water status or eutrophication status indicators.

3.2 Nutrient criteria

Refers to the nutrient concentration or level of the nutrient produced by the ecological effect of the lake that does not endanger its water function or use.

3.3 Reference state condition

Refers to the state of the least affected or considered to be the best possible condition.

Refer to the lake reference lake Refers to lakes that are not artificially affected or are artificially affected and are of minimal use.

4 Nutrition benchmarks to develop technical processes

The lake nutrient benchmarking process is shown in Figure 1.

Figure 1 Nutrient benchmarking Technical flow chart

5.1 Data sources

3 data sources mainly for environmental monitoring agencies, research institutes and other institutions to collect data in a standard way. For other sources of data (public Development documents), should support the inspection documents to ensure that sampling, measurement and analysis methods are consistent.

5.2 Data Filtering Principles

Nutrition benchmarks need to be based on a large amount of data, the required data should be consistent with the following principles.

(1) Data integrity principles. For areas where monitoring data is complete, such as the need to meet the classification of lakes and the development of benchmarks, its work is mainly for the collection of existing data, analysis and screening; for the lack of monitoring data or insufficient areas, should be carried out in a timely manner and monitor the work to meet the data requirements.

(2) the least data. the monitoring data should include at least total phosphorus, total nitrogen, chlorophyll a and transparency. Other data include judgment Basic data for the degree of nutrient input (information on pollutant emission data, land use, etc.).

5.3 Data quality evaluation

Trusted data refers to the use of standard methods to collect data, should be from the following aspects of the data quality evaluation.

(1) monitoring site. with a clear site information, including latitude and longitude and other geographical information related to the reference.

(2) monitoring indicators and analysis methods. the same monitoring indicators should be a unified standard analysis method. If a standard method is used Obtain too little monitoring data, you can use other standard methods to get the data.

- (3) laboratory quality control. meet the laboratory quality control requirements of the monitoring data can be used.
- (4) Data duration. Monitoring data for at least 3 consecutive years in the past 10 years, if not required Supplementary monitoring.
- (5) monitoring frequency. under normal circumstances, need to be monitored within a natural year by month; or at least in a natural year in the spring, Summer, autumn monitoring once.
- (6) representative lake data. should be randomly selected representative of the lake monitoring data. Representative lakes require an area greater than 10 km², the number reached more than 80% of the total number of lakes in the area. If the above requirements are not met, additional monitoring is required.

6 Candidate indicators and screening

Nutritional benchmark candidates include nutrient indicators, biological indicators and auxiliary indicators.

6.1.1 Phosphorus

The content of total phosphorus (TP) in water samples was analyzed by GB 11893, including all organic and inorganic, dissolved and particulate phosphorus, for µg/L or mg/L. TP is a mandatory indicator of the nutrient base. Phosphates can be used as an alternative to nutrient benchmarks.

6.1.2 Nitrogen

The contents of total nitrogen (TN) in water samples were analyzed by HJ 636, including all nitrate nitrogen, nitrite nitrogen, ammonia nitrogen and total organic Nitrogen in µg/L or mg/L. TN is a mandatory indicator of the nutrient base. Ammonia nitrogen, nitrate nitrogen, nitrite nitrogen can be used as a nutrient Optional indicators for benchmarks.

Biological Indicators

6.2.1 Chlorophyll a

The content of chlorophyll a (Chl a) was analyzed by SL 88, which directly reflected the biomass of algae in µg/L or mg/m³. Chl a is a mandatory indicator for the basis of the baseline.

6.2.2 Transparency

Transparency (SD) can be used as a predictor of the outbreak of lacustrine green algae blooms in cm. SD is not suitable for water Large nuts with higher chroma (≥ 30 mg Pt/L) or