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Standard DWA-A 100E

**Guidelines of Integrated Urban Drainage
(IUD)**

December 2006

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The German Association for Water, Wastewater and Waste (DWA) is intensively involved with the development of reliable and sustainable water management. Being a politically and economically independent organisation it operates specifically in the areas of water management, wastewater, waste and soil protection.

In Europe the DWA is the association in this field with the greatest number of members and, due to its specialist competence it holds a special position with regard to standardisation, professional training and information of the public. The approximately 14,000 members represent specialists and managers from municipalities, universities, consulting engineers, authorities and businesses.

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Foreword

The DWA's Rules and Standards contain several single Standard and Advisory Leaflets dealing with the field of urban drainage (= subtask of wastewater disposal: collection and transport of wastewater as well as collection, transport, treatment and discharge of stormwater). Primarily, they deal with individual construction- and system-related individual topics. The available regulations can roughly be classified into two major topics, which are based on totally different concerns and aims:

- safe and flood-free drainage (wastewater, combined sewage and stormwater),
- prevention and/or reduction of the pollution of bodies of water.

In most cases the single Standards and Advisory Leaflets were developed to solve specific problems. Partially, they contain in-depth, detail-related regulations on calculation, dimensioning, constructive design and operation of urban drainage systems. These detailed regulations with often very specific requirements concerning certain measures can lead to a loss of flexibility in practice. On the other hand, the high number of single regulations aggravates an integrated way of dealing with problems.

At the same time, various developments have led to broadened aims and in individual cases also to target conflicts between the mentioned concerns and thus also between the corresponding single regulations:

- source-based stormwater management or harvesting instead of discharge-accentuated drainage concepts (prevention of discharge, utilisation, infiltration, retention of stormwater);
- specification of the required flood protection by the European Standard series DIN EN 752;
- integrated concepts of wastewater disposal, partially connected with alternative approaches of domestic wastewater disposal;
- demands on water pollution control taken from demands on emissions and immissions in accordance with the European Water Framework Directive ("combined approach").

As a superior framework for action the Standard at hand is intended to allow a holistic point of view on the urban drainage (= "integrated urban drainage") and is to support the user when it comes to selecting the single regulations that have to be applied in a specific case. Here, special emphasis is put on the necessary dovetailing with related fields and sub-systems (catchment area, drain system, wastewater treatment plant, surface bodies of water, groundwater).

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Content

Foreword	3
Authors	4
List of Figures	6
List of Tables	6
User Notes	7
1 Scope	7
2 Aims of Integrated Urban Drainage	9
2.1 Safe Disposal.....	11
2.2 Water Pollution Control	12
2.3 Safe Usage of Bodies of Water.....	12
2.4 Other Concerns	12
3 Legal and Technical Requirements for Urban Drainage	12
3.1 Requirements by the European Union	12
3.1.1 Quality Targets	12
3.1.2 Combined Approach.....	13
3.2 Requirements by the German State and the German Federal States.....	13
3.2.1 Discharge from Urban Areas	13
3.2.2 Construction and Operation of Wastewater Systems	14
3.3 Other Technical Requirements	14
4 Fundamentals and Tasks of the Planning of Integrated Urban Drainage	14
4.1 Fundamentals	14
4.2 Tasks.....	16
4.3 Integrated Drainage Planning as a Continuous Task	17
5 Matters of Integrated Drainage Planning	17
5.1 Motives of Integrated Drainage Planning	17
5.2 Working Steps of the Planning Process	18
5.2.1 Clarification of the Task and Outline of the Planning Space (working steps 1+2)	19
5.2.2 Determination of Fundamentals and Condition Assessment (working steps 3+4)	19
5.2.3 Analysis of Solution Variants (working step 5).....	19
5.2.3.1 Selection of Measures (working step 5.1)	19
5.2.3.2 Prediction of the Effectiveness (working step 5.2)	20
5.2.3.3 Comparison of Costs (working step 5.3)	21
5.2.4 Selection of the Preferred Variant (working step 6)	21
5.2.5 Workflow for Implementation (working step 7).....	21
5.2.6 Programme for Operation and Result Testing (working step 8)	21
5.2.7 System-Related Planning (working step 9)	21
5.3 Construction and Operation.....	21
5.4 Result Testing	22
6 Concluding Remark	22

Literature	22
Laws and Ordinances	22
Technical Regulations for Urban Drainage (Subject Drain and Sewer Systems)	23
DIN Standards.....	23
DWA Rules and Standards	23
Other Technical Regulations	24
Further Literature	24
Annex A Catalogue of Measures for Integrated Urban Drainage – Aspects to be checked during Planning, Construction and Operation	26
Annex B Examples of Measures in the Case of Deficiencies in Water Pollution Control	33
Annex C Example of an “Integrated Drainage Planning”: Initiation by Deficiencies in Water Pollution Control: “Integrated Planning Rinderbach”	34
C.1 Preliminary Note.....	34
C.2 Planning Motive.....	34
C.3 Planning Objectives and Requirements	36
C.4 Extent and Procedure of Planning.....	36
C.5 Conclusion	39
Annex D Abbreviations and Symbols (not part of the German version)	40

List of Figures

Figure 1: Sub-categorisation of the technical rules and standards with Standard DWA-A 100E as regulation framework for the sub-area drainage systems	8
Figure 2: Subjects of protection and objectives of integrated urban drainage	10
Figure 3: Urban drainage as part of urban water management.....	11
Figure 4: System structure in the planning space of urban drainage.....	15
Figure 5: Working steps of integrated drainage planning	18
Figure C.1: Catchment area Rinderbach with existing combined sewage discharges.....	34
Figure C.2: Current status of the water structure quality	35
Figure C.3: Saprobity index of the Rinderbach, ammonia and oxygen concentration during stormwater overflow (simplified verification in accordance with BWK M3) in the current status	35
Figure C.4: Planning aspects in the example “Rinderbach”	38
Figure C.5: Predictive assessment of the macrozoobenthos after performing all rehabilitation measures for the influencing factors of pollution (saprobity) and water morphology.....	39

List of Tables

Table A.1: Objective hygiene: Wastewater disposal	26
Table A.2: Objective flood protection: Drainage of stormwater	27
Table A.3: Objective water pollution control (surface water): Wastewater disposal (“prevention”).....	29
Table A.4: Objective water pollution control (surface water): Reduction of loads caused by stormwater	30
Table B.1: Examples of measures in the case of deficiencies in water pollution control in connection with urban drainage in rainy weather	33

User Notes

This Standard has been produced by a group of technical, scientific and economic experts, working in an honorary capacity and applying the rules and procedures of the DWA and the Standard ATV-DVWK-A 400. Based on judicial precedent, there exists an actual presumption that this document is textually and technically correct and also generally recognised.

Any party is free to make use of this Standard. However, the application of its contents may also be made an obligation under the terms of legal or administrative regulations, or of a contract, or for some other legal reason.

This Standard is an important, but not the sole, source of information for solutions to technical problems. Applying information given here does not relieve the user of responsibility for his own actions or for correctly applying this information in specific cases. This holds true in particular when it comes to respecting the margins laid down in this Standard.

1 Scope

As a branch of the municipal task of “wastewater disposal”, urban drainage comprises collection and transport of wastewater as well as collection, transport, treatment and discharge of stormwater. In accordance with state-of-the-art technology it requires a long-term conception, which is developed within the scope of an integrated drainage planning within the responsibility of the city or municipality (and/or the responsible association) that has committed itself to wastewater disposal. Planning of integrated discharge for the purpose of this Standard covers the planning process that includes extensive evaluation of the subjects of protection and objectives (Clause 2), the selection and assessment of necessary measures, their implementation into construction and operation as well as the control of success (Clause 5).

Provided that during the process of water-related inspections planning space results that goes beyond the municipal administrative borders, it is the concerned water authorities’ task to initiate the planning process and – where necessary – the coordination of the single municipal planning authorities.

As a framework of action concerning the detailed regulations for urban drainage, the given Standard “Guidelines of Integrated Urban Drainage” is intended to

- ensure comprehensive processing as “integrated urban drainage“;
- contribute to sustainable wastewater disposal;
- enable the superior aim of reducing the interferences that result from urban drainage for the natural habitat of bodies of water and other uses of bodies of water;

- work towards a holistic view of the existing conditions and future developments and necessities for the purpose of the European Water Framework Directive (Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy);
- help to define aims, strategies and priorities for future measures involving urban drainage;
- support operators in developing a stable foundation for financial budgeting and in securing the drain and sewer systems’ long-term maintenance of value.

In this way, the approach and further development of integrated urban drainage according to consistent guidelines as well as the coordination of the single topics are to be ensured. At the same time the recommended measures intend to systematically create scopes for a flexible selection of technical solutions, measures and constructional systems. The guidelines allow a case-specific application of single regulations and are thus limited to general principles of urban drainage. They are intended to point out links between the basic tasks (“aims”) of urban drainage, possible deficiencies in water quality and possible measures including their specific effects in order to balance or reduce these deficiencies. The development, dimensioning and constructive design as well as the operation of measures and systems is respectively dealt with in individual guidelines within the rules and standards.

Figure 1 illustrates the status of the Standard at hand within the technical regulations on urban drainage by utilising the structure of a building as reference. In the picture Standard DWA-A 100E functions as a “roof” for the regulations concerning the subtopic of drainage systems. The vertical structure also shows the related subareas of the regulation.