

West Virginia Stormwater Management and Design Guidance Manual

West Virginia Department of Environmental Protection
November 2012



Nc State Stormwater Design Manual

KJ Lindholm-Leary



Nc State Stormwater Design Manual:

The Sustainable Sites Handbook Meg Calkins, 2012-01-18 Get the definitive resource guide for sustainable site design construction and management The Sustainable Sites Initiative SITES is transforming land design development and management practices across the United States with the first national rating system for sustainable landscapes The Sustainable Sites Handbook features comprehensive and detailed information on principles strategies technologies tools and best practices for sustainable site design Contributors to this book are some of the same experts that carefully shaped the SITES rating tool ensuring thorough coverage of the broad range of topics related to sustainable site design The Sustainable Sites Handbook offers in depth coverage of design construction and management for systems of hydrology vegetation soils materials and human health and well being Focusing primarily on environmental site design and ecosystem services this wide ranging guide also covers issues of social equity economic feasibility and stewardship which are crucial to the success of any sustainable site Equally useful as a handbook for obtaining SITES credits or for the independent development of sustainable sites The Sustainable Sites Handbook is an indispensable resource for practicing professionals in landscape architecture landscape design architecture civil engineering land planning horticulture ecology environmental engineering landscape contracting and parks and recreation management

Design and Construction of Urban Stormwater Management Systems American Society of Civil Engineers, 1993-01-01 Prepared by the Task Committee of the Urban Water Resources Research Council of ASCE Copublished by ASCE and the Water Environment Federation Design and Construction of Urban Stormwater Management Systems presents a comprehensive examination of the issues involved in engineering urban stormwater systems This Manual which updates relevant portions of Design and Construction of Sanitary and Storm Sewers MOP 37 reflects the many changes taking place in the field such as the use of microcomputers and the need to control the quality of runoff as well as the quantity Chapters are prepared by authors with experience and expertise in the particular subject area The Manual aids the practicing engineer by presenting a brief summary of currently accepted procedures relating to the following areas financial services regulations surveys and investigations design concepts and master planning hydrology and water quality storm drainage hydraulics and computer modeling

Green Stormwater Infrastructure for Sustainable Urban and Rural Development Luis A. Sañudo-Fontaneda, William F. Hunt, 2021-04-22 Green Stormwater Infrastructure for Sustainable Urban and Rural Development offers some of the latest international scientific and practitioner findings around the adaptation of urban rural and transportation infrastructures to climate change by sustainable water management This book addresses the main gaps in the up to date literature and provides the reader with a holistic view ranging from a strategic and multiscale planning implementation and decision making angle down to the engineering details for the design construction operation and maintenance of green stormwater techniques such as sustainable drainage systems SuDS and stormwater control measures SCMs This book is particularly recommended for a

wide audience of readers such as academics researchers and students in the fields of architecture and landscaping engineering environmental and natural sciences social and physical geography and urban and territorial planning This book is also a resource for practitioners and professionals developing their work in architecture studios engineering companies local and regional authorities water and environmental industries infrastructure maintenance regulators planners developers and legislators

Storm Water Management and Technology US Environmental Protection Agency,1995-01-01 This book provides industrial facilities with comprehensive guidance on the development of storm water pollution prevention plans and identification of Best Management Practices BMPs It provides technical assistance and support to all facilities subject to pollution prevention requirements established under National Pollutant Discharge Elimination System NPDES permits for storm water point discharge discharges In addition to providing guidance for facilities that are subject to storm water permit requirements this book contains information that is generally useful for controlling storm water problems Guidelines and accompanying worksheets will walk the reader through the process

Storm Water Management and Technology United States. Environmental Protection Agency,1993 This book provides industrial facilities with comprehensive guidance on the development of storm water pollution prevention plans and identification of Best Management Practices BMPs It provides technical assistance and support to all facilities subject to pollution prevention requirements established under National Pollutant Discharge Elimination System NPDES permits for storm water point discharge discharges In addition to providing guidance for facilities that are subject to storm water permit requirements this book contains information that is generally useful for controlling storm water problems Guidelines and accompanying worksheets will walk the reader through the process

Identification of Research Needs Related to Highway Runoff Management Marie Venner,National Cooperative Highway Research Program,2004

Sustainable Solutions for Water Resources James L. Sipes,2010-03-30 Get the single source solutions guide to the sustainable management of water resources Why is water the environmental issue The answer is simple without it life on this planet could not exist Yet despite this fact reckless consumption practices from a growing population are drying up the Earth's already limited water resources Other factors such as river and lake contamination rising temperatures and disproportionate geographic accessibility further contribute to the fresh water crisis To confront this pressing concern this enlightening guide which covers over twenty case studies offering insights into real world projects uses a holistic integrated approach to illustrate ways to preserve vital water supplies from green design remedies to encouraging greater personal responsibility This book Provides a basic overview of water resources hydrology current problems involving water resources and the potential impact of global warming and climate change Covers watershed planning Best Management Practices and potential design and planning solutions Offers a concise overview of the issues affecting water use and management Includes a full chapter dedicated to planning issues and a full chapter covering site planning design and implementation Sustainable Solutions for Water Resources takes a practical approach to head off a

global water catastrophe by offering sensible measures that can be put in place immediately to promote a clean plentiful flow of the Earth's most precious resource

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, 2005

Using Graywater and Stormwater to Enhance Local Water Supplies National Academies of Sciences, Engineering, and Medicine, Division on Earth and Life Studies, Water Science and Technology Board, Committee on the Beneficial Use of Graywater and Stormwater: An Assessment of Risks, Costs, and Benefits, 2016-07-30

Chronic and episodic water shortages are becoming common in many regions of the United States and population growth in water scarce regions further compounds the challenges. Increasingly alternative water sources such as graywater (untreated wastewater that does not include water from the toilet but generally includes water from bathroom sinks, showers, bathtubs, clothes washers, and laundry sinks) and stormwater (water from rainfall or snow that can be measured downstream in a pipe, culvert, or stream shortly after the precipitation event) are being viewed as resources to supplement scarce water supplies rather than as waste to be discharged as rapidly as possible. Graywater and stormwater can serve a range of non-potable uses including irrigation, toilet flushing, washing, and cooling, although treatment may be needed. Stormwater may also be used to recharge groundwater, which may ultimately be tapped for potable use. In addition to providing additional sources of local water supply, harvesting stormwater has many potential benefits including energy savings, pollution prevention, and reducing the impacts of urban development on urban streams. Similarly, the reuse of graywater can enhance water supply reliability and extend the capacity of existing wastewater systems in growing cities. Despite the benefits of using local alternative water sources to address water demands, many questions remain that have limited the broader application of graywater and stormwater capture and use. In particular, limited information is available on the costs, benefits, and risks of these projects, and beyond the simplest applications, many state and local public health agencies have not developed regulatory frameworks for full use of these local water resources. To address these issues, *Using Graywater and Stormwater to Enhance Local Water Supplies* analyzes the risks, costs, and benefits on various uses of graywater and stormwater. This report examines technical, economic, regulatory, and social issues associated with graywater and stormwater capture for a range of uses including non-potable urban uses, irrigation, and groundwater recharge. *Using Graywater and Stormwater to Enhance Local Water Supplies* considers the quality and suitability of water for reuse, treatment and storage technologies, and human health and environmental risks of water reuse. The findings and recommendations of this report will be valuable for water managers, citizens of states under a current drought, and local and state health and environmental agencies.

Handbook of Water Sensitive Planning and Design Robert L. France, 2002-05-29

Design options and planning procedures must be critically examined to ensure that landscapes are created with sensitivity to water quality and management issues as well as overall ecological integrity. *Handbook of Water Sensitive Planning and Design* presents the history of water as a design and planning element in landscape architecture and describes new interpretations of water management. This text pushes the frontiers of

standard water management in new directions challenging readers into abandoning the comfortable safety of conducting business as usual within narrow disciplinary confines and instead directing views outward to the exciting and incompletely mapped regions of true interdisciplinary water sensitive planning and design With contributions from renowned practitioners Part I provides seventeen chapters addressing the subject of site specific water sensitive design and Part II presents another seventeen chapters focusing on issues relating to the water sensitive planning of riparian buffers and watersheds In addition Professor France has provided a Response to accompany each chapter which succinctly underscores the salient features in more detail and emphasizes cross linking to other chapters in the book The Overview provides a brief road map to navigate through the section Finally the discussion summaries at the end of each section elaborate on past problems current challenges and future directions Handbook of Water Sensitive Planning and Design puts forward the very best of modern water sensitive planning and design and should be required reading for everyone involved in this dynamic and crucial field

Storm Water Management for Industrial Activities Developing Pollution Prevention Plans and Best Management Practices Washington Us Epa,1993-02-18 This manual provides industrial facilities with comprehensive guidance on the development of storm water pollution prevention plans and the identification of appropriate Best Management Practices BMPs The guide presents expert technical assistance for any facility subject to pollution prevention requirements established under NPDES permits for storm water point source discharges Step by step guidelines and accompanying worksheets will walk you through the process of developing and implementing a pollution prevention plan Specific EPA General Permit pollution prevention requirements are highlighted in shaded boxes throughout the manual for easy reference This approach allows you to complete your plan quickly and efficiently Storm Water Management for Industrial Activities will soon be dog eared with use by plant operators managers and supervisors Consultants and regulators will also find themselves constantly referring to this essential guide [Stormwater Management for Transportation Facilities](#) Shaw L. Yu,1993 This synthesis will be of interest to highway design engineers maintenance engineers environmental personnel administrators and others responsible for the design operation and maintenance of stormwater management for highways and ancillary facilities Information is presented on the basic hydrology needed to assess stormwater impacts and on the effectiveness of stormwater management techniques Designers of highway facilities must consider stormwater management requirements within the context of both localized runoff impacts as well as downstream effects of runoff This report of the Transportation Research Board describes the management of both stormwater quantity and stormwater quality Stormwater quantity includes an overview of methods of estimating runoff and management control practices Stormwater quality management includes discussions of the most prevalent pollutants and best management practices BMP to minimize pollutants from transportation facilities Various types of structural and non structural methods are described including their design considerations and efficiencies Several stormwater management models are described

with special concern for highway applications Highlights from the 1990 National Pollutant Discharge Elimination System NPDES permits are presented Development document for proposed effluent guidelines and standards for the construction and development category , **Water Resources Management VIII** C.A. Brebbia,2015-06-15 Water Resources Management VIII contains papers presented at the eighth conference in a biennial series organised by the Wessex Institute First held in 2001 the Conference includes the work of scientists practitioners and other experts regarding the sustainable management of water resources It is predicted that population growth and irregular precipitation due to climate change may lead to more restricted access to water in certain regions of the world The problem will be aggravated by human activities that affect the quality of available water In order to improve strategies for dealing with a scarcity of potable water it is important to review and compare the performance of current technologies and practices in order to select those that will provide the most effective approaches It is also important that technologies and practices be able to respond with agility to changing conditions New ways of thinking are required in order to successfully predict future trends and prepare adequate sustainable solutions The papers included in this book cover such topics as Water Management and Planning Water Rights and Accessibility Water Markets and Policies Climate Change Irrigation Urban Water Management Hydraulic Engineering Water Quality Pollution Contaminants and Control River Basin Management Flood Risk Management Geopolitics of Water Water Resources and Economics Governance and Regulations Desalination Water Services Constructed Wetlands and Sustainable Development Gary Austin,Kongjian Yu,2016-08-25 This book explains how with careful planning and design the functions and performance of constructed wetlands can provide a huge range of benefits to humans and the environment It documents the current designs and specifications for free water surface wetlands horizontal and vertical subsurface flow wetlands hybrid wetlands and bio retention basins and explores how to plan engineer design and monitor these natural systems Sections address resource management landscape planning technical issues environmental engineering and botany recreation and physical design landscape architecture and biological systems ecology Site and municipal scale strategies for flood management storm water treatment and green infrastructure are illustrated with case studies from the USA Europe and China which show how these principles have been put into practice Written for upper level students and practitioners this highly illustrated book provides designers with the tools they need to ensure constructed wetlands are sustainably created and well managed **Living Roofs in Integrated Urban Water Systems** Daniel Roehr,Elizabeth Fassman-Beck,2015-03-05 With the infrastructure to manage storm water threats in cities becoming increasingly expensive to build or repair the design community needs to look at alternative approaches Living roofs present an opportunity to compliment ground level storm water control measures contributing to a holistic integrated urban water management system This book offers tools to plan and design living roofs in the context of effectively mitigating storm water Quantitative tools for engineering calculations and qualitative discussion of potential influences and interactions of the

design team and assembly elements are addressed

Site Planning Gary Hack, 2018-05-04 A comprehensive state of the art guide to site planning covering planning processes new technologies and sustainability with extensive treatment of practices in rapidly urbanizing countries Cities are built site by site Site planning the art and science of designing settlements on the land encompasses a range of activities undertaken by architects planners urban designers landscape architects and engineers This book offers a comprehensive up to date guide to site planning that is global in scope It covers planning processes and standards new technologies sustainability and cultural context addressing the roles of all participants and stakeholders and offering extensive treatment of practices in rapidly urbanizing countries Kevin Lynch and Gary Hack wrote the classic text on the subject and this book takes up where the earlier book left off It can be used as a textbook and will be an essential reference for practitioners Site Planning consists of forty self contained modules organized into five parts The Art of Site Planning which presents site planning as a shared enterprise Understanding Sites covering the components of site analysis Planning Sites covering the processes involved Site Infrastructure from transit to waste systems and Site Prototypes including housing recreation and mixed use Each module offers a brief introduction covers standards or approaches provides examples and presents innovative practices in sidebars The book is lavishly illustrated with 1350 photographs diagrams and examples of practice

Site Planning, Volume 1 Gary Hack, 2018-04-27 Ebook Volume 1 of 3 A comprehensive state of the art guide to site planning covering planning processes new technologies and sustainability with extensive treatment of practices in rapidly urbanizing countries Ebook Volume 1 of 3 Cities are built site by site Site planning the art and science of designing settlements on the land encompasses a range of activities undertaken by architects planners urban designers landscape architects and engineers This book offers a comprehensive up to date guide to site planning that is global in scope It covers planning processes and standards new technologies sustainability and cultural context addressing the roles of all participants and stakeholders and offering extensive treatment of practices in rapidly urbanizing countries Kevin Lynch and Gary Hack wrote the classic text on the subject and this book takes up where the earlier book left off It can be used as a textbook and will be an essential reference for practitioners Site Planning consists of forty self contained modules organized into five parts The Art of Site Planning which presents site planning as a shared enterprise Understanding Sites covering the components of site analysis Planning Sites covering the processes involved Site Infrastructure from transit to waste systems and Site Prototypes including housing recreation and mixed use Each module offers a brief introduction covers standards or approaches provides examples and presents innovative practices in sidebars The book is lavishly illustrated with 1350 photographs diagrams and examples of practice

State of North Carolina Administrative Code ,2016 **Engineering Hydrology for Natural Resources Engineers** Ernest W. Tollner, 2023-08-14 This fully revised edition provides a modern overview of the intersection of hydrology water quality and water management at the rural urban interface The book explores the ecosystem services available in wetlands natural channels and ponds lakes As in the first edition Part I examines

the hydrologic cycle by providing strategies for quantifying each component rainfall with NOAA 14 infiltration evapotranspiration and runoff Part II examines field and farm scale water quality with an introduction to erosion prediction and water quality Part III provides a concise examination of water management on the field and farm scale emphasizing channel design field control structures measurement structures groundwater processes and irrigation principles Part IV then concludes the text with a treatment of basin scale processes A comprehensive suite of software tools is available for download consisting of Excel spreadsheets with some public domain models such as HY 8 culvert design and software with public domain readers such as Mathematica Maple and TK solver

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