

# Case study of the document

Education



## Case study of the Document

### About The writer

Low-Impact Development Hydrologic Analysis is a document purposely used to provide low-impact development (LID) hydrologic analysis and “computational procedure used to determine low-impact development storm water management requirements” (p. 1).

The document was prepared and written by the Programs and Planning Division of the Department and Environmental Resources of the state of Maryland.

According to the writers, “planning considerations combined with supplemental controls using LID integrated management practices can be used to compensate for rainfall abstraction and losses and changes in run off concentration due to site development” (p. 3). They point out that the LID approach attempts to match the predevelopment condition by compensating for losses of rainfall abstraction through maintenance of infiltration potential and evapotranspiration, and surface storage, as well increased travel time to reduce rapid concentration of excess runoff” (p. 3). Thus, obviously what was the writers’ in mind was how to control the loss of storm and rainwater due to fast ground penetration and ‘evapotranspiration that will result to the lowering of the water table.

The purpose in the writers’ minds in writing the document was “to provide an overview and general description of the key hydrologic principles involved in low-impact development, and provides guidance on the hydrologic analysis required for the design of low-impact development sites” (p. 1) The

writers explained that “ Data for precipitation, including both snow and rain, used in site planning and storm water design” (p. 1). They further explain that analysis of the rainfall and storm distribution over a long period of time indicates that frequency of occurrence of a given storm events follow statistical patterns. Statistical analysis “ allows engineers and urban planners to further characterize storm events based on their frequency of occurrence or return period. Thus it is quite evident that the writers’ had laid down this document for the purpose of explaining the importance of this document in environmental concerns.

The purpose that the document serves now is that it creates awareness on the community of the nature and environmental process, which could help them to anticipate storm or rainfall based on the data analysis. It also helps engineers and urban planners to do their jobs, that is, “ to define the limits of floodplains and for consideration of the impacts of major floods” (p. 1).

The document can be used of course by the government engineers and urban planners in containing flood control system and other infrastructure development project that needs environmental analysis. The document can provide them necessary information that will avoid future environmental problems such as erosion and other related circumstances particularly in the construction of drainage system. The document could also be used by the educational system as it provides advanced knowledge particularly to civil engineering courses and other subjects that can benefit from this document.

The plan of the organization in the future for the document is to make it a model of storm water management effort. They noted:

“ Traditionally, the response to urban developments has been measured in terms of changes in the flow of regime, with management efforts focused on the prevention of property damage from flooding as previously described. Storm water management efforts historically followed the design storm concept described earlier and focused almost exclusively on runoff collection system such as curbs and gutters, and pipe conveyance system which discharge directly to receiving water bodies” (p. 7)

The Writers’ noted that storm water quantity management was incorporated as IMPs to address concerns about downstream flooding and stream bank erosion. The document will be use to set storm water quantity control, by the state or local government agencies to prevent site and downstream flooding erosion. It will be use also to maintain “ the post development peak for a 2- and 10- year frequency storm event at a level equal to or less than the respective 2- and 10- year development peak discharge rates, through the use of storm water management structure that control the timing and rate of runoff.

## Introduction

According to Erick D. Loucks, Low impact development project (LID) is an alternative approach to stormwater management. Loucks Point out “ LID achieves storm water control by fundamentally changing conventional site to create an environmentally functional landscape that mimics natural watershed hydrologic functions” (p. 9). LID means a minimizing site disturbance to retain much of the predevelopment land cover. Prince George County is a large woodland region emerging from a largely agricultural

economy. Thus the Low-impact hydrologic analysis perfectly fit in this woodland county to protect their natural environment.

### Description of the Document

The Low-impact development hydrologic analysis as given above is a document on alternative storm water management. The document is actually a case study analysis consisting of two parts. Part one is about the introduction LID and its objectives while part two provides the alternative technologies and practices that can be integrated into the land development process. The writers noted that the preservation of the site can be evaluated through consideration of the runoff volume, peak runoff rates, storm frequency and size, and water quality management. The intention is to minimize the impact of the runoff water and to preserve land coverings in the face of developments.

### The Document History

The history of the document stemmed from the proposed Model Land Development Standard and Accompanying Model state Enabling Legislations published in 1993 which aimed provide decent, safe, and suitable living environment for all Americans. This paved the way for the introduction of the water management technology called the Low-impact Development or LID. The document that is hereby the case in point is a hydrologic analysis on how to minimize the impact of runoff waters and management of the stormwater, which is a common problem in Prince George County.

### The Document's Functions

The function of the LID according to Nicole Silk and Kristine Ciruna are as follows: provide an improved technology for the environmental protection of receiving waters; provide economic incentives that encourage environmental sensitive development; develop the full potential of environmentally sensitive site planning and design; encourage public education and participation in environmental protection; help build communities based on environmental stewardship; reduce construction and maintenance costs of the stormwater infrastructure; introduces new concepts, technologies, and objectives for stormwater management; encourage flexibility in regulations that allows innovative engineering and site planning to promote smart growth principles; and, encourage debate on the economic, environmental, and technical viability and applicability of current stormwater practices and alternative approaches (p. 191).

The document “ The Practice of Low Impact Development” written by NAHB Research Center, Inc. of Upper Marlboro, Maryland is prepared for United States Department of Policy Development and Research in Washington, D. C. in July 2003. It is circulated all over America, which aims to assist developers, engineers, architects and other concerned agencies as they build residential subdivisions that serve both the people in the community and environment. Its system of writing is very comprehensive because it provides textual explanation properly arranged by main headings and subheadings with corresponding images of structural designs and maps. It also has tables that best present information. The language used is good for students and other researchers who wish to study the project.

The Future of the Document

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The document is futuristic in nature meaning, it tries to help land developers in building houses that protects both the community from possible natural disaster like soil erosion caused by storm water, run off water, and rainfall water; and the environment that is to preserve its land covering.

Once this project is utilized by many developers through the initiation and assistance of the government, it will provide convenience and friendly environment to the community especially the children. LID technology has been adapted by other highly developed countries such as Canada and Europe.

The idea presented is also futuristic since it tackles the cost impacts of the technology, coming to think that many more people will have difficulty owning their houses. Environment wise, it will enhance the natural flow of environment aiming to protect it for the future of America.

#### How the Community Fulfills its Design and Purpose

Community as pertained to by this project includes developers, engineers, architectures, urban planners, and government agencies. These communities must uphold to the guidelines and rules of the said document.

The Executive summary stated:

This publication is intended to assist these groups (building professionals and municipal planning officials) by 1) providing basic conventional and innovative land development technology information, and 2) encouraging the amendment of existing development codes to facilitate the use of those technologies (p. 11).

By carefully using the guidelines stated in the document, the community will be able to apply the technology in the planning design, which they have to incorporate at the phase of development process of a new and suburban area.

However, as suggested in the document, developers are encouraged to utilize some of the technologies whichever is applicable or appropriate to a site's unique regulatory, climatic, and topographic conditions.

#### Work Cited

" Low Impact Development Design Strategies: An Integrated Design Approach." Department of Environmental Resources. Diane Publishing, June 1999.

" Low Impact Development Hydrologic Analysis." Department of Environmental Resources. Diane Publishing, June 1999.

Silk, Nicole and Ciruna, Kristine. A Practitioner's Guide to Freshwater Biodiversity Conservation. Washington: The Nature Conservancy, 2004.

" The Practice of Low Impact Development." PD&R. [http://www. huduser. org/Publications/PDF/practLowImpctDevel. pdf](http://www.huduser.org/Publications/PDF/practLowImpctDevel.pdf)