



# Stormwater Design

**Why is it important?**

**How do we manage it better?**

By Dan Caldwell, Principal  
Stout & Caldwell Engineers, LLC

June 2018

A good place to start is a quick refresher on what is stormwater. In short, it is rain, melted snow and any other precipitation falling from the sky. Such water has two fates. It can fall directly in bodies of water or be absorbed into the natural environment, thus a source of replenishment for plant, animals and water reserves. The second results when precipitation falls on impervious surfaces, such as streets, pavements and roofs, and causes a runoff effect. It is this latter flow that can wreak havoc on the environment and lead to flooding, erosion, property damage, habitat destruction and contaminated streams, rivers and other bodies of water.



These reasons alone provide a preliminary sense of the importance of stormwater management as it relates to new development projects and on-going site management. Now the question – how can we best manage stormwater and design the most effective system? The answer is not a short one as it is unique to each site and has to be designed with that mindset. However, there are a number of common points that come to mind.

First, what are some of the methods we use to protect against the negative effects of stormwater runoff? Pipes, storm drains, curbs and gutters make the short list. There are also detention basins, ditches and even creeks that may be useful – again based on the site landscape. But the tools alone are not enough. The design has to be well thought out. The key is to capture and hold the runoff as near to the source as possible and ultimately reduce the amount of total suspended solids and pollutants that are being released. Once the water is detained (or retained), design measures should be in place to remove pollutants before it infiltrates the groundwater, streams and wetlands.

There have been extensive studies in the area of sustainable stormwater management and the development of stormwater control measures (SCM) that include structural or engineered control devices and systems used to treat or store polluted stormwater. These efforts also address operational or procedural practices. One key best management practice (BMP) is to mirror the manner in which nature handles stormwater and incorporate it when planning building and site developments. This includes increasing topsoil, creating infiltration trenches and using porous pavement. Further “green” efforts in development involve approaches and technologies to capture and reuse stormwater. Attractive and functional greenscapes can provide a natural habitat while protecting water quality at the same time. These improvements not only clean and cool the environment but enriches livability and increases property value.

Along these same lines and equally important are the less obvious efforts that need to take place. To start, stormwater cannot be ignored. There needs to be practices in place to address funding for new developments but also in short and long-term programs to repair and replace aging infrastructure. Current regulations should be reviewed, and enforcement of existing and future ordinances needs to be maintained. Lastly, the importance of educating the community ought not be understated. Water quality and its impact on the environment affects us all.

For more information, contact Stout & Caldwell, LLC at 856-786-2202 or [djc@stoutcaldwell.com](mailto:djc@stoutcaldwell.com).

## About Daniel J. Caldwell

**Chief Marketing Officer Member, Stout & Caldwell, LLC**

Daniel J. Caldwell is co-founder and principal with Stout & Caldwell, LLC, a leading provider of professional and technical engineering and consulting services in Southern New Jersey. His primary focus is new business development and marketing of the firm, but also assists with office oversight and proposal writing. Dan has more than 20 years experience working in the environmental industry as a NJPDES permit compliance professional for a NJDEP Certified Testing Laboratory and he sat as the Environmental professional for the Mansfield Township Environmental Commission from 2004-2018. With this expertise, Dan also works with the team on Phase I Environmental Assessments and sampling, surveying and soil borings. Some notable client projects include Conifer/MEND Springside School in Burlington Township, NJ, Jewish Community Center Campus in Princeton, NJ, Merion Caterers Facility in Cinnaminson, NJ and Urban Promise Spirit Building in Camden, NJ. Dan is active in the business community. He is a trustee of the foundation board at Rowan at Burlington County College, Past President of Businesses Committed to South Jersey, on the Friends of MEND Board along with many other community service organizations and non-profits.

---

## About Stout & Caldwell, LLC

Stout & Caldwell Engineers is a provider of professional and technical engineering and consulting services to commercial real estate development, affordable housing, residential developers, retail developers, industrial developers, food manufacturers, military contractors, construction firms and non-profit organizations. Founded in 2004, the firm specializes in site plan design, land survey and environmental solutions, including flood elevation certificates in the tri-state area. Stout & Caldwell Engineers serves clients throughout New Jersey, Pennsylvania and Delaware from its headquarters at 705 US Route 130 South in Cinnaminson, NJ. For more information, contact (856) 786-2202 or visit [stoutcaldwell.com](http://stoutcaldwell.com).