

Local/National Stormwater Ordinance and Legislation Regulation Review

Task 2.1 Brief Review of 20 Stormwater Programs

All programs represent strong and exemplary examples of stormwater management programs. To narrow the list to the 12 programs that will be reviewed in more detail in Task 2.2, the relative benefits to DuPage County should be considered. A preliminary suggestion shows 12 programs that are bolded and underlined. These 12 are suggested as they provide robust programs that offer more innovative approaches that are feasible for implementation in DuPage. The 8 that are not bolded contain innovative approaches that generally are similar to approaches also contained in the 12 bolded communities. Still, all have advantages so the final selection could differ from that bolded below.

1. Austin, TX. Austin has worked with the state of Texas and the Federal Highway Administration to promote stormwater runoff management best management practices (BMPs) to treat roadway runoff. The application of large sand filter facilities has been a long-term strategy that has received national attention as they adapt and improve sand filter designs to achieve desired water quality objectives. The program offers excellent opportunities for lessons learned in promoting and successfully implementing successful stormwater technologies. However, the successes have been built into other programs that are now implementing new innovative technologies so the lessons learned may be dated.
2. **Baltimore, MD**. Has a good development and redevelopment program that will be further revised to address upcoming MS4 permit renewal requirements. They also have a long history of using good science to develop watershed and subwatershed scale management plans and to implement environmental protection and restoration BMPs.
3. **Chicago, IL**. Chicago's stable leadership and focus on defensible practices for stormwater management that are based on good science have resulted in a measured and steady application of progressive innovative approaches on a large scale. This has included the green roofs program, green alley program, and incentives for development, redevelopment and infill development. The proximity of Chicago and the successful implementation of the programs offer DuPage County good opportunities to learn from proven programs applied in a setting similar in environment.
4. Denver Urban Drainage and Flood Control District. The program has been in operation for a long time and offers good research and well thought out and implemented guidance manuals. The program however does not incorporate some of the innovative approaches offered by the other programs considered that apply stream protection, green open space protection and onsite stormwater management strategies.
5. **Charlotte-Mecklenburg Stormwater Services**. This County/City cooperative continues to progressively develop leading edge approaches for floodplain management and water quantity/quality management. Their over 15 years of dedicated stormwater funding has been applied towards conducting studies, evaluating BMP strategies and defining modeling strategies to continually improve their stormwater program.
6. Eugene, OR. The Eugene stormwater program applies interesting approaches for reducing impervious cover through building policies, for preserving green spaces, and for protecting the environment during construction with setback policies and headwater stream protection. This site is one of three in the Northwest with well regarded programs. The other two, Seattle and Portland,

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were considered to have broader appeal and a staff more focused towards outreach support nationally.

7. **Lenexa, KS**. Lenexa provides a suburban perspective to growth next to a larger highly urban city (Kansas City). It is requiring onsite BMPs to reduce stormwater runoff and retain open space. It makes distinctions in the required release rates based on whether there are flooding problems. It includes some redevelopment exceptions. It is one of the smaller cities of those reviewed, and has a mid-western geography and climate pattern.
8. **Philadelphia, PA**. Philadelphia Water Department has been aggressively implementing programs to apply green infrastructure such as green roofs, bioretention facilities, green streets, green sewers and increased open space. They also have a redevelopment policy that requires partial, but not full, compliance with new development stormwater requirements. These programs and model ordinance that is offered to neighboring communities is in response to state requirements for improved stormwater management, revitalization interests and a desire to improve the quality of the city streams so they serve as amenities rather than stormwater and sewage discharge portals.
9. **Portland, OR**. Portland has implemented and tested the ability of their stormwater designs using onsite BMPs and low impact development concepts to the point that at least one community has been built that may have no net increase in stormwater runoff. Their program includes the management of industrial, commercial, residential, and roadway runoff as new development and retrofit of existing developed areas. In this highly urban city, they consider predeveloped conditions to be the same as undeveloped so that redevelopment must meet all stormwater requirements that new development must comply with. They have a well regarded stormwater program nationally and are used to dealing with request from other communities for advice and support.
10. **Seattle, WA**. This ultra urban city has used green infrastructure to retrofit existing undermanaged developed areas so successfully that some of their projects, such as the SEAS street projects, have become examples presented worldwide. They have excellent approaches, policies, ordinance and guidance manuals on working cooperatively with developers and commercial/residential stakeholders to develop green infrastructure projects that look aesthetic, achieve exemplary hydrologic control and water quality enhancement, and receive regular maintenance and retrofits to achieve long-term goals. Seattle also has a flexible roadway design policy based on location and use.
11. Contra Costa County, CA. This program offers an innovative approach towards sizing BMPs. It is based on a statewide requirement to address hydrologic modification that is created when green space is converted to impervious area. A robust study and program was used to develop their program. However, their program is not too dissimilar from that of Santa Clara County, which has a longer and well funded history of developing leading stormwater programs using good science.
12. Fairfax County, VA. Fairfax County is nearly built out and has been working on redevelopment and infill development policies that will need to be revised again to address proposed requirements in their MS4 Phase I permit that is under negotiation. They also are investigating the benefits of taking over the entire roadway system construction and maintenance from the state since state services have continued to dwindle over the years – this however is still a work in progress. The current policies are not dissimilar from approaches used in other programs described here that also provide additional innovative features.

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13. Gwinnett County, GA. Innovative practices and requirements for erosion and sediment control, with numerical turbidity requirements for streams supporting trout fisheries or trout waters. Requirements for redevelopment vary based on percent disturbed. With some exceptions, the stormwater and topographic situations addressed do not appear comparable to DuPage County.
14. **Montgomery County, MD.** Their program is innovative in how they approach the determination of whether a stormwater problem exists and how they determine the causal agents. Their approach has always been to monitor the aquatic ecosystem first and to then determine if water quantity, water quality or another cause is degrading a stream reach, but generally only after the aquatic ecosystem shows signs of stress. They also have a stream protection strategy of more pristine waters that involves the application of redundant sediment control practices; and they have a development policy that focuses on preservation of open space and farmland. Their recent approach has been to use onsite controls and stream restoration practices.
15. **Prince George's County, MD.** Prince George's County was one of the earlier communities to establish a dedicated stormwater fund. They have successfully applied this fund to progressive research that included the development of the "rain garden" concept and the development of a county and a separate USEPA guidance document on designing low impact development practices. They have a close working relationship with USEPA on leading stormwater management practices and with FEMA on floodplain management and levee maintenance. They have developed several tools to improve stormwater development procedures and numerous public outreach and education programs.
16. **Santa Clara County, CA.** Santa Clara County was one of the communities to develop a stormwater program using leading practices well before it was required by the state or federal governments. They have a well funded program with a long history of research and public outreach to support the various approaches that have been successful or that required some modification to be more successful. They, like Contra Costa County, conducted modeling to develop criteria for selecting and sizing onsite BMPs to protect streams and mimic predevelopment hydrology at post development sites. They also provide studies and implementation experience on erosion and sediment control programs and development/redevelopment programs.
17. **Stafford County, VA.** Stafford has required onsite BMPs and other low impact development approaches to the maximum extent practicable while most other communities only recommend this approach. They have worked with the state to develop acceptable practices for designing these practices on a large scale and still be able to obtain county and state permits for innovative practices. They have developed ordinances, property owner agreements, design and construction procedures, and other policy infrastructure and public outreach and education material to address successes and failures as the program matures.
18. King County, WA. They offer a good program with some leading approaches for BMP design. However, their other programs are similar to those being implemented by a number of the other community programs addressed here. One distinction of this county is that they offer a suburban application of a stormwater program that is adjacent to another leading program at a highly urban city (Seattle).

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19. **Maryland.** Maryland developed a stormwater design manual in 1999 and 2000 that has been used as a template for several other states. With the passage of the 2007 stormwater act, Maryland began updates to model ordinances and the stormwater design manual in 2007 through 2009 that offer some of, if not the most innovative program based on the latest science to design BMPs based on mimicking predeveloped hydrologic conditions. This includes groundwater recharge, hydrologic cycles, open space preservation, and development standards.
20. Wisconsin. The state offers a good wetlands characterization and protection program. Their statewide program for stormwater management and open space preservation was roughly similar to Maryland's 2000 approach though it is now not as progressive since Maryland's recent revisions.