

## Lower DuPage River Watershed Plan Ordinance Review – Summary of Results

21/127/11 draft

### Background and Purpose

The purpose of this review is to evaluate the ordinances of the communities in the Lower DuPage River Watershed. The particular focus is how well the ordinances control the effects of development on water quality, hydrology, and aquatic habitat. In addition, the review considers ordinance provisions for sustainable development that can promote overall watershed health.

The ordinance review began with the development checklist ~~is~~ to provide an objective template for the review of stormwater, subdivision, zoning, and related development ordinances. The checklist emphasizes key stormwater provisions, including detention, floodplain, erosion control, and stream/wetland protection. It also looks at relevant subdivision, zoning, landscaping, and ~~any~~ conservation design provisions, if present.

This checklist is very similar to a checklist that was applied to the Hickory Creek watershed. It is based on a combination of local, regional, and national ordinances and resources, including:

- NIPC *Facility Planning Area Nonpoint Source Management* checklist
- Progressive Conservation-based provisions of local municipal ordinances, countywide stormwater ordinances, and other municipal or county conservation design ordinances
- NIPC/CMAP *Ecological Planning and Design Directory*  
([http://www.chicagowilderness.org/sustainable/directory\\_documents.php](http://www.chicagowilderness.org/sustainable/directory_documents.php) )
- *Blackberry Creek Watershed: Zoning Code Analysis and Ordinance Language Recommendation* report (Kane County, 2004,  
<http://www.co.kane.il.us/kcstorm/blackberry/zoning/FinalReport.pdf> )
- U.S. EPA *Water Quality Scorecard*  
([http://www.epa.gov/smartgrowth/pdf/2009\\_1208\\_wq\\_scorecard.pdf](http://www.epa.gov/smartgrowth/pdf/2009_1208_wq_scorecard.pdf) )
- Center for Watershed Protection, *Better Site Design (Code and Ordinance Worksheet and related publications)*  
(<http://www.northinlet.sc.edu/training/media/resources/Better%20Site%20Design%20S%20W%20Code%20Ordinance%20Worksheet.pdf> )

The ordinance review considers five major topical areas. These include:

- 1) Comprehensive Stormwater Standards
  - a. Stormwater drainage and detention
  - b. Soil erosion and sediment control
  - c. Floodplain management
  - d. Stream and wetland protection
- 2) Natural Area Standards

- 3) Landscaping Standards
- 4) Impervious Area Reduction: Street and Parking Requirement
- 5) Conservation Design: Zoning/Subdivision Standards

The review was performed for the following communities, as well as for the countywide *Will County Stormwater Management Ordinance*.

- Bolingbrook
- Channahon
- Crest Hill
- Joliet
- Minooka
- Naperville
- Plainfield
- Romeoville
- Shorewood
- Will County ([unincorporated](#))

## Results and Recommendations

### 1. Comprehensive Stormwater Standards

Will County has a well-written countywide stormwater ordinance that primarily focuses on the prevention of increased flood damages associated with stormwater quantity and floodplain development. This ordinance is not intended, however, to address water quality, natural hydrology, ~~and-or~~ aquatic resources of streams and wetlands. All watershed communities in Will County are required to have adopted stormwater standards that are at least equivalent to the countywide ordinance.

Survey Results -- Stormwater: The majority of ~~the~~ ordinances embrace protection of water quality and hydrology in their purpose statements. However, the ordinances are split over the level of encouragement or requirement of runoff BMPs. The majority of ordinances are strong in the following categories:

- Limiting discharge rates from the 2-year storm;
- Prohibiting detention in the floodway and limiting onstream detention;
- Prohibiting the discharge of undetained stormwater into wetlands; and
- Requiring maintenance plans for detention facilities.

Areas where significant improvements could be achieved in most ordinances include:

- Encouraging or requiring ~~stormwater~~ runoff BMPs and ~~innovative~~ designs such as bio-swales, filter strips, permeable paving, and green roofs;
- Providing detention credit for practices such as permeable paving that store runoff in sub-surface void spaces of stone sub-bases;
- Requiring “naturalized” wet-bottom or wetland detention basins;
- Including numerical water quality performance criteria; and
- Specifying performance standards for maintenance of detention facilities.

Survey Results – Soil Erosion and Sediment Control: Most of the ordinances have relatively strong purpose statements for minimizing erosion. The majority of communities have adopted NIPC model ordinance language for site planning principles and specific site design requirements for sediment and erosion control. Most of the ordinances require routine maintenance and inspection and include a range of penalties for non-compliance. One area where significant improvement could be achieved in most ordinances is the addition of a specific reference to the *Illinois Urban Manual*.

Survey Results – Floodplain Management: Nearly all ordinances include strong purpose statements addressing water quality and aquatic habitat and also discourage stream channel modifications and require mitigation for unavoidable water quality or habitat impacts. However, most of the ordinances do not limit appropriate uses of the floodway to the NIPC-recommended list (e.g., they allow uses such as parking lots).

Survey Results – Stream and Wetland Protection: The ordinances are widely varying in their approach to stream and wetland protection. About half of the communities – including Minooka, Romeoville, Plainfield, ~~erest-Crest~~ Crest Hill, and ~~will-Will~~ Will County -- have adopted standards regarding wetland protection, generally based on provisions of the *NIPC Model Stream and Wetland Protection Ordinance*. Most of the ordinances have some basic provisions for pretreatment of stormwater prior to discharge into a wetland, protection of a 25-foot buffer strip adjacent to wetlands and stream channels, and prohibiting watercourse re-location except in special circumstances. None of the ordinance specifically encouraged stream restoration opportunities or appeared to have streamlined ordinance provisions to facilitate such projects.

Stormwater Ordinance Recommendations: All communities should strive to adopt ~~progressive,~~ comprehensive standards for the protection of water resources and related aquatic resources. In particular, ordinances should go beyond a core emphasis on stormwater rate and quantity, as required in the countywide *Will County Stormwater Management Ordinance*, to also emphasize holistic protection of water quality, natural hydrology, and aquatic habitat. These items can be addressed through an integrated approach to stormwater drainage and detention, soil erosion and sediment control, floodplain management, and stream and wetland protection.

This can largely be achieved by the adoption of the provisions of the following Northeastern Illinois Planning Commission (NIPC) model ordinances, as some watershed communities have already done. These ordinances can be found on the website of the Chicago Metropolitan Agency for Planning (CMAP) at: <http://www.cmap.illinois.gov/wastewater-committee/about-fpa-requests>.

- *Model Stormwater Drainage and Detention Ordinance* (copy can be included in Appendix)
- *Model Soil Erosion and Sediment Control Ordinance*, 1991.
- *Model Floodplain Ordinance for Communities Within Northeastern Illinois*, 1996.
- *Model Stream and Wetland Protection Ordinance*, 1988.

Communities can acquire copies of ~~progressive~~ ordinances from their neighboring municipalities. Alternatively, communities may wish to consider the provisions of the countywide stormwater ordinances of DuPage, Kane, Lake, and/or McHenry Counties. All of

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these countywide ordinances, to varying degrees, incorporate provisions addressing water quality, hydrology, and aquatic habitat. If this latter approach is taken, it may be appropriate to for ~~the lower-Lower DuPage River watershed-Watershed~~ communities to coordinate with other Will County communities to discuss possible changes and improvement to the countywide *Will County Stormwater Management Ordinance*. In particular, the communities in the Hickory Creek watershed also are engaging in an ongoing watershed planning process and may be supportive of this approach.

## 2. Natural Area Standards

This section focuses on protection, restoration, and management of natural areas. These recommendations address *remnant* landscapes as well as *restored/created* natural areas. Many of the municipal stormwater ordinances already address, to varying degrees, protection of streams, lakes, and wetlands and establishment of appropriate buffers. However, these ordinances do not specifically address associated upland natural areas – such as prairies, savannas, woodlands, steep slopes, sensitive recharge areas, and hydric soils – that buffer aquatic systems and provide critical landscape linkages for aquatic life and wildlife.

Survey Results: Very few of the ordinances include any provisions requiring the protection and management of natural areas, apart from streams and wetlands. The primary exceptions are Plainfield and Will County whose ordinances include natural area protection provisions, but only for conservation design subdivisions. These communities also have provisions for funding the long-term maintenance and management of protected natural areas and open spaces in developments. [In addition, several communities have planned development provisions that allow clustering of residential around sensitive natural areas.](#) While most of the communities do have some type of open space set-aside, most are not specifically focused on natural areas such as woodlands, wetlands, and prairies. About half of the ordinances also have requirements for identifying the ownership and long-term oversight of open space parcels associated with new developments.

Natural Area Protection Recommendations: All communities are encouraged to identify and inventory their natural resources and open spaces, including the various features referenced above. This can lead to the mapping of a community-wide (or watershed-wide) “green infrastructure” network that identifies aquatic and upland resources to be protected, along with appropriate buffers. This could be accomplished, for example, via a series of “natural area overlay districts.” Identified natural areas could be protected via strict development prohibitions or through flexible zoning that allows for clustering around sensitive natural areas. Specific standards should address natural area identification, allowable uses and cover within the natural area, buffer transitions, and other design elements. These regulatory protections could be supplemented by the acquisition programs of park and forest preserve districts.

In addition, preparation of short- and long-term management plans should be required for designated natural areas. Further, vegetative performance criteria, qualified ownership and management entities, conservation easement provisions, and revenue sources for management activities should be clearly spelled out. Watershed communities should consider the progressive ordinance provisions of neighboring communities, such as Plainfield and Will County. Alternatively, a recently adopted conservation design ordinance in McHenry County is an

excellent model to follow. See:

<http://www.co.mchenry.il.us/departments/planninganddevelopment/Documents/Ordinances/Conservation%20Design%20Addendum.pdf> . This subject is further addressed below under Conservation Design Standards.

### 3. Landscaping Standards

Natural landscaping can greatly benefit the preservation of water quality and natural hydrology. Natural landscaping can be encouraged and/or required, where appropriate, in common areas in lieu of conventional turf grass landscapes. It also can be specifically targeted to BMP applications, such as bio-infiltration swales, rain gardens, filter strips, and naturalized detention basins.

Unfortunately, some landscaping ordinances may (unintentionally) discourage the use of natural landscaping via “weed” prohibition language. Some ordinances also require the physical separation of pervious and impervious surfaces on site, thereby effectively preventing runoff from impervious surfaces flowing onto pervious areas. A common example is the requirement to install raised landscape islands (vs. recessed islands) in parking lots.

Survey Results: Only a few watershed communities, including Minooka, Plainfield, and Will County, actively encourage the use of native vegetation for common areas in new developments. Several other communities encourage or require natural landscaping around naturalized detention facilities. Only Will County, however, has specific requirements for the long-term oversight, management, and funding of created natural landscapes. About half of the communities – including Bolingbrook, Channahon, Naperville, Romeoville, and Will County -- have tree protection and replacement requirements, and nearly all require planting of street trees. While the majority of communities have requirements for pervious landscaped areas associated with parking lots, none of them encourage the use of recessed landscape islands for stormwater filtering and infiltration.

Landscaping Recommendations: Landscaping ordinances should encourage the use of deep-rooted natural landscaping, where appropriate, in lieu of conventional, shallow-rooted turf grass landscaping. In particular, it is recommended that natural landscaping be required in detention basins and natural area buffers and encouraged in common areas and open spaces such as in conservation developments. Further, ordinances should include specific provisions for the maintenance of natural landscapes, including performance criteria. As a starting point, communities interested in upgrading their natural landscaping requirements should consider the **Will County landscape maintenance provisions**. A more detailed reference for natural landscape design and maintenance criteria is *Natural Landscaping for Local Officials: Design and Management Guidelines* (NIPC, 2004), which can be found at [http://www.chicagowilderness.org/sustainable/naturallandscaping/installation\\_maintenance\\_guide.pdf](http://www.chicagowilderness.org/sustainable/naturallandscaping/installation_maintenance_guide.pdf) .

Landscaping ordinances also should encourage and/or require the integration of pervious, landscaped areas with the impervious areas of the site to facilitate the routing of runoff across and through landscaped areas. Language to specifically allow or require integration of bio-infiltration into parking lot islands and street side landscape strips is recommended.

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Unfortunately, there are relatively few local ordinances that address this topic effectively. A suggested reference for ordinance approaches is the *Conservation Design Resource Manual* (NIPC, 2003), which can be found at: [http://www.chicagowilderness.org/sustainable/conservationdesign/Manual/Conservation\\_Design\\_Resource\\_Manual.pdf](http://www.chicagowilderness.org/sustainable/conservationdesign/Manual/Conservation_Design_Resource_Manual.pdf).

Tree protection language is recommended to provide protection of desirable (e.g., native) trees and shrubs. Flexibility should be provided to allow removal of trees where appropriate for proper forest/natural area management, along with the inclusion of replacement criteria for the unavoidable removal of desirable species. There are a number of good local tree protection ordinances to model, including those referenced above.

#### **4. Impervious Area Reduction: Street and Parking Requirements**

A substantial portion of the impervious surface area in our communities is associated with streets and highways. Limiting the amount of impervious cover to that which is necessary is a key to reducing stormwater runoff, lowering installation and replacement costs, and encouraging ecologically sensitive design.

Similarly, parking facilities often create large impervious surfaces that result in an increase in stormwater runoff and related water quality impacts. Reduced parking area and alternative porous paving materials can help to reduce impervious surfaces and facilitate infiltration and groundwater recharge.

Survey Results: Nearly all of the watershed communities have taken a traditional approach to the planning and sizing of streets and parking lots. Correspondingly, there are relatively few examples of approaches that attempt to reduce impervious surface area associated with streets and parking lots. Some more specific findings are highlighted below.

Only Will County has provisions for narrow streets (24 feet for local streets). Other community requirements generally range from 28 to 36 feet (measured at back of curb) for residential neighborhoods. Parking standards – stall size and number of space -- vary significantly among communities. Permeable paving is not explicitly recognized as an option in any community. Several communities allow for shared parking to reduce new parking requirements, notably Crest Hill, Joliet, Channahon, Shorewood, Plainfield, and Will County. Plainfield also has flexible parking provisions to encourage downtown re-development.

Impervious Area Reduction Recommendations: It is recommended that communities evaluate their ordinances and consider revised design standards for narrower street widths, along with allowances for street designs that utilize naturalized stormwater infiltration and conveyance systems. Also, since stream crossings can cause significant stream impacts, recommended standards related to the number of crossings and the design of crossings should be considered.

Parking standards should be updated to allow for shared parking, parking credit programs (i.e., purchasing credits for public parking in lieu of creating private spaces), and preferred parking for compact cars and non-motorized vehicles. [Parking stall dimensions should also be reevaluated, along with consideration of reducing required stall length to account for vehicle overhang onto](#)

[landscape islands or perimeter landscaping](#). Specific language to allow permeable paving technology, such as interlocking concrete pavers, porous asphalt, and porous concrete, should be considered for parking lots, driveways, and ~~(possibly)~~ streets.

With the exceptions noted above, there are relatively few local ordinances that address this topic effectively. A suggested reference for ordinance approaches is the *Conservation Design Resource Manual* (NIPC, 2003), which can be found at:

[http://www.chicagowilderness.org/sustainable/conservationdesign/Manual/Conservation\\_Design\\_Resource\\_Manual.pdf](http://www.chicagowilderness.org/sustainable/conservationdesign/Manual/Conservation_Design_Resource_Manual.pdf).

### **5. Conservation Design: Zoning/Subdivision Standards**

Some of the approaches and standards discussed above may be inconsistent with existing zoning and subdivision codes. Therefore, greater flexibility is needed in existing codes to allow, encourage, and/or require ~~creative~~, conservation-based site designs. This can provide a number of benefits, including allowing additional room for the incorporation BMPs; reducing mass grading; allowing shorter street networks; and protecting natural areas and open space without reducing the number of lots.

Conservation design provides the best framework for preserving sensitive natural areas, including stream corridors and wetlands. Conservation design would ideally incorporate a site design process that:

- Identifies ~~and~~ sensitive natural resources and conservation areas;
- Locates buildable areas to minimize impacts on natural areas and to take advantage of open space and scenic views;
- Designs the street network to minimize encroachment in sensitive natural areas; and
- Establishes lot lines and lot sizes following a cluster development approach.

Survey Results: None of the ordinances reviewed require conservation design. Two ordinances, Plainfield and Will County, specifically designate conservation design as an allowable form of development. These communities also ~~offer incentives~~ ~~size for~~ [offer incentives](#) for conservation design by providing potential density bonuses. Further, the Will County ordinance has specific requirements for percentage of open space, ranging from 30-60 percent, in its conservation subdivisions.

Most other communities allow for flexible subdivision designs via “planned development” provisions. Some, like Romeoville, specifically recommend natural resource and open space protection in their planned development provisions.

Conservation Design Recommendations: Conservation design should be encouraged or required in community zoning and/or subdivision codes, particularly in communities where development is projected in areas that contain significant natural resources. Communities should also consider offering density bonuses to ~~incentivize~~ ~~encourage~~ [incentivize](#) conservation design elements that exceed minimum ordinance requirements.

Communities choosing to embrace conservation design should evaluate existing ordinances, such as the Will County and Plainfield ordinances that allow conservation development by right. Communities should also consider more aggressive approaches that mandate conservation design

for some types of development. One suggested approach is the Homer Glen conservation design ordinance that mandates conservation design and common open space for most new residential development. Another approach, embodied in recent ordinances adopted by McHenry County, Woodstock, and Algonquin, mandated conservation design on sites in locations? that contain significant natural resources. These ordinances contain a specific trigger mechanism. The McHenry County conservation design ordinance is perhaps the most thorough and can be found at:

<http://www.co.mchenry.il.us/departments/planninganddevelopment/Documents/Ordinances/Conservation%20Design%20Addendum.pdf> . The previously referenced Conservation Design Resource Manual also should be evaluated for ordinance suggestions.

### **Summary and Conclusions**

Most of the individual municipal and county (unincorporated) ordinances exceed the minimum requirements of the Will County countywide *Stormwater Management Ordinance* in their protection of water quality, hydrology, and aquatic resources. Overall, there is a high degree of variability in the requirements of the various ordinances. A number of communities have embraced relatively progressive standards with respect to watershed protection priorities and sustainability, while other communities have relatively basic, traditional requirements.

With respect to subdivision, zoning, and landscaping ordinances, there also is considerable variability in provisions that are relevant to watershed protection. In nearly every ordinance category that was reviewed, there were generally at least one or two communities with progressive standards that could be used as models for other communities that may desire to upgrade their own standards. Overall, though, the subdivision and zoning codes do not recognize flexible and innovative non-traditional design practices such as natural landscaping, bio-infiltration, and permeable paving. It may be possible to utilize such approaches, but developers will generally need to proceed with variances or planned development approaches.

Numerous specific recommendations for ordinance improvements have been made above. It is understood that substantial ordinance improvements may be a challenge in many communities because of limited staffing and resources. At the same time, there are significant arguments in support of ordinance updates, beyond the obvious watershed protection benefits. Some of these are highlighted below.

- Most existing municipal codes are relatively prescriptive, encouraging or requiring traditional “gray infrastructure” design approaches. By providing greater ordinance flexibility and removing existing *barriers* to preferred “green infrastructure” designs, developers are more likely to willingly implement innovative non-traditional BMP designs.
- Municipalities can provide *incentives* for innovation and sustainability. For example, stormwater detention credits can be applied to stormwater storage under permeable

paving and density bonuses can be offered for [creative non-traditional](#) conservation designs.

- [Communities can offer encouragement and flexibility during the annexation process to facilitate the consideration and inclusion of BMPs and watershed-friendly design approaches for new development.](#)
- Communities can educate landowners and developers regarding the *cost-effectiveness* of watershed-friendly development and redevelopment. For example, recent evidence suggests that green infrastructure designs like permeable paving often have longer lives than traditional designs and, hence, lower life-cycle costs. Similarly, clustered conservation design subdivisions have been shown to have significantly lower infrastructure costs than conventional subdivisions.
- Progressive municipalities can be role models for developers. Currently, there are funding programs, like the IEPA Green Infrastructure Grants Program and Section 319 Nonpoint Source grants, that can enable municipalities to implement green infrastructure designs for new or retrofitted infrastructure and facilities.
- Help in updating ordinances is available from multiple sources. In addition to the specific references cited above, municipalities can seek assistance from CMAP and other local and regional resource organizations.
- If ordinance changes are done cooperatively with other communities on a watershed or countywide scale, a “level playing field” is preserved from the perspective of developers.
- A strong case can be made that preservation of natural resources through green infrastructure designs, conservation development, and open space and greenway preservation, can [also](#) enhance community character and quality of life. This, in turn, can attract desirable businesses and sustainable residential development.