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Rainwater Recapture: Development Regulations Promoting Water Conservation

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RAINWATER RECAPTURE: DEVELOPMENT REGULATIONS PROMOTING WATER CONSERVATION

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I. INTRODUCTION

Measuring the impact of proposed development on various infrastructure needs has long been a part of planning and development regulation law. Requiring developers to pay impact fees and the like, to at least partially cover the costs associated with providing the infrastructure needed to support new development, is also commonplace.[1] Until recently, the types of infrastructure developers were required to provide or finance were so-called "hard" infrastructure items such as roads, parks, schools, and public buildings.[2] In the last few decades, local governments in some jurisdictions expanded infrastructure requirements to include "social" infrastructure items such as child care facilities and affordable (work force) housing.[3] More recently, a few jurisdictions have required developers to fund environmental infrastructure such as wildlife habitats, open spaces, and preservation of environmentally sensitive areas.[4]

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1. *See generally* Julian Conrad Juergensmeyer & Thomas E. Roberts, LAND USE PLANNING AND DEVELOPMENT REGULATION LAW §9.9 (2007) (noting that local governments are increasingly likely to require developers to bear the cost of capital improvements).

2. *See generally* ARTHUR C. NELSON, JAMES C. NICHOLAS & JULIAN C. JUERGENSMEYER, IMPACT FEES: PRINCIPLES AND PRACTICE OF PROPORTIONATE-SHARE DEVELOPMENT FEES, Chapter 10 (2009) (giving examples of "hard" infrastructure).

3. *See generally id.* at Chapter 11 (giving examples of "social" infrastructure); *see also* ARTHUR C. NELSON, LIZA K. BOWLES, JULIAN C. JUERGENSMEYER & JAMES C. NICHOLAS, A GUIDE TO IMPACT FEES AND HOUSING AFFORDABILITY (Island Press 2008) (discussing further the question of "social" infrastructure).

4. *See generally* NELSON, NICHOLAS & JUERGENSMEYER, *supra* note 2, Chapter 12 (giving examples of environmental infrastructure).

The emphasis on developer funding of infrastructure requirements will no doubt expand in the second decade of the twenty-first century to include water supply and energy-related infrastructure. Water conservation plays a huge part in the sustainability of a development. It is no surprise that certain jurisdictions are taking the idea of water conservation and promoting that idea through regulation. This Article sets forth a broad overview of various methods used for water conservation, as well as the underlying ideas behind promotion of such conservation efforts, and, in some instances, the resistance to these ideas. Finally, in the context of rainwater capture, this Article discusses some of the innovative regulations that have been formulated to make new development responsible for at least a portion of the water supply needed to support the proposed development.

II. WATER CONSERVATION METHODS

One question that presents itself when the idea of regulating water conservation is under discussion is: what type of water conservation should be promoted or required? Should there be an overall general policy behind the regulation to promote as many different types of water conservation as possible, or should a local government's regulations focus on just one type of water conservation? And, of course, what are the different water conservation methods available to choose from?

As other papers presented in this symposium indicate, water shortage is a common phenomenon in the United States and throughout the world. Most of the time, the shortages are climate-based, either because of consistently modest annual rainfall or periodic droughts. In the eastern United States, however, the shortages often have a regulatory basis. In Atlanta, for example, a dispute as to whether Lake Lanier can continue to be the major source of municipal water supplies for the metropolitan Atlanta area threatens to cut off existing sources for many local governments. The United States Army Corps of Engineers ("Corps") completed construction of a dam and reservoir on the Chattahoochee River in 1960.[5] The dam is known as the Buford Dam, and the reservoir is known as Lake Lanier. The Corps began allocating a percentage of the water to be used for local consumption by the people of metropolitan Atlanta. Alabama and Florida brought suit against the Corps, claiming that this reallocation of water was not authorized by Congress and therefore violated the Water Supply Act ("WSA").[6] In particular, it

5. *In re* Tri-States Water Rights Litigation, 639 F. Supp. 2d. 1308, 1309 (M.D. Fla. 2009).

6. *Id.* at 1310.

was claimed that Section 301 of the WSA was violated. This section states that modifications to a reservoir project which would seriously affect the purposes for which the project was authorized shall be made only upon the approval of Congress.[7] Judge Paul A. Magnuson has held that the Corps' reallocation of water to metropolitan Atlanta did constitute a modification that should have been approved by Congress.[8] Therefore, the Corps has violated the WSA. Although the Corps was held to have violated the WSA, the Judge recognized that it would take time to receive Congress' approval of the reallocation. The Corps has three years in which to receive approval or to work out an agreement between the states. If the three years expire without reaching a resolution, then a substantial percentage of the current water supply to metropolitan Atlanta will be cut off.[9]

Whatever the cause or the likely duration of a water shortage, one of the simplest methods many residents use to conserve water is the use of rain barrels. Catching rain water is often viewed as one of the easiest and least expensive ways to conserve water. For generations, home gardeners have put a bucket outside during a rainstorm and then later used that collected rainwater to water house plants or outdoor vegetable gardens and flower beds. This is a classic example of water conservation even though the motive behind it is often water quality rather than water quantity.

Of course, using one bucket of rain water to water plants may not cut back water use in a dramatic way; however, the potential significance of rain water catchment is determined by how much water can be caught. The formula for calculating the quantity of rain water which can be caught from a building's roof is: (1) to multiply the length of the roof by its width to get the area, (2) to multiply the roof area by the inches of average annual rainfall, and (3) to multiply that number by 0.623, which will provide the gallons of water that can be captured annually.[10] The result can be surprisingly large. For example, if the roof area of a single-family residence is 2,000 square feet and the average annual rainfall is 50 inches, then approximately 62,000 gallons a year can be captured. The average domestic consumption for that living unit,

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7. *Id.*

8. *Id.* at 1354.

9. *Id.* at 1355.

10. The formula for figuring out how much rain water you can collect off your roof is roof square footage x .623 gallons per square inch of rainfall x annual rainfall. Square footage of the roof of the house x amount of rain and the last variable is .623. A cubic foot of water being equal to 7.48 gallons, which when divided by 12 (i.e. inches in a foot) equals .623 gallons per inch of rain.

Doug Pushard, Rainwater Harvesting: Frequently Asked Questions, Harvest H_2O.com, The Online Rainwater Harvesting Community, http://www.harvesth2o.com/faq.shtml (last visited May 18, 2010).

consisting of an average family of four, would be approximately 400 gallons per day or 146,000 gallons per year.[11] If one considers the extensive roofs of many public, industrial, and commercial buildings, it becomes evident that rainwater capture is not just a drop in the bucket![12]

The amount of rainwater which can be caught depends not only on how much is available (i.e., roof size and annual rainfall), but also on the equipment available. Moving up from the bucket, rain barrels provide water on a larger scale. A school in Georgia provides an example of how rain barrels can be used to achieve a more dramatic reduction in public water use. At the bottom of every gutter surrounding Russell Elementary School in Cobb County, there is a barrel. When there is a storm, all of these barrels collect water, and that water is later used by the school. This demonstrates how a seemingly small idea can be turned into a large-scale water conservation project.[13]

More meaningful quantities of rain water can be captured and utilized if a cistern is used. A cistern is a storage tank for the rainwater that is collected. In contrast to rain barrels, cisterns hold a larger amount of rainwater and allow a place for it to be stored until the water is needed. Before public water was available in rural and even suburban areas, cisterns were common substitutes or supplements to private wells. While developments in remote areas may still use them in this context, today they are used in many areas of the country to reduce the amount of public water needed. While cisterns have been a good alternative for many municipalities, they do have their problems. The main issue, other than cost, when using a cistern is how fast the water that has been collected and stored can be used. If the water from one rainfall fills up the cistern and that water is not quickly used, the cistern will be full during the next rainfall and no water will be collected. While the cistern conserved water and prevented wasted rainwater during the first rain, all of the rain that falls during the second storm will be completely lost. In order for a cistern to be effectively used, it should service an area capable of depleting the water supply quickly enough for the cistern to be effective during the next rainfall. An example of a land use where a cistern would

11. United States Environmental Protection Agency, Indoor Water Use in the US, http://www.epa.gov/WaterSense/pubs/indoor.html (last visited May 18, 2010).

12. Walter Reeves, Compost Scraps with Leaves, Ease, http://www.ajchomefinder.com/gardening/compost-scraps-with-leaves-226075.html; *see also* American Rainwater Catchment Systems Association, http://www.arcsa.org (last visited May 18, 2010) (pointing out ways that the American Rainwater Catchment Systems Association promotes rainwater catchment).

13. Interview with Richard Wingate, Attorney, Hallman Wingate, LLC, in Marietta, Ga. (Sept. 23, 2009).

be highly effective is commercial buildings.[14] Apartment buildings, office buildings, and hotels are also areas that have the capacity to deplete the water supply in the cistern very quickly. If the water in the cistern were used for toilet flushing, then any of these land uses listed above should have a high enough water demand to deplete the cistern supply. In contrast, a small business that may only have 10-15 employees would not likely have enough demand for the cistern to be used effectively.

Another and more innovative approach to conserving water through rainfall capture is through the use of "green roofs." A green roof in simple terms is exactly what it sounds like: a roof that has at least some vegetation rather than all impermeable roofing materials. When there is a heavy rainfall in a city that consists of buildings with traditional roofs, all of the rain that falls on the rooftops runs off into the city streets. Conversely, a green roof absorbs some of the water and stores it for later use. In addition to absorbing and storing water, it also slows down and filters the water it does not store.[15] The main issue developers and residents face with green roofs is cost. But there is a strong argument that the money saved in energy bills over the life of a green roof ultimately saves money. While this analysis may be valid, it is difficult to convince a developer or owner of a building that the initial cost of the green roof is economically appealing, especially in today's economic climate.

III. LEGAL RESTRICTIONS ON RAINWATER CAPTURE

The traditional common law view of water rights based on reasonable use by all riparian (relating to or located on the banks of a river or stream) land owners seems to have nothing negative to say about rain water capture.[16] However, water rights concepts in western United States prior appropriations law have traditionally been negative toward allowing individuals to catch and use rainwater for their own personal use.[17] In some western states, it is illegal for an individual to collect rainwater and then use that water for personal benefit. With circumstances today such as drought, the need to be more energy efficient, and the green

14. Eric W. Strecker & Aaron Poresky, *Stormwater Retention on Site*, THE WATER REPORT, July 15, 2009, at 1, 8.

15. Verlyn Klinkenborg, *Up on the Roof*, NAT'L GEOGRAPHIC MAG., May 2009, *available at* http://ngm.nationalgeographic.com/2009/05/green-roofs/klinkenborg-text.

16. *See generally* A. Dan Tarlock, LAW OF WATER RIGHTS AND RESOURCES § 3.11-3.13 (2009) (summarizing water rights of riparian owners).

17. *See generally* Lincoln L. Davies, *East Going West? The Promise of Assured Supply Laws in Modern Real Estate Development*, 42 J. MARSHALL L. REV. 319 (2010) (discussing prior appropriations law as it relates to rainwater catchment).

movement, the idea that it is illegal to use rainwater may seem counterintuitive; but if one looks at the problem from another perspective, it becomes clearer where this idea got its force.

The hostility toward rain water capture is firmly grounded in the prior appropriations water law theory of "first in time, first in right."[18] Water is a finite resource. When one landowner decides to take advantage of the rain falling at his house, he is preventing this rain from entering streams that flow downstream to other landowners. Downstream landowners are left with less and less water. In essence, if the downstream owners have a superior right to a certain quantity of water which would be decreased by upstream capture, the upstream rainwater harvester is in effect taking water that does not belong to him. Rain does not belong to a particular person; it belongs to the watershed in which it falls.

Colorado is a jurisdiction that, until recently, made all forms of rainwater harvesting illegal. This law was based on the prior appropriation water law concepts just discussed. However, on July 1, 2009, Colorado Senate Bill 09-080 went into effect. Essentially, the bill allowed for rainwater catchment systems to be implemented legally by individuals.[19] While this is a step forward for Colorado, the bill does include some serious limitations. For one, if an individual has access to city water, then he or she cannot legally catch rainwater. Only those not serviced by a domestic water system that services at least three domestic dwellings qualify for a permit to install a rainwater catchment system.[20] Moreover, the new law only allows permits to be issued for buildings used "primarily as a residence." Not only does the bill have limitations on who may obtain a permit, but there are also restrictions on the water's use once a permit is obtained. If a Colorado resident plans on using the water for irrigation purposes, he or she can only do so on up to a one-acre parcel of land. If his or her property is more than one acre, the water cannot be used to water the entire garden or lawn.[21]

One might ask what has brought on this change in thinking from the traditional water rights view to the current rainwater harvesting view. A common theme in many of the jurisdictions that have implemented such programs and embraced change is drought. When water supply is down, conservation becomes the most important method of maintaining the amount of water available. Another reason why water conservation has become more acceptable is due to the "green movement." People today are

18. *See, e.g.*, Colorado's explanation of its "first in time, first in right" system (discussing its application in the context of its Prior Appropriation System), available at http://water.state.co.us/wateradmin/prior.asp.

19. COLO. REV. STAT. § 37-90-105(f) (2009).

20. *Id.* § 37-90-105(f)(I).

21. *Id.* § 37-90-105(f)(I)(D).

more aware of the toll their actions take on the environment. As people have become more environmentally conscious, they have started to change their thinking. Conserving natural resources is a major tenet of the green movement, and water conservation is one key area everyone can implement in order to lessen his or her burden on the environment.

The last factor that may bring about more water conservation is today's overall economic environment. Individuals who can cut down on their water bill will be more inclined to do so. Just as more individuals are trying to save money, so are municipalities. Municipalities maintain storm water and sewer systems at a cost. By promoting individual water conservation and decreasing the load of storm water runoff, the cost of maintaining these systems is reduced. Although all of these ideas may have contributed to a change in thinking regarding water conservation, each jurisdiction may have more individualized reasons for enacting water conservation regulations.

IV. NEW INNOVATIVE PROGRAMS

A. Prescott, Arizona

Prescott, Arizona, has an extremely comprehensive ordinance regarding water conservation. The ordinance has both mandatory and incentive characteristics. The mandatory portion requires all new construction to conform to specific water conservation requirements. When a homeowner in an existing home replaces fixtures in his or her home, these replacements must comply with certain water conservation requirements. The ordinance specifies the type of urinals, showerheads, and faucets to be installed within a building. In addition, bathrooms in commercial buildings used by the general public must meet strict water conservation guidelines.[22]

The incentive portion of the program is quite innovative. The ordinance provides a list of options that homeowners can implement to improve water efficiency. The homeowner then gets to pick and choose which ideas he or she would like to employ. The options include everything from relatively minor installations to large projects. Minor changes include installing low flow toilets and showerheads that do not exceed 2.4 gallons of water per minute. Larger options include converting to an automatic drip system for landscaping and installing rainwater cisterns.[23] Each option allows for a maximum award. Homeowners know exactly how much money they are entitled to receive for implementing an option. Homeowners receive the award through their water

22. PRESCOTT, AZ, CODE § 3-10-3 (2009).
23. *Id.* § 3-10-8.

companies. When the water bill arrives, there is a credit for the amount of money due in incentives.[24]

B. Tucson, Arizona

Tucson, Arizona's ordinance employs a mandatory water conservation program. The ordinance was passed on October 14, 2008, but will not be implemented until June 1, 2010.[25] The ordinance requires a developer to create a rainwater harvesting program. When submitting commercial development plans, the rainwater harvesting plan must also be submitted. The rainwater harvesting plan must include a budget and an implementation process.[26] The implementation process must specify the process by which water used for on-site landscaping will be metered. Within three years of the issuance of a certificate of occupancy by the City of Tucson, the commercial development must account for fifty percent of its landscape water demand with rainwater that is harvested on-site.[27]

C. Alpharetta, GA

Alpharetta, Georgia's water conservation regulations are mandatory. Alpharetta implemented its ordinance regulations in January 2008. Since its inception, the regulations have not caused any major problems with developers.[28] The regulations came about in the form of a city council mandate. The city council mandated a ten percent reduction in water use, but gave no guidance on how to achieve this reduction. The city added teeth to the mandate by implementing the Water Conservation Permit Requirements. These requirements include a minimum of ten percent water use reduction for new construction.[29] Developers must submit a water reduction plan with their application for a new construction project. The requirements also suggest methods for reducing the amount of water used for landscaping by ten percent. Moreover, the ordinance provides a matrix to determine the amount of water consumed per day by a commercial building. Once the number is calculated, developers must provide strategies to achieve a ten percent reduction in that number.[30] As will be discussed below, just as Sandy Springs modeled its ordinance after Alpharetta's,

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24. *Id.* § 3-10-8(F).
25. TUCSON, AZ, CODE § 6-188 (2009).
26. *Id.* § 6-182(A).
27. *Id.* § 6-183(B).
28. Telephone Interview by Sarah Hobbs with Paul Ivey, Building Official, City of Alpharetta, in Alpharetta, Ga. (Aug. 25, 2009).
29. City of Alpharetta, City of Alpharetta Water Conservation Permit Requirements, Jan. 7, 2008, *available at* http://www.alpharetta.ga.us/files/docs/pdfs/F&D/CD/Water_Conservation_Requirements_New_Construction.pdf.
30. *Id.*

Alpharetta considered Leadership in Energy and Environmental Design ("LEED") guidelines when writing its requirements.[31]

D. Sandy Springs, GA

Sandy Springs implemented an incentive-based program modeled after Alpharetta, Georgia's ordinance. The basics of the program are identical to Alpharetta's, outlined above. The major problem with implementing an incentivized program is that the ultimate goal of water conservation may not be achieved. Thus far, this program has not been taken advantage of by any developers or homeowners.[32] Unused incentives equal no water conservation. Although the program is not the most effective way to achieve water conservation goals, Sandy Springs had sound reasons for choosing an incentive structure. When the program was implemented, the economy had fallen and developers were not building. Sandy Springs chose to implement an incentive program, as opposed to a mandatory program that would discourage developers from building.[33] As time progresses and more development occurs, Sandy Springs hopes to see more developers taking advantage of the incentive program.

E. LEED Guidelines

The U.S. Green Building Council developed LEED Guidelines in the year 2000.[34] Since then, LEED guidelines have helped jurisdictions set up their own water conservation ordinances. As stated above, Alpharetta, Georgia considered the LEED guidelines as a model for its innovative water conservation ordinance. LEED is a third-party certification program and a tool that can be used for all types of buildings. LEED guidelines cover new construction as well as major renovations. It also covers buildings such as schools, homes, commercial interiors, and existing buildings.

A building will be LEED-certified if the building receives sufficient points.[35] One hundred possible points are available. There are seven categories in which buildings can receive points. Once a building has received its points, it is either certified or not. The four certifications a building may receive are Platinum, Gold,

31. Telephone Interview by Sarah Hobbs with Lynn Pierson, Community Development, City of Alpharetta, in Alpharetta, Ga. (Aug. 28, 2009).

32. Telephone Interview by Sarah Hobbs with David Schmid, Envtl. Compliance Officer, City of Sandy Springs, in Sandy Springs, Ga. (Aug. 25, 2009).

33. *Id.*

34. U.S. Green Building Council, LEED Green Building Certification System, http://www.usgbc.org/ShowFile.aspx?DocumentID=3330 (last visited Oct. 30, 2009).

35. *Id.* at 1.

Silver, and Certified.[36] The buildings that receive the highest points will earn a Platinum certification.

Water Efficiency is one category in which a building may receive points. Out of the one hundred points, a building may receive up to ten points in this category. As a prerequisite, the building must reduce water use in the aggregate by twenty percent.[37] If this prerequisite is met, there are three ways to earn points. The first way in which a building may earn points under the water efficiency category is to employ water-efficient landscaping. This can be worth two to four points. Option one allows two points to be gained if a building decreases the amount of potable water used for irrigation by fifty percent. A suggested method for achieving the reduction is to utilize captured rainwater.[38] Option two allows for a building to gain four points. This option first requires that option one be met and, in addition, that no potable water be used for irrigation. One suggestion for achieving this goal is to use only captured rainwater for irrigation. The second way to earn points is through innovative wastewater technologies. A building can earn two points under this subsection. The first option requires a fifty percent reduction of potable water use for building sewage conveyance. Again, one method suggested for achieving this requirement is to use non-potable water such as captured rainwater.[39] The last way to earn points under the water efficiency category is to reduce water use by a certain percentage. A building will receive two points for a thirty percent reduction, three points for a thirty-five percent reduction, and four points for a forty percent reduction.[40]

The "Model Unified Land Development Code for Coastal Communities," prepared in conjunction with the University of Florida and under consideration as a proposed ordinance in the Town of Marineland, Florida, would require that all new construction must be, at a minimum, LEED-certified and shall strive to achieve LEED Platinum certification.[41] An infeasibility exemption is available as an administrative "relief valve" for unintended consequences of the requirement, allowing an exemption from LEED requirements where individual circumstances exist that make it a hardship or infeasible for the

36. *Id.*

37. U.S. Green Building Council, LEED 2009 for New Construction and Major Renovations, at 21, *available at* http://www.usgbc.org/ShowFile.aspx?DocumentID=5546 (last visited Oct. 30, 2009).

38. *Id.* at 23.

39. *Id.* at 25.

40. *Id.* at 26.

41. DRAFT Town of Marineland Unified Land Development Code for Coastal Communities, University of Florida Conservation Clinic § 3.09.03 (2009), *available at* http://www.law.ufl.edu/conservation/resources/pdf/Marineland/chapter3.pdf.

applicant to meet those requirements.[42] As discussed previously, the LEED guidelines offer a number of points for implementing water conservation.

F. Yankeetown, Florida

One community that has really confronted the issue of water conservation and has already implemented a variety of measures to preserve water is Yankeetown, Florida. The Town of Yankeetown Comprehensive Plan contains a policy that all new planned unit developments, subdivisions, and commercial development in every land use district must utilize "low impact" development" ("LID") practices.[43] There are many water conservation methods included in these practices. One practice is to use green roofs and rain barrels where feasible. Another method is to utilize porous pavement. It is also suggested that water be conserved by utilizing stormwater that has accumulated in ponds to irrigate the landscape. Under the policy, each of these methods must be connected in a treatment "train" with effluent from one process entering as influent into the next management practice to achieve even greater nutrient reduction.[44]

Yankeetown has also created what is known as commercial water-dependent land use districts.[45] Only certain types of low- to medium-intensity commercial development are allowed in these districts. These districts are used to promote "water-dependent" uses such as commercial and recreational fishing. Hotels, motels, and resorts are allowed, but required to include additional features as "water-enhanced" uses, including perpendicular and parallel walkways providing public access to the waterfront, or a rebuttable presumption is created that such hotel, motel, or resort can be located elsewhere on upland non-waterfront parcels and still meet its basic purpose.[46] These districts promote water conservation by requiring that any commercial development in the district may not have more than fifty percent of impervious surface on its parcel of land.[47] By requiring that most of the land be free of impervious surface, the law allows for less rainwater runoff because more stormwater can be absorbed by the pervious surface of the land while stormwater falling on impervious surfaces is captured and treated by other LID mechanisms such as a rain

42. *Id.* § 3.09.04.

43. TOWN OF YANKEETOWN COMPREHENSIVE PLAN, Policy 1.1.1.3 (adopted by Town of Yankeetown Ord. 07-10, as amended by Ord. 09-02), *available at* http://www.ralfbrookesattorney.com/images/CPA_08-01_TEXT_underline_strike_ thru.pdf.

44. *Id.*

45. *Id.* Policy 1.1.2.8.

46. *Id.* Policy 1.1.2.8.7.

47. *Id.* Policy 1.1.2.8.2.

barrel or a green roof.

In addition to the traditional structural setbacks, the Town of Yankeetown has also adopted a 150-foot nutrient source setback from rivers, creeks, streams, and wetlands based on data and analysis from recent EPA publications.[48]

Yankeetown, Florida is a great example of how a community can promote water conservation in many different ways. The community utilizes a plethora of water conservation methods and incorporates them in all aspects of planning and development.

G. Rain Tax

Implementing a rain tax indirectly promotes water conservation. The rain tax, also known as a stormwater service charge, storm water utility charge, or surface water drainage charge, requires property owners to pay for the cost of "handling" their rainwater runoff. This fee is calculated by the total impervious surface area on the property. In order to understand the rain tax, one must first examine the relationship between rainwater catchment and stormwater system management. Storm water management can represent a huge cost to municipalities. Municipalities spend money in order to maintain the drainage system rainwater runoff and sewage flow-through. No maintenance or poor maintenance can ultimately lead to systems backing up and flooding. Municipalities also spend money to separate the storm and sewer systems.[49] It costs money to manage the excess rainwater runoff flowing into storm water and sewage systems, and the rain tax is a way to recoup that cost. Effective stormwater management in general has many benefits related to preventing water pollution and flooding, but is not the focus of this Article.[50] Rainwater catchment is also a benefit of implementing a rain tax. When such a tax is created, it can account for conservation methods used by property owners and in turn allow them to receive a credit.[51] If property owners use rainwater catchment methods on-site, they will be able to cut down on their bills.

The most recent jurisdiction to consider implementing a rain tax is England. Ofwat, which is responsible for regulating the

48. *Id.* Policies 1.1.1.2.8 & 5.1.6.4; *see also* Paul M. Mayer, Steven K. Reynolds, Jr. & Timothy J. Canfield, *EPA Riparian Buffer Width, Vegetative Cover and Nitrogen Removal Effectiveness: A Review of Current Science and Regulations*, EPA OCTOBER 2005 (EPA/600/R-05/118), at 1 (2005), *available at* http://www.epa.gov/nrmrl/pubs/600R05118/600R05118.pdf (discussing agency guidelines recommending minimum nutrient buffer zones).

49. Bolt v. City of Lansing, 587 N.W.2d 264 (Mich. 1998).

50. Avi Brisman, Article, *Considerations in Establishing a Stormwater Utility*, 26 S. ILL. U. L.J. 505, 512 (2002).

51. *Id.* at 515.

water industries in England and Wales, recently pushed its water utilities to charge a rain tax. The tax encourages landowners to implement water conservation in order to shield themselves from higher water bills. One of the rainwater catchment systems discussed above, which would be most helpful in reducing one's tax, is installation of a green roof. At a residential level, the largest impermeable area on a parcel of land usually is the structure's roof. By installing a permeable green roof, that surface area would no longer be used in calculating how much tax will be levied.

Promoting conservation through taxes forces results, but it can also lead to problems. In England, there has been considerable protest by churches and other non-profit entities. Churches tend to have large amounts of non-permeable areas (such as parking lots) on their property.[52] Before the new rain tax, an area was charged based on a ratable value. Churches, charities, and community sport clubs received very low ratable values under the old system and based on those values, were not charged a high amount.[53] Under the rain tax, these groups will see a tremendous increase in their bills. Mr. Hilary Benn, the Environment Secretary in the United Kingdom, has said that the legislature will enact laws allowing water companies to run concessionary schemes for these organizations.[54]

Another issue with implementing a rain tax is that the process by which it is imposed must be constitutional. Lansing, Michigan, struggled with this problem in 1995. Lansing adopted an ordinance that created a storm water service charge. The charge was imposed on each landowner and attempted to estimate each parcel's storm water runoff.[55] A landowner who received a bill for $59.83 for his 5,400 square foot parcel brought suit against the city. He claimed that the charge was a tax, rather than a valid user fee, which required a vote by the electorate before it could be implemented. The Michigan Supreme Court held that the storm water service charge was a tax, and because there was never approval by a vote of the electorate, it was unconstitutional.[56]

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52. *See, e.g.*, Lynn Monson, *Ypsilanti City Council Wary of Proposal to Charge "Pavement Fee,"* MLIVE.COM, Apr. 1, 2009, http://www.mlive.com/news/ann-arbor/index.ssf/2009/04/ypsilanti_city_council_wary_of.html (pointing out that lawmakers are reluctant to apply storm water utility fees to churches).

53. *Id.*

54. Nick Lester, *Groups Are Given New 'Rain Tax' Assurances*, PLYMOUTH EVENING HERALD, Sept. 29, 2009, *available at* http://www.thisisplymouth.co.uk/oddnews/GROUPS-GIVEN-NEW-RAIN-TAX-ASSURANCES/article-1374615-detail/article.html.

55. *Bolt*, 587 N.W.2d at 267.

56. *Id.* at 169.

V. VARIOUS ISSUES WITH IMPLEMENTATION OF WATER CONSERVATION PROGRAMS

The first issue that local governments face when implementing a water conservation program is deciding what means to use in its implementation. Some of the programs discussed above are incentive-based, some are mandatory, and some, such as Prescott, Arizona's program, are a combination of the two. The biggest problem with a strictly incentive-based program is discussed above with regard to the Sandy Springs, Georgia's program. Through the program to date, no water has been conserved. Not one person has taken advantage of the incentives. This outcome tends to lead municipalities to adopt mandatory programs. The biggest achievement of a mandatory program is that it accomplishes what it set out to—water conservation. If all new construction must agree to reduce water use, water will be conserved.

Achieving its goal is the main objective for a municipality, but it would prefer to reach this objective while avoiding problems. Problems come up in water conservation programs. One issue to consider when enacting an ordinance is at what point the ordinance will be implemented. Many of the plans listed above implement the ordinance at the permitting stage. When a developer wants approval of building and development plans, it must submit plans to conserve water. This scheme makes permits and approval contingent on the developer's ability to conserve water once the development is completed.

The most debated issue that arises in the context of water conservation is the question of who should pay. Should developers or homeowners pay? Is the up-front cost going to be too much for the developer to absorb or pass on? Will the costs ever be recouped? Most developer funding of infrastructure programs—impact fees, for example—require the developer (the person or entity who applies for the building permit) to pay. Depending on various economic factors, which vary from place to place, the buyer of the residential, commercial, or industrial property may bear all or a portion of the cost through paying a higher purchase price for the property. Or, the infrastructure costs may come out of the developer's profit. Or, some analysis indicates that those developers who know the infrastructure costs they will bear are willing to pay less for the raw land which will be the locus of the development, and therefore the cost is passed back to the owner of developable land. Most likely, all three bear some of the burden.

The equities in regard to who should bear the financial burden of water and energy conservation infrastructure are somewhat different because the homebuyer (or ultimate owner of the commercial or industrial building) may save money by paying less for water or energy because of the required conservation

infrastructure. Professor Robert Freilich has pioneered an innovative and workable solution to this problem. He calls it the "monetization" idea, but a more descriptive name may be the advancement or refunding agreement approach.[57] Pursuant to many of the statutes discussed above, the developer has the initial cost of providing the rainwater harvesting system or installing more efficient, but more expensive fixtures. A developer may not have the money up front to fund such an expensive conservation project, or may decide that it will be impossible to recoup the investment by passing it on to the buyer. The advancement approach would work like this: the developer would receive money advanced through a grant from some organization such as a water utility or a homeowner's' association. The developer would then use this money to pay the extra cost of conservation infrastructure. When the developer sells the house to a homeowner, that homeowner will pay back the advancement. If the advancement was made from a water utility, the homeowner's water bill would include surcharges that ultimately go to paying off the money advanced to the developer. If the homeowner's' association was the entity which initially fronted the money, then it can charge the homeowner a special fee that will be tacked on to the homeowner's dues. The money that was advanced to the developer will be paid back through these special assessments.

VI. CONCLUSION

Water conservation will continue to become more important to local governments as time progresses. Droughts and water shortages due to overdevelopment will continue to bring water conservation to the forefront of land use planning goals. With the current economy, people and towns alike are looking to save money. Spending less on a water bill or less on maintaining the drainage systems will reinforce the idea of water conservation as an acceptable alternative to current practices. Regulations promoting conservation will continue to increase, and as more and more are implemented, they will become efficient ways to cut water use through promoting rainwater catchment.

57. DAVID L. CALLIES, ROBERT H. FREILICH & THOMAS E. ROBERTS, CASES AND MATERIALS ON LAND USE 682 (Thomson West 5th ed. 2008).