

# No Swimming: Kentucky's Wasted Waterways

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## I. INTRODUCTION

Human waste pollution, sometimes referred to as fecal coliform pollution, is a major threat to the waterways throughout much of Kentucky. In many cases, this pollution is piped from homes and businesses directly into the ground water and streams. Additionally, failing septic systems and aged sewer systems also allow sewage to contaminate the groundwater and surface water. Whether it comes from a failing septic system in Central Kentucky, or a straight pipe sewage discharge from a home in Eastern Kentucky, the bottom line is sewage has polluted many streams and rivers to the point they are no longer safe for human contact. Unfortunately, many do not understand that human waste is not simply unpleasant; it can be dangerous. In fact, many believe that sewage leaking, leaching and cascading into the ground and into the waterways is nothing more than a cosmetic problem, a stench that is unpleasant yet necessary and quite simply a part of life.<sup>1</sup> This mindset has led to a problem comparable to that found in developing nations.<sup>2</sup> Unfortunately, in parts of Kentucky, sewage dumped onto the ground, leaking into the waterways through

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<sup>1</sup> The Head of Three Rivers Project, *The Problems (Pollutants)*, <http://www.letcherwater.com/pollutants.htm> (last visited Nov. 8, 2008).

<sup>2</sup> EPA, KENTUCKY STRAIGHT PIPES REPORT: HARLAN, MARTIN AND BATH COUNTIES 1 (Dec. 2002), available at <http://www.epa.gov/Region4/sesd/reports/2002-1107.html>.

poorly maintained septic systems, and sometimes directly spilling onto the ground from "straight pipe" sewer discharges, is not uncommon.<sup>3</sup> How effective the different areas in Kentucky have been when dealing with and preventing pollution from human waste is the primary focus of this paper.

However, it is not just the rural areas of Kentucky that experience problems with wastewater. The urban area of Lexington and Fayette County has experienced its own problems with sewer and wastewater.<sup>4</sup> The difference in how the two areas of the state are approaching the problem warrants much discussion. A fundamental difference exists in the fact that Lexington has the blessing (or the curse) of a municipal sewer system, whereas much of the rural areas of Central and Eastern Kentucky depend on septic systems (or some other type of onsite system). Despite these differences, just as the residents of rural Kentucky have been replacing and installing new septic systems to treat residential waste, the Lexington-Fayette Urban County Government (LFUCG) must now face the challenge of upgrading the aged municipal sewer system.<sup>5</sup> Both areas face a common problem: how to ensure that untreated wastewater will not end up in Kentucky's streams and rivers.

Interestingly, the example of Lexington is evidence that a sanitary sewer system alone would not be a permanent solution for the

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<sup>3</sup> Head of Three Rivers Project, *supra* note 1.

<sup>4</sup> U.S. v. Lexington-Fayette Urban County Govt., No. 5:06-cv-386 (E.D. Ky.) (consent decree), available at <http://www.epa.gov/compliance/resources/decrees/civil/cwa/lexington-cd.pdf>. [hereinafter LFUCG Consent Decree].

<sup>5</sup> *Id.* at 18-20.

rural areas. Like many solutions discussed in this paper, whether it be a sanitary sewer system or a cluster system serving a small community, proper management and maintenance is essential for long term viability of the project. Unfortunately this has, at times, been an issue for smaller communities even when a system is developed and installed.<sup>6</sup>

In order to better understand the different approaches that may be taken it is important to compare how an urban area and a rural area have dealt with (or failed to deal with) the same problem. Differences in resources, community mindset, and willingness to make the necessary changes will all factor into how these very different areas deal with human waste. Equally important is how these different approaches have affected the users of the system. Responsible citizens become better stewards of the environment and will serve to ensure that the solutions implemented today will not simply fall into disrepair and become the problems of tomorrow.

Although the scope of this paper has been limited to Central and Eastern Kentucky, at times it will look to other areas of the United States for information regarding the health effects of fecal coliform pollution.<sup>7</sup> Additionally, for comparative purposes, included is one area outside Kentucky that has dealt with the problem of human waste contamination of water resources.<sup>8</sup> Unfortunately, the issues regarding

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<sup>6</sup> EPA, *supra* note 2 at 10-11.

<sup>7</sup> See, e.g., Mark A. Borchardt, Po-Huang Cyou, Edna O. Devries & Edward A. Belongia, *Septic System Density and Infectious Diarrhea in a Defined Population of Children*, 111 ENVTL. HEALTH PERSP. 742 (2003).

<sup>8</sup> See, e.g., Kalena Porter, *From Straight Pipes to Straight Talk: Collaborating to Solve Wastewater Issues*,

human waste contamination of water sources from septic systems and straight pipes is not limited geographically: nearly a quarter of homes in the United States use septic systems for wastewater treatment.<sup>9</sup>

Although the urban area would seem to have an advantage with both resources and infrastructure, it is the rural areas of Eastern Kentucky that have taken a much more proactive approach to eliminating human waste pollution. The LFUCG is currently working toward final approval of a consent decree (a settlement agreement with the U.S. Environmental Protection Agency), which will require improvements to the sanitary and storm water sewer systems over the next eleven to thirteen years.<sup>10</sup> This agreement comes only after the EPA commenced a legal action against LFUCG.<sup>11</sup> On the other hand, the rural areas of Eastern Kentucky have embraced the Eastern Kentucky Personal Responsibility In a Desired Environment (PRIDE) program; a voluntary program that currently subsidizes septic systems for low income homes with no or a failing septic system, and works toward large scale projects in areas where other options such as a sanitary sewer system is viable.<sup>12</sup> Eastern Kentucky PRIDE pools local, state,

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24 ECHO 1 (2007), available at [http://www.canaanvi.org/canaanvi\\_web/news.aspx?collection=echo&id=704](http://www.canaanvi.org/canaanvi_web/news.aspx?collection=echo&id=704).

<sup>9</sup> Borhardt et al., *supra* note 7, at 742.

<sup>10</sup> LFUCG Consent Decree, *supra* note 4, at 35.

<sup>11</sup> Davina Marraccini, *Lexington, Ky., Agrees to Major Sewer System Upgrades*, <http://yosemite.epa.gov/opa/admpress.nsf/2ac652c59703a4738525735900400c2c/817989161be56eca8525740c006997f9!OpenDocument> (last visited Mar. 14, 2008).

<sup>12</sup> See PRIDE, *What is Pride?*, <http://www.kypride.org/about/index.php> (last visited Dec. 11, 2008).

and federal resources to eliminate fecal coliform pollution. By educating the public and following this education with financial support the PRIDE program has spent the past decade drastically improving the straight pipe/failing septic systems situation throughout Eastern Kentucky. Through government and community involvement the PRIDE program strives to solve Southern and Eastern Kentucky's wastewater problem.<sup>13</sup> The program is a successful example of a collaborative effort of governmental institutions coming together to solve a problem; known as adaptive governance.<sup>14</sup>

In Section II, first discussed is how failing septic systems and straight pipe discharges cause pollution and why this pollution is particularly hazardous to public health. In Section III, the regulatory framework within which this problem will be solved is analyzed. Section IV describes the areas of Kentucky focused on for the paper and one area outside of Kentucky with comparable human waste issues. Section V analyzes the success of rural and urban efforts to eliminate human waste pollution, comparing the different approaches taken and the extent to which litigation has been a primary motivational factor. Finally, this paper concludes that although the areas identified throughout Kentucky have identified human waste pollution problems and are seeking viable solutions, the Eastern Kentucky PRIDE program is a model program for any area working toward eliminating fecal coliform pollution and has been most effective. The PRIDE program not

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<sup>13</sup> *Id.*

<sup>14</sup> See John T. Scholz & Bruce Stiftel, *The Challenges of Adaptive Governance*, in *ADAPTIVE GOVERNANCE AND WATER CONFLICT: NEW INSTITUTIONS FOR COLLABORATIVE PLANNING* 1, 1 (John T. Scholz & Bruce Stiftel ed., Resources for the Future 2005).

only promotes wastewater management, but through education and community involvement conditions citizens to be better stewards of the environment.

## II. HOW FAILING SEPTIC SYSTEMS AND STRAIGHT PIPE DISCHARGES POLLUTE

### A. HOW THE SYSTEMS WORK

In order to prevent the contamination of water resources, sewage waste from residential homes must terminate in an approved holding tank or septic system, if the home is not located where it can connect to a public sewer system.<sup>15</sup> Unfortunately, a home is often not connected to a septic system and a straight pipe is used to discharge the raw sewage directly into a waterway.<sup>16</sup> Even if a septic system is properly installed, the life span of the system is realistically only around twenty years.<sup>17</sup>

Approximately 25 million rural and suburban households dispose of their wastewater (an estimated trillion gallons each year) through private onsite wastewater treatment systems, also referred to as septic systems.<sup>18</sup> Septic systems vary from those that distribute the waste water through a leach field<sup>19</sup> to those where wastewater simply enters a holding tank and is periodically removed by a licensed waste hauler.<sup>20</sup>

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<sup>15</sup> R. DODGE WOODSON, *WATER WELLS AND SEPTIC SYSTEMS HANDBOOK* 15 (McGraw Hill 2003).

<sup>16</sup> Head of Three Rivers Project, *supra* note 1.

<sup>17</sup> WOODSON, *supra* note 15, at 251.

<sup>18</sup> Borchardt et al., *supra* note 7, at 742.

<sup>19</sup> WOODSON, *supra* note 15, at 260.

<sup>20</sup> Borchardt et al., *supra* note 7, at 742.

For the most part, Kentucky septic systems are standard systems with a septic tank and drain field.<sup>21</sup> In this type of system, the sewage is piped from the home directly into a septic tank where the solids are trapped while the liquid is allowed to exit the tank and enter a leach or drain field where the soil naturally filters the wastewater.<sup>22</sup> Periodic inspections of the septic tank are recommended in order to determine when the waste left in the tank should be removed by pumping.<sup>23</sup> Regular pumping (every three to six years) is critical to maintain a proper functioning septic system and if not done, will allow solids to enter and clog the drain field eventually causing the overall system to fail.<sup>24</sup>

There are two other wastewater management systems that are discussed in this paper: a sanitary sewer system and a storm sewer system. A sanitary sewer system is relatively simple. If working properly, the system will collect and transport all the sewage from the connected homes, businesses, etc., to a wastewater treatment facility where the water will be treated and safely released back into the environment.<sup>25</sup> A municipal separate storm sewer system (MS4) is designed to collect rainfall runoff and transport the water untreated

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<sup>21</sup> W.O. Thom & Pat Keefe, *Maintaining Conventional Septic Systems*, <http://www.ca.uky.edu/agc/pubs/agr/agr166/agr166.htm> (last visited Nov. 9, 2008).

<sup>22</sup> *Id.*

<sup>23</sup> *Id.*

<sup>24</sup> *Id.*

<sup>25</sup> EPA, *National Pollutant Discharge Elimination System (NPDES): Sanitary Sewer Overflows*, [http://www.cfpub.epa.gov/npdes/home.cfm?program\\_id=4](http://www.cfpub.epa.gov/npdes/home.cfm?program_id=4) (last visited Nov. 24, 2008).

into local waterbodies.<sup>26</sup> In order to ensure that the MS4 discharge is safe, the U.S. Environmental Protection Agency requires a municipality using an MS4 system to obtain a National Pollutant Discharge Elimination System permit.<sup>27</sup>

#### B. WATER QUALITY DEGRADATION

If the systems described above are properly designed and maintained the harmful pathogens found in human waste are prevented from entering the environment. However, in reality, pollution from failing septic systems and straight pipe discharges are a major cause of nonpoint source pollution throughout parts of Kentucky. Both straight pipes and failing septic systems are recognized as sources of nonpoint source pollution by the Kentucky Nonpoint Source Pollution Control Program (KNSPCP) as discussed below.<sup>28</sup> To better understand the magnitude of fecal coliform pollution in Kentucky and the effect it has on stream health one need only look at the numbers. In 1997, it was estimated that around twelve percent of Kentucky's water pollution was attributable to septic tanks (note this does not include straight pipe discharges).<sup>29</sup> In 1998, approximately thirty-three

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<sup>26</sup> EPA, *National Pollutant Discharge Elimination System (NPDES): Stormwater Discharges from Municipal Separate Storm Sewer System (MS4s)*, <http://www.cfpub.epa.gov/npdes/stormwater/munic.cfm> (last visited Dec. 2, 2008).

<sup>27</sup> *Id.*

<sup>28</sup> Ky. Div. of Water, *Nonpoint Source Pollution*, <http://www.water.ky.gov/sw/nps/> (last visited Oct. 21, 2008).

<sup>29</sup> Env'tl. Quality Comm'n, *Coal Mines, Agriculture, Sewage Plants Leading Sources of Water Pollution in KY*, 13 KENTUCKY'S ENV'T 1 (Apr.-May 1997) (newsltr. of the Env'tl. Quality Comm'n).

percent of the rivers and streams in the state were impaired due to improper waste disposal.<sup>30</sup> In 2002 it was estimated that approximately forty percent of Kentucky households were not connected to a centralized sewer system.<sup>31</sup> The Kentucky Division of Water warns that it is unsafe to swim in portions of the Upper Cumberland, Kentucky, and Licking River.<sup>32</sup> People are cautioned to avoid recreational contact with the waters listed because of bacteria found in human and animal waste.<sup>33</sup> Specifically, illegal straight pipe discharges are named as the primary reason for the swimming advisories in the Upper Cumberland and Kentucky rivers.<sup>34</sup>

[Picture 1 – <http://www.letcherwater.com/pollutants.htm>]

\* Photo of straight pipe discharge from The Head of 3 Rivers Project.<sup>35</sup>

Interestingly, some people may feel that they have every right to dump their sewage into a waterway despite the detrimental effect it has on the stream or river. In fact, some have even asserted that they have the right not only to pipe their waste into a stream, but if they do not live by the stream, they have the right to pipe it across the property of others in order to reach the stream.<sup>36</sup>

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<sup>30</sup> EPA, *supra* note 2, at 3.

<sup>31</sup> *Id.*

<sup>32</sup> Ky. Div. of Water, *Swimming Advisories to Continue at Kentucky Sites*, <http://www.water.ky.gov/sw/advisories/swim.htm> (last visited Oct. 22, 2008).

<sup>33</sup> *Id.*

<sup>34</sup> *Id.*

<sup>35</sup> Head of Three Rivers Project, *supra* note 1.

<sup>36</sup> See, e.g., *Staniford v. Hensley*, 2005 WL 265161 (Ky. Ct. App. Feb. 4, 2005).

### C. THE DANGERS OF HUMAN WASTE POLLUTION: MORE THAN JUST A STINK

Human waste pollution has been linked to serious health effects by medical researchers.<sup>37</sup> The effect of human waste pollution goes beyond the obvious stench and unsightly sludge caused by the runoff. The effect of contamination from septic systems can have very real health effects.

In one study performed in Marshfield, Wisconsin, medical researchers studied the effect of septic system density on infectious diarrhea in children.<sup>38</sup> The research primarily focused on septic systems with no leach field where the waste is collected in a holding tank and later removed by a licensed waste hauler.<sup>39</sup> The researchers concluded that for every additional holding tank per 640 acres, the risk of a child contracting viral diarrhea illness increased by eight percent, and for 40 acres of the same area, the risk of bacterial diarrhea increased by twenty two percent.<sup>40</sup> The researchers noted that holding tanks properly maintained and utilized do not release effluent into the environment, but it is estimated that as many as forty percent of all holding tanks have some illegal surface discharge.<sup>41</sup> Additionally, this study did not include the effect of other septic systems that were not holding tanks.<sup>42</sup>

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<sup>37</sup> Borchardt et al., *supra* note 7.

<sup>38</sup> *Id.* at 742.

<sup>39</sup> *Id.*

<sup>40</sup> *Id.* at 745.

<sup>41</sup> *Id.* at 746.

<sup>42</sup> *Id.* at 745.

### III. STATUTORY AND REGULATORY FRAMEWORK

#### A. THE CLEAN WATER ACT

The regulatory framework within which nonpoint source pollution is controlled and monitored begins at the federal level with the Clean Water Act. The Clean Water Act currently provides that:

[I]t is the national policy that programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner so as to enable the goals of this chapter to be met through the control of both point and nonpoint sources of pollution.<sup>43</sup>

In 1987, Congress amended the Clean Water Act (originally enacted in 1977 as an amendment to the Federal Water Pollution Control Act of 1972) to establish what is known as the § 319 Nonpoint Source Management Program (codified at 33 U.S.C. 1329).<sup>44</sup> This section further requires the Governor of each state to prepare and submit a report identifying the navigable waters within the State that cannot be reasonably expected to maintain applicable water quality standards under the Clean Water Act because of nonpoint source pollution.<sup>45</sup> Most importantly, the act requires implementation of nonpoint source management programs and provides an application process for grants to implement the management programs.<sup>46</sup> These management programs are created at the state level.

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<sup>43</sup> 33 U.S.C. § 1251(a)(7) (2000).

<sup>44</sup> EPA, *Polluted Runoff (Nonpoint Source Pollution): Laws, Regulations, Treaties*, <http://www.epa.gov/owow/nps/cwact.html> (last visited Mar. 7, 2008).

<sup>45</sup> 33 U.S.C. § 1329 (A) (2000).

<sup>46</sup> 33 U.S.C. § 1329.

In 1996, Section 531 of the Water Resources Development Act authorized the Army Corps of Engineer to supply grant funding to a twenty-nine county area in South Eastern Kentucky through the Southern and Eastern Kentucky Environmental Improvement Program.<sup>47</sup> This funding is to be used for “water-related environmental infrastructure and resource protection and development projects.”<sup>48</sup> As discussed below, the Army Corps of Engineers is one of the founding partners in the Eastern Kentucky PRIDE program.<sup>49</sup>

#### B. SEPTIC TANK REGULATION AT THE STATE LEVEL

Kentucky has implemented a management program pursuant to the Clean Water Act in order to control and monitor nonpoint source pollution. The Kentucky Nonpoint Source Pollution Control Program’s (KNPSPCP) primary goal is to protect the quality of Kentucky’s surface and groundwater from NPS pollutants. In order to achieve these goals the program partners with federal, state, local and private entities to “promote complementary, regulatory and nonregulatory nonpoint source pollution control initiatives at both statewide and watershed levels.”<sup>50</sup> Both failing septic systems and straight pipe discharges are identified as sources of nonpoint source pollution by the KNPSPCP. The KNPSPCP has been instrumental in developing programs that have

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<sup>47</sup> U.S. Army Corps of Eng’rs, *Environmental Infrastructure for SE Kentucky (531 Program)*, <http://www.lrh.usace.army.mil/projects/current/section531/> (last visited Dec. 5, 2008 ).

<sup>48</sup> *Id.*

<sup>49</sup> See, e.g., PRIDE, *Grants for Sewer Projects*, <http://www.kypride.org/grantprograms/sewer.php> (last visited Dec. 11, 2008 ).

<sup>50</sup> Ky. Div. of Water, *supra* note 28.

replaced failing septic systems using § 319 funding.<sup>51</sup> Although the program has done much to correct failing septic systems, the approval for installation of new on-site waste disposal systems is promulgated through the Cabinet for Health and Family Services.<sup>52</sup>

The Cabinet for Health and Family Services, pursuant to Kentucky Revised Statutes § 211.180, is required to enforce administrative regulations promulgated for the regulation and control of the construction, installation, and alteration of any on-site sewage disposal system (septic system).<sup>53</sup> The statutes further provide in KRS § 211.350(3) that site evaluations shall be conducted by the local health department.<sup>54</sup> In order to finance the site evaluations, KRS § 211.355 provides the local Health Department with a fee scheduling system for permits required under the applicable regulation.<sup>55</sup>

Under the statutes above, the Cabinet for Health and Family Services enacted 902 Kentucky Administrative Regulation 10:085, setting forth specific requirements for the installation of on-site disposal systems (septic system). The regulation is particularly extensive with regard to inspections required at the time of installation, construction, and alteration. Section 9 of the regulation insures that "[e]very on-site sewage disposal system installed, constructed, altered

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<sup>51</sup> See, e.g., David Daniels, *The Tripplett Creek Project: On-site Wastewater Issues in Rural Areas*, <http://www.epa.gov/owow/NPS/Section319II/KY.html> (last visited Nov. 9, 2008).

<sup>52</sup> KY. REV. STAT. ANN. § 211.180(1)(d) (West 2006).

<sup>53</sup> *Id.*

<sup>54</sup> KY. REV. STAT. ANN. § 211.350(3) (West Supp. 2008).

<sup>55</sup> KY. REV. STAT. ANN. § 211.350(10) (West Supp. 2008).

or repaired shall be inspected by a certified inspector."<sup>56</sup> Beyond the initial inspection or an inspection required due to an alteration or repair, section 10 provides that operation and maintenance are the responsibility of the owner, developer, certified installer, or user of the system.<sup>57</sup>

#### IV. BASINS AT RISK

##### A. BASINS OF EASTERN AND CENTRAL KENTUCKY

Much of this paper focuses on three particular areas in Kentucky; 1) the Big and Little Sandy River Basin, 2) the Upper Cumberland River Basin and 3) the Kentucky River Basin. The Big and Little Sandy River Basin<sup>58</sup> and the Upper Cumberland River Basin<sup>59</sup> cover much of eastern and Southeastern Kentucky and small parts of Virginia and West Virginia. The Kentucky River Basin includes part of Southeastern Kentucky and the urban area of Lexington and Fayette County.<sup>60</sup> Each basin is discussed in turn to highlight some of the particular problems facing each area. However, each basin has

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<sup>56</sup> 902 KY. ADMIN. REGS. 10:085(9) (2008).

<sup>57</sup> 902 KY. ADMIN. REGS. 10:085(10) (2008).

<sup>58</sup> KY. DIV. OF WATER, BIG AND LITTLE SANDY RIVER BASIN STATUS REPORT (2002), available at [http://www.watersheds.ky.gov/basins/big\\_little\\_sandy/](http://www.watersheds.ky.gov/basins/big_little_sandy/) [hereinafter BIG AND LITTLE SANDY RIVER BASIN REPORT].

<sup>59</sup> KY. DIV. OF WATER, CUMBERLAND RIVER BASIN AND FOUR RIVERS REGIONS STATUS REPORT (2000), available at [http://www.watersheds.ky.gov/basins/four\\_rivers/](http://www.watersheds.ky.gov/basins/four_rivers/) [hereinafter *Cumberland River Basin Report*].

<sup>60</sup> KY. DIV. OF WATER, KENTUCKY RIVER BASIN STATUS REPORT (1997), available at <http://www.watersheds.ky.gov/basins/Kentucky/> [hereinafter *Kentucky River Basin Report*] (this document downloads in Microsoft Word format; page numbers in cites used in this paper may not be correct if viewed in a format other than Microsoft Word).

significant issues with human waste polluting the water resources. See the figure below for a breakdown of the State by river basin(s).

[Picture 2 - <http://www.watersheds.ky.gov/basins/Kentucky/>]

\* From the Kentucky River Basin Report .<sup>61</sup>

Sewage has impaired many streams in the Big and Little Sandy River Basin. The Big and Little Sandy River Basin Report states that one hundred and six streams in the area are impaired.<sup>62</sup> Of the one hundred and six, sewage is a major source of pollution in twenty-five, accounting for nearly two hundred eighty three miles of contaminated streams.<sup>63</sup> Fecal bacteria in many of the streams is not simply marginally above the level safe for human contact, it is three hundred times the level deemed safe for human contact.<sup>64</sup> One Kentucky county located in the Big and Little Sandy River Basin was the focus of an EPA study on the effects of straight pipe pollution.<sup>65</sup> Martin County is an area of "highest concern" according to the EPA, requiring attention "from all levels of government" and containing water pollution problems comparable to those found in the United States during the 1950s and 1960s.<sup>66</sup>

The EPA goes on to describe the conditions caused by straight pipe discharge in Martin County, Harlan County (covering areas both in the Upper Cumberland River Basin and the Kentucky River Basin), Bath County (located between the Big/Little Sandy and the Kentucky River

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<sup>61</sup> *Id.* at 2.

<sup>62</sup> BIG AND LITTLE SANDY RIVER BASIN REPORT, *supra* note 58, at 10.

<sup>63</sup> *Id.* at 1, 10.

<sup>64</sup> *Id.* at 15.

<sup>65</sup> EPA, *supra* note 2.

<sup>66</sup> *Id.* at 1.

Basins in the Salt/Licking River Basins area), and Montgomery County (parts of which are also located in the Kentucky River Basin) as "unprecedented in the United States" and that at the current rate of investment, "many more generations of Kentucky citizens will continue to live under the same conditions that face many developing countries."<sup>67</sup>

The Cumberland River Basin and Four Rivers Region runs the entire length of the state of Kentucky, dipping into much of central Tennessee.<sup>68</sup> The focus here, however, is on the Upper Cumberland Basin, which begins at the headwaters of the Cumberland Basin and continues southwest to the Tennessee State Line.<sup>69</sup> This area is particularly at risk due to unsafe wastewater discharges by both straight pipe systems and failed septic systems.<sup>70</sup> In fact, many streams in the area are not only unsafe for swimming, but they are also unfit for human contact at all such as wading or fishing.<sup>71</sup>

#### B. THE KENTUCKY RIVER BASIN

The area served by the LFUCG is an area of highest concern in the Kentucky River Watershed because, despite having a sanitary sewer system in place, has had a problem with wastewater discharges very similar to a straight pipe discharge. The Kentucky River Basin Report identified many of the issues facing the area in 1997.<sup>72</sup> Unfortunately, many of the problems identified have not drastically improved. In fact,

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<sup>67</sup> *Id.*

<sup>68</sup> CUMBERLAND RIVER BASIN REPORT, *supra* note 59, at 2.

<sup>69</sup> *Id.* at 1.

<sup>70</sup> *Id.* at 17-18.

<sup>71</sup> *Id.* at 18.

<sup>72</sup> KENTUCKY RIVER BASIN REPORT, *supra* note 60.

under the Consent Decree, LFUCG has agreed to pay \$425,000 to the United States for violations of the Clean Water Act.<sup>73</sup>

The 1997 report noted that nearly half of all private water wells tested each year were contaminated with fecal coliform bacteria.<sup>74</sup> Because of fecal coliform bacteria contamination, a swimming advisory was in effect for eighty-six miles of the North Fork of the Kentucky River.<sup>75</sup> Over ten years later, the swimming advisory is still in effect.<sup>76</sup> As documented in the Kentucky River Report, although Fayette County did not have a problem with homes not being connected to sewer systems or septic tanks, i.e., no straight pipe discharge problem, the urban area of Lexington fell within the highest range of discharge violations between 1995 and 1997, having between one hundred seventy-two and three hundred seventy-seven discharge violations.<sup>77</sup>

Although LFUCG operates separate storm and sanitary sewer systems, the municipal sewer system was poorly designed so that in at least nine places the sanitary sewer system and storm sewer systems interconnect.<sup>78</sup> The storm sewer system is designed to carry rainfall

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<sup>73</sup> LFUCG Consent Decree, *supra* note 4, at 14.

<sup>74</sup> KENTUCKY RIVER BASIN REPORT, *supra* note 60, at 19.

<sup>75</sup> *Id* at 6.

<sup>76</sup> Ky. Div. of Water, *Swimming Advisories to Continue at Kentucky Sites*, <http://www.water.ky.gov/sw/advisories/swim.htm> (last visited Oct. 22, 2008).

<sup>77</sup> KENTUCKY RIVER BASIN REPORT, *supra* note 60, at 10.

<sup>78</sup> Jim Newberry, Mayor, Lexington-Fayette Urban County Gov't, Address, *Remarks Concerning Approval of Consent Decree with United States Environmental Protection Agency and Commonwealth of Kentucky* (Feb. 19, 2008) at 3, available at <http://www.lexingtonky.gov/index.aspx?page=1500>, click on "Consent Decree at a glance").

and other surface discharges through the sewer and into local streams where it is eventually carried to the Kentucky River.<sup>79</sup> However, the sanitary sewer system has leaked over into the storm sewer system during heavy rainfall creating the ultimate straight pipe discharge, dumping raw sewage into streams and rivers.<sup>80</sup> The Consent Decree states that the LFUCG has identified one hundred eleven recurring locations where sanitary sewer overflows occur, including the illicit cross-connections.<sup>81</sup> In addition to the sanitary sewer overflows and the nine cross-connections, un-permitted discharges from LFUCG's two wastewater treatment facilities have been documented over the past several years releasing untreated sewage into the environment.<sup>82</sup>

Although a permit was issued in 2000 for the discharge from LFUCG's separate storm sewer system ("MS4"), a performance evaluation in 2004 found that LFUCG was in violation of its MS4 permit. After these EPA inspections revealed numerous violations of the Clean Water Act, including the violations of the MS4 permit and the un-permitted discharges from the two wastewater treatment plants, an action was filed in 2006 by the United States and the Commonwealth of Kentucky against the LFUCG.<sup>83</sup>

### C. LEE COUNTY, VIRGINIA

Communities outside of Kentucky have also confronted problems with fecal coliform pollution. Lee County, Virginia borders Kentucky just next to the Upper Cumberland River Basin, and has

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<sup>79</sup> *Id.* at 2.

<sup>80</sup> *Id.* at 3.

<sup>81</sup> LFUCG Consent Decree, *supra* note 4, at 2.

<sup>82</sup> See Newberry, *supra* note 78, at 1.

<sup>83</sup> LFUCG Consent Decree, *supra* note 4.

experienced many of the same problems with straight pipe discharges and pollution from wastewater.<sup>84</sup> Lee County is located in one of the most diverse watersheds in the continental United States; the Clinch-Powell River Watershed. In fact, The Nature Conservancy ranks it as the third most biodiverse watershed in the continental United States, comparable to the Everglades of Florida and the rainforests of South America.<sup>85</sup>

Unfortunately, its beauty and importance has not shielded the area from fecal coliform pollution. In 1999, water-based services in Indian Creek (a tributary to the Powell River) were discontinued because of fecal coliform contamination, and a study by Virginia Tech showed that seventy-two percent of household water samples tested positive for coliform while thirty-six percent tested positive for *E. coli* bacteria.<sup>86</sup> The two major sources for this contamination were: 1) straight pipes discharging human waste, and 2) livestock operations.<sup>87</sup>

Each of the areas discussed above are dealing with pollution caused by human wastewater. In the following section I analyze the steps being taken to find a solution to the wastewater problem. Many of the river basins discussed above are encompassed by the Eastern Kentucky PRIDE and Army Corps of Engineers Section 531 Program (the Section 531 coverage area is completely encompassed by the PRIDE coverage area<sup>88</sup>) and the Kentucky River Basin will be particularly

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<sup>84</sup> Porter, *supra* note 8, at 2.

<sup>85</sup> *Id.* at 1.

<sup>86</sup> *Id.* at 2.

<sup>87</sup> *Id.*

<sup>88</sup> See the Map below of the counties covered under the PRIDE program. The Upper Cumberland River Basin and the Kentucky River Basin encompass most with a few of the

referred to regarding the solutions being implemented by the LFUCG. In addition Lee County, Virginia will be specifically singled out because it is located outside of Kentucky and not included in the river basin reports mentioned above.

## V. SOLVING THE WASTEWATER PROBLEM

### A. CHANGES NEEDED WITHIN THE REGULATORY FRAMEWORK

Before discussing the various approaches taken to solving the fecal coliform pollution problem, there are a few changes to the regulatory system at the state level governing septic systems that could be implemented to ensure that existing septic systems remain in proper working order. Beyond the initial inspection and any inspection done when an alteration is made, the regulation provides for no periodic inspection whatsoever to ensure proper maintenance of the septic system and drain field. Once the system passes the initial inspection, the Cabinet takes a big step back, leaving the system to fall into disrepair with no requirements that there be a follow up inspection. In fact, the regulation provides what is effectively a disclaimer:

Actions of the cabinet and certified inspectors, engaged in the evaluation and determination of measures required to effect compliance with the provisions of this administrative regulation shall in no way be taken as a guarantee that on-site sewage disposal systems approved and permitted will function in a satisfactory manner for any given period of time, or that such agents or employees assume any liability for damages, consequential or direct which are caused, or which may be caused, by a malfunction of such systems.<sup>89</sup>

Understandably, the regulatory approval cannot be expected to provide a warranty for proper septic system performance but requiring periodic

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Northern most counties stretching into the Big and Little Sandy River Basin.

<sup>89</sup> 902 KY. ADMIN. REGS. 10:085(10)(2) (2008).

inspections would prevent failed systems from going undetected. Requiring an inspection of a residential septic tank every five years would not be unduly burdensome on the homeowner. In fact, these inspections would not only serve to protect water resources by ensuring that a septic system is working properly, but would save the property owner in the long run. Detecting a backup in the system before it causes serious property damage results in less costly repair and, in turn, benefits the environment.

Likewise the regulation should require septic tanks to be periodically cleaned by pumping the solid wastes from the tank. If the solids are not removed from the tank this can have devastating effects on the drain field and its ability to filter the contaminants from the wastewater. Failure to do so can result in a nonfunctioning system<sup>90</sup> and a nonfunctioning septic system as discussed above can be as detrimental to water quality as a straight pipe discharge.<sup>91</sup> The two regulatory changes suggested would work hand in hand. Pumping the tank would allow for easier inspection and each requirement could be simultaneously satisfied.

#### B. EFFORTS IN RURAL KENTUCKY: PRIDE

The Kentucky Personal Responsibility In a Desirable Environment (PRIDE) program has been very successful in helping eliminate pollution caused by straight pipes and failing septic systems in the thirty-eight county area it serves (See map of PRIDE counties below). PRIDE was created in 1997 by Congressman Hal Rodgers and General James Bickford (former Secretary of the Kentucky Natural

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<sup>90</sup> See, e.g., Thom, *supra* note 21.

<sup>91</sup> Head of Three Rivers Project, *supra* note 1.

Resources and Environmental Protection Cabinet). PRIDE brings together citizens and resources from the local, state and federal level to accomplish three goals: 1) to improve water quality, 2) to clean up illegal trash dumps and address other solid waste issues, and 3) to promote environmental awareness and education.<sup>92</sup> Eastern Kentucky PRIDE has been immensely successful in completing projects since its inception, including providing 28,096 homes with access to sanitary wastewater treatment (7,235 septic systems installed and 20,861 homes served by other sewer projects).<sup>93</sup> Although PRIDE has its own set of goals the work done through PRIDE utilizes many of the solutions identified by the EPA in the 2002 Straight Pipe Report.<sup>94</sup>

[Picture 3 - <http://www.kypride.org>]

\*From [www.kypride.org](http://www.kypride.org).<sup>95</sup>

The EPA has recommended three categories of solutions for rural communities dealing with straight pipe sewage discharge: 1) connection to an existing wastewater plant, 2) cluster systems, and 3) on-site systems.<sup>96</sup> Many of these solutions are, in fact, being advocated and funded by the PRIDE program.

Connecting to an existing wastewater plant is a logical approach to solving the problem of untreated sewage discharge. This is likely the

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<sup>92</sup> PRIDE, *What is PRIDE?*, <http://www.kypride.org/about/index.php> (last visited Dec. 11, 2008 ).

<sup>93</sup> PRIDE, *Is PRIDE Working?*, <http://www.kypride.org/about/working.php> (last visited Jan. 29, 2010).

<sup>94</sup> EPA, *supra* note 2, at 9.

<sup>95</sup> PRIDE, *Home*, <http://www.kypride.org> (last visited Dec. 11, 2008 ).

<sup>96</sup> EPA, *supra* note 2, at 9.

cheapest solution for un-sewered communities. Unfortunately this is not an option for some areas. Two problems are identified which may make this solution unviable for a particular community: 1) many communities are simply too remote to connect to a wastewater treatment plant, and 2) even when a community is close enough to connect to a wastewater treatment plant the plant itself may not have the capacity to withstand the increased load.<sup>97</sup>

In order to overcome the capacity problem the EPA suggests using small diameter pipe to pump the sewage to the treatment facility during off-peak hours. A holding tank can be utilized at each home in order to store the waste during peak hours. This suggested solution has two advantages. First, installing the smaller pipe (versus a conventional sewer) is much cheaper and, second, the soil in Eastern Kentucky will often be unsuitable for the large scale construction of a conventional sewer pipe.<sup>98</sup>

There are two grants available through the Eastern Kentucky PRIDE program that provides funding for sewer extension projects. The PRIDE Wastewater Construction Grants cover the entire cost of the awarded project. Funds are available to counties, cities and wastewater utilities, if the area is covered by a mandatory sewer use ordinance. The PRIDE program partners with the USDA Rural Development to administer these grants.<sup>99</sup> Additionally grants are available through the U.S. Army Corps of Engineers Section 531 Funds.

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<sup>97</sup> *Id.*

<sup>98</sup> *Id.*

<sup>99</sup> PRIDE, *Grants for Sewer Projects*, <http://www.kypride.org/grantprograms/sewer.php> (last visited Dec. 11, 2008 ).

The Army Corp of Engineers is a founding partner in the PRIDE initiative and awards the funds to communities who demonstrate an innovative wastewater treatment approach that will serve an area unlikely to secure funding via traditional sources. These grants require that the wastewater project have already secured a small amount of funding but will cover up to seventy-five percent of the project cost. Although these funds are administered in conjunction with the PRIDE program, they are only available in the 5<sup>th</sup> Congressional District (twenty-nine counties in the PRIDE coverage area).<sup>100</sup>

The grants awarded by the Army Corp of Engineers also serve to implement the U.S. EPA's second suggested solution. Although cluster systems have long been a source of problems in parts of Eastern Kentucky, new technologies have advanced to the point that certain types of cluster systems may be the best option for some communities.

Activated sludge package plants were originally the preferred choice when a cluster system was installed, but have caused many environmental problems in the communities where they were used. The system itself "is a complex wastewater treatment process which requires highly trained individuals to properly operate and maintain the system."<sup>101</sup> Unfortunately, the communities where these package plants could have been most effective could often not afford the operators necessary to run the system. Poor maintenance and operation have caused the systems to fail and become hazardous to the environment.<sup>102</sup> The U.S. EPA suggests other "low-tech, easy-to-

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<sup>100</sup> *Id.*

<sup>101</sup> EPA, *supra* note 2, at 10.

<sup>102</sup> *See id.* at 10-11.

operate” plants for these smaller communities in need of a cluster system. These plants include technologies such as lagoon systems and intermittent sand filters which require lower capital cost and lower operation and management cost for the long term.<sup>103</sup> These projects are likely those that would be awarded Section 531 funding through the Army Corp of Engineers and Eastern Kentucky PRIDE. A major drawback to these newer technologies is the requirement of land to construct the facility.<sup>104</sup>

Additionally, many of these newer technologies, including lagoons and wetlands, fall within the category of “experimental disposal methods” as defined by Title 902 Chapter 10 of the Kentucky Administrative Regulations.<sup>105</sup> Applications submitted to the Cabinet for Health and Family Services seeking to implement an “experimental disposal method” are subject to review by the Natural Resources and Environmental Protection Cabinet.<sup>106</sup>

Finally, the EPA recommended the state consider the effectiveness of new on site systems including constructed wetlands, peat systems, individual retention lagoons, and recirculating and intermittent sand filters,<sup>107</sup> but also recognized the importance of improving existing septic systems and installing a septic system where applicable regulations will permit.<sup>108</sup> The Eastern Kentucky PRIDE program has been instrumental in installing septic tanks for low-income

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<sup>103</sup> *Id.* at 13.

<sup>104</sup> *Id.*

<sup>105</sup> 902 KY. ADMIN. REGS. 10:160(6) (2008).

<sup>106</sup> *Id.*

<sup>107</sup> EPA, *supra* note 2, at 11.

<sup>108</sup> *Id.*

families, now funding one hundred percent of each approved septic system project. PRIDE reports that as of August 31, 2005 the program had invested over twenty million dollars in nearly 6,500 septic systems across the PRIDE service area. It is estimated that about half of these funds were awarded through the grant program while the other half was awarded through a program providing low interest loans from 1999 to August of 2002.<sup>109</sup>

Thanks to funding from the Eastern Kentucky PRIDE program, the community of Mt. Vernon, located in Rockcastle County in the Upper Cumberland River Basin, recently completed installation of a sewer line, which serves thirty-five homes, a restaurant, and the local VFW Club.<sup>110</sup> The project was made possible by \$755,000 in federal funds secured through the PRIDE program. Although the sewer line serves only a small portion of the community, before the project, the homes and businesses were using failing septic systems endangering the nearby Lake Linville. The lake provides drinking water for around 23,000 people (all of Rockcastle County and portions of five other counties).<sup>111</sup> As stated above, the project was funded primarily through federal funds, but it was a cooperative effort requiring each homeowner to sign up for sewer service provided by the line.<sup>112</sup> This is

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<sup>109</sup> PRIDE, *Homeowner Septic System Grant Program*, <http://www.kypride.org/grantprograms/septic.php> (last visited Dec. 11, 2008).

<sup>110</sup> PRIDE, *Mt. Vernon's New Sewer Line will Protect Water Supply for 23,000 People*, [http://www.kypride.org/newsstory.php?subaction=showfull&id=1219175538&archive=&start\\_from=&ucat=1](http://www.kypride.org/newsstory.php?subaction=showfull&id=1219175538&archive=&start_from=&ucat=1) (last visited Aug. 19, 2008).

<sup>111</sup> *Id.*

<sup>112</sup> *Id.*

a prime example of how PRIDE works to achieve not only its own goals but the solutions set forth by the EPA as well. By connecting to an existing wastewater treatment service these few homeowners have helped protect the drinking water for an entire county.

Not only does the Eastern Kentucky PRIDE program provide funding to implement these various solutions, it also promotes and awards grants for community environmental education. The program provides a grant opportunity for teachers in public and private schools, educational institutions, and nonprofit organizations to provide resources for environmental education. These grants can be used for various activities, but PRIDE sets forth some examples of how the funds may be used: 1) outdoor classroom shelters, 2) greenhouses, 3) wetlands, 4) environmental education tools and equipment, 5) environmental books, 6) videos, and 7) computer software.<sup>113</sup> Education promotes awareness of the problems facing the area and is of utmost importance for a sustainable solution to the pollution problem, providing a sense of connection between the public and the environment.<sup>114</sup>

### C. PRIDE: AN EXAMPLE OF ADAPTIVE GOVERNANCE

Programs such as PRIDE are an example of adaptive governance: the concept that “involves the evolution of new governance institutions capable of generating long-term, sustainable

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<sup>113</sup> PRIDE, *PRIDE Environmental Education Grant Program*, <http://www.kypride.org/grantprograms/education.php> (last visited Dec. 11, 2008).

<sup>114</sup> See, e.g., Craig Anthony (Tony) Arnold, *Working Out an Environmental Ethic: Anniversary Lessons from Mono Lake*, 4 WYO. L. REV. 1, 41 (2004).

policy solutions to wicked problems through coordinated efforts involving previously independent systems of users, knowledge, authorities, and organized interests.”<sup>115</sup> The problems facing these areas of Kentucky result from a dilemma between private property owners, who may not know they need to repair their sewer system or who may be economically unable to do so, and the public policy behind the Clean Water Act that nonpoint source pollution should be eliminated. In order to solve these problems the PRIDE program promotes partnerships between local, state and federal governing institutions to provide viable wastewater treatment solutions to rural areas. Although the approach has been applied to areas facing issues regarding the allocation of water where the resource is scarce,<sup>116</sup> the concept of adaptive governance may be used when discussing pollution of the water source and how to stop the pollution as well.

Many different communities may border a single body of water; therefore, in order to eliminate fecal coliform pollution entering the water source it takes more than a single community implementing viable solutions. PRIDE steps in to fill the niche of providing a region-wide program that citizens from all communities are eligible for and promotes innovative solutions at the community level.<sup>117</sup>

#### D. THE IMPORTANCE OF THE COOPERATIVE APPROACH AND EDUCATION

Cooperation between governmental agencies is not unique to the PRIDE program, nor can it be if issues regarding human waste are

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<sup>115</sup> Scholz & Stiftel, *supra* note 14, at 5.

<sup>116</sup> See, e.g., Scholz & Stiftel, *supra* note 14, at 1-11.

<sup>117</sup> See PRIDE, *Local PRIDE Coordinators*, <http://www.kypride.org/about/localpridecoord.php> (last visited Dec. 11, 2008).

going to be adequately addressed. Despite the success of the PRIDE program, funding is limited and the program serves only a portion of the state. The cooperative approach to solving the residential wastewater pollution problem has been utilized by the Kentucky Nonpoint Source Pollution Control Program state-wide.

Just before the PRIDE program was created, a cost-share program was implemented in Rowan County along Triplett Creek to repair the failing septic systems in the area. Just as PRIDE does now, this particular program focused on public education to motivate the residents to apply for the grants. The grants covered many of the components of the septic system but it was left to the homeowner to replace the leach/drain fields. The project approved thirty applications for assistance and as a result of the project another twenty homeowners decided to fix their failing septic systems using their own funds.<sup>118</sup> The program had an extensive public outreach and education component including walking surveys, direct contact with possible applicants, news releases, radio and television interviews, and presentations to student and community groups.<sup>119</sup>

Another example of the Section 319 program at work is the Preston Community in Bath County. In the U.S. Environmental Protection Agency (U.S. EPA) Straight Pipe Report, the community was praised for its efforts to construct a wastewater treatment facility for

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<sup>118</sup> David Daniels, *The Triplett Creek Project: On-site Wastewater Issues in Rural Areas*, <http://www.epa.gov/owow/NPS/Section319II/KY.html> (last visited Nov. 9, 2008).

<sup>119</sup> *Id.*

the small compact community.<sup>120</sup> The community was chosen as a pilot project to implement and demonstrate the concepts advocated by the U.S. EPA. The U.S. EPA cited a strong owner/manager as one reason it chose the community. A strong owner/manager would solve many of the problems identified with wastewater treatment plants such as maintenance and qualified management. Furthermore, the U.S. EPA acknowledged much of the program's success can also be attributed to the partnerships between the involved organizations, including East Kentucky Power and others.<sup>121</sup>

One of the keys to success for any program requiring an individual to take action in order to correct a problem on their own property when they, many times, may be unable to see the results of the problem, is education. Unfortunately, to the average person the only evidence of a pollution problem in a lake or stream may be a “no swimming” sign on the stream shore. In order to motivate individuals to make the necessary improvements to their property, not only is it important to provide funding, but it is imperative to inform the community as to why the improvement should be made and what the negative effects are if they continue to use a defective septic system or straight pipe.

A program focusing on education as part of the solution is more likely to prompt citizens to become better stewards of the environment in the future. The group of twenty homeowners along Triplett Creek agreeing to fix their failing septic systems and fund it with their own

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<sup>120</sup> EPA, *supra* note 2, at 2.

<sup>121</sup> *Id.*

income is a prime example of how education can make a difference.<sup>122</sup> Likewise the Eastern Kentucky PRIDE program, as evidenced by its very name, places responsibility on the individual to protect the environment, promoting Personal Responsibility In a Desired Environment.<sup>123</sup>

The importance of education is also evident when considering the personal responsibility of the homeowner or landowner in maintaining a septic system. A low income family who was using a straight pipe and then receives funding to install a new septic system may be grateful, but the tangible benefit of the septic system over the straight pipe may be little, or at least unnoticeable to the family. This will provide little incentive for them to properly maintain the new septic system. However, if they are educated on how and why a septic system should be maintained they would at least be more likely to do so. If it is going to be left up to the homeowner to maintain the septic system, education is a necessary component to the overall solution.

#### E. A COOPERATIVE APPROACH IN LEE COUNTY, VIRGINIA

Lee County, Virginia is an example outside Kentucky of how multiple organizations, both governmental and community based, come together to lobby for grant money and collaborate on how to solve a wastewater problem. Much like the PRIDE program in Kentucky, this approach promotes cooperative government action and community involvement.

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<sup>122</sup> Daniels, *supra* note 118.

<sup>123</sup> PRIDE, *What is PRIDE?*, <http://www.kypride.org/about/index.php> (last visited Dec. 11, 2008).

Officials in the area realize that many of the straight pipes were put in as businesses and homes in the area were built, before the negative environmental effect of this practice was realized.<sup>124</sup> The Daniel Boone Soil and Water Conservation District (SWCD), along with the Indian Creek Watershed Action Group (ICWAG), have concentrated their efforts on straight pipe elimination, and in 2001, their first round of septic systems were installed replacing nine straight pipe systems thanks to funding from the Virginia Department of Conservation and Recreation.<sup>125</sup> The program was a 75:25 cost share plan and although small in size, helped to spark interest in the need for such programs and the success was overwhelming.<sup>126</sup> In 2006, another round of grant funding provided \$200,000 to the area to replace straight pipes and half of the award was set aside for construction of a decentralized water treatment system.<sup>127</sup>

In one small town, more than thirty residential and commercial entities discharge their waste via straight pipes.<sup>128</sup> Many of the sites have insufficient area for installation of a septic system or unsuitable floodplain soil.<sup>129</sup> Thankfully, this community is receiving support from grass roots organizations such as the ICWAG and grants from organizations such as the Canaan Valley Institute (CVI) to be used toward construction of a \$332,000 decentralized wastewater facility.<sup>130</sup>

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<sup>124</sup> Porter, *supra* note 8, at 3.

<sup>125</sup> *Id.* at 2-3.

<sup>126</sup> *Id.* at 2.

<sup>127</sup> *Id.* at 3.

<sup>128</sup> *Id.*

<sup>129</sup> *Id.*

<sup>130</sup> *Id.*

However, this facility's impact may be limited somewhat by the proper use of holding tanks in the area unsuitable for traditional drain fields. The effectiveness of the facility will depend on responsible users and as noted in the Marshfield, Wisconsin study, even holding tanks are subject to improper and, indeed illegal, discharge by the residents or simply illegal surface discharge due to neglect.<sup>131</sup> Theoretically, the holding tank will prevent discharge from ever getting into the environment and if used appropriately this will, in reality, be the effect. Unfortunately, in practice, the expense of having the waste removed from the tank may provide an economic incentive for illegal discharges.

The benefit from a collaborative effort in Lee County is still more proof that a collaborative effort between grassroots organizations and the government at all levels can lead to success when it comes to dealing with pollution problems. Lee County and the PRIDE program cannot be seen as exceptions, the success in the two areas clearly shows that the best way to deal with fecal coliform pollution is through an adaptive governance approach, including all levels of government and the public to implement changes.

#### F. LITIGATION IN RURAL KENTUCKY

Litigation in rural Kentucky provides some insight into the public mindset regarding the issue of straight pipe discharges. Although it was not published, a case arising out of Lawrence County Kentucky is illustrative of the degree to which some may feel they have a right to

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<sup>131</sup> See, e.g., Borchardt et al., *supra* note 7, at 742 (discussing discharges from holding tank type septic systems).

discharge their waste through a straight pipe.<sup>132</sup> The Hensleys and Stanifords owned neighboring property. Although a boundary dispute was also at issue, the Hensleys brought the action in order to settle and have a pipe removed from their property that carried raw sewage from the Staniford's residence to nearby stream.<sup>133</sup> The Court held that the Stanifords did not have the right to run the sewer pipe across the Hensley's property, and although the appellate court did not directly address any environmental issues, it noted that the trial court had expressed concerns over the Staniford's dumping raw sewage into a creek.<sup>134</sup>

Given the nature of the problem, one major obstacle for implementing environmentally friendly plans for disposing of human wastewater is public opinion and concern. The *Staniford* case illustrates that even as late as 2005, some homeowners feel that they have every right to discharge their sewage in this way. Again, this highlights the importance of education to explain why dumping raw sewage into a waterway, something widely accepted years ago, is no longer an acceptable practice.

#### G. LEXINGTON KENTUCKY AND THE CONSENT DECREE

Unlike the rural areas of Southern and Eastern Kentucky, LFUCG is going to be working under a timeline to bring the municipal sewer system into conformity with the U.S. EPA and the Clean Water Act. The cost of the program is estimated to far surpass the \$425,000 fine

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<sup>132</sup> *Staniford v. Hensley*, 2005 WL 265161 (Ky. Ct. App. Feb. 4, 2005).

<sup>133</sup> *Id.* at 1.

<sup>134</sup> *Id.*

imposed.<sup>135</sup> For example, it is estimated that in order to fix failing pumping stations, the cost will be in the millions<sup>136</sup> and the total cost of the projects outlined in the consent decree is estimated to exceed \$290 million.<sup>137</sup> Some of this cost is being passed on through sanitary sewer usage fee increases.<sup>138</sup>

Although the Clean Water Act enforcement proceedings seem to have spurred the LFUCG into action, it does not change public opinion as to the problems with a failing sanitary sewer. Quite simply the cost will be substantial and much of the work must be done quickly, sooner rather than later. An increase in costs at the hands of a regulatory agency is almost guaranteed to leave a bitter taste in the mouth of those who pay the increased fee, despite both the necessity and benefits of the improvements.

LFUCG must plan to complete the requirements of the Consent Decree in eleven to thirteen years.<sup>139</sup> Within this time frame, the LFUCG will be required to identify the untreated discharges and their causes, evaluate the systems capacity, and improve both the pumping stations and treatment plants and the management, operation and maintenance of them.<sup>140</sup> The consent decree also contains provisions requiring LFUCG to restore nearly a mile of the Cane Run stream and to implement green infrastructure at one or more sites to manage storm water runoff.<sup>141</sup>

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<sup>135</sup> Newberry, *supra* note 78, at 1.

<sup>136</sup> *Id.* at 4.

<sup>137</sup> Marraccini, *supra* note 11.

<sup>138</sup> Newberry, *supra* note 78, at 3.

<sup>139</sup> *Id.* at 3.

<sup>140</sup> Marraccini, *supra* note 11.

<sup>141</sup> *Id.*

The effectiveness of the Consent Decree is largely unknown because it has yet to be fully implemented, or even approved by all parties involved. Upon final approval one thing is certain, drastic changes to the municipal sewer system in Lexington will occur. These changes seem to be supported by the current Mayor<sup>142</sup> but lack the cooperative approach present in many of the rural areas. Implementing the Consent Decree does not have the combined effect of solving the wastewater problems and changing the mindset of the community from the ground up.

This is one area where the Consent Decree and the approach taken by programs such as Eastern Kentucky PRIDE are in stark contrast. In order for a program such as PRIDE to be effective in reaching its goals, it must involve the community. The consent decree, on the other hand, requires LFUCG to make the changes outlined and the support of the public is not required or even necessary, even though they will share the burden of the improvements because they will likely pay more for sewer services provided.<sup>143</sup>

In fact, some private citizens have entered the Clean Water Act litigation as intervening plaintiffs. However, their involvement is limited and they can not truly participate in the litigation (discovery, etc.) before seeking approval from the district court.<sup>144</sup> Unlike the PRIDE Program where community involvement is encouraged, LFUCG

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<sup>142</sup> See, e.g., Newberry, *supra* note 78.

<sup>143</sup> See, e.g., Lexington-Fayette Urban County Government, *Proposed Storm Water Fee*, available at <http://www.lexingtonky.gov/Modules/ShowDocument.aspx?documentid=4778>.

<sup>144</sup> U.S. v. Lexington-Fayette Urban County Gov't, 2007 WL 2156543 (E.D.Ky. July 24, 2007).

argued before the district court that limitations on the involvement of the intervening plaintiffs were necessary so that such activities would not threaten to derail the progress of the ongoing negotiations and that their activities be limited to commenting on the proposed consent decree.<sup>145</sup>

The current proposed consent decree still awaits approval from the District Court. Originally, the Federal District Court refused to approve the Consent Decree on August 7, 2008. The District Court expressed concern that the \$425,000 proposed civil penalty could be better used to alleviate the problems giving rise to the violations.<sup>146</sup> On appeal, the case was recently remanded to the district court by the 6th Circuit Court of Appeals holding that “such a concern by itself cannot support rejection of an otherwise proper settlement, in light of the express provision for civil penalties in the Clean Water Act.”<sup>147</sup> However, during the appeals process the Lexington-Fayette Urban County Government continued to comply with the reporting requirements and has strived to get on track to meet the completion goals set forth in the Consent Decree.<sup>148</sup>

Essentially, despite nearly two years of litigation, the Consent Decree as proposed still awaits approval from the District Court. In the end the LFUCG will likely emerge with a municipal sewer system in

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<sup>145</sup> *Id.*

<sup>146</sup> These concerns were raised by comments made by citizens when the consent decree was posted for comment in the Federal Register. *U.S. v. Lexington-Fayette Urban County Gov't*, 591 F.3d 484, 486-87 (6th Cir. 2010).

<sup>147</sup> *Id.* at 485.

<sup>148</sup> See *Consent Decree Annual Report for 2009*, available at [www.lexingtonky.gov/index.aspx?page=840](http://www.lexingtonky.gov/index.aspx?page=840).

conformance with the consent decree, or at least some modification thereof. However, the question remains as to whether the people living in this urban area will become better stewards of the environment. Although change implemented from the top down may get the job done, grassroots organizations and community involvement have a much stronger chance of ensuring a prolonged solution to the human waste problem.

#### H. COMPARING THE RURAL AND URBAN SOLUTIONS

As homeowners in the rural areas of Kentucky continue to seek funding to eliminate straight pipe discharges and failing septic systems, it seems that urban residents in Lexington will also be funding changes to their sanitary sewer system. As stated above, the public in the rural areas will likely be better conditioned to make the changes necessary in the future. It is yet to be seen if those served by the municipal sewer system in Lexington will greet the usage increases with open arms.

However, the difference is one of both means and method. The LFUCG will likely delve into the extensive tax base to meet the requirements of the Consent Decree. The average homeowner in Lexington will notice little besides an increase in their bill and possible construction. In the more rural areas the tax base simply does not exist and a more cooperative approach has been taken.

Education has been at the heart of any effort in rural Eastern and Southern Kentucky to promote improved septic systems and extensions of existing sanitary sewers. This approach taken by programs such as Eastern Kentucky PRIDE is an example of how adaptive governance has brought the public and governmental agencies together to find viable solutions to an enormous problem. Although I

do not conclude that simply because the efforts in LFUCG have been spurred by litigation that they are somehow inferior to the efforts in Eastern Kentucky, something can be said with regard to the fact that at the rural level any solution is going to place some level of responsibility on the individual homeowner.

Engaging the public through education and community involvement is essential to motivate those affected by fecal coliform pollution to seek out and implement solutions at both the community and individual level.<sup>149</sup> In the rural areas the wastewater problem often falls on the individual to repair or install a septic system because there is no centralized government with the infrastructure or resources to provide the motivation or support to ensure an operational wastewater management program. The family living twenty miles from the nearest town and a mile off the paved highway is unlikely to ever have the benefit of a centralized sewer system. For them, the problem is right there at home, and no one is going to fix it; no one is going to save their stream except for themselves. In some ways programs such as PRIDE step in to take the place of a large centralized government. PRIDE motivates the public to make the individual choices necessary to solve the wastewater problem.

#### IV. CONCLUSION

In conclusion, this paper urges the regulatory changes suggested above to the state regulations regarding the inspections of septic systems. In order to prevent failing septic systems in the future,

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<sup>149</sup> See Arnold, *supra* note 114, at 39 (discussing the positive effects of community involvement and public participation with regard to water resources).

mandatory follow up inspections and cleaning of the septic tank itself are of utmost importance. Unfortunately, it is quite probable that septic systems will continue to fall into disrepair if the mandatory inspections are not somehow implemented and enforced by the Cabinet for Health and Family Services.

Although the general issue of what to do with human waste is a common one, the areas focused on in this paper have approached it from two very different standpoints. Regardless of whether the Consent Decree receives final approval, the urban area of Lexington is going to be required to eliminate the discharges of raw sewage from the municipal sewer system. Likewise, over time programs such as Eastern Kentucky PRIDE will likely eliminate much of the straight pipe discharges and failing septic systems plaguing the more rural areas of Kentucky. The key difference is that Lexington's approach is top down while the efforts in the rural areas begin at the community level. By beginning at the community level in the rural areas, the mindset of the public is changed, creating a concerned public that is essential to a lasting solution to the human waste problem.

The rural areas face this problem on a much more individualized level. This is likely necessary because of the nature of the solutions implemented. An on-site system such as a septic tank puts some responsibility on the household to maintain the system. A sanitary sewer system, on the other hand, is managed more by the local government and therefore would not require as much involvement from the general public. However, the benefits of changing the public's mindset go beyond the problems facing these areas today.

When community involvement is promoted it will transcend this particular environmental problem and create a citizenry that is more greatly concerned with the health of the environment as a whole. A program such as Eastern Kentucky PRIDE is not limited to water pollution or the human waste problem; the reach of the program encompasses all aspects of environmental health from cleaning up illegal dumps and littered roadways, to environmental education in the public and private schools.<sup>150</sup>

To ultimately conclude that one approach is more favorable than the other is not meant to undermine the efforts in any particular area. Indeed, hopefully, pollution from human waste will be eliminated in Kentucky in the very near future, regardless of whether it is occurring in an urban or rural setting. However, the benefits of an approach that incorporates community involvement and environmental education outweigh the more rigid, regulatory mandates that result from what is comparable to a judicial order. The efforts in rural Kentucky are more successful in creating a knowledgeable and responsible public that will care for the environment well into the future.

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<sup>150</sup> Head of Three Rivers Project, *supra* note 1.