

# HEALTHY SOILS

By

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## I. Introduction

Agriculture contributes to climate change and in return, climate change can affect agricultural viability. Agriculture contributes to climate change in a variety of ways, the largest contributor is soil management. Soil management is a general term that refers to a series of practices intended to improve crop yields such as fertilization, tillage, drainage, and irrigation of land.<sup>1</sup> Production of fertilizer uses energy which contributes to climate change. Additionally, the application of fertilizer to fields results in nitrous oxide being released into the atmosphere which is also a greenhouse gas (“GHG”) like carbon dioxide. Tillage is the process by which farmers disrupt the top layer of soil to remove weeds and loosen soil. Tillage contributes to climate change by releasing carbon that was stored in the soil, by destroying perennial root systems that act as a carbon sink, and by removing surface biomass which also acts as a carbon sink. Additionally, tilling a field requires the use of a tractor which can consume a large quantity of fossil fuel. Irrigation contributes to climate change because the process of transporting or pumping large quantities of water to fields can consume equally large amounts of energy.

Agriculture in Pennsylvania, like most of the world, occurs partially or entirely in the open air, exposed to the elements and dependent on weather for success. Even production that occurs under controlled climate conditions are affected by climate through heating and cooling

<sup>1</sup> EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016, at 5-1 (2018) (EPA 430-R18-003).

costs.<sup>2</sup> Beyond the direct effects of global climate change on agriculture in Pennsylvania, climate change can also affect Pennsylvania's agriculture through its effects on the prices of agricultural commodities, which are determined by regional, national, and international markets that are affected by climate-induced changes in supply and demand.<sup>3</sup>

Our *Healthy Soils Ordinance* will incentivize the adoption of climate-friendly farming practices (“CFFP”). Taking a practical approach, we realize that local farmers face many challenges which jeopardize their bottom line. They are also unwelcoming towards new practices being forced upon them through regulation but are more likely to adopt new practices when given the discretion to choose how to accomplish the implementation.<sup>4</sup> By giving the farmers discretion, they are able to remain competitive in the marketplace by protecting the investments they already made, while phasing in new practices as the market allows. Therefore, we decided to use a voluntary system that offers incentives for participation and does not penalize the farms that choose not to participate or simply cannot afford it.

Our *Healthy Soils Ordinance* offers a menu of CFFP which farmers can choose from to participate in. As more farmers adopt these practices, the inherent benefits should become apparent, and we expect those benefits will induce additional farmers into adopting CFFP. Healthy soils benefit farmers financially by increasing yields, decreasing irrigation needs, and minimizing fertilizer use. Healthy soils are also a way to mitigate climate-related risks such as erosion, floods, and pest and disease outbreak. These co-benefits accrue not only to farmers but also to society at large. One ancillary benefit of healthy soils that has been underexplored in US

<sup>2</sup> David Abler “ET AL.”, Pennsylvania climate Impacts Assessment Update at 7-8 (The Pennsylvania State University eds., 2<sup>nd</sup> update. 2015).

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

<sup>4</sup> Telephone Interview with John Montenegro, Government Affairs Counsel, Pennsylvania Farm Bureau, (September 26, 2019).

policy is the ability to capture atmospheric carbon, which presents a unique opportunity to offset net greenhouse gas emissions.<sup>5</sup>

The following discussion will begin in Section II, which summarizes the problem. Section III provides an overview of Pennsylvania's approach to the problem and how its heavy focus on providing resources to farmers in designated watersheds results in an uneven distribution of resources to farmers in many townships that are not within the designated watersheds. Section IV addresses the lack of local ordinances that incentivize CFFP. Section V compares the approaches taken by county-level land conservation districts in Pennsylvania with county-level land conservation districts in Wisconsin. Section VI looks at state-level programs in Vermont and Maryland which can be scaled down and applied on the local level. Section VII looks at state-level programs in California and Hawaii which cannot be scaled down to use locally, but which offer policy considerations which can be applied locally. Section VIII recommends the type of farming practices that should be adopted, analyzes our policy considerations, then recaps the environmental, social, and economic benefits of the ordinance. Section IX explores funding options available to townships. The paper concludes with Section X where we offer some final thoughts on the ordinance.

## **II. Healthy Soils Can Fight Climate Change and Reduce GHG's**

People operating in the agriculture industry are in a unique position to positively and negatively impact levels of GHG emissions.<sup>6</sup> Agriculture is the process of growing crops and raising animals for food, feed, fuel, and fiber.<sup>7</sup> Out of the Country's total 2.3 billion acres of

<sup>5</sup> Leopold Bairdeau, et al., *Soil Health and Carbon Sequestration in US Croplands: A Policy Analysis*, 3 (Natural Resources Conservation Service of the United States Department of Agriculture et al. eds., 2016)

<sup>6</sup> PETER H. LEHNER & NATHAN A. ROSENBERG, *LEGAL PATHWAYS TO DEEP DECARBONIZATION IN THE UNITED STATES* 775 (Michael B. Gerrard & John C. Dernbach eds., 2019).

<sup>7</sup> *Id.* at 774.

land, about half is used for agriculture.<sup>8</sup> In Pennsylvania, 7.7 Million acres of the total 28.6 million acres of landmass are used for agriculture.<sup>9</sup> Because agriculture has such a large footprint, small changes in farm practices, which may have a modest impact per acre, can significantly reduce agriculture’s contribution to climate change if the practices are widely implemented.<sup>10</sup> Our goal is to incentivize farmers to adopt one or more of the following practices which are relatively simple to implement and will only require modest investments to get started.

### **III. State of the Law in Pennsylvania**

This *Healthy Soils Ordinance* is a good option for Pennsylvania farmers because it supplements existing state law. In the 1930s, in response to the dust bowl, which ravaged farmlands in many midwestern states, the U.S. Federal Government passed the Soil Conservation and Domestic Allotment Act<sup>11</sup> which rewarded farmers who planted grasses and legumes to support soil, rather than commercial crops which exhausted its nutrients.<sup>12</sup> Eventually, this led way to the creation of soil conservation districts, independent units of state government

<sup>8</sup> *Id.*

<sup>9</sup> USDA, National Agriculture Statistics Service, 2017 – 2018 Agricultural Statistics Annual Bulletin Pennsylvania 12 SARE, Managing Cover Crops in Conservation Tillage Systems, [https://www.nass.usda.gov/Statistics\\_by\\_State/Pennsylvania/Publications/Annual\\_Statistical\\_Bulletin/2017-2018/2017-2018%20PA%20Annual%20Bulletin.pdf](https://www.nass.usda.gov/Statistics_by_State/Pennsylvania/Publications/Annual_Statistical_Bulletin/2017-2018/2017-2018%20PA%20Annual%20Bulletin.pdf) (last visited November 24, 2019).

<sup>10</sup> PETER H. LEHNER & NATHAN A. ROSENBERG, LEGAL PATHWAYS TO DEEP DECARBONIZATION IN THE UNITED STATES 775 (Michael B. Gerrard & John C. Dernbach eds., 2019).

<sup>11</sup> Soil Conservation and Domestic Allotment Act Pub.L. 74–461, (1936),

<sup>12</sup> Soil Conservation in the New Deal Congress, <https://history.house.gov/Historical-Highlights/1901-1950/Soil-Conservation-in-the-New-Deal-Congress/> (last viewd Nov. 15, 2019).

responsible for carrying out natural resource protection programs at the local level.<sup>13</sup> Today, there are more than 3,000 soil conservation districts in the U.S.<sup>14</sup>

In 1945, the state of Pennsylvania passed the Conservation District Law<sup>15</sup>, which among other things, established a state policy for soil conservation, created a commission to oversee the policy, and provided for the creation of Conservation Districts in the State of Pennsylvania.<sup>16</sup> The Act has since been reenacted and amended in both 1984<sup>17</sup> and in 2008<sup>18</sup> but the main provisions are the same. Under the Conservation District Act<sup>19</sup>, the governing body of any county, may determine that conservation of soil and water along with control and prevention of soil erosion are problems of public concern, and upon presenting a resolution and determining that a substantial portion of the county landowners favor the resolution, the local governing body may declare the county a conservation district.<sup>20</sup> Once a Conservation District has been established, the law grants broad authority for the District to conduct an array of acts, including, conducting surveys and publish results; providing financial or other aid; providing machinery, equipment, fertilizer, seeds and seedlings, and other materials to landowners and occupiers; advise owners/occupants of land to develop and implement plans and programs for cultivation methods, cropping programs, and tillage practices; conduct educational programs and publish related materials; and to accept contributions from any source.<sup>21</sup>

<sup>13</sup> Maryland's Soil Conservation Districts, Plant the Seeds of Conservation In Your Community 2, [https://mda.maryland.gov/resource\\_conservation/counties/Maryland%27s%20Soil%20Conservation%20Districts.pdf](https://mda.maryland.gov/resource_conservation/counties/Maryland%27s%20Soil%20Conservation%20Districts.pdf) (last viewed Nov. 15, 2019).

<sup>14</sup> Maryland's Soil Conservation Districts, Plant the Seeds of Conservation In Your Community 2, [https://mda.maryland.gov/resource\\_conservation/counties/Maryland%27s%20Soil%20Conservation%20Districts.pdf](https://mda.maryland.gov/resource_conservation/counties/Maryland%27s%20Soil%20Conservation%20Districts.pdf) (last viewed Nov. 15, 2019).

<sup>15</sup> Conservative District Act of 1945, P.ub. L. 547, No. 217 (1945).

<sup>16</sup> *Id.*

<sup>17</sup> Conservative District Act of 1984, P.ub. L. 1125, No. 221 (1984).

<sup>18</sup> Conservative District Act of 2008, P.ub. L. 986, No. 75 (2008).

<sup>19</sup> *Id.*

<sup>20</sup> *Id.*

<sup>21</sup> *Id.*

Since the Conservation District Act was passed, every county in Pennsylvania, except Philadelphia, has established a Conservation District<sup>22</sup>. Most of the districts address and fund the issue of soil health through a cost-share program, known as *Growing Greener Plus* that offers grant money to farmers who implement practices that maintain and revitalize watersheds.<sup>23</sup> The *Growing Greener Plus* cost-share program is successful, but its focus on watershed restoration, limits the scope of farmers who can participate to those who are near or connected to one of the designated watersheds.<sup>24</sup>

In addition to the Conservation District Act, Pennsylvania passed the Pennsylvania Climate Change Act<sup>25</sup>, which, among other things, established a climate change action plan. The Climate Change Action Plan outlines eight sectors, one of which is agriculture, and enumerates strategies for each sector to, adapt to climate change impacts and reduce emissions within that sector.<sup>26</sup>

For agriculture, the Climate Change Action Plan focuses on encouraging best practices in farming by providing informative resources and technical assistance to farmers.<sup>27</sup> This is an important aspect to getting farmers to participate in CFFP. Providing farmers with data about the benefits of these practices, how to implement them, and what programs may be available to help them in the process, has led to increased use of climate-friendly practices. An additional resource for farmers is the Penn State Cooperative Extension, which provides farmers with information and support about implementing CFFP.<sup>28</sup> The Penn State Cooperative Extension has partnered with and is funded by federal, state, and county governments to bring support and

<sup>22</sup> PACD, Find Your Conservation District, [https://pacd.org/?page\\_id=59](https://pacd.org/?page_id=59)

<sup>23</sup> Pennsylvania Department of Environmental Protection, Growing Greener Plus Grants Program 7 (2019).

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

<sup>25</sup> Pennsylvania Climate Change Act of 2008, 71 P.S. § 1361.1 (West).

<sup>26</sup> ICF International, Pennsylvania Climate Action Plan at 14 (2018).

<sup>27</sup> *Id.* at 81-87.

<sup>28</sup> Pennsylvania State University, About Penn State Extension, <https://extension.psu.edu/about-us>, (last visited November, 24, 2019) .

education to members of the farming community.<sup>29</sup> The Penn State Cooperative Extension has an office in every county in Pennsylvania which coordinates with local communities to keep them informed about issues that affect agriculture.<sup>30</sup>

While the local land conservation districts do support and encourage farmers to implement climate-friendly practices, and the Climate Change Action Plan and Penn State Cooperative Extension provide a framework for obtaining substantial technical and informative assistance, there still appears to be a gap between the County and farmers in the townships. We believe the *Healthy Soils Ordinance*, is an important way to bridge the gap. The ordinance will encourage the township to act as the “point-man” to bring information from the land conservation districts and the Penn State Cooperative Extension to the farmers in their community. The ordinance will also encourage the township to seek out a broader range of financial assistance for farmers than what is currently available and establish programs that will make it easier for them to switch to these practices.

#### **IV. The Lack of Township Level Healthy Soils Ordinances**

While the *Healthy Soils Ordinance* focuses on implementing CFFP in second class townships, none of the jurisdictions we researched had similar programs on a scale smaller than the county level. After an exhaustive search of, the Sustainable Development Code<sup>31</sup>, LEXIS Advance Municipal Codes<sup>32</sup>, American legal Publishing Corporation<sup>33</sup>, General Code<sup>34</sup>,

<sup>29</sup> *Id.*

<sup>30</sup> *Id.*

<sup>31</sup> Sustainable Development Code, <https://sustainablecitycode.org/> (last visited Nov. 15, 2019).

<sup>32</sup> LEXIS Advance: Municipal Codes,

<https://advance.lexis.com/practice?config=0144JAAwZwUwN2E5OC11NTY2LTRiNWItODEjOC03MGFjY2IyY2M2MGIKAFBvZENhdGFsb2d9cVtI715rXPOnuUnanJna&pdbs=1472669238588&prid=460d419d-f2a8-4eee-9bd1-7c5cd6af6ab7&crd=197fcb92-17a6-43d2-9d12-303dce16e1b3&cbc=0> (last visited Nov. 15, 2019).

<sup>33</sup> American Legal Publishing Corporation, <http://www.amlegal.com/codes/pa/> (last visited Nov. 15, 2019).

<sup>34</sup> General Code, <https://www.generalcode.com/resources/ecode360-library/#PA> (last visited Nov. 15, 2019).

Municode<sup>35</sup>, and an email exchange discussing the topic with Peter H. Lehner and Nathan A. Rosenberg<sup>36</sup>, who are both preeminent experts in the field of climate-friendly agriculture, we have reached the conclusion that there are few, if any local municipalities that have implemented a healthy soils ordinance. Many of the municipal codes that were examined made mention of best management practices, but typically this was in relation to stormwater management and in no instances was there a comprehensive plan in place to address implementing healthy soil initiatives as a comprehensive policy. With that in mind, this narrative will begin with county programs that exist in many areas, how they work, and how they can be improved upon. Following that, will be a discussion of some state-level programs which can be scaled down to apply on the township level. Last will be a discussion of some state-level programs which cannot be scaled down to the township level.

## **V. County-Level Conservation Districts**

### A. Pennsylvania Soil Conservation Districts

Like most other states, Pennsylvania established Soil Conservation Districts that are organized on a county level, which focus on best management practices for soil health.<sup>37</sup> In response to the need of the districts to coordinate their efforts, the Pennsylvania Association of Conservation Districts, Inc. (PACD) was formed to act as a collective voice for all 66 county districts.<sup>38</sup> PACD is a nonprofit, 501 C-3 organization that provides advocacy, education and training, and program coordination for the districts and their constituents. PACD works with private organizations, business and industry partners, and federal and state agencies to gain

<sup>35</sup> Municode, <https://library.municode.com/PA> (last visited Nov. 15, 2019).

<sup>36</sup> E-mails from Peter H. Lehner, Dir., EarthJustice, and Nathan A. Rosenberg, Assistant Pr., University of Arkansas School of Law (Nov. 11, 2019 – Nov. 12, 2019) (on file with recipient).

<sup>37</sup> PACD, Find Your Conservation District, [https://pacd.org/?page\\_id=59](https://pacd.org/?page_id=59) (Last visited November 24, 2019).

<sup>38</sup> PACD, About Us, [https://pacd.org/?page\\_id=483](https://pacd.org/?page_id=483) (Last visited on November 24, 2019).

funding for the districts and to help them implement conservation efforts.<sup>39</sup> Through a patchwork of federal and state grants, such as the *Growing Greener Plus* grants available through the Pennsylvania Department of Environmental Protection<sup>40</sup> and the *Conservation Innovation Grants* available through the United States Department of Agriculture's Natural Resources Conservation Service,<sup>41</sup> the districts are able to promote voluntary efforts by farmers to implement CFFP. Unfortunately, the funding for these programs is limited and priority is given to farmers who reside within select watersheds that need preservation and restoration. These limits reduce the usefulness of the districts for farmers who do not reside within a watershed which has been designated in need of preservation or restoration.

Aside from providing financial and educational assistance to farmers, most of the districts also run programs that make it easier for the farmers to adopt CFFP. One example is the no-till drill rental program ran by the Perry County Soil Conservation District. The program was established in 2005, with a single no-till drill, and the goal of providing affordable rentals and technical services to local farmers who wanted to implement CFFP but lacked the funding to purchase a no-till drill of their own.<sup>42</sup> Since its inception, the program has expanded to include 4 no-till drills and averages 4,000 acres of no-till planting each year.<sup>43</sup> Not only does this program help farmers to overcome some of the initial start-up costs of switching to CFFP but it also provides a source of income to the district which can be used to expand the no-till drill rental program and fund other CFFP programs.

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

<sup>40</sup> Pennsylvania Department of Environmental Protection, Growing Greener Plus Grants Program, <https://www.dep.pa.gov/Citizens/GrantsLoansRebates/Growing-Greener/Pages/default.aspx> (last visited November 24, 2019).

<sup>41</sup> USDA, NRCS PA, Conservation Innovation Grants, <https://www.nrcs.usda.gov/wps/portal/nrcs/main/pa/programs/financial/cig/> (last visited November 24, 2019).

<sup>42</sup> Perry County Conservation District, No-Till Drill Rental Program, <http://www.perrycd.org/Pages/No-Till%20Drill%20Rental%20Program.aspx>, (last visited November 24, 2019).

<sup>43</sup> *Id.*

## B. Wisconsin Land Conservation Districts

Unlike Pennsylvania's Conservation District Law<sup>44</sup>, which allows each county the discretion to choose to establish a conservation district, Wisconsin's Soil and Water Conservation and Animal Waste Management Act<sup>45</sup> ("WCAWMA"), mandates that each county create a land conservation district.<sup>46</sup> Additionally, Wisconsin's cost-sharing program, which is funded through federal and state grants, does not prioritize funding for farmers that practice CFFP in a designated watershed.<sup>47</sup> Unlike Pennsylvania, The CFFPs in Wisconsin are mandatory for farmers, contingent upon an offer of cost-sharing grants that cover at least 70% of the landowners' compliance cost.<sup>48</sup> Annually, Wisconsin provides approximately twenty million dollars for farm conservation cost-share grants, which includes grants needed to comply with conservation standards as well as other programs.<sup>49</sup> Under the WCAWMA the Dept. of Agriculture, Trade, and Consumer Protection is granted the authority to set and implement statewide soil and water conservation policies.<sup>50</sup> It is then left to the Conservation Committee, for each county, to develop and adopt standards and specifications, within the parameters given by the Department.<sup>51</sup> This gives each county the flexibility to focus on local priorities.

Wisconsin's mandatory CFFP compliance, along with its broad range of cost-sharing programs has enjoyed success but has some issues. There are sizable gaps in compliance, due to limited funding, a patchwork of exceptions, and a lack of desire to enforce reporting

<sup>44</sup> Conservation District Law<sup>44</sup>, P.ub. L. 986, No. 75 (2008)

<sup>45</sup> Soil and Water Conservation and Animal Waste Management Act Wis. Stat. Ann. § 92.06 (West).

<sup>46</sup> *Id.*

<sup>47</sup> Wis. Dept. of Agriculture, Trade and Consumer Protection, James Maston, retired Chief Counsel, Wisconsin Farm Conservation Standards and Cost-Sharing: An Overview, 2 [https://wisconsinlandwater.org/files/events/WI\\_Farm\\_Conservation\\_Standards\\_\(8-18-16\).pdf](https://wisconsinlandwater.org/files/events/WI_Farm_Conservation_Standards_(8-18-16).pdf) (last viewed Nov 15, 2019).

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

<sup>49</sup> *Id.* at 3.

<sup>50</sup> Wis. Stat. Ann. § 92.05 (West).

<sup>51</sup> Wis. Stat. Ann. § 92.06 (West).

requirements.<sup>52</sup> Similar to Pennsylvania, several of Wisconsin's districts operate no-till drill rentals which have benefited farmers as well as the districts<sup>53</sup>.

Because Pennsylvania is larger than Wisconsin, both in land mass and population, it's hard to imagine that a mandatory compliance system like Wisconsin's would be effective in Pennsylvania or be easy to implement. Wisconsin has trouble with compliance and reporting. A mandatory system like Wisconsin's is likely to lead to additional burdens on both farmers and townships. Farmers would be required to comply and report, which would create additional work for them, with no guarantee that they would benefit from the cost-sharing programs. Additionally, the township would have to use resources to collect data and enforce compliance which could otherwise be used for incentives in a voluntary program. A weighing of the pros and cons leads us to believe that the voluntary system is preferable. Farmers who want to participate can do so and the township does not have to divert funding from the programs for enforcement. Additionally, the voluntary system avoids upsetting farmers who do not want to participate. While we would like to adopt Wisconsin's broad standard of who qualifies for cost-sharing grants, we are cautious of the pushback among the agricultural community that a mandatory system like Wisconsin's would create.

## **VI. State Programs that can be Scaled Down**

### **A. Vermont's Incentives for Stewardship**

Conceptualized in 2016 in response to statewide water-quality and environmental challenges, the Vermont Environmental Stewardship Program (VESP) is a voluntary pilot

<sup>52</sup> Wis. Dept. of Agriculture, Trade and Consumer Protection, James Maston, retired Chief Counsel, Wisconsin Farm Conservation Standards and Cost-Sharing: An Overview, 2 [https://wisconsinlandwater.org/files/events/WI\\_Farm\\_Conservation\\_Standards\\_\(8-18-16\).pdf](https://wisconsinlandwater.org/files/events/WI_Farm_Conservation_Standards_(8-18-16).pdf) (last viewed Nov 15, 2019).

<sup>53</sup> Wisconsin Coastal Management Program, Ashland County Land and Water Conservation Department No-Till Drill Rental Policy, [https://co.ashland.wi.us/vertical/sites/%7B215E4EAC-21AA-4D0B-8377-85A847C0D0ED%7D/uploads/No-Till\\_Rental\\_Policy\\_2012.pdf](https://co.ashland.wi.us/vertical/sites/%7B215E4EAC-21AA-4D0B-8377-85A847C0D0ED%7D/uploads/No-Till_Rental_Policy_2012.pdf) (last viewed Nov 17, 2019).

program that encourages and supports local agricultural producers to achieve environmental and agricultural excellence and in turn provides them with a certificate that recognizes their efforts.<sup>54</sup> Pursuing VESP certification demonstrates a farm's commitment to regenerative, responsible agricultural practices, and successful completion of VESP certification will result in public recognition of a farmer's commitment to environmental stewardship on their farm.<sup>55</sup> The VESP certification process uses science-based environmental indicators to assess the impact of a farm's management on water quality, soil health, GHG emissions, and carbon sequestration.<sup>56</sup> If the program makes it past the pilot stage, Vermont hopes to expand incentives to include flexible lending options and insurance rate adjustments. Since VESP is still in the pilot stage, little is known about its success rates.

A similar program could be implemented on a local level. Under our ordinance, farmers will be reporting their acreage, how much of that acreage is devoted to the CFFP, and which practices they are utilizing. In addition, participating farms will be subject to biannual inspections to verify the accuracy of the information they are reporting. Since most of the information will already be available to the township, it should be easy and inexpensive to provide participating farms with a designation that recognizes their efforts as good Stewards of the environment. The township may partner with the Penn State Cooperative Extension to develop science-based indicators to determine how successful the practices are.

#### B. Maryland's Healthy Soils

<sup>54</sup> Vermont Agency of Agriculture, Food & Markets, Vermont Environmental Stewardship Program, [https://agriculture.vermont.gov/sites/agriculture/files/documents/Water\\_Quality/VESP-Pilot-Standards.pdf](https://agriculture.vermont.gov/sites/agriculture/files/documents/Water_Quality/VESP-Pilot-Standards.pdf) (last visited November 24, 2019).

<sup>55</sup> *Id.*

<sup>56</sup> *Id.*

In 2017, Maryland passed HB 1063<sup>57</sup> with overwhelming support by both environmental and farm communities. The State Senate voted unanimously in favor of the bill and it passed the State House of Delegates by a 137-1 vote.<sup>58</sup> The legislation incentivized practices that contribute to healthy soils. <sup>59</sup> The legislation defines healthy soils as, “the continuing capacity of soil to (i) function as a biological system; (ii) increase soil organic matter; (iii) improve soil structure and water and nutrient holding capacity; and (iv) sequester carbon and reduce GHG emissions.”<sup>60</sup>

Several factors led to the bill garnering so much support. First was the establishment of the Chesapeake Bay Restoration Fund<sup>61</sup> in 2004 which created a fund, financed by wastewater treatment plants and other wastewater system users, which was to be used to upgrade treatment facilities, and prevent nitrogen from loading into the bay by implementing the use of cover crops.<sup>62</sup> Second, was the enactment of Maryland’s Healthy Air Act<sup>63</sup>, which recognized that GHGs along with global warming poses a serious threat to Maryland and its 3,100 miles of “tidally influenced shoreline.” Two notable parts of this legislation are that it set aggressive goals for reducing GHG emissions while at the same time preempting Maryland from passing any kind of “cap and trade” regulations on GHG emissions.<sup>64</sup> The requirement to reduce GHG emissions without the use of a carbon cap system forced the state to chart a path different from states like California (which will be briefly discussed below). This cleared the way for the Healthy Soils

<sup>57</sup> Md. Code Ann., Agric. § 2-1901 (West).

<sup>58</sup> Fair Farms Maryland, Healthy Soils Press Releases <https://fairfarmsnow.org/press-release-gov-sign-healthy-soils-legislation/> (last visited November 24, 2019).

<sup>59</sup> Regeneration International, Summary of State Efforts to Promote Healthy soils and Soil Carbon Sequestration, <https://regenerationinternational.org/2017/08/09/summary-state-efforts-promote-healthy-soils-soil-carbon-sequestratio/> (last visited November 24, 2019).

<sup>60</sup> Md. Code Ann., Agric. § 2-1901 (West).

<sup>61</sup> Bay Restoration Fund, 2004 Maryland Laws Ch. 428 (S.B. 320).

<sup>62</sup> *Id.*

<sup>63</sup> Healthy Air Act, Md. Code Ann., Envir. tit. 2, Subt. 10, Refs & Annos (West).

[https://l.next.westlaw.com/Document/NC3608BB0856F11DB817FD5A832BB69E9/View/FullText.html?originatioNContext=documenttoc&transitionType=CategoryPageItem&contextData=\(sc.Default\)](https://l.next.westlaw.com/Document/NC3608BB0856F11DB817FD5A832BB69E9/View/FullText.html?originatioNContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default))

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

Program to get passed with few obstacles. A large portion of Maryland’s farmers were already engaged in the type of farming practices which the program was encouraging, and industry leaders, who do not contribute heavily to wastewater, didn’t have to worry about the farm practices being subsidized through a carbon tax on GHG emissions. In the most recent year, nearly 2,000 farmers participated in the Maryland Agricultural Water Quality Cost-Share Program, which offers farmers up to \$90 per acre for planting cover crops.

This is a program that can be scaled down to the local level, through a simple adjustment to the amount offered to the farmers. We understand that townships do not have the same amount of resources as the state, so our ordinance allows them to cap the amount of funding any person can receive. The ordinance offers the township flexibility to determine, what they can offer to farmers, based upon available funding, number of participants, and total acreage covered.

## **VII. State Programs That Can’t Be Scaled Down**

### **A. California Investment’s**

California has a healthy soil program (HSP) that encourages the implementation of CFFP such as cover cropping, no-till/reduced-till planting, mulching, compost application, and conservation planting. The HPS has two components: the first is an incentive program that provides financial assistance for the implementation of CFFP. The second component is the demonstration project, which showcases the different successful methods that California farmers and ranchers have implemented.<sup>65</sup> The HSP is successful but relies heavily on a carbon cap and trade program known as California Climate Investments. California Climate Investments

<sup>65</sup> CDFA, Healthy Soils Program, <https://www.cdfa.ca.gov/oefi/healthysouils/> (last visited November 24, 2019).

originated in 2006 with the introduction of the California Global Warming Solutions Act, Cal.<sup>66</sup> This act created a system where multiple state agencies have to cooperate to monitor carbon emissions of industry leaders in fields such as electricity generation, refineries, cement production facilities, oil and gas production facilities, glass manufacturing facilities, and food processing plants.<sup>67</sup> These facilities are then granted an allotment of metric tons of GHG emissions per year, which they may release into the atmosphere, based on gradually decreasing caps, which is set by the California Air Resources Board.<sup>68</sup> If they exceed these levels, they can either purchase additional allotments at auctions, which profits go to the California Climate Investments fund, or they can invest in carbon offsets.<sup>69</sup> In 2017, the California Climate Investments program provided \$7.5 million in funding for the HSP.<sup>70</sup> Since the program began, \$41 million in funds have been made available to farmers for incentive and demonstration projects for development and implementation of HSP.<sup>71</sup> In 2018, HSP was able to provide funds to 194 participants, for implementing CFFP, with grants that range from as little as \$2,134.50 to as much as \$75,000.00.<sup>72</sup>

California's cap and trade system enjoys a substantial amount of success. However, implementing a system like this is just not feasible in a township. Townships have neither the authority nor the funding to create a statewide mandated regulatory system to implement and fund the CFFP program. Even if a township did have the authority and funding, it is unlikely, in

<sup>66</sup> Global Warming Solutions Act, Cal. Health & Safety Code § 38500 (West).

<sup>67</sup> California Air Resources Board, Cap-and-Trade Regulation Instructional Guidance, <https://ww3.arb.ca.gov/cc/capandtrade/guidance/chapter1.pdf> (last visited November 24, 2019).

<sup>68</sup> *Id.*

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

<sup>70</sup> CDFA, Healthy Soils Program, <https://www.cdfa.ca.gov/oefi/healthysouils/> (last visited November 24, 2019).

<sup>71</sup> California Air Resources Board, Appropriations and Funded Programs, <https://ww2.arb.ca.gov/our-work/programs/california-climate-investments/ci-funded-programs#Transportation> (last visited November 24, 2019).

<sup>72</sup> California Department of Food and Agriculture, Healthy Soils Program Incentives Program Projects Selected For Award, <https://www.cdfa.ca.gov/oefi/healthysouils/docs/2018-HSPIncentives-SelectedProjects.pdf> (last visited November 24, 2019).

the state of Pennsylvania, that the political will would exist to carry such an ordinance into action.

### B. Hawaii's Best Management Practices

Motivated by the success of California's HSP, Hawaii's Legislature enacted Act 33 of 2017 which created a Carbon Farming Task Force.<sup>73</sup> The following year, HB 2182 was signed into law which repealed Act 33 and replaced the Carbon Farming Task Force with the GHG Sequestration Task Force.<sup>74</sup> Among its goals, are to establish a baseline for GHG emissions within Hawaii and short- and long-term benchmarks for increasing GHG sequestration in the State's agricultural and natural environment.<sup>75</sup> Because the task force is still in its infancy, they have not moved beyond the planning and analysis stages yet, but have thoroughly considered their options. In analyzing the unique issues that farmers face in transitioning to best management practices, Hawaii has concluded that the costs of switching to and implementing best management practices increase the farmers' costs while other stakeholders benefit from it. The burden of the costs is borne by the farmer who may not see the benefit for several years. This is a market failure known as a positive production externality."<sup>76</sup> To combat these production externalities, Hawaii has focused on the following policies with the potential to create incentives or reduce barriers to adopting best management practices: (1) cost-share and other payment incentives; (2) full subsidization; (3) education, demonstration, and technical assistance initiatives; and (4) payment for ecosystem services.<sup>77</sup> Policy goals were created to help guide the

<sup>73</sup> Hawaii State Legislature, HB1578 HD1 SD2 CD1(CCR 141), [https://www.capitol.hawaii.gov/Archives/measure\\_indiv\\_Archives.aspx?billtype=HB&billnumber=1578&year=2016](https://www.capitol.hawaii.gov/Archives/measure_indiv_Archives.aspx?billtype=HB&billnumber=1578&year=2016)

<sup>74</sup> 13 HRS § 225P-3, [https://www.lawserver.com/law/state/hawaii/hi-statutes/hawaii\\_statutes\\_225p-3](https://www.lawserver.com/law/state/hawaii/hi-statutes/hawaii_statutes_225p-3) (last visited November 24, 2019).

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

<sup>76</sup> Analysis of Agricultural Carbon Sequestration Policy in Hawaii, [http://files.hawaii.gov/dbedt/op/carbon\\_farming\\_task\\_force/projects/nremagriculturewhitepaper.pdf](http://files.hawaii.gov/dbedt/op/carbon_farming_task_force/projects/nremagriculturewhitepaper.pdf)

<sup>77</sup> *Id.* at 7.

decision of which policy should be pursued. These policy goals were economic efficiency: which means the policy impacts (benefits) are greater than its negative impacts (costs); cost-effectiveness: which refers to the least amount of resources to achieve a set objective; consistency with other policies: which is the concept that recommended policy will be aligned with, and not contradict, other preexisting policies; equity: which recognizes that all people should be taken into account and treated fairly, and individual circumstances should be considered rather than imposing standard, inflexible requirements or benefits; and political feasibility: which examines the ease with which each policy may be approved by the local political system.<sup>78</sup> Once Hawaii begins implementation, its thoroughly thought out approach should garner substantial support.

The law that Hawaii seeks to implement is not capable of being scaled down to work on a local level because it will require substantial funding, and cooperation from multiple state agencies. On the other hand, the policy considerations that they took into account can be applied to a township. By focusing on economic efficiency; cost-effectiveness; consistency with other policies; equity; and political feasibility, we can ensure that the ordinance considers all the variables that could impede its implementation. For an ordinance to work, it must be more than just a statement of goals and a list of ways to achieve those goals. It must consider the people in the community it will affect. Hawaii did well in this area and a thorough evaluation of these policies should benefit anyone trying to implement a new ordinance.

## **VIII. Recommendations**

### **A. Incentive Base Climate-Friendly Farming Practices**

<sup>78</sup> *Id.* at 8-9.

The *Healthy Soils Ordinance* offers farmers a menu of climate-friendly farming practices to choose from. The practices we chose to offer were based on practical considerations. The practices we are encouraging are already being successfully used by farmers. Our goal is to increase the scale of how widely these practices are being used. With the incentives offered, we hope to convince farmers who are already using these practices to expand their use and to convince farmers who are not already using the practices to start using them. The practices are easy to use, require a minimal amount of time to learn, and are inexpensive to implement. While there will be a start-up cost of converting to these practices, we expect the incentives to adequately off-set their cost. Ultimately, we leave it to the farmers to decide which practices to adopt, if they choose to participate. As more farmers use these practices with success, other farmers will be persuaded to join in. The following are the practices we chose to incentivize.

i. No-till crop planting

No-till agriculture is a practice of tilling that uses a seed drill in place of a traditional plow to reduce disruption to the surface area of the soil. This practice leaves enough crop residue on the soil surface after planting to provide substantial soil cover, enough to reduce soil erosion.<sup>79</sup> Leaving the soil physically undisturbed, protects organic matter from soil microbes which could otherwise accelerate the carbon cycle by returning soil carbon to the atmosphere as carbon dioxide.<sup>80</sup> The most important benefits have been attributed to the accumulation of organic matter at the soil surface.<sup>81</sup> This accumulation of surface organic matter results in increased soil water infiltration because the plant matter creates channels for the water to penetrate the soil. It also raises soil resistance to erosion by anchoring soil into place. Increased

<sup>79</sup> SARE, *Managing Cover Crops in Conservation Tillage Systems*, [https://www.nass.usda.gov/Statistics\\_by\\_State/Pennsylvania/Publications/Annual\\_Statistical\\_Bulletin/2017-2018/2017-2018%20PA%20Annual%20Bulletin.pdf](https://www.nass.usda.gov/Statistics_by_State/Pennsylvania/Publications/Annual_Statistical_Bulletin/2017-2018/2017-2018%20PA%20Annual%20Bulletin.pdf) (last visited November 24, 2019).

<sup>80</sup> *Id.* at 744.

<sup>81</sup> *Id.*

organic matter leads to less carbon dioxide and nitrous oxide in the air because plants can remove GHGs from the air and sequester them in the soil. Additionally, farmers can reduce their field inputs such as labor, fuel, and fertilizer by using these no-till practices. Less fertilizer usage means less nitrous oxide escaping into the air. Less fuel use means less carbon dioxide from fossil fuels burning. No-till farming leads to increased biomass in the soil from cover crops and perennial root systems. Cover crops and perennial root systems absorb surface level nutrients which reduces nutrient availability to weeds, which results in fewer weeds growing. With fewer weeds growing, farmers spend less time and energy spraying herbicides and plowing fields to eradicate weeds. This also reduces machinery use, which results in fewer repairs and less fuel use. Additional surface organic matter can also increase wildlife, such as small game and birds, because the crop residues provide shelter and food for them, which in turn, can result in increased farm revenue. No-till practices can also reduce wind erosion which results in cleaner air because there is less dust blowing around. Since no-till results in less disruption to the organic matter in the soil, it results in reduced carbon dioxide release from that organic material because it is not exposed to the surface air.<sup>82</sup>

No-till practices have been in use for more than a half-century and are relatively simple to implement. The largest investment for the farmer will be the purchase of a tillage drill, or other planting machinery, which is used to penetrate the plant residue on the surface of the soil to plant the seeds, without substantially disturbing the plant residue or the soil surface. To help the farmer overcome this financial obstacle, our ordinance suggests a no-till plow rental service be provided to the farmers by the township at a reasonable rate.

ii. Cover Crops

<sup>82</sup> *Id.*

Cover crops are planted to enhance soil conditions rather than to produce an agricultural product. They are grown during the late fall and winter when common commodity crops are not in season. In addition to increasing soil organic carbon by increasing plant biomass, cover crops significantly reduce nitrate loss, which results in the farmer needing less fertilizer, thereby indirectly reducing nitrous oxide emissions.<sup>83</sup> This is accomplished when cover crop root systems dig deep below the surface of the soil to reach nitrogen buried deep in the soil where traditional crop roots can't reach. Cover crops are typically used in conjunction with no-till planting systems to improve soil health by producing crop residues (the part of the plant which is left in the soil after the cover crop is killed) at the surface level. Much like no-till practices, cover crops help to control weeds; improve soil structure and increase water infiltration. This results in the farmer using less energy to irrigate his field and less tractor time removing weeds, which indirectly reduces GHGs. Additionally, cover crops protect the soil surface by dissipating raindrop energy; reducing the velocity of water moving over the soil surface; and anchoring the soil into place. This is accomplished via carbon-rich root structures deep in the soil profile.<sup>84</sup> Cover crop residues help to keep the soil cooler, reduce fluctuations of soil temperature, and reduce soil temperature maximums and minimums.<sup>85</sup> The cooler soil temperatures, benefit commodity crops throughout the summer but can delay spring planting.<sup>86</sup> Additionally, soil residues left on the soil surface may create a more diverse plant/soil ecosystem, but can also harbor insects, diseases, and nematodes that can be harmful to commodity crops. Because of this, farmers utilizing cover crops or no-till planting practices need to understand specific

<sup>83</sup> PETER H. LEHNER & NATHAN A. ROSENBERG, LEGAL PATHWAYS TO DEEP DECARBONIZATION IN THE UNITED STATES 775 (Michael B. Gerrard & John C. Dernbach eds., 2019).

<sup>84</sup> SARE, Managing Cover Crops in Conservation Tillage Systems, [https://www.nass.usda.gov/Statistics\\_by\\_State/Pennsylvania/Publications/Annual\\_Statistical\\_Bulletin/2017-2018/2017-2018%20PA%20Annual%20Bulletin.pdf](https://www.nass.usda.gov/Statistics_by_State/Pennsylvania/Publications/Annual_Statistical_Bulletin/2017-2018/2017-2018%20PA%20Annual%20Bulletin.pdf) (last visited November 24, 2019).

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

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

pest/crop interactions and the conditions that favor them so they can make good pest management decisions.<sup>87</sup> Using cover crops requires additional time and money, due to seed costs, energy costs, and nitrogen fertility dynamics in cover crop systems, but these costs are typically offset by the farmer's reduction in farm inputs.<sup>88</sup> However, long-term use of no-till practices with cover crops significantly increases carbon sequestration, improves soil health, increases crop yield, and enhances the soil's ecosystem. Results also show that the use of cover crops can improve soil health quickly, while crop yield improvements may take longer.<sup>89</sup> This means that farmers who choose one, or both methods, should continue to use them for several growing seasons if they want to realize the full benefits of these methods.

### iii. Perennial Crops

Perennial crops are crops that can survive without replanting for several years, which means they can be harvested several times before replanting is needed.<sup>90</sup> Because they do not need to be reseeded or replanted every year, they do not require annual plowing or herbicide applications.<sup>91</sup> Perennial crops eliminate the need for tillage, reduce irrigation and fertilizer needs, and sequester additional carbon through their considerable biomass and deep root systems. In the U.S., there are several common perennial crops grown, including grapes, apples,

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

<sup>88</sup> *Id.*

<sup>89</sup> 98 International Soil and Water Conservation Research, Vol. 2, No. 1, 2014, pp. 98, (G.B. Triplett Jr., W.H. Johnson and D.M. Jr Van Doren Agron. J., 55 (1963), pp. 408-409).

<sup>90</sup> Robert L. Zimdahl, Fundamentals of Weed Science (Fifth ed., 2018), <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/perennial-crop> (last visited November 24, 2019).

<sup>91</sup> The Land Institute, Transforming Agriculture, Perennially, <https://landinstitute.org/our-work/perennial-crops/> (last visited November 24, 2019).

blueberries, stone fruits, citrus, almonds, and other nuts.<sup>92</sup> “There are also perennial crops that are able to produce ample quantities of feedstock for biofuels, such as switchgrass, that could take the place of annual crops now grown for the same purpose.”<sup>93</sup> Perennials such as alfalfa and switchgrass are much more effective than annuals in maintaining topsoil. Soil carbon may also increase 50 to 100% when annual fields are converted to perennials.<sup>94</sup> With their longer growing seasons and deeper roots, perennials can dramatically reduce water and nitrate losses which indirectly leads to less GHGs in the air.<sup>95</sup> They require less field attention by the farmer and less pesticide and fertilizer inputs, resulting in lower costs<sup>96</sup> and less fuel use. Wildlife can benefit from reduced chemical inputs and from the greater shelter provided by perennial cover.<sup>97</sup> Additionally, perennials are more resilient to temperature increases of the magnitude predicted by some climate change models.<sup>98</sup> Although perennials may not offer farmers the flexibility of changing crops each year, they can be planted on more-marginal lands (such as slopes and hillside farms where land is severely eroding)<sup>99</sup> and can be used to increase the economic and biological diversity of a farm, thereby increasing the flexibility of the farming system. Perennials are more resilient to social, political, health, and environmental disruptions because they don’t rely on annual seedbed preparation and planting.<sup>100</sup>

#### iv. Agroforestry/Silvopasture

<sup>92</sup> PETER H. LEHNER & NATHAN A. ROSENBERG, LEGAL PATHWAYS TO DEEP DECARBONIZATION IN THE UNITED STATES 775 (Michael B. Gerrard & John C. Dernbach eds., 2019).

<sup>93</sup> *Id.*

<sup>94</sup> Jerry D. Glover, et. Al., Perennial Grains Food Security for the Future, <https://issues.org/glover/> (last visited November 24, 2019).

<sup>95</sup> *Id.*

<sup>96</sup> *Id.*

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

<sup>98</sup> Eric Toensmeier, Carbon-Sequestration Agriculture, <http://www.perennialsolutions.org/carbon-sequestering-agriculture-global-warming-solution-piece-remove-co2-from-atmosphere-organic-garden.html> (last visited November 24, 2019).

<sup>99</sup> *Id.*

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

Agroforestry is a collective name for agricultural systems that integrate the management of woody perennials and agricultural crops or animals on the same piece of land.<sup>101</sup> Silvopasture is a subset of agroforestry which refers specifically to the integration of trees and grazing livestock on the same land.<sup>102</sup> By adding trees to agricultural lands, which substantially increases above- and below-ground biomass, agroforestry increases both annual sequestration rates and the overall amount of carbon that a piece of land can store.<sup>103</sup> Agroforestry can also increase soil organic carbon levels on agricultural or previously uncultivated land.<sup>104</sup> As a result, agroforestry's per-acre sequestration potential is far higher than that found in annual crop systems.<sup>105</sup> An added advantage of silvopasture systems is reducing heat stress to livestock, which improves animal performance and well-being.<sup>106</sup> Silvopasture can also increase wildlife diversity, improve water quality, protect the soil from water and wind erosion, add organic matter to the soil, all while providing a more attractive landscape which is aesthetically pleasing.<sup>107</sup> While these practices may not cost much to implement, they typically require farmers to engage in rotational grazing, which is a management activity, that requires more attention than traditional methods, because the farmer must properly minimize damage to trees and plan for long-term tree regeneration.<sup>108</sup>

v. Riparian buffers

<sup>101</sup> PETER H. LEHNER & NATHAN A. ROSENBERG, LEGAL PATHWAYS TO DEEP DECARBONIZATION IN THE UNITED STATES 775 (Michael B. Gerrard & John C. Dernbach eds., 2019).

<sup>102</sup> USDA National Agroforestry Center, Silvopasture, <https://www.fs.usda.gov/nac/practices/silvopasture.php> (last visited November 24, 2019).

<sup>103</sup> PETER H. LEHNER & NATHAN A. ROSENBERG, LEGAL PATHWAYS TO DEEP DECARBONIZATION IN THE UNITED STATES 775 (Michael B. Gerrard & John C. Dernbach eds., 2019).

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

<sup>105</sup> *Id.*

<sup>106</sup> USDA National Agroforestry Center, Silvopasture, <https://www.fs.usda.gov/nac/practices/silvopasture.php> (last visited November 24, 2019).

<sup>107</sup> *Id.*

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

A riparian buffer is an area adjacent to a stream, lake, or wetland that contains a combination of trees, shrubs, and/or perennial plants that are managed differently from the surrounding landscape, primarily to provide conservation benefits.<sup>109</sup> Riparian buffers can also be managed to include trees and shrubs that provide a harvestable crop along with conservation benefits, although this is less common.<sup>110</sup> A significant amount of global carbon can be sequestered in forests and especially in forest soils. This is particularly true for soils in wetlands where decomposition is slower.<sup>111</sup> In agricultural regions of the world, many forests along headwater streams have been completely removed or severely reduced in order to maximize arable cropland.<sup>112</sup> Riparian forest buffers can deliver a number of benefits including filtering nutrients, pesticides, and animal waste from agricultural land runoff; stabilizing eroding banks; filtering sediment from runoff; providing shade, shelter, and food for fish and other aquatic organisms; providing wildlife habitat and corridors for terrestrial organisms; protecting cropland and downstream communities from flood damage; producing income from farmland that is frequently flooded or has poor yields; providing space for recreation; and diversifying landowner income.<sup>113</sup> Like all conservation practices, the success of forest riparian buffers depends on planning.<sup>114</sup> Careful consideration of appropriate species, as well as individual circumstances,

<sup>109</sup> USDA National Agroforestry Center, Riparian Forest Buffers, <https://www.fs.usda.gov/nac/practices/riparian-forest-buffers.php> (last visited November 24, 2019).

<sup>110</sup> *Id.*

<sup>111</sup> Richard D. Rheinhardt, et. Al, Carbon Storage of Headwater Riparian Zones in an Agricultural Landscape, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3298783/> (late visited November 24, 2019).

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

<sup>113</sup> USDA National Agroforestry Center, Riparian Forest Buffers, <https://www.fs.usda.gov/nac/practices/riparian-forest-buffers.php> (last visited November 24, 2019).

<sup>114</sup> Hannah Packman, NFU Communications Coordinator, What Can Farmers Do About Climate Change? Riparian Forest Buffers <https://nfu.org/2017/04/03/what-can-farmers-do-about-climate-change-riparian-forest-buffers/> (last visited November 24, 2019).

soil quality, topography, and crop types, are necessary.<sup>115</sup> When properly done, riparian buffers can increase carbon sequestration, improve water quality, and reduce the risk of flooding.

### B. Policy Considerations

The *Healthy Soils Ordinance* recommends a combination of incentives to encourage farmers to adopt CFFP. The ordinance is based on voluntary participation. This has the dual effect of respecting the autonomy of farmers while reducing enforcement expenses related to a mandatory compliance program like Wisconsin has. Farmers who want to adopt the practices outlined above, and farmers who already engage in these practices, may submit an annual application with the township if they want to be eligible for the incentives. The incentives include: relief from stormwater management fees (where they exist); reduced rental rates for no-till drill rentals; community recognition as a good steward of the land; and receipt of cost-sharing funds provided by grants and charitable donations. Additionally, farmers must meet specific benchmarks in implementing the CFFP to receive any of the incentives. Failure to meet the benchmarks will disqualify the farmer from receiving incentives for that year. The absence of any of the above-listed CFFP on a farm will be the baseline against which success will be measured. There is no fine or penalty for farmers who choose not to participate in the program, and failure to meet the requirements for any given year will not prohibit farmers from being eligible in subsequent years, if they can meet the minimum benchmarks.

In crafting the ordinance, we relied heavily on the same policy considerations that were outlined by Hawaii, which included: economic efficiency; cost-effectiveness; consistency with other policies; equity; and political feasibility. The first two policy goals go together. Most of the practices we chose to incentivize require modest changes and modest investments, and reasonably priced equipment rentals are available for the practices that require more substantial

<sup>115</sup> *Id.*

investment. This should result in a smooth transition from prior farming practices with minimal financial burden on the farmer. While the farmer will have to use the practices for several growing seasons before he will realize the full benefits of the practices, the investment will have a substantial payoff in the long run. Next is consistency with other policies. The Pennsylvania Conservation District Act,<sup>116</sup> the Pennsylvania Climate Change Act,<sup>117</sup> and the Pennsylvania Climate Change Action Plan<sup>118</sup> already provide for the state to help fund soil conservation, with priority on farms in certain watersheds, and to encourage agricultural best practices by way of informative resources and technical assistance. This ordinance will simply supplement the existing law by broadening financial incentives to farmers who do not already qualify for grants and by making information easier to obtain by having townships function as a “point-man” between the districts and the farmers. This is like Maryland’s Healthy soils Legislation which supplemented the already existing Chesapeake Bay Fund<sup>119</sup> and the Healthy Airs Act.<sup>120</sup> Since the law does not conflict with any preexisting laws, and it fundamentally aligns with preexisting policy goals, the *Healthy Soils Ordinance* should not face much resistance being passed. Next is equity. This means that each person’s situation is unique, and their individual circumstances should be considered when making decisions. The person in the best position to know these individual circumstances are the farmers themselves. That is why the ordinance is based on voluntary participation. The farmers can choose if they want to implement these practices. Should they make the decision to implement these practices, the incentives provided will make

<sup>116</sup> Conservative District Act of 2008, P.ub. L. 986, No. 75 (2008).

<sup>117</sup> Pennsylvania Climate Change Act of 2008, 71 P.S. § 1361.1 (West).

<sup>118</sup> ICF International, Pennsylvania Climate Action Plan at 14 (2018).

<sup>119</sup> Chesapeake Bay Fund Md. Code Ann., Agric. § 2-1901 (West).

<sup>120</sup> HEALTHY AIR ACT, Md. Code Ann., Envir. tit. 2, Subt. 10, Refs & Annos (West).

[https://l.next.westlaw.com/Document/NC3608BB0856F11DB817FD5A832BB69E9/View/FullText.html?originatio nContext=documenttoc&transitionType=CategoryPageItem&contextData=\(sc.Default\)](https://l.next.westlaw.com/Document/NC3608BB0856F11DB817FD5A832BB69E9/View/FullText.html?originatio nContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default))

the process easier for them. Finally, we considered political feasibility. We need the local community to support our ordinance if we want it to be successful. A commonality among second-class townships is that most of them are rural and have a large farm presence which accounts for a substantial portion of their local economy. Farmers may be reluctant to change from the current practices they employ, but the *Healthy Soils Ordinance* we've drafted should persuade some farmers to make the changes long enough to realize the benefits to be gained. After multiple seasons, the farmers who use these practices should have a noticeable increase in productivity, and noticeable reductions in farm inputs, when compared to farmers who use traditional methods. As the differences become more noticeable, the local community should recognize the inherent benefits of CFFP and openly support it.

### C. Social, Economic, and Environmental benefits

To recap, implementation of CFFP can lead to overlapping, long term social, environmental, and economic benefits. However, it is a process, which will not yield immediate results. Soil health may increase within the first year while it could take several years of repeated use before these practices will result in crop yields increasing and production inputs decreasing. The incentives are not just meant to get the farmers started down the path of CFFP, they are meant to help maintain the practices until their benefits can be fully realized. With proper training and persistence, farmers who utilize these practices will be rewarded in the long run, but they must be consistent with them. If they are consistent with these practices, the following benefits will flow from their efforts.

#### i. Social

The implementation of CFFP creates healthier air. This is because the practices disturb the soil less and allow for the development of perennial root systems from plants that remove GHG's from the air. CFFP also reduces farm inputs, such as fuel, fertilizer, and irrigation, which leads to less GHG's in the air because there is less fossil fuel being used to run tractors, create fertilizer, and pump water. This is because healthy soil can retain more water, retain more nitrogen, and doesn't need to be fertilized or plowed as frequent. Root systems in healthy soil anchor the soil in place, making it less susceptible to wind and water erosion, which results in less dust in the air and less run-off from the field in the waterways, including fertilizer run-off. Because healthy soil can retain more water, CFFP should increase property values and should reduce property insurance by reducing downstream communities' susceptibility to flooding, and by stabilizing eroding riverbanks and slopes near homes. CFFP can also improve general quality of life by adding aesthetic value to the landscape, in and around farms who use CFFP, by increasing wildlife diversity in and around the farms, and by providing space for recreation such as hiking, picnicking, swimming, fishing, and hunting (with the farmers permission).

ii. Economic

The implementation of CFFP results in increased crop yield and decreased farm inputs, and the need for fewer applications of fertilizer, less irrigation, and less plowing. This is the result of deep penetrating perennial root systems, which can dig below the top few feet of dirt into the layers where most nutrients and water get stored. Additionally, these root systems reverse soil compaction which allows the soil to retain more water and nutrients and creates a more diverse soil ecosystem teeming with earthworms and healthy microorganisms. The implementation of these methods will lead to fewer man-hours and less tractor use because of less inputs which results in savings on fuel and tractor repairs. Livestock performance and

wellbeing can be improved by integrating grazing of livestock with crops and in forested areas. This provides the livestock with shade as well as crops to eat that are healthier than normal livestock feed. This reduces heat-stress and provides more nutrition, which results in increased productivity. If the area being grazed in is also filled with cover crops, the farmer may be able to reduce the time he must devote to killing his cover crops. The use of CFFP will increase wildlife habitat and diversity by providing additional food sources and shelter among the cover crop residue. This may result in additional income for the farmer through trapping and hunting. Additionally, perennials, with their deep root systems, can be planted in marginal and sloped lands that are vulnerable to erosion. This land is considered unusable for annual crops. Not only will perennials help to stabilize the soil, but they can also produce viable crops that can increase income. Finally, since healthy soil retains more water and stabilizes the soil, these methods can make croplands less susceptible to floods which means harvesting a larger portion of the planted crop which will result in more income.

### iii. Environmental

The implementation of CFFP results in benefits to the environment by reducing GHGs through carbon sequestration. This is the process where crops, absorb carbon dioxide and other GHG's from the atmosphere and store it in their biomass, both above and below ground. Reducing tillage also reduces the amount of carbon and nitrogen in the air because it disturbs the soil surface less which results in less destruction of perennial root systems. An increase in perennial root systems leads to improved water quality. This is because the roots dig deep into the soil, deep below the first few feet of soil, where most nutrients get stored. The nutrients then get pulled to the surface where they can be used by all the crops. This means less fertilizer needs to be used by farmers, and less fertilizer will be getting into waterways. Additionally, less soil

erosion will occur because the perennial root systems hold soil in place, and riverbanks will be less prone to decay because these same root systems will anchor the soil in place. Wildlife diversity will increase as a result of additional food and shelter in the form of cover crop residue. Aquatic life will increase due to less sediment and pollution runoff into the waterways and increased availability of shade and food. Flooding will decrease because perennial root systems retain water and decompact the soil which also results in the soil retaining more water. Soil will also be less susceptible to being washed away during heavy rains.

## **IX. Funding**

Funding for the ordinance will likely be the largest feasibility challenge that a township wishing to enact the ordinance will face. For that reason, we have provided a variety of funding options a township can select based on their local needs. First, the CFFP in the ordinance can be funded by any source available, including federal, state, and local grants, as well as charitable contributions. The ordinance also provides self-funding options that can be utilized, which may require a start-up cost, but after the initial investment, they should sustain themselves and eventually generate funds to provide for expansion and implementation of the CFFP. One self-funded option is the no-till plow rental program which was mentioned above. The township will purchase a no-till drill and rent it out to local farmers at a reasonable cost, based on a variable fee structure. This will provide equipment for farmers in and out of the township who cannot afford to purchase their own while providing the program with a source of income. Additionally, the ordinance will introduce a program where the township will partner with a local nursery to offer saplings for sale, at a profit, to members of the community. These saplings can either be planted by the purchaser on private land or can be donated to the township for planting on public land or can be donated to one of the farmers who are participating in the program to help increase their

climate-friendly farming goals. Finally, the township will be authorized to reallocate stormwater management fees (to the extent that they have such fees in place) to increase the amount paid by members of the community who have large non-permeable surface areas, and to reduce or eliminate the fee which the farmer is paying.

## **X. Conclusion**

There are several different ways to get farmers to participate in CFFP, but as we saw from the Wisconsin example above, not all of them respect the farmers' autonomy to decide which practices are best for them. Additionally, we explored large scale state ran options which involve complex interagency cooperation on a state level which simply is beyond the scope of a township's authority. Then there are programs like what Pennsylvania already has, which allows farmers to adopt CFFP's while seeking out incentives to help them, but most of the incentives are reserved for farmers who reside in protected watersheds. We feel that the system that Pennsylvania currently has in place is best suited for our situation, however, we recommend that the incentives be more inclusive of the entire farming community to have the largest impact on social, economic and environmental benefits to a local community. Our ordinance extends incentives to farmers regardless of if they reside in a protected watershed.

While everyone can benefit from CFFP, farmers are the ones who bear the up-front costs of learning and implementing these practices and typically must use the practices for several growing seasons before they will realize a meaningful return on their investment. Because farmers know their own operational needs best, they should be offered incentives to implement these practices and be allowed to choose if they want to participate or not. By offering a range of practices that can be freely adopted and a menu of incentives, we believe this ordinance can convince farmers to adopt these practices as long-term goals. This approach is less invasive on

the farmers' autonomy while fostering a common bond between them and the communities they live in. By making modest changes to practices that some farmers already engage in, and by providing financial support on the township level, we hope to garner a wide range of participating farmers who eagerly want their local township to pass this *Healthy Soils Ordinance*.

Beth Kern and Isaac Huggins

**HEALTHY SOILS<sup>121</sup>**  
**MODEL ORDINANCE FOR SECOND-CLASS TOWNSHIPS**

BOARD OF SUPERVISORS  
\_\_\_\_\_  
\_\_\_\_\_ TOWNSHIP,  
\_\_\_\_\_ COUNTY, PENNSYLVANIA

ORDINANCE NO. \_\_\_\_\_ - \_\_\_\_\_

**CHAPTER 1**

**GENERAL PROVISIONS**

**Section 101. Short title.**

This ordinance shall be known as the Healthy Soils Ordinance.<sup>122</sup>

**Section 102. Statement of purpose.**

The township finds and declares as follows:

(a) Agriculture is an important industry within the township.

(b) Climate change due to increases in greenhouse gas emission levels poses a threat to the agriculture industry.

<sup>121</sup> Healthy Soils language used instead of Climate-Friendly Farming Practices to be consistent with the language used in other state programs or laws that address this topic.

<sup>122</sup> Thomas Lopez, *Workforce Housing Model Ordinance*, ENVTL. L. & SUSTAINABILITY CTR., at 29.

<https://widenerenvironment.files.wordpress.com/2019/01/inclusionary-zoning-for-workforce-housing-final.pdf> (last visited October 4, 2019).

(c) Persons operating in the agriculture industry are in a unique position to positively and negatively impact levels of greenhouse gas emissions.<sup>123</sup>

(d) The largest source of agricultural greenhouse gas emissions in the United States comes from soil management.<sup>124</sup>

(e) The amount of agricultural greenhouse gas emissions can be meaningfully reduced by increasing the amount of carbon sequestration in agricultural soils.<sup>125</sup>

(f) This ordinance will create a Healthy Soils Program and is intended to achieve the following purposes:

(1) improve the health, yield, and profitability of agricultural soils of the township;<sup>126</sup>

(2) increase biological activity and carbon sequestration in the agricultural soils of the township by promoting farm management practices based on emerging soil science, including adopting no-till, also known as strip-tilling farming practices, planting mixed cover crops, planting perennial crops,

123 PETER H. LEHNER & NATHAN A. ROSENBERG, LEGAL PATHWAYS TO DEEP DECARBONIZATION IN THE UNITED STATES 775 (Michael B. Gerrard & John C. Dernbach eds., 2019).

124 *Id.* at 774.

125 *Id.* 775 - 776.

126 Md. AGRICULTURE Code Ann. Section 2-1901.

implementing agroforestry or silvopasture, installing or preserving riparian buffers and<sup>127</sup>

(3) promote the widespread use of healthy soils practices among farmers in the township.<sup>128</sup>

### **Section 103. Legal authority.**

Article I, Section 27 of the Constitution of the Commonwealth of Pennsylvania, and Title 3, Chapter 14B, Section 953(a) of the Pennsylvania Statutes, Protection of Agricultural Operations from Nuisance Suits and Ordinances<sup>129</sup>, and Article XV Section 1506, General Powers<sup>130</sup>, of the Second-Class Township Code provide the legal authority for this ordinance.<sup>131</sup>

## **CHAPTER 2**

### **DEFINITIONS**

The following words and phrases when used in this ordinance shall have these meanings unless the context clearly indicates otherwise.<sup>132</sup>

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

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

<sup>129</sup> 3 P.S. § 953.

<sup>130</sup> Act 69 of 1933, The Second Class Township Code, Article XV, §1506.

<sup>131</sup> Adam Grabill & Doug Harrigan, *Riparian Buffer Creation and Preservation Model Ordinance*, ENVTL. L. & SUSTAINABILITY CTR., at 27.  
<https://widenerenvironment.files.wordpress.com/2019/01/riparian-buffers-final.pdf> (last visited October 1, 2019).

<sup>132</sup> Paige Parker & Kayla Kormanik, *Proposed Model Ordinance for Agritourism*, ENVTL. L. & SUSTAINABILITY CTR., at 28.  
<https://widenerenvironment.files.wordpress.com/2019/01/agritourism-final.pdf> (last visited November 17, 2019).

**"Agricultural use."** Land that has been specified by the township to be used to produce farm products.

**"Agroforestry."** The intentional combination of agriculture and forestry to create productive and sustainable land-use practices created by growing trees and shrubs together with crops.<sup>133</sup>

**"Applicant."** A person, or group of persons seeking a healthy soils program action or approval from the department.<sup>134</sup>

**"Cover crops."** Includes crops grown to protect and enrich the soil, either planted alongside commodity crops or before and after the harvest of commodity crops.

**"Credits."** The payment of moneys paid by the township to participants for participation in the program. This term includes reimbursement of fees previously paid, or a waiver of fees not yet paid, that the township has the authority to reimburse or waive.

**"Department."** The department, person or group of persons designated by the township to administer this ordinance.

<sup>133</sup> USDA, *National Agroforestry Center Agroforestry Practices*, <https://www.fs.usda.gov/nac/practices/index.shtml> (last visited October 5, 2019).

<sup>134</sup> Paige Parker & Kayla Kormanik, *Proposed Model Ordinance for Agritourism*, ENVTL. L. & SUSTAINABILITY CTR., at 30. <https://widenerenvironment.files.wordpress.com/2019/01/agritourism-final.pdf> (last visited October 5, 2019).

**"Farm management practice."** The climate-friendly farming practices incentivized under section 302.

**"Healthy soils."** The continuing capacity of soil to:

- (1) Function as a biological system.
- (2) Increase soil organic matter.
- (3) Improve soil structure and water and nutrient holding capacity.
- (4) Sequester carbon and reduce greenhouse gas emissions.<sup>135</sup>

**"No-till crop planting."** A method of planting crops with minimal soil disruption including using a seed drill planter.

**"Parcel."** An area of land owned by an individual or person for agricultural use.

**"Participant."** A person, or group of persons that have applied and have been approved to participate under this ordinance.

**"Perennial crops."** Crops that do not require replanting every year because the crops' life span is two or more years in length.

**"Person."** Includes a corporation, partnership, limited liability company, business trust, other association, government

<sup>135</sup> Md. AGRICULTURE Code Ann. Section 2-1901.

entity, estate, trust, foundation or natural person.<sup>136</sup> The term does not include the Commonwealth.

**"Program."** The township's Healthy Soils Program.<sup>137</sup>

**"Riparian buffer."** An undeveloped area adjacent to a body of water, which provides ecological services including filtration of runoff, floodwater storage or improved surface water quality and carbon sequestration. The term includes areas created by adding trees, shrubs and herbaceous vegetation to strips of land adjacent to a body of water.<sup>138</sup>

**"Silvopasture."** The deliberate integration of trees or crops with grazing livestock operations on the same land, created by introducing forage into a woodland, tree plantation, or fields with crops or by introducing trees into a pasture.<sup>139</sup>

**"Township."** The Second-Class Township adopting this ordinance.

**"Viable agricultural land."** Land actively being used to produce farm products.

**"Year."** A calendar year.<sup>140</sup>

<sup>136</sup> 1 Pa.C.S. § 1991.

<sup>137</sup> *Id.*

<sup>138</sup> *York County Sustainable Landscaping Model Ordinance*, at 3. <https://www.ycpc.org/DocumentCenter/View/303/Model-Sustainable-Landscaping-Ordinance-Final-01-27-2014-PDF> (last visited October 4, 2019).

<sup>139</sup> USDA, *National Agroforestry Center Silvopasture Practices*, <https://www.fs.usda.gov/nac/practices/silvopasture.php> (last visited October 5, 2019).

<sup>140</sup> 1 Pa.C.S. § 1991.

## CHAPTER 3

### HEALTHY SOILS PROGRAM

#### **Section 301. Eligibility.**

The following are eligible to participate in the Healthy Soils Program:

- (a) All persons owning 10 or more acres per parcel that are zoned for agricultural use and located within the township.
- (b) All persons owning 10 or more acres per parcel that have been granted a land-use variance for agricultural use and located within the township.

#### **Section 302. Incentivized farm management practices.**

In order to achieve the purpose of this ordinance, the following farm management practice options shall be incentivized:

- (a) No-till crop planting.
- (b) Growth of cover crops.
- (c) Growth of perennial crops.
- (d) Implementation of agroforestry or silvopasture.
- (e) Installation or preservation of riparian buffers.

#### **Section 303. Education.**

The township shall partner with the Penn State Cooperative Extension office in the county where the township is located to educate township residents on the incentivized farm management practices and the importance of healthy soils. The Penn State

Cooperative Extension office may provide education programs including workshops, conferences and on-site consultations. The township may partner with other State and county conservation agencies to provide residents education on the incentivized farm management practices and the importance of healthy soils. The township shall allow township buildings to be utilized as a site for these educational programs or events.

## **CHAPTER 4**

### **HEALTHY SOILS PROGRAM REQUIREMENTS**

#### **Section 401. Requirements.**

(a) Township duties. To carry out this ordinance, the township shall provide education on the benefits of healthy soils to residents, provide incentives in the form of credits, recognize the efforts of farmers as good stewards of the land, purchase, rent, and maintain seed drills and if funding is available to conduct research, and provide technical assistance, and financial assistance, to farmers for implementation of farm management practices that contribute to healthy soils.<sup>141</sup>

(b) Participant duties. Each participant must implement or continue to use one or more of the farm management practices, under section 302, that contribute to healthy soils.

Participation in the program is voluntary and shall be open to persons eligible under section 301. Participants must submit an

<sup>141</sup> Md. AGRICULTURE Code Ann. Section 2-1901.

annual application to the department in accordance with Chapter 5 relating to application procedures. Approved participants must allow biannual on-site visits by the department to verify program compliance. Based on funding available to the township, approved participants are encouraged to submit soil samples to the township for research purposes.

## **CHAPTER 5**

### **HEALTHY SOILS PROGRAM APPLICATION PROCESS**

#### **Section 501. Application period.**

(a) The annual application period will begin on January 1 of each year.

(b) The annual application period will close at the end of the business day on March 31 of each year. If March 31 falls on a day in which the township is not open to conduct business an exception must be made for the date that the application period will close. In that case, the application period will close at the end of the business day on the next date the township is open to conduct business.

#### **Section 502. Applicant procedures.**

To receive the credits available as incentives each applicant must complete and submit to the department a program application annually. The program application must include the following information:

(a) Applicant's name.

(b) Applicant's address.

(c) Applicant's phone number.

(d) Address of the parcel the program application is for, if different from the applicant's address.

(e) Year of application.

(f) Total acreage of the program parcel.

(g) Total acreage of viable agricultural land of the parcel to be enrolled in the program.

(h) Total acreage of the parcel the applicant certifies will be managed using one or more of the farm management practice options identified in section 302, on the applicant's viable agricultural land.

(i) The applicant specifically selects and certifies, one or more farm management practice options identified in section 302, that will be used on the applicant's viable agricultural land throughout the application year. Farm management practices must be utilized for a minimum of \_\_\_\_ months out of the application year.

(j) Projected date of initiation of the farm management practices during the application year.

(k) Indication if the parcel has been enrolled in the program in prior years. If the parcel was enrolled in the program in prior years, the applicant must indicate:

(1) Prior years of program enrollment.

(2) Prior total acreage enrolled, and percentage of acreage dedicated to farm management practices in the program, listed by year.

(3) Prior farm management practices used in the program, listed by year.

(4) Prior total credits or other incentives received, listed by year.

(1) Signature of the applicant certifying that the information on the application is true and accurate.

**Section 503. Department procedures.**

The department shall process each application by:

(a) Verifying that the total number of acres listed on the application is accurate for the parcel, in comparison to township records.

(b) Verifying that the total number of acres to be enrolled in the program meets the current minimum requirements of the program.

(c) Verifying the accuracy of the information on the application regarding prior enrollment in the program, if applicable.

(d) Approving or denying the application, based on the following requirements:

(1) Application period. The Application must be submitted on or before the application period close

date specified in section 501, to be considered for further approval by the department. Applications submitted after the close of the application period shall be denied.

(2) Complete application. The application must be complete, contain all required information and have the signature of the applicant as specified in section 502, to be considered for further approval by the department. Incomplete applications shall be denied.

(3) Minimum program requirements. The application must meet the minimum program requirements to be approved by the department. To meet the minimum requirements the application must certify, and the department shall verify that the applicant will:

(i) Use one or more of the farm management practices under section 302.

(ii) Have at minimum 50% of the parcel's total acreage available as viable agricultural land.

(iii) Use the farm management practices under section 302 on a minimum of 25% of the parcel's total acreage available as viable agricultural land.

Applications that do not meet the minimum program requirements shall be denied.

(e) Notifying the applicant in writing of the application approval or denial within \_\_\_ days. If the application is denied the notice of denial must clearly state the reason(s) for denial and provide applicant the notice of appeals option.

(f) Entering the application approval into the program tracking system. The tracking system specifications are to be determined by the department.

**Section 504. Application appeals.**

(a) A denial of an application must be appealed by the applicant in writing within \_\_\_ days from the date of the notice of denial or it shall be denied as untimely.

(b) The applicant's appeal must clearly state the reason(s) the applicant disagrees with the denial and must include any supporting documentation as evidence.

(c) The applicant's appeal shall be submitted to the department. The department shall first review all appeals and issue an appeal determination which reverses or affirms the department's initial denial. The department must give the applicant notice of the appeal decision in writing within \_\_\_ days from the date of appeal.

(d) Department appeal decisions that affirm the initial denial decision may be further appealed by the applicant. The applicant must resubmit the appeal in writing within \_\_\_ days from the date of the department's appeal decision.

(e) Department appeal decisions shall be reviewed by the Township Board of Supervisors at a regular meeting.

(f) The appealing applicant shall be given written notice of the date and time of the Township Board of Supervisors meeting when the appeal will be reviewed.

(g) The date when the Township Board of Supervisors meet to review the appeal shall occur no later than \_\_\_ days and no sooner than \_\_\_ days from the date that the applicant's appeal is received by the township.

(h) The appealing applicant shall be given the opportunity to verbally address the Township Board of Supervisors during the review of the appeal.

(i) Written notice of the appeals decision of the Township Board of Supervisors shall be sent to the applicant within \_\_\_ days.

(j) The Township Board of Supervisors' decision regarding the appeal shall be final but may be appealed to the Court of Common Pleas in the county and judicial district where the township is located.

(k) Application denials that are not appealed in accordance with this section shall be considered final but may be appealed to the Court of Common Pleas in the county and judicial district where the township is located.

(l) Denial of an application may not prevent the applicant from being considered for eligibility for the program in subsequent years.

## CHAPTER 6

### HEALTHY SOILS PROGRAM FUNDING

#### Section 601. Funding options.

(a) The township may appropriate from time to time as it may be necessary moneys out of the general fund to administer the program.<sup>142</sup>

(b) The township shall create a special fund to be known as the Healthy Soils Program Fund.<sup>143</sup>

(c) The fund may be supplemented by moneys received from the following sources:<sup>144</sup>

(1) State funds available to the township.<sup>145</sup>

(2) Federal funds available to the township.<sup>146</sup>

(3) Gifts and other contributions from public

and private sources.<sup>147</sup>

142 3 P.S. § 862.

143 *Id.*

144 *Id.*

145 *Id.*

146 *Id.*

(4) Any fees collected by the department.<sup>148</sup>

(d) The township may amend the Storm Water Management fee structure for residents with high amounts of impermeable surface area to fund the program. The township may place into the fund either the participant's previously paid stormwater management fees or moneys from the restructuring of the stormwater management fees of other township residents.

(e) The township may create a tree fund to support the program. The tree fund is operated by the department to create a self-funding option for the program. To create a tree fund, the township shall:

(1) Partner with a distributor of sapling trees who will sell saplings to the township on an as-needed basis for a reduced wholesale price.

(2) Promote and offer for sale within the township and the surrounding communities the availability of the sapling trees to be purchased by persons in support of the program.

(3) Sell, at a price higher than the reduced wholesale price, the sapling trees to interested purchasers.

(4) Allow purchasers to have a sapling tree:

147 *Id.*

148 *Id.*

(i) Shipped directly to the purchaser.

(ii) Donated to the township for planting on public land.

(iii) Donated to a participant for use in riparian buffers, agroforestry or silvopasture planting purposes.

(5) Place the surplus from all sales of sapling trees into the program fund.

(6) Use the tree fund only to fund the program.

(f) The township may create a no-till drill rental service for the purpose of renting for a fee, no-till drills to the public. The no-till drill rental service is operated by the department to create a self-funding option for the program. To create a no-till drill rental service, the township shall:

(1) Purchase at minimum one no-till drill using program funds.

(2) Publicize the availability of no-till drill rental services to the general public.

(3) Establish and collect no-till drill rental fees according to the following rental classifications:

(i) \_\_\_ per acre for program participants.

(ii) \_\_\_ per acre for township residents.

(iii) \_\_\_ per acre for members of the general public.

(4) Place the no-till drill rental service surplus of all collected fees into the program fund.

(5) Use the no-till drill rental service surplus only to fund the program.

(g) The township may use other public and private sources to support the program.<sup>149</sup>

(h) To the extent there is a surplus in the fund after all participants have received the full amount of their annual credits, the township shall use the surplus to provide support for the program through research, technical assistance, education, and outreach.<sup>150</sup>

(i) The money in the program fund shall only be used for the purposes authorized by this ordinance and shall not be transferred or diverted for any other purpose.<sup>151</sup>

## **CHAPTER 7**

### **HEALTHY SOILS PROGRAM INCENTIVES**

#### **Section 701. Incentive options.**

(a) The township may provide approved participants with incentives in the form of annual credits.

<sup>149</sup> Cal Food & Agr Code § 569.

<sup>150</sup> *Id.*

<sup>151</sup> 3 P.S. § 862.

(b) [If the township has an existing Storm Water Management fee ordinance for residents] The township shall completely or partially waive the Storm Water Management fees, as a form of credit for a participant. The township may either provide participants a full or partial reimbursement of the participant's previously paid Storm Water Management fees or provide participants moneys from the storm water management fees of other township residents.

(c) The township may provide other forms of credit options based on available funding.

(d) [If the township wants to purchase and rent no-till seed drill(s)] The township shall create a no-till drill rental service for the purpose of renting for a fee, no-till drills to the public. The no-till drill rental service is operated by the department to encourage no-till farming practices. The township shall authorize the department to establish a no-till drill rental service policy<sup>152</sup> that shall include the following:

- (1) Acceptable use of the no-till drills.
- (2) No-till drill rental priority based on rental classifications.

<sup>152</sup> *Ashland County Land and Water Conservation Department No-Till Drill Rental Policy*, at 1-3. [https://co.ashland.wi.us/vertical/sites/%7B215E4EAC-21AA-4D0B-8377-85A847C0D0ED%7D/uploads/No-Till\\_Rental\\_Policy\\_2012.pdf](https://co.ashland.wi.us/vertical/sites/%7B215E4EAC-21AA-4D0B-8377-85A847C0D0ED%7D/uploads/No-Till_Rental_Policy_2012.pdf) (last visited on November 17, 2019).

(3) No-till drill use education and training requirements.

(4) No-till drill inspection and maintenance requirements.

(5) Any additional policy requirements the department determines are necessary for the implementation of the no-till drill rental service.

(e) [If the township wants to establish a public recognition program for participants] The township shall create a Healthy Soils Farm public recognition designation for the purpose of promoting and encouraging the public to support farms with a Healthy Soils Farm designation. The Healthy Soils Farm public recognition designation is administered by the department to encourage the farming practices under section 302. To create the Healthy Soils Farm public recognition designation, the township shall:

(1) Establish Healthy Soils Farm public recognition designations according to the following participation classifications:

(i) Healthy Soils Gold Farm, for program participants that meet the program requirement of utilizing the farming practices incentivized under section 302 on a minimum of 75% of the parcel's total acreage available as viable agricultural land.

(ii) Healthy Soils Silver Farm, for program participants that meet the program requirement of utilizing the farming practices incentivized under section 302 on a minimum of 50% of the parcel's total acreage available as viable agricultural land.

(iii) Healthy Soils Bronze Farm, for program participants that meet the program requirement of utilizing the farming practices incentivized under section 302 on a minimum of 25% of the parcel's total acreage available as viable agricultural land.

(2) Publicize a list of all farms designated as a Healthy Soils Farm, by level classification to the general public. The publication of this list shall encourage that the public support farms with Healthy Soils Farm designations.

(3) Provide each participant with a Healthy Soils Farm designation sign, by level classification, that the participant may display to the public.

(4) Provide each participant with a Healthy Soils Farm designation logo, by level classification, that the participant may use on product packaging or to otherwise use in communication to the public.

(5) Authorize the department to establish any additional policy or procedure the department determines

necessary for the implementation of the Healthy Soils Farm public recognition designation.

## **CHAPTER 8**

### **HEALTHY SOILS PROGRAM ENFORCEMENT**

#### **Section 801. Program enforcement.**

(a) An approved participants list shall be maintained annually by the department.

(b) The department shall be responsible for program compliance enforcement in accordance with the following:

(1) Program compliance enforcement shall only be carried out for approved participants.

(2) The department shall make biannual on-site visits to each approved participant's enrolled parcel. The on-site visits shall be unannounced and done at the convenience of the department during the following times of the year:

(i) The first visit shall occur within the Spring months of the current enrollment year.

(ii) The second visit shall occur within the Fall months of the current enrollment year.

(3) During each on-site visit, the department shall verify that the participant is using the farm management practices as specified by type and amount on the approved application.

#### **Section 802. Non-compliance procedures.**

(a) Participants found to be out of compliance with the program requirements for that enrollment year must be notified in writing by the department within \_\_\_ days to schedule an in-person on-site visit to review the participant's program defects.

(b) After the in-person on-site visit with the department, participants must be given \_\_\_ days to cure the program defects.

(c) Participants that cannot or do not cure program defects within the provided time period must receive notice of removal from the program and forfeiture of credits within \_\_\_ days of the last date to cure the defects.

(d) Participants that fail to follow the requirements of the program or the procedures of this Chapter must forfeit any credits due for the particular enrollment year.

**Section 803. Non-compliance appeals.**

(a) To appeal a finding of uncured program defects by the department the participant must submit an appeal, in writing, within \_\_\_ days from the date of the notice of removal from the program and forfeiture of credits or it shall be denied as untimely.

(b) The participant's appeal must clearly state the reason(s) the participant disagrees with their removal from the program and forfeiture of credits. The appeal must include any supporting documentation as evidence.

(c) The participant's appeal shall be submitted to the department. The department shall first review all appeals and issue an appeal determination which reverses or affirms the department's initial compliance decision. The department must give the participant notice of the appeal decision in writing within \_\_\_ days from the date of appeal.

(d) Department appeal decisions that affirm the initial compliance decision may be further appealed by the participant. The participant must resubmit the appeal in writing within \_\_\_ days from the date of the department's appeal decision.

(e) Department appeal decisions shall be reviewed by the Township Board of Supervisors at a regular meeting.

(f) The appealing participant shall be given written notice of the date and time of the Township Board of Supervisors meeting when the appeal will be reviewed.

(g) The date of the Township Board of Supervisors meeting where the appeal will be reviewed shall occur within \_\_\_ days and no sooner than \_\_\_ days from the date that the participant's appeal is received by the township.

(h) The appealing participant shall be given the opportunity to verbally address the Township Board of Supervisors during the review of the appeal.

(i) Written notice of the appeal decision of the Township Board of Supervisors must be sent to the participant within \_\_\_ days.

(j) The appeal decision of Township Board of Supervisors shall be final but may be appealed to the Court of Common Pleas in the county and judicial district where the township is located.

(k) The participant's notice of removal from program and forfeiture of credits that are not appealed, in accordance with this section, shall be considered final but may be appealed to the Court of Common Pleas in the county and judicial district where the township is located.

(l) A finding of non-compliance will not prevent the participant from being eligible for participation in the program in subsequent years.

## **CHAPTER 9**

### **HEALTHY SOILS PROGRAM PARTICIPATION CREDITS**

#### **Section 901. Program credit annual cap.**

(a) The township shall cap 50% of annual credits available to the participant to be \_\_\_\_\_ per acre for \_\_\_ total acres per year.

(b) The township shall cap 75% of annual credits available to the participant to be \_\_\_\_\_ per acre for \_\_\_ total acres per year.

(c) The township shall cap 100% of annual credits available to the participant to be \_\_\_\_\_ per acre for \_\_\_\_ total acres per year.

(d) The township shall cap the amount of the waiver or reimbursement of a participant's Storm Water Management fee based on the following program participation levels:

(1) 50% of the annual credits available shall be capped at 50% of the participant's actual or anticipated Storm Water Management fee.

(2) 75% of the annual credits available shall be capped at 75% of the participant's actual or anticipated Storm Water Management fee.

(3) 100% of the annual credits available shall be capped at 100% of the participant's actual or anticipated Storm Water Management fee.

**Section 902. Program credit levels.**

The township shall provide participants in compliance with the program with credits based on the following participation levels:

(a) Use of farm management practices provided in section 302, on a minimum of 25% and a maximum of 49% of the parcels total acreage available as viable agricultural land shall receive 50% of the annual credits available to the participant under section 901.

(b) Use of farm management practices provided in section 302, on a minimum of 50% and a maximum of 74% of the parcels total acreage available as viable agricultural land shall receive 75% of the annual credits available to the participant under section 901.

(c) Use of farm management practices provided in section 302, on 75% or more of the parcel's total acreage available as viable agricultural land shall receive 100% of the annual credits available to the participant under section 901.

**Section 903. Program credit disbursement.**

Credits shall be disbursed by the department from the fund to participants, who are in compliance, no later than January 31 of the next year, following the year the participant was enrolled in the program.

**CHAPTER 10**

**REPEALS, SEVERABILITY, EFFECTIVE DATE, ENACTMENT**

**Section 1001. General repeal.**

All other ordinances or parts of ordinances are repealed insofar as they are inconsistent with this ordinance.<sup>153</sup>

**Section 1002. Severability.**

The provisions of this ordinance are severable. If any sentence, clause or section of this ordinance is for any reason

<sup>153</sup> 101 Pa.C.S. § 19.61.

found to be unconstitutional, illegal or invalid, the  
unconstitutionality, illegality or invalidity shall not affect  
or impair any of the remaining provisions, sentences, clauses or  
sections of this ordinance. It is hereby declared to be the  
intent of the Board of Supervisors of \_\_\_\_\_  
(Township) that this ordinance would have been adopted had the  
unconstitutional, illegal or invalid sentence, clause or section  
not been included herein.<sup>154</sup>

**Section 1003. Effective date.**

This ordinance shall become effective 30 days after  
enactment.<sup>155</sup>

**Section 1004. Enactment.**

**ENACTED AND ORDAINED THIS \_\_\_\_\_, DAY OF**  
**\_\_\_\_\_, 20\_\_\_\_\_.**

[Signature Block]

<sup>154</sup> Jennifer Breneman & Tyler Semler, *Tiny Homes Model Ordinance*, ENVTL. L. & SUSTAINABILITY CTR., at 61.  
<https://widenerenvironment.files.wordpress.com/2018/01/tiny-homes2017.pdf>  
(last visited October 4, 2019).

<sup>155</sup> *Id.*