

**Final Report**

**Lake Erie Protection Fund**

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***Reducing Sediment Loading in Lake Erie by Identifying  
Legal and Policy Options for Improved Agricultural  
Drainage Ditches***

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## **Abstract**

As primary conveyors of water in the Lake Erie watershed, agricultural drainage ditches play a role in the identified problem of high levels of agricultural sediment loading in Lake Erie. However, legal and policy barriers in Ohio hinder our ability to address the relationship between drainage ditches, sediment loading, and other water quality concerns. Recommendations in this report focus on resolving the inherent conflicts between agricultural ditch laws and water quality policy. Relying upon a series of discussions with drainage and water quality experts throughout the state, the authors recommend legal and policy changes to institutionalize improved drainage construction and maintenance practices, suggest incentives for such practices, and address the disparities between water quality standards and agricultural drainage ditches.

## **Acknowledgments**

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## **Disclaimer**

The recommendations contained in this report represent the research and analysis of The Ohio State University's Swank Program in Rural-Urban Policy. While individual experts contributed to this project, we do not intend to present our recommendations as the personal opinions or consensus decisions of either those individuals who participated in the project or the individuals' respective employers or professional affiliations.

## I. Introduction

The Lake Erie watershed within Ohio is very dependent upon agricultural drainage ditches for conveyance of surface water. Ohio is one of the most highly drained cropland states in the nation,<sup>1</sup> and agricultural drainage ditches play a vital role in maintaining Ohio's cropland drainage system. Concurrently, the Lake Erie Restoration Plan identifies agricultural sediment as a non-point pollutant of concern, and declares that such non-point pollution is a primary cause of continued degradation of Lake Erie's water quality.<sup>2</sup> Existing approaches to reducing agricultural sediment loading focus on land management practices such as conservation tillage and installation of riparian buffer strips.<sup>3</sup> A second important agricultural sediment transport mechanism, however, is the drainage channel itself. What role do agricultural drainage channels play in transporting agricultural sediment into Lake Erie? Attention to the impact of drainage ditches is necessary if we are to address agricultural sediment issues in Lake Erie.

Many agricultural ditches in the Lake Erie watershed arose under Ohio's agricultural drainage laws,<sup>4</sup> which have existed for over 150 years. Ohio's petition ditch laws create a public process for drainage channel construction and maintenance projects conducted by the county engineer, county soil and water conservation district or conservancy district and paid for through public and landowner assessments.<sup>5</sup> However, the Ohio ditch laws do not require or encourage ditch construction and maintenance practices that could minimize agricultural sediment loading and protect water quality. Rather, the primary goal of Ohio ditch law is to keep the water flowing by constructing and cleaning out drainage ditch systems. Many experts believe that the drainage ditch laws are at odds with policies that aim to address Ohio's water quality concerns. Despite the inherent conflicts between water quality policy and current drainage ditch laws, technical experts have proven that we can address water quality concerns while meeting our needs for agricultural drainage by instituting different approaches to drainage ditch construction and maintenance than traditionally implemented via the petition ditch laws. However, policy and legal changes, as well as incentives, are necessary.

In this project, we explore the conflicts between drainage ditch law, water quality policy and the desire to reduce agricultural sediment loading Lake Erie. We identify drainage ditch

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<sup>1</sup> Zucker, L.A. and L.C. Brown (Eds.). 1998. *Agricultural Drainage: Water Quality Impacts and Subsurface Drainage Studies in the Midwest*. Ohio State University Extension Bulletin 871.

<sup>2</sup> Ohio Lake Erie Commission, Lake Erie Protection and Restoration Plan, pp. 17-18, hereinafter referred to as the Restoration Plan.

<sup>3</sup> The Lake Erie Protection and Restoration Plan sets conservation tillage increases, waterway buffer establishment and funding for implementation of soil conservation projects and new research as strategic actions aimed at reducing agricultural sediment loading. Restoration Plan at 20.

<sup>4</sup> We use the term "agricultural drainage laws" to refer collectively to three legal mechanisms for drainage projects in Ohio – the "County Petition Ditch Law", Ohio Revised Code Sections 6131 *et seq.*, Conservation Improvement Projects administered through the Soil and Water Conservation Districts via Ohio Revised Code Section 1515.16 *et seq.* and the Conservancy District Law, Ohio Revised Code Section 6101 *et seq.* Most of the group's discussion, however, focused on ditches constructed and maintained through the County Petition Ditch Law, and to a lesser extent on Conservation Improvement Projects. A quick review of these three legal mechanisms is contained in *Ohio's Drainage Laws: An Overview*, Larry C. Brown and Jodie L. Stearns, 1991, Ohio State University Extension Bulletin 822.

<sup>5</sup> See Appendix One for an explanation of Ohio's Petition Ditch Law procedure.

construction and maintenance practices that could address water quality and sediment issues better than the current approach, while recognizing our continuing need for drainage mechanisms. We also recommend policy and legal changes that would allow for implementation of the preferred practices.

## II. Methodology

Our research plan utilized the knowledge of technical, policy and legal experts in Ohio to assess the problem and help us formulate feasible alternatives to the current legal and policy framework for agricultural drainage. To do so, we convened experts in agricultural drainage, water quality and public policy in a series of three facilitated roundtable discussions.<sup>6</sup> Part one of the discussions focused on assessment of the problem, part two on solution identification, and part three on evaluation of possible solutions.

The role of roundtable participants was to offer their respective expertise to the discussions. We advised participants that there were no expectations or desire for group consensus on discussion issues. To compile our recommendations, we supplemented the discussion outcomes with additional research and analysis. While we relied upon the project participants' expertise as our primary information base, the recommendations contained in this report are those of the authors and should not be attributed to individual participants in the roundtable discussions.

The following questions served as the discussion guide for part one of the roundtable meetings, which focused on problem assessment:

- Are agricultural ditches necessary to continued farmland productivity in Ohio?
- Does agricultural drainage have an adverse impact on the integrity of water resources in Ohio and Lake Erie?
- What specific types of drainage practices cause those impacts?

For part two, participants responded to the following questions regarding solution identification:

- What existing laws or policies encourage/promote/facilitate ditch construction and maintenance practices that adversely affect water quality?
- What technical alternatives are available to mitigate sediment loadings from agricultural drainage ditches in Ohio?

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<sup>6</sup> See Appendix Two for a listing of roundtable participants and facilitator.

Part three focused the group on evaluation of potential solutions and identification of policy solutions, as follows:

- Do these alternatives make a difference? How well do they work? With regard to alternatives that have not been tried in Ohio (such as "needs criteria"), how well are they likely to work?
- What are the technical and/or practical limitations of these alternatives? Why aren't they being used more? What are the barriers to broader implementation of these alternatives?
- Of the alternatives identified, does the group agree that any should be rejected as impractical or infeasible?
- Of the technical alternatives retained for discussion, how can those alternatives be made more attractive to those who would implement the alternatives, i.e., landowners, agencies, etc.?
- How can current law and/or policy be changed to implement those alternatives or to eliminate or minimize unintended consequences of laws currently on the books?
- Do group members have views as to the feasibility or advisability of the identified policy solutions?
- Would the identified policy solutions have other effects (either positive or negative) with regard to water quality or other services such as habitat?

### III. Discussion Results

Because consensus was not an expectation of the roundtable process, participants were able to raise alternative viewpoints or note where data or other information was lacking on a particular topic of discussion. The following is a summary of the points, conclusions and insights raised in the roundtable discussions. We have made efforts to accurately record the discussion results, and thus have not paraphrased or edited discussion results.

1. *Agricultural drainage ditches are necessary to maintaining the current agricultural industry in place in Ohio today.*

We can question whether our current reliance on ditches is the preferred approach, but we can also conclude that the agricultural industry in its current state is highly dependent upon subsurface and channelized drainage systems. These systems have permitted the emergence of certain kinds of agriculture in Ohio, and agriculture could look very different in the absence of our drainage systems. Additional points from this discussion include:

- a. Current agricultural systems in Ohio are a function of drainage, both natural and constructed.
- b. Some drainage is necessary for certain crops/production systems under particular soil and topography situations.

- c. Petition ditch law can be viewed as a policy statement that the State of Ohio desired certain agricultural practices at the time of the law's enactment, at a time when other concerns such as water quality had not yet been identified.
  - d. Expectations and goals concerning the role of drainage are evolving in Ohio.
  - e. A useful question to ask is how much can we realistically vary from the current agricultural drainage system?
2. *Agricultural drainage ditches can create adverse impacts on the "integrity" of our water resources.*

It is important to understand that a declaration of "adverse impacts" is dependent upon realistically and accurately defining water quality criteria and the uses and expectations for a water resource. The best definition of "water quality" focuses on the "integrity" of a water resource—its ability to maintain and repair itself.<sup>7</sup> Adverse impacts to water resource integrity that might result from agricultural ditches generally can include:

- a. Loss of function of the water resource
- b. Nitrate loading
- c. Sediment loading
- d. Changes in hydrology
- e. Temperature changes
- f. Morphology/habitat changes
- g. QHEI/biotic indices
- h. Entrenchment
- i. Lowering of the water table
- j. Aquifer replenishment issues
- k. Recreation/human use impacts
- l. Wetland impacts
- m. Conveyance of pesticides/organic chemicals

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<sup>7</sup> Reference was made to James Karr's definition of "integrity" which examines five criteria: flow regime, chemical properties, energy inputs, morphology and biota.

We cannot assume, however, that all agricultural ditches inevitably result in poorer water quality. The manner in which the ditch is constructed and maintained can make a difference in the health and integrity of the water resource.

Additionally, an emerging problem with drainage ditch law is the use of petition ditches for “non-agricultural” drainage solutions. Increasingly, petition ditch projects in urban areas are not instituted for agricultural drainage purposes, but instead are intended to address urban drainage demands resulting from land development. This scenario apparently is a result of inadequate tools and enabling authority for communities to address urban storm water management needs, despite many legislative attempts to resolve the issue.<sup>8</sup> When considering the impacts of drainage ditches on water quality, it is important to note that it is highly likely that all impacts are not solely the result of agricultural land uses; urban uses may be interconnected with agricultural drainage ditch systems and may be contributors to the impacts.

3. *The adverse impacts of agricultural drainage can be a result of practices associated with agricultural drainage ditches.*

Farm management practices, subsurface tile drainage, urban storm water management, residential septic systems and sheet runoff contribute negatively to the integrity of Ohio’s waterways, but certain practices related specifically to the drainage ditches themselves also play a key role. Ditch construction and maintenance practices have a proven impact on water quality, particularly on sediment transport.

Because the historical purpose of drainage ditches is to maximize water flow, most ditches are constructed with the primary goal of moving water and with little or no attention to the water quality within the channel or watershed. However, the manner in which the channel is constructed, as well as construction practices in the riparian zone and ongoing maintenance practices, can all create or minimize adverse impacts to water quality.

4. *There are legal and policy contributors to the adverse impacts created by agricultural drainage ditches.*

Law and policy play a significant role in determining how and if drainage ditches are constructed and maintained. Contributors to the impacts of agricultural drainage in Ohio include:

- a. The Ohio Revised Code’s ditch law provisions do not require a scientific needs assessment for a ditch or a construction or maintenance practice.

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<sup>8</sup> Legislation proposing an alternative to use of the petition ditch law for urban storm water drainage needs was first introduced around 1980 by Rep. McLin from the Dayton area. His daughter and successor, Rhine McLin, unsuccessfully sponsored legislation authorizing the creation of storm water management districts in 1992 (HB 389) and 1993 (HB 204).

- b. The ditch law does not dictate specific types of construction and maintenance practices that could protect water quality.<sup>9</sup>
  - c. Ohio's existing use designations and water quality standards do not effectively address the physical, chemical and biological properties of agricultural drainage ditches.
  - d. The federal Clean Water Act and its process for Ohio EPA jurisdiction limits EPA's ability to review ditch construction and maintenance practices.
  - e. Ohio law fails to recognize the relationship between urban storm water runoff and agricultural drainage ditches.
5. *Technical solutions could be utilized in Ohio to address the adverse impacts of agricultural drainage ditches on water quality, particularly in regards to agricultural sediment loading.*

Many solutions exist that could address the adverse impacts attributable to drainage ditches. The solutions fall into four general categories: needs assessment, ditch geometry, riparian zone management, and other alternatives.

a. Needs Criteria

- i. Establish criteria to assess need for ditch construction or maintenance.
- ii. Develop a "systems" approach to assessing need for construction or maintenance, which would include physical, biological, chemical and social parameters.

b. Ditch Geometry

- i. Utilize two-stage channels.
  - 1. Use different ditch design -- narrower bottom, flatter slopes.
  - 2. Allow stream access to floodplains.
- ii. Utilize natural channel design and restoration.
- iii. Utilize confluence design to minimize sedimentation.
- iv. Utilize Best Management Practices such as bank stabilization design, seeding procedures, side slope design.

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<sup>9</sup>Some interpret the Ohio Revised Code as dictating practices that actually harm water quality and wildlife habitat, pointing to the provisions concerning ditch design in Section 6131(14) of the Ohio Revised Code, attached with other selected provisions of the County Petition Ditch Law as Appendix Three.

c. Riparian Zone Management

- i. Use sediment traps.
- ii. Improve upland management practices-- buffer strips, conservation tillage, winter cover crops, limits on working wet fields.
- iii. Improve management of riparian zones, e.g., grass versus tree cover, encourage pasture/grassland uses.

d. Other Alternatives

- i. Create an interdisciplinary "Stream Team" to address the educational function lacking in petition projects.
- ii. Minimize upstream impervious areas.
- iii. Divert pump station discharge to wetlands to minimize bank erosion.
- iv. Address private ditch projects, which seem to be more commonly used now than in the past.

6. *Needs criteria, ditch geometry and education have the most potential for addressing sediment loading and other water quality issues in drainage ditches..*

Much research and funding has focused on riparian and upland practices, but there should be more attention paid to needs criteria, ditch geometry, and education of technicians, professionals and landowners. Suggestions relating to these areas include:

- a. The site review mechanism in current ditch law could be better utilized as a needs assessment procedure. Standard needs criteria and a more extensive cost/benefit analysis could be developed within this mechanism.
- b. A review or permitting process for private drainage ditch projects is necessary.
- c. There must be incentives to encourage landowners and counties to utilize better construction and maintenance practices.
- d. There must be disincentives to discourage landowners and counties from utilizing poor construction and maintenance practices.
- e. Innovative ditch geometry designs have tremendous potential to impact water quality and sediment loading in drainage ditches.
- f. Ditch geometry designs should be combined with riparian zone management tools to effectively address sediment issues.

- g. Education and technical assistance for Best Management Practices and alternative ditch design is needed for landowners, engineers and technicians.
- h. A “piggyback” approach may be most effective, i.e., tie new practices into current programs.

#### **IV. Recommendations**

Upon conclusion of the project roundtable discussions, the Swank Program in Rural-Urban Policy relied upon discussion content to identify viable ways to decrease agricultural sediment loading in agricultural drainage ditches. We researched policy and legal changes that could allow for implementation of the preferred solutions, and expanded our analysis to include potential solutions that were not directly identified or deliberated within the roundtable meetings. The following recommendations are the result of our research and analysis. The recommendations do not represent either the consensus of roundtable participants or the opinions of individual participants and their respective organizations, but are solely the recommendations of the Swank Program in Rural-Urban Policy.

##### **Recommendation One**

##### **Define statewide Best Management Practices for drainage ditch construction and maintenance projects and educate landowners and county staff on implementation of the BMPs.**

The Natural Resources Conservation Service has developed Conservation Practice Standards for surface drainage ditches and riparian zone management.<sup>10</sup> While SWCD Conservation Improvement Projects utilize the standards, similar standards do not exist for county petition ditch projects and private ditch projects. The petition ditch law makes some references to certain management practices,<sup>11</sup> but is largely silent as to specific preferred construction and maintenance practices that should be employed to address water quality concerns in a petition ditch project. County Engineers and their staff thus have little guidance from the State on recommended best management practices and in many cases are lacking awareness or understanding of the NRCS standards.

Experts believe reliance on the NRCS standards would decrease sediment loading, improve water quality, and minimize ongoing maintenance needs. We recommend that the State of Ohio adopt the NRCS or similar standards as required Best Management Practices for agricultural drainage ditches. A clear mandate to abide by the current approved standards must be included in the provisions of the Ohio Revised Code that address petition ditch design and

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<sup>10</sup> Electronic Field Office Technical Guide, available at <http://www.nrcs.usda.gov/technical/cfotg/>. Standards 607 and 608 of the Conservation Practice Standard pertain to surface drainage ditches, and are attached as Appendix Four. Numerous other standards address riparian zone management practices.

<sup>11</sup> ORC 6131.14 states that the County Engineer shall include in his report “...recommendations regarding the use of best management practices that are consistent with the prayer of the petition...” and “shall provide for erosion and sediment control through the establishment of sod or seeded strips” on either side of the ditch.

approval.<sup>12</sup> Additionally, the State should educate ditch construction and maintenance professionals on implementation of the BMPs, following an earlier “Ohio Stream Team” model for delivery of education and assistance on construction projects.<sup>13</sup>

## **Recommendation Two**

### **Increase adoption of innovative ditch geometry practices.**

The traditional approach to drainage ditch design has focused on moving water as quickly and efficiently as possible, resulting in straight and narrow trapezoidal channels with little vegetation. Such channels are customarily maintained by continued clearing of vegetation within the channel and the riparian zone. The construction and maintenance of the traditional trapezoidal ditch poses many threats to water quality, including sediment export and erosion.

New research indicates that drainage ditches modeled after natural waterways are effective drainage mechanisms that can provide water quality benefits.<sup>14</sup> “Natural channel design” or “two-stage” ditch design are examples of ditch geometry practices that echo natural morphology and provide net benefits to water resource integrity while maintaining drainage efficiency.<sup>15</sup> Such designs offer opportunities for minimizing sediment conveyance in agricultural ditches, as well as providing other water quality benefits.

Several projects implementing these innovative ditch geometry practices are taking place in Ohio.<sup>16</sup> Additionally, some are experimenting with approaches that involve one or a few other “non-traditional” ditch practices, such as flattening slopes or allowing vegetation and meandering within the channel. These practices can be more costly and more difficult to “market” to landowners, although some argue that there are long-term financial gains due to decreased future maintenance needs.

Start-up funding and an education and training program are necessary for increased adoption of these innovative ditch geometry practices. We recommend a comprehensive approach by the State to further adoption of new practices through additional demonstration projects and a formal training and assistance program. The State of Ohio and the Lake Erie Commission should continue funding projects such as the Ohio Natural Channel Design Project,<sup>17</sup> and should heighten awareness of the projects and expand educational opportunities for county technical professionals to learn how to design and implement such projects. Current

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<sup>12</sup>Namely, ORC §§ 6131.09 and 6131.14.

<sup>13</sup> Ohio used a “Stream Team” a number of years ago, but the team no longer exists. The team was a group of ditch design experts who provided assistance to counties undertaking new petition ditch projects. The experts advised the county on designing drainage channels.

<sup>14</sup> See Zucker et al, *The Use of Geomorphic Features in Low-Gradient, Lowered, and Artificial Drainage Networks To Enhance Stream Integrity and Drainage*, at <http://streams.osu.edu/naturalchannel.php> (last visited December 29, 2004).

<sup>15</sup> See Ward et al, *Two-Stage Channel Design Procedures*, at [http://streams.osu.edu/streams\\_pdf/2stage\(ward\).pdf](http://streams.osu.edu/streams_pdf/2stage(ward).pdf) (last visited December 29, 2004).

<sup>16</sup> See the Ohio Natural Channel Design Project, funded by the Great Lakes Protection Fund, available at <http://www.ag.ohio-state.edu/%7Encd/index.html> (last visited December 29, 2004).

<sup>17</sup> See note 15.

tools such as those developed for Ohio State University's Streams Project<sup>18</sup> offer a starting point. Again, the "Stream Team" utilized in Ohio in prior years provides a model for education and training efforts.<sup>19</sup>

### **Recommendation Three**

#### **Provide incentives for adoption of innovative ditch geometry practices and Best Management Practices for ditch construction and maintenance.**

Innovative ditch geometry practices and BMPs will usually require landowners and counties to incur additional costs or dedicate additional land for drainage purposes. Incentives could offset the additional financial costs, and many argue that such incentives are necessary if new practices are to be adopted. The challenges to providing incentives are several: identifying incentives that produce the desired responses, identifying or developing programs to administer the incentives, and finding funding sources for incentive adoption. To address these challenges, we identified existing programs that offer opportunities for encouraging the recommended practices, and summarize these opportunities below.

1. Reduction of ditch maintenance assessment. Two current provisions of the petition ditch law allow a landowner to receive reductions of the ditch maintenance assessment if the landowner performs the maintenance work or institutes conservation practices to reduce runoff and erosion.<sup>20</sup> Discussions with County Engineer offices suggest that these reduction provisions are under-utilized, and a program to heighten awareness of the provisions could increase adoption of desired conservation practices. Additionally, expansion of these provisions could include maintenance reductions for channels constructed in accordance with natural channel, two-stage and other innovative designs and adoption of Best Management Practices, as recommended in this report.
2. Federal conservation programs. Several federal conservation programs administered through the United States Department of Agriculture provide incentives for landowner implementation of identified conservation practices, such as the Conservation Reserve Program and Ohio Conservation Reserve Enhancement Program, the Environmental Quality Incentives Program and the Conservation Security Program. The conservation practices encouraged by these programs include use of filter strips, buffers, cover crops and conservation tillage. A significant financial incentive for landowners would exist if the eligible conservation practices under these programs included the drainage ditch construction and maintenance practices recommended in this report.
3. Ohio Property taxes. The petition ditch law provides that "sod or seeded strips established and maintained in excess of four feet shall be compensated for by their removal from the taxable valuation of the property of which they are a part."<sup>21</sup> It is

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<sup>18</sup> Available at <http://streams.osu.edu>. (last visited December 29, 2004).

<sup>19</sup> See note 12.

<sup>20</sup> ORC §§ 6137.08 and 6137.09, included in Appendix Three.

<sup>21</sup> ORC § 6131.14, included in Appendix Three.

unclear how counties interpret and implement this provision,<sup>22</sup> but the concept of declaring the riparian zone as well as the channel itself as non-taxed property has merit for incentive purposes. The petition ditch law also states that the width of the strip to be removed from the tax roll be “measured at right angles to the top of the ditch bank.” Because many innovative ditch designs may require additional land in the channel itself, a change to include the channel in this provision would provide additional incentives.

We must also recognize the need to encourage counties to undertake new ditch designs and maintenance practices. Efforts to educate county staff on new designs and their benefits will be helpful, but additional incentives may be necessary. We do not have firm recommendations for such incentives at this time, but we suspect there may be opportunities to provide differential eligibility for state funding or to create recognition and certification programs. These ideas are in need of further research and discussion.

#### **Recommendation Four**

##### **Establish a more structured and detailed needs assessment for agricultural drainage ditch construction and maintenance projects.**

More closely scrutinizing the necessity of a drainage ditch project at its proposal stage is an obvious, if not controversial, approach to reducing agricultural sediment loading. Some argue that the petition ditch law allows for an assumption that a drainage ditch is necessary if landowners are suffering crop yield loss due to poor drainage, and that the law fails to undertake a meaningful analysis of the need for the project. Others claim that the cost-benefit analysis provided for in the ditch law can result in a detailed scrutiny of the proposed project, at the discretion of the county engineer and commissioners. These divergent viewpoints imply that the law’s provisions for assessing a petition are vague enough to yield very different approaches to the project decision-making process.

The petition ditch law contains several provisions that appear to guide the Board of County Commissioners and the County Engineer in “assessing” a proposed drainage construction or maintenance project. In ORC §6131.09, the County Engineer must submit to the Board of County Commissioners a preliminary report “including his preliminary estimate of cost, his comment on feasibility of the project, and a statement of his opinion as to whether benefits from the project are likely to exceed the estimated cost.” This provision also requires the Engineer to “list all factors apparent to the engineer, both favorable and unfavorable to the proposed improvement, so that the petitioners may be informed as to what is involved.” ORC §6131.11 allows the Board of County Commissioners, to dismiss a petition project if the board finds that the project is unnecessary, not conducive to the public welfare, or that estimated costs will exceed the benefits of the project. To the contrary, ORC §6131.12 provides the opposite criteria for granting a petition: a finding that the project is necessary, conducive to the public welfare, and has a proposed cost that is less than the benefits allows the board to grant a petition.

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<sup>22</sup> Upon issuance of this report, we had not been able to ascertain how County Auditors interpret this provision, nor have we been able to verify that there are other property tax provisions that allow ditches to be regarded as “non-taxed” property.

When granting a petition, the board must also consider the protection of environmentally significant areas that could be adversely affected by the proposed improvement and, if necessary, provide alternative plans to protect such areas.

More specific determination considerations are contained in ORC § 6131.21, which lists the following factors to be considered when determining whether to approve a proposed project:

- (A) The cost of location and construction;
- (B) The compensation for land or other property necessary to be taken;
- (C) The effect on land along or in the vicinity of the route of the improvement; (D) The effect on land below the lower terminus of the improvement that may be caused by constructing the improvement;
- (E) The sufficiency or insufficiency of the outlet;
- (F) The benefits to the public welfare;
- (G) The benefits to land, public corporations, and the state needing the improvement;
- (H) Any other proper matter that will assist it in finding for or against the improvement.

Perhaps the most specific guidance for the assessment process is provided in the definition of “benefits” in ORC §6131.01. According to the definition, benefits are “...advantages to land and owners, to public corporations as entities, and to the state resulting from drainage, conservation, control and management of water, and environmental, wildlife, and recreational improvements.”<sup>23</sup> The definition also lists factors relevant to determining whether such advantages will exist.<sup>24</sup>

As demonstrated above, many provisions in the petition ditch law attempt to direct the County Engineer and Board of County Commissioners in assessing whether a project should occur. Nevertheless, the provisions arguably set up a cost/benefit assessment with very broad parameters and few formal requirements focused on quantifying the need for the project. Some familiar with the process argue that it allows for social and political decisions rather than decisions based upon scientific or measurable needs. A more detailed analysis of the need for the proposed project could lead to alternative solutions to the drainage problem, fewer petition projects, and ultimately, fewer adverse impacts on sedimentation and water quality. Conversely, it could be challenging to attempt to quantify need, and that process could also be subject to social and political factors as well as inaccuracy.

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<sup>23</sup> The definition continues by providing that the term “benefits” includes any or all of the following factors: Elimination or reduction of damage from flood; removal of water conditions that jeopardize public health, safety, or welfare; increased value of land resulting from the improvement; use of water for irrigation, storage, regulation of stream flow, soil conservation, water supply, or any other purpose incidental thereto; and providing an outlet for the accelerated runoff from artificial drainage whenever the stream, watercourse, channel, or ditch under improvement is called upon to discharge functions for which it was not designed by nature; it being the legislative intent that uplands that have been removed from their natural state by deforestation, cultivation, artificial drainage, urban development, or other manmade causes shall be considered as benefited by an improvement required to dispose of the accelerated flow of water from the uplands.

<sup>24</sup> The factors are: (1) The watershed or entire land area drained or affected by the improvement; (2) The total volume of water draining into or through the improvement and the amount of water contributed by each landowner (3) The use to be made of the improvement by any owner, public corporation, or the state. ORC §6131.01(F).

Nevertheless, we recommend that the State compose a panel of legal, engineering and resource experts to develop a needs assessment process. The process should require demonstration of a certain level of quantifiable need and a determination that alternative solutions are not feasible for resolving the drainage problem. Such an assessment procedure should aspire to create a systematic and quantitative documentation of the measurable benefits attributable to the project at issue, which could include the following components:

- An initial monitoring period in which data is collected to help understand the drainage “problem” at issue.
- A consideration of the broader drainage system in which the “problem” operates.
- A consideration of alternative approaches to resolving the “problem”, including utilization of conservation programs that would reward landowners for not proceeding with a project.
- A determination of riparian, upstream and downstream landowner impacts with and without the proposed project.
- A survey of water quality, environmental and habitat impacts with and without the proposed project.
- A threshold requirement that would allow a project to proceed only upon attainment of a specified level of quantified needs.

Additionally, we recommend a revision of the existing cost-benefit analysis portion of the petition ditch law’s assessment process, outlined above. The analysis should include an affirmative requirement to consider alternative construction and maintenance practices such as natural channel design, and a comparison of financial costs for both construction and long-term maintenance of such design approaches.

### **Recommendation Five**

**Create a new beneficial use designation and new water quality standards for agricultural drainage ditches, and require that ditch construction or maintenance practices meet the new standards.**

Perhaps our most controversial recommendation focuses on the source of the conflict between Ohio water quality policy and Ohio petition ditch law. Some experts argue that Ohio’s water quality standards do not “fit” the purposes and uses of agricultural drainage ditches. Drainage ditches, typically designated as “warmwater habitat” or “modified warmwater habitat” uses under EPA’s rules, must meet water quality standards that are defined in terms of supporting aquatic life.<sup>25</sup> Many believe that, while the support of aquatic life can be a benefit of a drainage ditch, it is not the primary purpose of the channel. A more accurate beneficial use designation and water quality standard should recognize that the primary use of a drainage ditch is water transport, and that a ditch may be incapable of possessing all of the biological and physical properties necessary to meet water quality standards. A petition ditch might, however, be capable of meeting standards based principally upon chemical properties.

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<sup>25</sup> Ohio Administrative Code, OAC 3745-1.

Conversely, others claim that the petition ditch process completely bypasses Ohio's water quality standards, resulting in waterways that fail to comply with the standards. The petition ditch law lacks a mandate to address water quality standards in the design, construction and maintenance of a drainage ditch. Absent jurisdiction by the Ohio EPA,<sup>26</sup> petition projects can proceed without an effort to comply with the water quality standards by which other users must abide.

These viewpoints illustrate the clash between two different policy preferences—maintaining water flow and addressing water quality. Our recommendation for bridging the gap between drainage and water quality policy is to create a new beneficial use designation and water quality standards for agricultural drainage ditches, and require that Ohio petition ditches and ditch projects comply with the standards.<sup>27</sup> A new beneficial use designation should acknowledge the conveyance of water as the primary purpose of the agricultural drainage ditch. Likewise, we should define new water quality standards primarily in terms of chemical properties and the water quality concerns that arise from the waterway's use as a drainage ditch, such as existence of chemicals, bacteria and sediment, and secondarily in terms of physical and biological properties.

While some may argue that our proposal would weaken water quality standards, we suggest that increased participation in and compliance with new, more accurate standards should yield water quality benefits. Additionally, the ditch designs and best management practices recommended above can serve as mechanisms for addressing the physical and biological properties of water quality standards that are lacking in historically channelized waterways. Adoption of these practices in tandem with new water quality standards could, in time, result in the full integration of desired chemical, physical and biological properties in Ohio's drainage channels.

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<sup>26</sup> The Ohio EPA's jurisdiction is dependent upon whether the Army Corp of Engineers takes jurisdiction of a project pursuant to §404 of the Clean Water Act.

<sup>27</sup> This recommendation requires two separate actions. First, the Ohio EPA must revise its administrative rules to create a new use designation, which would in turn require that sufficient social and economic evidence be brought forth to justify designation of the proposed existing use. We recognize that this proposed action presents difficulties for OEPA, which must abide by the U.S. EPA's parameters for water quality standards and its "anti-backsliding" provisions. Second, the petition ditch law must be amended to include a provision requiring compliance with water quality standards. Consideration should also be given to including a review process in the petition ditch law that would allow the OEPA to determine whether a petition project will comply with the water quality standards.

## **Recommendation Six**

### **Conduct a review of Ohio's Petition Ditch Laws.**

The recommendations presented thus far in this report suggest several revisions to the petition ditch laws. The laws are old, originally enacted in 1847,<sup>28</sup> and undoubtedly reflect the needs and preferences of a time when settlement of agricultural lands was a policy priority. Many controversies, difficulties and new policies and preferences regarding drainage channels have arisen since that time. Our drainage needs no longer focus on expansion of tillable lands, but on addressing water quantity and quality issues.

For these reasons, and because we have suggested many revisions to the law, we recommend that the State conduct a comprehensive review of the petition ditch law. We would hope that the review would include consideration of the recommendations made in this report along with an analysis of the purpose and intent of the law in regards to contemporary applications, and a review of legal challenges and additional problematic provisions of the law. We recommend that the State complete the review by relying upon a task force of experts in drainage, law, water quality, water management and public policy.

## **IV. Additional Needs**

For the purposes of this project, we intentionally limited the term "agricultural drainage ditches" to those ditches constructed and maintained through Ohio's petition ditch laws. During the project, however, it became evident that we cannot logically separate petition ditches from two additional drainage uses that likely contribute to sediment loading and water quality: private ditches and urban storm water drainage.

Some experts believe that private ditch projects are becoming more common in Ohio.<sup>29</sup> No oversight typically exists for these projects,<sup>30</sup> and such projects thus could have a significant impact on water quality. Likewise, experts have concerns about urban storm water and its effect on water quality, claiming that escalating quantities of urban storm water and an absence of mechanisms for managing the storm waters<sup>31</sup> have led to the use of petition ditches to resolve urban storm water problems.

More information on private ditch projects and urban storm water needs is necessary. An analysis of the extent and types of private ditch projects, private construction practices, urban storm water needs and impacts of both private projects and urban storm water on sedimentation and water quality must occur if we are to fully resolve the conflicts between water quality policy and drainage needs in Ohio.

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<sup>28</sup> There were extensive amendments to the law in 1957 and 1981, and several minor changes between 1961 and 1999.

<sup>29</sup> Apparently, there is no data on the number of private ditch projects occurring in Ohio. We were not able to verify whether there is an increasing trend toward private projects.

<sup>30</sup> Particularly in light of the federal court's invalidation of the "Tulloch Rule", which removed the requirement that certain "incidental fallback" excavation projects in wetland areas obtain a permit under Section 404 of the Clean Water Act. See *National Mining Ass'n v. United States Army Corps of Eng'rs*, 145 F.3d 1399 (D.C. Cir. 1998).

<sup>31</sup> See note 8.

**APPENDIX ONE**  
**REVIEW OF**  
**OHIO PETITION DITCH LAW**

Agdex 752.557

Bulletin 462



**THE OHIO DRAINAGE LAWS  
PETITION PROCEDURE**



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# THE OHIO DRAINAGE LAWS PETITION PROCEDURE

By Byron H. Nolte  
*Extension Agricultural Engineer*

Ohio drainage laws are very broad in scope and apply to a wide variety of improvements. They are administered by the boards of county commissioners and their purpose is to provide for the better utilization of Ohio's soil and water resources.

## WORK THAT MAY BE DONE

The improvements possible under the drainage laws include:

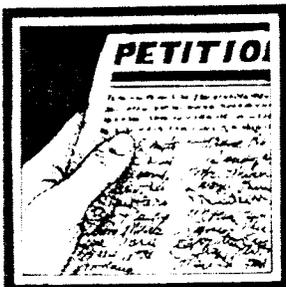
- The location, construction, reconstruction, reconditioning, widening, deepening, straightening, alternating, boxing, filling, walling, arching, or any change in the course, location or terminus of any ditch, drain, watercourse or floodway.
- The deepening, widening, straightening, or any change in the course, location, or terminus of a river, creek, or run.
- A levee, or any wall, embankment, jetty, dike, dam, sluice, re-vestment, reservoir, holding basin, control gate, breakwater, or other structure for the protection of lands from any stream, lake, or pond, or for the protection of any outlet, or for the storage or control of water.
- The removal of obstructions such as silt bars, log jams, debris, and drift from any ditch, drain, watercourse, floodway, river, creek, or run.
- The vacating of a ditch or drain.

Improvements may be planned, financed, and constructed using the petition procedure or the mutual agreement procedure. In either case permanent maintenance is provided.

The area affected by an improvement may include all or a part of one or more counties.

## SINGLE COUNTY PETITION PROCEDURES

Summary of steps necessary to make improvements:



1.

A petition is filed by an owner or a public body.



2.

The proposed improvement is viewed by the board of county commissioners, the county engineer, and other interested people.



3.

The first hearing is held and the county engineer files his preliminary reports, including a statement of his opinion as to whether benefits from the project are likely to exceed the estimated cost.



4.

The county engineer makes surveys, plans, and specifications for the improvements; prepares a schedule of assessments of benefits and damages; and files this information with the clerk of the board of county commissioners.



5.

The final hearing is held. Any exceptions to the engineer's schedule of benefits and damages must be filed on or before the date of the final hearing. The board hears evidence, amends, corrects, and approves assessments, and orders the engineer to let the contracts for construction.



## 6.

The engineer receives bids at the time fixed, if no appeal has been taken to the court of common pleas.



## 7.

Upon completion of the contracts, the assessments are adjusted pro rata from the estimated to the final cost. This assessment, plus the maintenance for one year based upon estimated cost, is levied upon each parcel of land as stated in the schedules.



## 8.

The improvement is maintained by the county with funds obtained by an annual assessment upon the benefited owners.

### Who May Petition

Any benefiting owner(s) may file a petition with the board of county commissioners to begin the legal steps necessary to finance, construct, and maintain an improvement.

"Owner" means any owner of any right, title, estate, or interest in or to any real property. "Owner" also includes any public corporation and the director of any department, office, or institution of the state affected by an improvement, not owning any right, title, estate, or interest in or to any real property.

### Filing the Petition

Petitions are filed with the clerk of the board of county commissioners. The petition must state that the construction of the improvement is necessary and will be conducive to the public welfare. It also must state the nature and location of the work petitioned for. It must contain a list of the names and addresses, where known, of all the owners of the land which the petitioner or county engineer claims will be benefited or damaged by the construction of the proposed improvement. The petition must be signed by one or more owners as petitioners.

A 500-dollar bond must be filed with the petition plus two dollars for each parcel of land in excess of 200 listed in the petition as be-

ing benefited. The bond is released 21 days after the first hearing or at the termination of any appeal; however, if the petition is dismissed the bond is used to pay the cost of notices and any other incidental expenses and it may be used to pay the cost of the preliminary engineering report.

The petition may be amended upon written application of any benefiting owner filed with the clerk of the board of county commissioners, provided the board approves the application.

### The View

The date, hour, and place where the view will start must be set by the board of county commissioners. The date shall be 25 to 90 days after the date on which the petition was filed.

A notice giving the date, hour, place of view and content of the petition must be sent by certified mail with return receipt requested, or by first class mail in a five-day return envelope, to the owners named in the petition and of legal record on the date the petition was filed.

The view gives the board of county commissioners and the county engineer an opportunity to gather field information about the proposed improvement. Also, any owner may present proof of how he will be affected by the proposed improvement.

### The First Hearing

The date and hour of the first hearing will be given on the notice announcing the view. It must be from 10 to 90 days after the date set for the view.

At the first hearing the county engineer must file a preliminary report including his estimate of cost, comments on feasibility of the project, and a statement of his opinion as to whether benefits from the project are likely to exceed the estimated cost.

The board of county commissioners shall hear any evidence offered by any owner for or against the granting of the proposed improvement or for or against any proposed changes in the improvement.

No change shall be made in the nature of the work proposed after the first hearing is completed, except upon application of an interested owner affected by the proposed improvement, and upon notice given to all owners affected by such change.

If the board of county commissioners finds:

- That an improvement is necessary:
  - (a) for disposal or removal of surplus water
  - (b) for controlled drainage of any land,
  - (c) for irrigation,
  - (d) for storage of water to regulate stream flow,
  - (e) for prevention of overflow of any land in the county, or
  - (f) for water conservation.
- That the construction of the improvement will be conducive to the public welfare, and
- That the cost of the proposed improvement will be less than the benefits conferred by its construction, it will grant the petition.

When deciding whether to grant the petition, consideration shall be given to the protection of environmentally significant areas.

If the petition is not granted, it will be dismissed. Any owner who is affected by the dismissal may appeal to the court of common pleas of the county in which said petition was filed. If no appeal is filed within 21 days, the petitioner must pay all the costs incurred in such proceedings, and the bond will be released.

## Plans and Benefits

The county engineer is responsible for making surveys, developing plans and estimating the cost of construction. Bridges and culverts are evaluated. The cost of construction includes the actual cost of construction, the cost of rights-of-way, the cost of engineering, and the cost of notices, publication, and other incidental expenses.

Plans are reviewed by the director of the Ohio Department of Natural Resources, the Ohio Department of Transportation (where a state highway is affected), and the board of directors of any conservancy district within which any part of the lands or streams affected by the proposed improvement may lie.

The plans shall provide for spreading and leveling of spoil banks and shall provide for erosion and sediment control through the establishment of a sod or seeded strip not less than four or more than 15 feet wide. The strip shall be provided on both sides of the ditch, except where suitable vegetative cover exists. The strip or other erosion and sediment control measures shall be considered a part of the permanent improvement. Owners shall be compensated for sod or seeded strips wider than four feet by their removal from the taxable valuation of the property of which they are a part.

The county engineer shall estimate the benefits accruing to public corporations, any department, office, or institution of the state of Ohio and to private owners.

In determining the estimated drainage assessments for a parcel, the county engineer shall give primary consideration to the potential increase in productivity that the parcel may experience as a result of the improvement and shall also give consideration to the quantity of drainage contributed, the relative location of the property to the project, the portion of the project through which the drainage from the parcel flows, the value of the project to the watershed, and benefits as defined below.

"Benefit" or "benefits" means advantages to land and owners, to public corporations as entities, and to the state of Ohio, resulting from drainage, conservation, control and management of water and environmental, wildlife, and recreational improvements. Factors relevant to whether such advantages result include:

- The watershed or entire land area drained or affected by the improvement
- The total volume of water draining into or through the improvement, and the amount of water contributed by each land owner
- The use to be made of the improvement by any owner, public corporation, or the state of Ohio

Also, benefits include any or all of the following factors:

- Elimination or reduction of damage from flood
- Removal of water conditions that jeopardize public health, safety, or welfare
- Increased value of land resulting from the improvement
- Use of water for irrigation, storage, regulation of stream flow, soil conservation, water supply, or any other purpose incidental thereto.
- Providing an outlet for the accelerated runoff from artificial drainage whenever the stream, watercourse, channel, or ditch under improvement is called upon to discharge functions for which it was not designed by nature, it being the legislative intent that uplands which have been removed from their natural state by deforestation, cultivation, artificial drain-

age, urban development, or other man-made causes will be considered as benefited by an improvement required to dispose of the accelerated flow of water from said uplands.

The county engineer must estimate the value of land or other property necessary to be taken and the damages to be sustained by any owner as a result of the construction of the proposed improvement and subsequent maintenance of such improvement. The total of these damages and valuations is included as part of the total cost of constructing the improvement.

As an alternative to the schedule of assessments, the board of county commissioners may pass a resolution to levy a tax on all the property listed and assessed for taxation in the county. The resolution must be certified to the board of elections 60 days before the election upon which it will be voted. The levy may be for a period up to 5 years except when it is for payment of debt charges the levy shall be for the life of the indebtedness.

At least 60 days prior to passage of the resolution to levy a tax for construction and maintenance of a drainage improvement, the board of county commissioners shall file with the county auditor and county board of elections an accurate map showing the locations and types of any proposed improvements, the areas to be benefited and the existing system of drainage improvements that is to be maintained. The resolution may designate all or part of the county as a drainage improvement district and the proceeds of the levy shall only be used within the district. The drainage improvement district designation shall be based on the location of the system of improvements and the areas to be benefited by that system.

## The Final Hearing

Upon the filing by the county engineer of his reports and schedules, the board of county commissioners must fix a date from 25 to 90 days thereafter for the final hearing. The clerk of the county commissioners must give notice of the hearing by certified mail, or by first class mail in a five-day return envelope, to all owners whose names appear in the engineer's schedule of assessments and damages.

The notice must include the date of the final hearing on the report of the engineer, the assessment or the estimated damages, if any, and compensation for any land or other property necessary to be taken. It also includes notification that all claims for compensations or damages must be filed with the clerk of the board of county commissioners before the date fixed for the final hearing.

At the final hearing the board of county commissioners will hear all evidence offered and consider all schedules and reports filed by the county engineer. It will reaffirm its former order granting the petition or it shall set aside the former order and dismiss the petition.

If the petition is dismissed at the final hearing, all the costs in said proceedings, including the cost made by the engineer in making his surveys, reports, and schedules, may be distributed to the benefiting owners or they may be paid from county funds. The petitioner, or any owner in favor of the improvement, may appeal within 21 days to the court of common pleas from such order of dismissal.

If the petition is not dismissed, the board of county commissioners will hear any evidence offered for or against the assessment proposed to be levied against any owner, or any land, as shown by the schedule of assessments filed by the county engineer, and will hear any competent evidence on the question of benefits. The board, from the evidence offered and from an actual view of the premises, will amend and correct the assessments, and the assessment so amended or corrected will be approved by the board.

The board of county commissioners must determine when the assessments are to be paid and whether bonds are to be issued. Also, they will order the county engineer to let the contracts.

## Assessments

Assessments are levied on each parcel of land benefited, to pay the cost of construction and maintenance of improvements. These assessments are paid in semi-annual installments as taxes are paid. When the county general funds are used to pay for the improvement the assessment shall not exceed ten semi-annual installments.

If bonds or notes are issued, the installments will include interest added at the rate of interest the bonds or notes bear. The bond repayment period may not exceed 16 semi-annual installments.

Any owner may pay the estimated assessment on his land in cash within 30 days after the final hearing without paying any interest. Notice of intent to pay in cash must be given within 21 days after the final hearing.

If the estimated cost of the improvement does not exceed 500 dollars, not more than two semi-annual installments, as taxes are paid, will be given to owners of lands benefited to pay the assessments that are made for such improvements. If the estimated cost of the improvement exceeds 500 dollars, the board may determine the number of installments in which the assessments are to be paid, not to exceed 10 semi-annual installments.

If an assessment is 25 dollars or less, or whenever the unpaid balance of any such assessment is 25 dollars or less, the same will be paid in full, and not in installments, at the time the first or next installment would otherwise be due.

Upon completion of the works of improvement, the assessments are reduced pro rata by the difference between the estimated cost and the final cost. The assessment will include the cost of location, engineering, compensation, damages, contingency, and the assessment for maintenance for one year. The minimum construction assessment is 10 dollars and the minimum maintenance assessment is two dollars.

The original schedule of benefit assessments upon owners for the construction of any improvement must be maintained by the county auditor as the permanent base for maintenance assessments.

In lieu of the permanent base, the county commissioners may by resolution levy assessments apportioned according to tax value of benefited property. Prior to adopting the resolution, the county commissioners shall give at least 10 days notice in a newspaper of general circulation of the time and place where the resolution will be considered. The commissioners shall hear all persons concerning the proposed levy, make any necessary adjustments and may then pass a resolution levying an assessment on benefited property. Any owner so assessed may appeal to the court of common pleas the question of whether any such assessment is levied according to benefits. Any increase or reduction of the assessments levied in this manner shall be made at the regular six-year reappraisal of all property in the county.

The legislative authority of a political subdivision may choose to pay the assessment of all parcels within the subdivision.

Maintenance assessments will be made as needed by the board or county commissioners upon substantial completion of an improvement and on or before the first day of July, in each year thereafter. Assessments will be placed on the next succeeding tax duplicate, to be collected and paid as other special assessments are collected and paid.

Such maintenance assessment are to represent a percentage of estimated benefits as estimated by the engineer and found adequate by the board or joint board; except that in any year when a maintenance fund has an unencumbered balance equal to 20 percent of the construction costs, the annual maintenance assessment is to be omitted.

After six such annual maintenance fund assessments have been made upon the owners benefiting from an improvement, the board

of county commissioners must review the permanent base for maintenance fund assessments and may increase or decrease the respective benefit apportionments in accordance with changes in benefits that have occurred during the intervening six years. When changes are made, the owners will be notified, and a hearing will be held.

At the end of six years from the date of the first review of the permanent base of maintenance assessments, and at six year intervals thereafter, the board of county commissioners will again review such permanent base.

Owners along a drainage improvement may form any advisory committee for the purpose of notifying the county engineer of needed repair and maintenance work. Any recommendations shall be submitted to the engineer by May 1 of the year work is needed. The engineer shall consider the committee's recommendations.

## Appeals

Any owner opposed to the granting of the petition, or any owner opposed to further proceedings in the improvement, or any owner who claims that the assessment levied against him is excessive, or is not in proportion to benefits, may take an appeal to the court of common pleas. The minimum appeal bond is 500 plus two dollars for each parcel over 200.

If an appeal has been taken to the court of common pleas, no further steps will be taken until the final judgment, order, or decree upon any appeal is rendered by the court of common pleas.

If the judgment, order, or decree is in favor of the granting of the improvement, the board will proceed with said improvement proceedings in compliance with such final judgment, order, or decree, from the point at which they were terminated by such appeal, or from the point at which the court orders the board to proceed.

## Construction

If no appeal has been taken to the court of common pleas, the engineer must proceed to receive the bids, determine the successful bidder and enter into contract for the construction of the improvement.

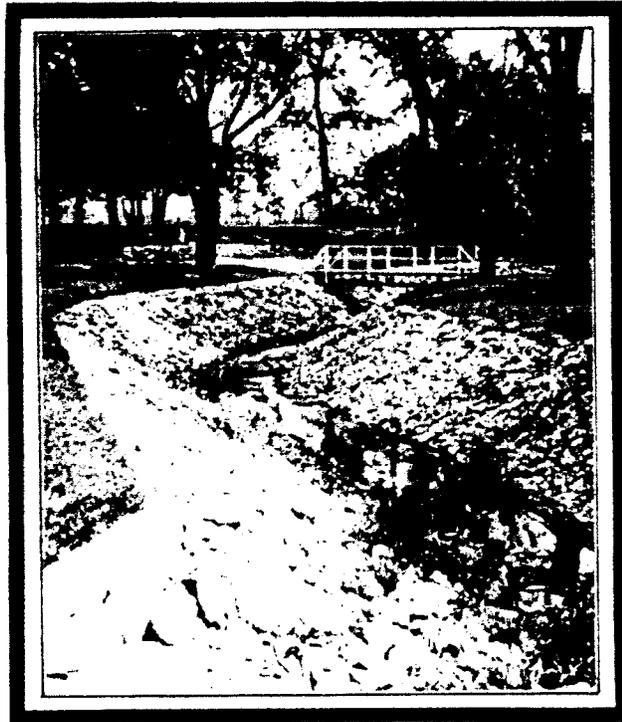
If appeals have been taken to the court of common pleas, they must be settled before construction can begin.

Upon acceptance of the contract work, the engineer shall file with the county recorder a property plat showing the general location of the improvement and a statement describing the width of the permanent easement for maintenance.

## Maintenance

The board of county commissioners must establish and maintain a fund for the repair, upkeep, and permanent maintenance of each improvement constructed under the provisions of the drainage laws.

Whenever the board from its own observation, or the recommendation of the county engineer, or on the written complaint of any of the owners of lands subject to said maintenance assessment, has reason to believe such improvement is in need of repair or maintenance, it will, as a board or by the county engineer, make an inspection of the condition, and if it finds such need to exist, it will make an estimate of the cost of the necessary works and material required for the purpose.



A completed drainage ditch

The board will determine the most economic and expeditious method of maintenance and repair, and cause the work to be done.

The county engineer has general charge and supervision of the repair and maintenance. He must make an inspection of the drainage improvements, and on or before the first day of June, in each year, must report to the board of county commissioners the condition of said drainage improvements and his estimate of the probable amount of funds required to repair and maintain them.

Persons who perform maintenance may go upon land abutting or adjoining drainage improvements as necessary. In the case of open ditches the area used must be not more than 25 feet from the top of the bank, except in an emergency up to 75 feet may be used. For closed ditches tile or pipe, not more than 80 feet centered on the ditch may be used.

When the performance of maintenance requires the damage of existing crops beyond the permanently established sod or seeded strip, the owner of the crops shall be granted damages equal to market value, to be paid from the permanent maintenance fund established for the improvement.

Any owner may make application for reduction in his maintenance assessment due to work he proposes on any portion of a public ditch, watercourse, or other improvement. Such application must be filed with the county engineer on or before the first day of May, in any year, and must state the nature of the work to be done. The county engineer must recommend the per cent reduction of maintenance assessment to be granted, if any. The board must either confirm or reject the allowances recommended by the county engineer.

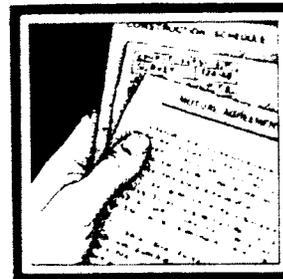
The board of county commissioners may grant to any owner a reduction of not more than 50 per cent of his annual maintenance assessment if such owner has filed with the county engineer a certificate of the board of supervisors of the soil and water conservation district of the county in which the land is located, certifying that he is following practices in the cultivation or management of agricultural land that will reduce the runoff of surface water and the

erosion of sediment and silt into drainage channels. Such certificate will remain in effect until cancelled by the board of county commissioners. The county engineer will have the right to inspect the premises of any owner claiming assessment reduction due to soil and water conservation and to ask the soil and water conservation district for review of any certificate on file.

If the clearing out or repair of an improvement is made necessary in whole or in part by the negligent acts or omissions of any owner, the board of county commissioners, after a hearing in accordance with provisions of the law, may add to the maintenance assessment of such negligent owner an additional repair assessment in an amount sufficient to rectify the damage.

## MUTUAL AGREEMENT PROCEDURE

The mutual agreement procedure applies when one or more owners desire to join in the construction of an improvement and are willing to pay the cost of construction. There are several steps necessary to make an improvement.



1. The owners involved submit to the clerk of the board of county commissioners the mutual agreement, plans approved by a registered professional engineer and schedules of construction for the improvement. These are reviewed by the county engineer. He may approve them or require amendments prior to approval.



2. The county engineer makes benefit assessment schedules for maintenance purposes. These assessments may include the cost of preparing the schedules.

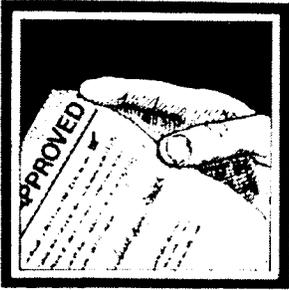


3. The board of county commissioners holds a hearing on the maintenance assessment schedules. They hear evidence and may amend and correct and shall approve the schedules.



4.

The owners contract for the construction and pay the cost as provided in their mutual agreement. This cost includes the estimated cost of maintenance for one year.



5.

The construction is inspected and certified to be in accordance with the plans. This must be done in a manner acceptable to the county engineer.



6.

The improvements are maintained by the board of county commissioners with funds obtained by an annual assessment upon the benefited owners.

The clerk of the board of county commissioners with whom the petition is filed, calls a meeting of the joint board within 30 days after the petition is filed. The meeting is held in the county in which the petition is filed.

The joint board designates the engineer of the county with the majority of the improvement to do the field work necessary to plan the improvement. The engineer of each county interested must assist in making the reports and schedules, and must sign and approve them.

All applications, remonstrances, claims for compensation or damage, reports, schedules, certificates, statements, contracts, bonds, and other papers must be filed with the clerk with whom the petition is filed.

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## INTERSTATE PROCEDURES

Improvements may involve land in an adjoining state. The board of county commissioners in Ohio may cooperate with the proper authorities in the adjoining state to carry out interstate improvements.

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## OUTSIDE ASSISTANCE

Federal and state laws provide for financial assistance on certain types of improvements. These require approval prior to construction. Application for assistance must be made well in advance in order to coordinate local action with the federal program.

Improvements may be planned and constructed in cooperation with federal and state agencies. If the regulations or procedures of the cooperating agency are in conflict with the Ohio drainage laws, the board of county commissioners may adopt the agency regulations or procedures and proceed with the improvement.

The board of county commissioners, with the advice of the county engineer, may enter into agreements with local soil and water conservation districts for the purpose of planning, constructing, or maintaining drainage improvements.

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## MULTI-COUNTY PROCEDURE

The primary difference between making improvements in one and in two or more counties is in the group that conducts the proceedings. The procedure for the owner is essentially the same.

The petition for an improvement that is proposed to be located in, or benefits or damages land in, two or more counties may be filed with the clerk of the board of county commissioners of the county with the majority of the proposed improvements.

The proceedings are conducted by a joint board of county commissioners consisting of the members of the boards of the several counties. One member of the joint board is elected president. The clerk of the board of county commissioners where the petition is filed acts as clerk of the joint board.

A majority of the joint board constitutes a quorum. All decisions of the joint board require a vote of a majority of the county commissioners on the joint board.

The director of the Ohio Department of Natural Resources is an *ex officio* member of the joint board. He may attend in person or through a designated representative. He may vote only in the case of a tie.

## NOTE

This bulletin outlines the main provisions of the Ohio drainage laws. It is not a complete legal guide. In specific cases direct reference should be made to the Ohio Revised Code Chapters 6131, 6133, 6135, and 6137. In many instances the help of a qualified attorney will be necessary.

*PHOTO CREDITS: U.S. Soil Conservation Service; M. L. Palmer, Cooperative Extension Service, Ohio State University; and County Engineers Association of Ohio.*

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## APPENDIX TWO

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## APPENDIX THREE

### Ohio Revised Code § 6131 *et seq.*

#### Selected Single County Petition Ditch Law Provisions

##### § 6131.01 Single county ditch definitions.

As used in sections 6131.01 to 6131.64 of the Revised Code:

(A) "Owner" means any owner of any right, title, estate, or interest in or to any real property and includes persons, partnerships, associations, private corporations, public corporations, boards of township trustees, boards of education of school districts, the mayor or legislative authority of a municipal corporation, the director of any department, office, or institution of the state, and the trustees of any state, county, or municipal public institution. "Owner" also includes any public corporation and the director of any department, office, or institution of the state affected by an improvement but not owning any right, title, estate, or interest in or to any real property.

(B) "Land" includes any estate or interest, of any nature or kind, in or to real property, or any easement in or to real property, or any right to the use of real property, and all structures or fixtures attached to real property, including but not restricted to all railroads, roads, electric railroads, street railroads, streets and street improvements, telephone, telegraph, and transmission lines, underground cables, gas, sewage, and water systems, pipe lines and rights of way of public service corporations, and all other real property whether public or private.

(C) "Improvement" includes:

(1) The location, construction, reconstruction, reconditioning, widening, deepening, straightening, altering, boxing, tiling, filling, walling, arching, or any change in the course, location, or terminus of any ditch, drain, watercourse, or floodway;

(2) The deepening, widening, or straightening or any other change in the course, location, or terminus of a river, creek, or run;

(3) A levee or any wall, embankment, jetty, dike, dam, sluice, revetment, reservoir, holding basin, control gate, breakwater, or other structure for the protection of lands from the overflow from any stream, lake, or pond, or for the protection of any outlet, or for the storage or control of water;

(4) The removal of obstructions such as silt bars, log jams, debris, and drift from any ditch, drain, watercourse, floodway, river, creek, or run;

(5) The vacating of a ditch or drain.

(D) "Person" means natural person, firm, partnership, association, or corporation, other than public corporations.

(E) "Public corporation" or "political subdivision" means counties, townships, municipal corporations, school districts, park districts, turnpikes, toll bridges, conservancy districts, and all other governmental agencies clothed with the power of levying general or special taxes.

(F) "Benefit" or "benefits," except as ordered in section 6131.31 of the Revised Code, means advantages to land and owners, to public corporations as entities, and to the state resulting from drainage, conservation, control and management of water, and environmental, wildlife, and recreational improvements. Factors relevant to whether such advantages result include:

(1) The watershed or entire land area drained or affected by the improvement;

(2) The total volume of water draining into or through the improvement and the amount of water contributed by each land owner;

(3) The use to be made of the improvement by any owner, public corporation, or the state.

"Benefit" or "benefits" includes any or all of the following factors:

Elimination or reduction of damage from flood;

Removal of water conditions that jeopardize public health, safety, or welfare;

Increased value of land resulting from the improvement;

Use of water for irrigation, storage, regulation of stream flow, soil conservation, water supply, or any other purpose incidental thereto;

Providing an outlet for the accelerated runoff from artificial drainage whenever the stream, watercourse, channel, or ditch under improvement is called upon to discharge functions for which it was not designed by nature; it being the legislative intent that uplands that have been removed from their natural state by deforestation, cultivation, artificial drainage, urban development, or other manmade causes shall be considered as benefited by an improvement required to dispose of the accelerated flow of water from the uplands.

(G) "Environmentally significant areas" mean natural land or water areas that in some degree retain or have reestablished their natural character or have other features of scientific or educational interest such as rare or endangered plant and animal populations or geologic, scenic, or other natural features and, because of their values and functions, contribute to the community's general welfare.

#### **§ 6131.04 Petition for construction of ditch improvement.**

Any owner may file a petition with the clerk of the board of county commissioners of the county in which is located a part of the land that is averred to be benefited by the construction of a proposed improvement. The petition shall state that the construction of the improvement is necessary, will benefit the petitioner, and will be conducive to the public welfare; shall state the nature of the work petitioned for; and may ask to locate, clean, remove obstructions from, construct, reconstruct, straighten, deepen, widen, alter, box, tile, fill, wall, or arch any ditch, drain, watercourse, floodway, creek, run, or river or to change the course, location, or terminus thereof, or may ask to construct a levee, wall, embankment, jetty, dike, dam, sluice, revetment, reservoir, holding basin, control gate, breakwater, or other structure for control of water. The petition shall state the course and termini of the proposed improvement and the branches, spurs, or laterals, if any are petitioned for. Except as ordered under section 6131.31 of the Revised Code, the petition shall state that all costs of engineering, construction, and future maintenance will be assessed to the benefiting parcels of land. The petition shall contain a list of the names and addresses, where known, of all the owners of the land that the petitioner or the county engineer claims will be benefited or damaged by the construction of the proposed improvement. The petition shall be signed by one or more owners as petitioners. If the petitioner is a public corporation or the state, the petition shall be signed by its authorized representative. If the petitioner is the county, the petition shall be filed with the clerk of the court of common pleas, the matters in the petition shall be heard by the common pleas court as if the petition had come to the court on appeal, and the clerk and the court shall do all things that sections 6131.01 to 6131.64 of the Revised Code provide that the county commissioners shall do. The court of common pleas may appoint a board of arbitrators to assume the duties of the judge. The board shall be comprised of three disinterested persons chosen by the judge, who shall designate one of the persons to be chairman. A decision of the board shall require approval of a majority of the members. Either party may appeal the board's decision to the court of common pleas, which shall decide the case on the record of arbitration.

#### **§ 6131.09 Preliminary report by county engineer.**

When notified of the filing of a petition authorized by section 6131.04 of the Revised Code, the county engineer shall prepare a preliminary estimate of the cost of the proposed improvement. The engineer shall file at the first hearing, as a guide to the commissioners and the petitioners, a preliminary report including his preliminary estimate of cost, his comment on feasibility of the project, and a statement of his opinion as to whether benefits from the project are likely to exceed the estimated cost. The preliminary report shall list all factors apparent to the engineer, both favorable and unfavorable to the proposed improvement, so that the petitioners may be informed as to what is involved. In addition to reporting on the improvement as petitioned, the engineer may submit alternate proposals to accomplish the prayer of the petition. The county commissioners may require the county engineer to file any additional preliminary reports, of whatever nature, that in the opinion of the board will serve as a guide to the board and the petitioners in

deciding whether to proceed with the proposed improvement. The costs incurred by the engineer in making preliminary reports may be paid from the bond of the petitioners if the petition is dismissed at the first hearing, and any amount in excess of the bond shall be paid from county funds. If the engineer's costs are not paid from the petitioners' bond, they shall be paid from county funds.

**§ 6131.11 Dismissal of petition - appeal.**

If the board of county commissioners, at the first hearing, finds that a proposed improvement is not necessary, or finds that a proposed improvement will not be conducive to the public welfare, or finds that the estimated cost of a proposed improvement will exceed the benefits to be derived if it is constructed, the board shall dismiss the petition and enter its findings upon its journal. Any owner who is affected by the order of dismissal may appeal to the court of common pleas of the county in which the petition was filed, as provided in sections 6131.12 to 6131.64 of the Revised Code. If no appeal is filed within twenty-one days, pursuant to section 6131.25 of the Revised Code, the petitioner shall pay all the costs incurred in the proceedings and the bond shall be released.

An order issued by the board under this section is effective on the day of the hearing at which the board issued it.

**§ 6131.12 Grant of petition.**

If the board of county commissioners finds that a proposed improvement is necessary and that it will be conducive to the public welfare, and if the board is reasonably certain that the cost thereof will be less than the benefits, it may grant the prayer of the petition. When deciding whether to grant the prayer of the petition, the board shall give consideration to the protection of environmentally significant areas when those areas could be adversely affected by the construction of the proposed improvement and, if necessary, to alternative plans providing for that protection as well as for construction of the proposed improvement. Upon granting the prayer of the petition, the board shall determine the route and termini of the proposed improvement and of the branches, spurs, and laterals thereof and the manner of constructing the same. On any petition for any improvement of a ditch, drain, watercourse, or levee, the board, without request or application, may by its order change either terminus of the proposed improvement or the route thereof if it finds that the change is necessary to accomplish the purposes of the improvement. An order issued by the board under this section granting the prayer of the petition is effective on the day of the hearing at which the board issued it.

Upon granting the petition, the board shall order the county auditor to transfer from the general revenue funds of the county, not otherwise appropriated, to the general drainage improvement fund an amount not more than twenty-five per cent of the engineer's preliminary estimate after the twenty-one day period for appeal, as provided in section 6131.25 of the Revised Code, has expired and no appeal has been taken, and as soon as the transfer of funds has been authorized, the board shall order the county

engineer to prepare the reports, plans, and schedules as provided in sections 6131.01 to 6131.64 of the Revised Code. It shall fix a date for the filing of the reports, plans, and schedules by the engineer, allowing such time as is necessary for the preparation of the reports, plans, and schedules by the engineer, and such time may be extended from time to time by the board.

The board shall adjourn the hearing on the improvement to the date that it has fixed for the filing of the reports, plans, and schedules by the engineer and adjourn the proceedings from time to time, if necessary, thereafter. No change in the route or termini of any proposed improvement shall be made, no branches, laterals, or spurs shall be granted, and no change shall be made in the nature of the work proposed after the first hearing is completed, except upon application of an interested owner affected by the proposed improvement and upon notice given to all owners affected by the change, as provided in sections 6131.01 to 6131.64 of the Revised Code. All the findings and orders of the board shall be entered in its journal.

The route of an improvement shall so far as practicable be located so as to avoid running the improvement diagonally across property and shall where practicable follow property lines, section lines, and lines of public highways, but where the line of a public highway is followed, approval must be obtained from the agency owning the highway.

If the board finds for the improvement, and if the improvement is being undertaken through the joint efforts and cooperation of the board and any federal or state agency, and if the federal regulations, state agency rules, or other procedures of the cooperating agency are in conflict with Chapter 6131. of the Revised Code with respect to the procedures for the preparing of contracts, the issuing of bids, the making of awards, and generally the administering of the contracts, the board may adopt the federal regulations, state agency rules, or procedures in those areas where conflict exists and proceed with the improvement in accordance with the requirements of the federal regulations, state agency rules, or procedures.

#### **§ 6131.14 County engineer's duties.**

The clerk of the board of county commissioners shall certify to the county engineer immediately, after the requirements of section 6131.12 of the Revised Code have been met, a copy of the findings and orders of the board of county commissioners in favor of an improvement. The engineer shall make the necessary survey for the proposed improvement. The engineer shall make plans for structures, maps showing the location of the land proposed to be assessed, and profiles showing the cuttings and gradient of the improvement and shall make an estimate of the cost of the construction of the improvement, which shall include actual construction cost, the cost of engineering, and the cost of notices, publication, and other incidental expenses. The engineer shall recommend the maintenance district in which the improvement shall be placed. The assessment of the improvement for maintenance for one year shall be added to the cost of construction in making the actual assessment and shall be credited to the maintenance fund of the district.

The county engineer shall set proper construction stakes and shall note the intersection of the line of the improvement with the apparent land boundaries of separate owners, township and county lines, natural landmarks, road crossings, or other lines or marks. The engineer shall take and note any necessary levels off the line of the improvement to determine the area of the land subject to drainage.

The engineer shall also establish, at intervals of not less than one in each mile, in the most practicable permanent form, and in locations where destruction or disturbance is improbable, bench marks from which the original levels of the improvement can be established. The bench marks and all levels of the improvement shall be based upon some established elevation of the geological survey of the United States, if any, in the county, and the relation of any assumed elevation used by the engineer in the work upon any improvement to the elevation established by the geological survey shall be accurately stated in the engineer's report. The engineer shall make a plan of the work proposed to be done, which shall show the grade, the depth, the excavating to be done, the location of the permanent bench marks and their actual elevation above or below the base elevation used, and such other data as in the judgment of the engineer will aid in retracing lines, levels, or other features of the improvement. The plan shall indicate the profile and the nature of the excavation.

As soon as the engineer has completed the maps, profiles, and plans for the improvement, the engineer shall transmit copies thereof to the director of natural resources, the director of transportation when a state highway is affected, and the board of directors of any conservancy district within which any part of the lands or streams affected by the proposed improvement may lie. The director of natural resources, the director of transportation, and the directors of the conservancy district shall review the plans submitted and within thirty days file with the county engineer a report indicating approval or, in case that approval cannot be given, a report with recommendations.

The approval or report with recommendations, which, where appropriate, shall include recommendations regarding the use of best management practices that are consistent with the prayer of the petition, shall be transmitted by the engineer to the board of county commissioners, who shall take notice of the approval or recommendations and shall authorize the engineer to make any changes or alterations that in the judgment of the board are necessary or desirable.

Upon receipt of approval of the plans by the director of natural resources, the director of transportation, and the directors of any conservancy districts affected, or upon completion of any changes authorized by the board of county commissioners, the engineer shall file with the clerk of the board of county commissioners all maps, profiles, and plans as provided by this section.

The engineer shall prepare specifications for the construction of the improvement. The engineer shall specify a width of temporary easement for construction purposes. The specifications shall provide for spreading and leveling of spoil banks and shall provide for erosion and sediment control through the establishment of a sod or seeded strip not fewer than four feet nor more than fifteen feet wide, measured at right angles to the top of the ditch bank, on both sides of the ditch, except where suitable vegetative cover exists. The strip or other such controls shall be considered a part of the permanent improvement. Sod or seeded strips

established and maintained in excess of four feet shall be compensated for by their removal from the taxable valuation of the property of which they are a part. The engineer shall make estimates of the cost of excavating and of the cost of material and may divide the construction of the improvement into construction areas as considered expedient. The engineer shall make a note of all fences, floodgates, culverts, or bridges that will be removed in constructing the improvement and of all culverts or bridges that must be adjusted or the channel of which must be enlarged to construct the improvement.

In estimating the cost of an improvement, the engineer may include the cost of installing gates in fences on the reserved right-of-way where needed to provide access for maintenance. The gates shall be kept locked when requested by the owner and shall be considered a part of the original improvement and subject to maintenance as provided by sections 6137.01 to 6137.12 of the Revised Code. The engineer shall make an estimate of the cost of inspecting the work as it progresses and shall, with the assistance of the prosecuting attorney, prepare forms for contracts with bidders and forms of bid guaranties that meet the requirements of section 153.54 of the Revised Code. Upon the acceptance of the contract work, the engineer shall file with the county recorder a property plat showing the general location of the improvement and a statement describing the width of permanent easement for maintenance as provided for in section 6137.12 of the Revised Code. The engineer shall make an itemized bill of the costs and expenses incurred in the proper discharge of duties set forth in this section and shall file the maps, profiles, plans, schedules, and reports with the clerk of the board of county commissioners upon completing them.

**§ 6131.21 Factors to be considered by commissioners at final hearing.**

At the final hearing on a proposed improvement, after hearing all the evidence offered in the proceedings and after receiving and considering all the schedules, plans, and reports filed by the county engineer, the board of county commissioners shall review and reconsider the former order made by it finding in favor of the improvement and shall either affirm its former order and proceed to confirm the assessments and order the letting of the contract or shall set aside its former order and dismiss the petition. At the final hearing, if the board finds that the cost of the improvement will be equal to or greater than the benefits that will be derived therefrom if constructed, or if the board finds that the improvement is not necessary, or if it finds that the improvement will not be conducive to the public welfare, the board shall set aside the former order finding in favor of the improvement made by it at the first hearing and shall dismiss the petition. In determining whether or not the improvement should be granted, the board shall consider the following factors:

- (A) The cost of location and construction;
- (B) The compensation for land or other property necessary to be taken;
- (C) The effect on land along or in the vicinity of the route of the improvement;

(D) The effect on land below the lower terminus of the improvement that may be caused by constructing the improvement;

(E) The sufficiency or insufficiency of the outlet;

(F) The benefits to the public welfare;

(G) The benefits to land, public corporations, and the state needing the improvement;

(H) Any other proper matter that will assist it in finding for or against the improvement.

If the petition is dismissed at the final hearing, all costs for the proceedings, including the costs incurred by the engineer in making surveys, plans, reports, and schedules, may be distributed to the benefiting landowners in the same ratio as determined by the engineer in the final estimated assessments presented at the final hearing. The board shall confirm or alter the assessments as provided for in section 6131.22 of the Revised Code. The approved assessments shall then be certified to the county auditor to be administered pursuant to section 6131.49 of the Revised Code.

If the costs are not distributed to the benefiting landowners, they shall be paid from county funds.

The petitioner, or any owner in favor of the improvement, may appeal from the order of dismissal, as provided in section 6131.25 of the Revised Code.

An order issued by the board under this section is effective on the day of the hearing at which the board issued it.

#### **6137.08 Reduction in maintenance assessment application.**

Any owner may make application for reduction in his maintenance assessment due to work he proposes on any portion of a public ditch, watercourse, or other improvement. The application shall be filed with the county engineer on or before the first day of May in any year and shall state the nature of the work to be done, such as clearing brush, removing silt or debris, repair of structure, or other work necessary to preserve the improvement. The county engineer, in making inspections of the drainage improvements, shall note the extent to which any owner has carried out such repair and maintenance work. In making the annual report and estimate to the board of county commissioners, the engineer shall include a schedule containing the name of each owner who has applied for reduction of maintenance assessment due to performance of repair and maintenance work and the percentage reduction, if any, that the engineer recommends be granted each owner. The board shall either confirm or reject the allowances recommended by the county engineer. The allowance confirmed as to each land owner shall be certified to the county auditor, who shall reduce the next annual maintenance assessment of the owner by the percentage so certified.

**6137.09 Certificate for reduction in maintenance assessment.**

The board of county commissioners may grant to any owner a reduction of not more than fifty per cent of his annual maintenance assessment provided that the owner shall have filed with the county engineer a certificate of the board of supervisors of the soil conservation district of the county in which the land is located, certifying that he is following practices in the cultivation or management of agricultural land that will reduce the runoff of surface water and the erosion of sediment and silt into drainage channels. The certificate shall be signed by the president and the secretary-treasurer of the soil conservation district board of supervisors and it shall remain in effect until canceled by the board of county commissioners. The county engineer shall have the right to inspect the premises of any owner claiming assessment reduction due to soil and water conservation and to ask the soil conservation district for review of any certificate on file.

At the time he makes his annual report and estimate of maintenance costs, the county engineer shall transmit to the board of county commissioners all soil conservation certificates that have been filed with him. The clerk of the board of county commissioners, on or before the first day of July in each year, shall file with the county auditor a list of owners who have been certified by the soil conservation district for a fifty per cent reduction in maintenance assessment for the current year.