

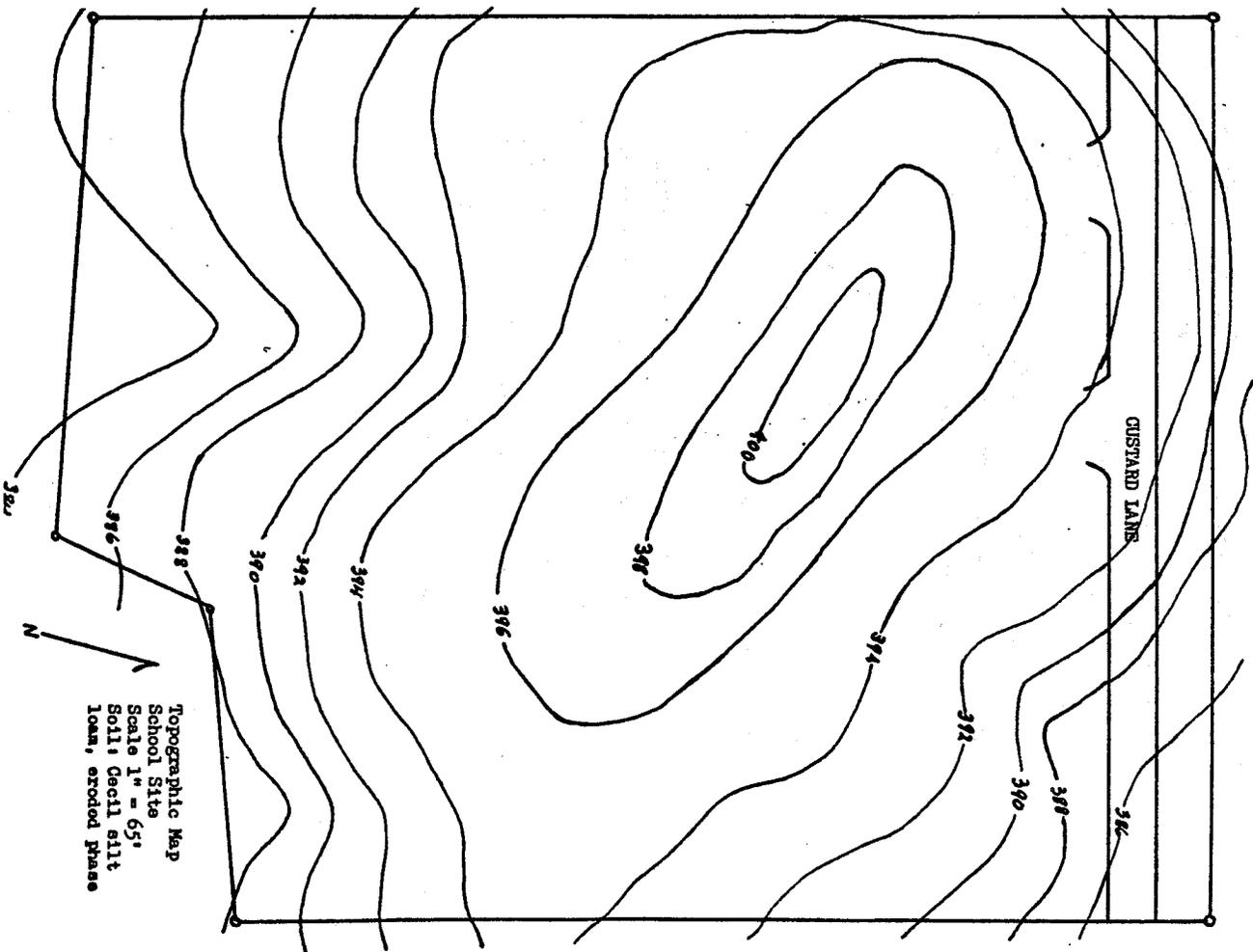
C. SAMPLE EROSION AND SEDIMENTATION  
CONTROL PLANS AND MODEL ORDINANCE

In order to show the type and range of erosion control plans which might be prepared as part of land development projects, two example plans are reproduced here.

Erosion-Sedimentation Control Plan 1, consists of a relatively simple plan prepared for an elementary school. It was taken from: Comprehensive Erosion and Sediment Control Training Program for Engineers, Architects and Planners, Sediment Control Manpower Project, National Association of Conservation Districts, Washington, D.C., 1976.

Erosion-Sedimentation Control Plan 2, shows a more elaborate approach to erosion and sedimentation planning. The maps and information shown here illustrate the way in which erosion and sedimentation control planning should be integrated into the overall planning of a site. This information was taken from a handbook developed in Michigan called, Michigan Soil Erosion & Sedimentation Control Guidebook, Michigan Department of Natural Resources, Soil Erosion and Sedimentation Control Unit, Lansing, Michigan, 1975.

Also included in this section is a model erosion and sedimentation control ordinance prepared by the Dane County Regional Planning Commission. It is included as an example of how the problem of erosion and runoff can be approached at the county level.



EROSION-SEDIMENTATION CONTROL PLAN-SAMPLE NARRATIVE  
ELEMENTARY SCHOOL

DESCRIPTION: The project is a 20,000 square-foot school building with exercise fields on a 6-acre site.

DATES OF CONSTRUCTION: Project is scheduled to start on May 1, 1975; to be completely stabilized by October 1, 1975.

SOIL DATA: The entire site is Cecil silt loam eroded rolling phase.

TREE PROTECTION: Trees along the perimeter will be protected from equipment damage by appropriate signs and barriers.

EROSION CONTROL PROGRAM: Not more than one-half the site is to be cleared at one time. Anchored mulch and temporary seeding will be done immediately after grading to all graded areas except building site and 30 feet border and parking area. Parking lot to be covered with gravel after grading.

SEDIMENT CONTROL PROGRAM: Control will be achieved through installation of one temporary sediment basin of 0.5 acre-foot capacity and one temporary sediment trap of 0.15 acre-foot capacity. Fifteen hundred feet of earth diversions to direct storm runoff to the basins.

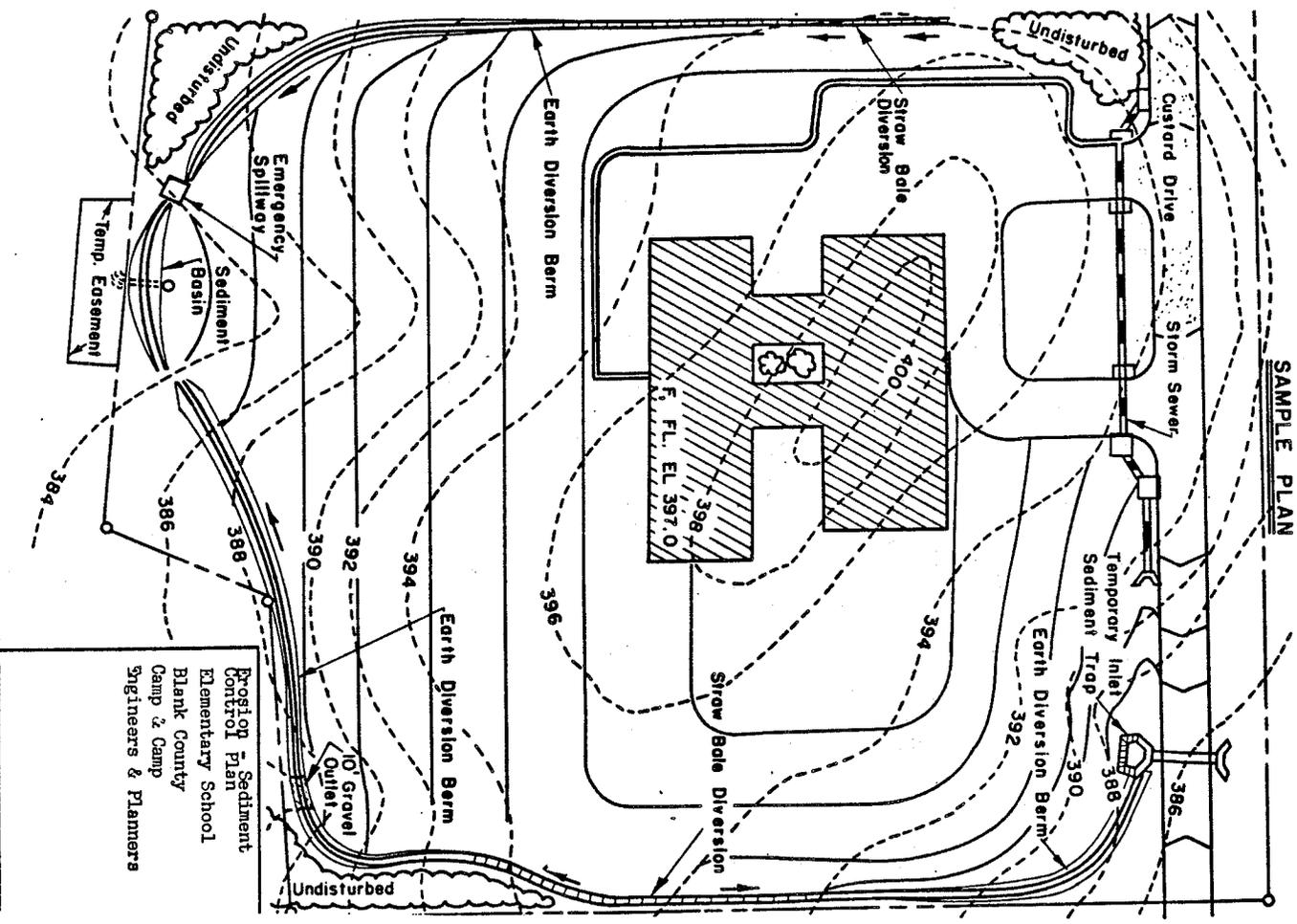
SAFETY PROTECTION: The sediment basins will be posted and the larger one fenced to exclude children.

PLAN OF OPERATIONS: All mechanical controls are to be placed, mulched, and seeded prior to or as the first step in clearing and grading. Following their completion, the school site and area east of the school building are to be stripped and the topsoil stockpiled at the southeast corner of the site. This area will then be brought to grade as nearly as possible without disturbance to other areas. All areas brought to grade will then be mulched and seeded with temporary vegetation. Mulch will be anchored with mulch anchoring tool. As soon as mulch is anchored, the remainder of the site except for the area at the south sediment basin will be graded and a stockpile of soil material established near the topsoil stockpile for filling the sediment basin as the last step in grading.

**STORM WATER MANAGEMENT:** The peak runoff for a 10-year frequency rain-fall after development shall not exceed the 10-year frequency peak before development. This will be accomplished by use of roof top and parking lot storage. (See attached calculations.) All calculations are based on the methods set forth in the Soil Conservation Service publication "Urban Hydrology For Small Watersheds," Technical Release No. 55, SCS, USDA, January 1975.

**MAINTENANCE PROGRAM:** All measures are to be inspected daily by the site superintendent and Inspector. Any damaged structural measures will be repaired by the close of the day. Sediment basins are to be cleaned out in accordance with the specifications and the material disposed of by spreading on the site. Mechanical controls will be removed after areas above them have been stabilized with vegetation. The sediment basin at the south end will be left until all other mechanical measures have been removed and the areas permanently stabilized.

SAMPLE PLAN



EROSION AND SEDIMENT CONTROL PLAN NOTES:  
ELEMENTARY SCHOOL

1. No disturbed area will be exposed for more than 30 calendar days without seeding, mulching, or other protective measures.
2. All mechanical erosion and sediment control measures are to be placed prior to or as the first step in clearing and grading.
3. All storm and sanitary sewer lines not in streets are to be mulched and seeded within 15 days after backfill. No more than 500 feet are to be open at any one time.
4. Electric power, telephone, and gas supply trenches are to be compacted, seeded, and mulched within 15 days after backfill.
5. All temporary earth berms diversions and sediment control dams are to be mulched and seeded within 10 days after grading. Straw, hay, or comparable mulch is required.
6. Trees along the perimeter will be protected from equipment damage by appropriate signs and barriers.
7. Any disturbed area not paved, sodded, or built upon by November 1 is to be seeded on that date with temporary vegetation and mulched.
8. All land, on or off site, which is disturbed by construction and which is not built upon or surfaced, shall be adequately stabilized to control erosion and sedimentation.
9. All erosion and sediment controls, including seeding and mulching, shall be in accordance with standards and specifications contained in the local erosion and sediment control handbook.

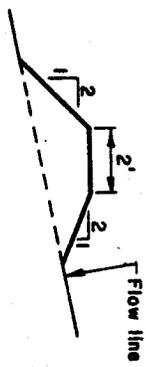
DETAILS OF MECHANICAL CONTROLS

SAMPLE

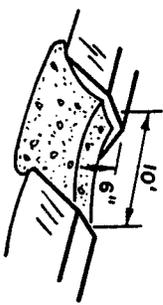
SAMPLE



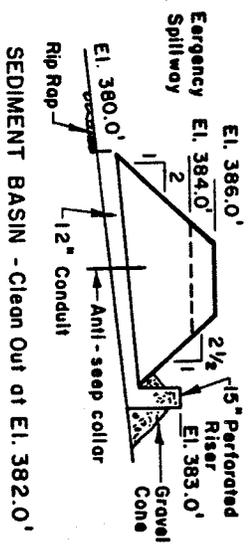
STRAW BALE DIVERSION



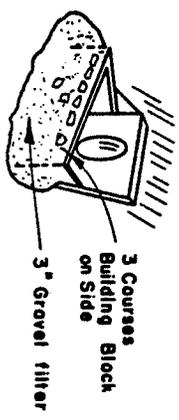
EARTH DIVERSION BERM  
(Height Varies)



GRAVEL OUTLET



SEDIMENT BASIN - Clean Out at El. 382.0'



TEMPORARY SEDIMENT TRAP  
AT CULVERT HEADWALL



TEMPORARY SEDIMENT TRAP  
AT ALL INLETS

The above plan is only one of several ways that the school site could have been laid out and protected from erosion and sediment damage. Even if the basic layout was retained, there could have been much less grading. The wooded area, or at least part of it, could have been retained. The depth of grading may have been excessive. Straw bale barriers were used to the limit of their applicability or, perhaps, more than the limit. It would have been safer to lengthen the earth diversions along the east and west boundaries. The plan calls for spreading the sediment cleaned from the basin on the site. It should also have specified when and how erosion of this material would be controlled. The plan is also silent on how permanent stabilization will be accomplished.

PART III References:

1. Klingebiel, A.A., "Costs and Returns of Soil Surveys," Soil Conservation, August, 1966.



# planning

## planning for erosion and sedimentation control

There are two steps in planning for erosion and sedimentation control. The first is an investigation and analysis of the natural characteristics of a site or corridor (such as soils, slope, and vegetation) that will help the earth changer anticipate where erosion problems might occur. The second step of erosion and sedimentation control planning is to select effective control measures. The selection of the appropriate set of control measures and their installation depends on the earth changer's ability to accurately anticipate and respond to erosion and sedimentation problems. An understanding of the principles, critical problem areas, and techniques of erosion and sedimentation control reviewed in Chapter 2 will enable the earth changer to:

1. gather information on topography, soils, drainage, vegetation, and other predominant site features
2. analyze the information in order to anticipate erosion and sedimentation problems
3. develop an earth change plan which minimizes the amount of erosion created by development
4. develop an erosion control plan which specifies effective erosion and sedimentation control measures

In this chapter, the erosion and sedimentation control information which is applied to the site and corridor inventory and analysis and the development of an earth change plan is described. In Section 1 inventory information required by the

General Rules of Michigan's Soil Erosion and Sedimentation Control Act is described and sources from which the required information may already be available are given. Methods for analyzing characteristics (soils, vegetation, and topography) of a site or corridor which are relevant to erosion and sedimentation control planning are discussed. An analysis that draws conclusions as well as an inventory of investigation information, is essential. Section 2 describes how site or corridor investigation information can be interpreted when determining erosion and sedimentation potential.

In Section 3 the factors to be considered in the development of an earth change plan are discussed. The objective of its phase of planning is to combine the requirements of the development program with site analysis conclusions to determine the erosion and sedimentation control measures needed. Some of the considerations involved in locating use areas (such as vehicular and pedestrian circulation routes, building zones, and recreation areas) are discussed. The grading and drainage plans for site and corridor development are discussed in particular detail. The development of this grading and drainage concept is especially important in erosion and sedimentation control.

In Section 4 the erosion and sedimentation control plan is defined and discussed. This plan is divided into two parts: one is graphic and the other written. The graphic submission includes the erosion control site plan, while the written submission defines a maintenance program for permanent erosion control.

### SECTION 1: inventory and interpretation

The General Rules of the Soil Erosion and Sedimentation Control Act require several types of site and corridor investigation information. Site investigation (or inventory) information which is required for both site and corridor development is as follows:

1. a site location map and an indication of the site's proximity to lakes, streams, and other surface waters
2. a topographic (contour) map or slope description of the site, as well as an indication of existing vegetation, predominant land features, and a description of existing site drainage patterns and facilities
3. a soil survey or written description of soil conditions for the site areas which will be exposed during development

By analyzing this site investigation data, the areas which are most vulnerable to erosion can be located. Development can then be planned to minimize erosion damages in these areas.

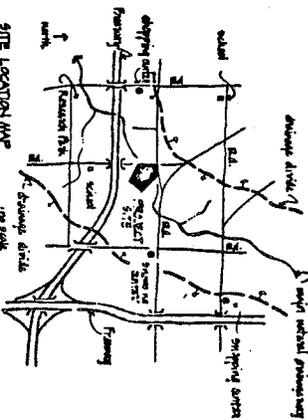
#### SITE LOCATION MAP

In addition to showing the location of the site, the purpose of the site location map is to show proximity to lakes, streams, or other surface waters whose quality may be affected by the development.

The scale of the site location map is not specified in the General Rules. A county drainage map, on which the site is outlined, would serve to illustrate this information. County maps should be available from the County Drain Commission or the County Planning Office. If such a map is not available, a series of United States Geological Survey (USGS) maps may be used as the site location map (see Chapter 5, page 97, for information about how to obtain USGS maps). The major drainage system within which the site is located should be indicated on the location map.

Corridor developments frequently extend through several counties. In these cases, the large scale of the USGS map may best serve to illustrate the location of the area to be developed in reference to surface waters.

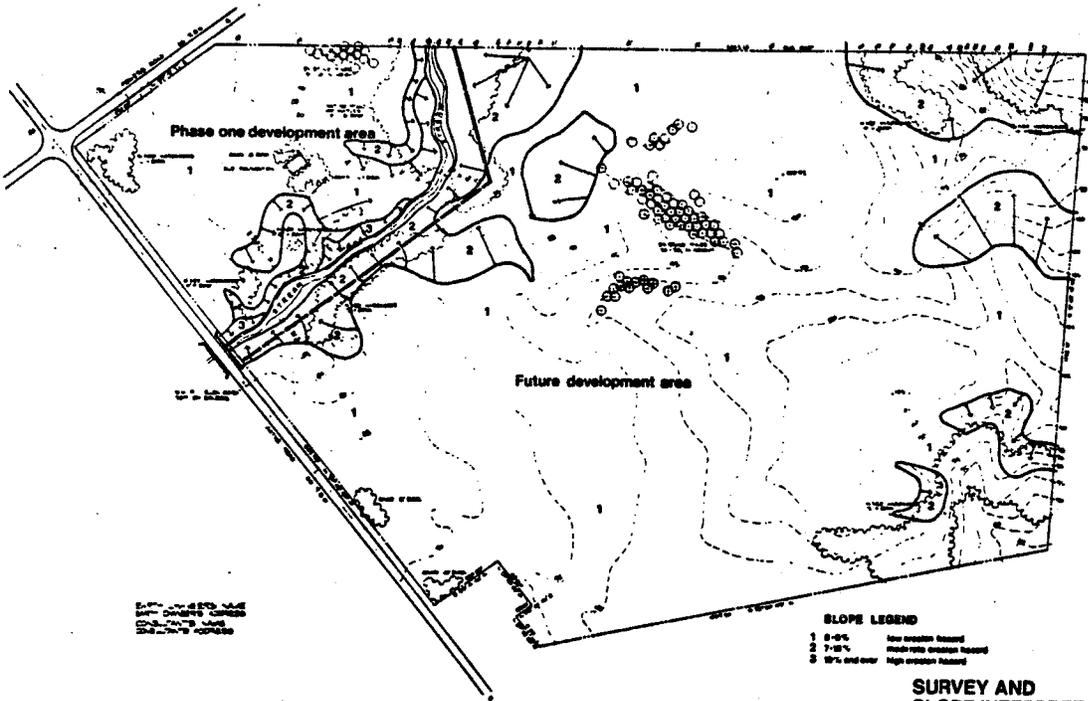
Proximity to streams and other surface waters can significantly influence the selection of erosion and sedimentation control measures and the ultimate cost of the control program. This site location data is, therefore, particularly significant in weighing corridor alignment alternatives. Where highways cross streams, or run parallel to their course, the risk of sediment damage will be high.



#### TOPOGRAPHIC MAPS

The following is a list of possible sources and types of topographic surveys available.

1. Local governmental planning agencies: These agencies often have topographic data for areas within their boundaries. Such agencies include county, township, and municipal planning offices.
2. United States Geological Survey (USGS): The State agent for USGS map distribution, the State Geological Survey Office in Okemos, has an index and complete inventory of maps for Michigan. Specific information about contacting this source is given in Chapter 5, page 97.
3. Private utility companies: These companies often have topographic maps of areas around their rights-of-way or easements.
4. Professional, registered land surveyors
5. Professional aerial survey services



**SURVEY AND SLOPE INTERPRETATION**  
**SOIL EROSION AND SEDIMENTATION CONTROL GUIDELINES**  
**FIGURE 6**

**TYPE 1: Soil Survey**

The nature of the proposed development and the characteristics of the site in question will determine which type of soil information will be acceptable. It is recommended that the following kinds of development have soil surveys:

- commercial developments
- subdivision and/or multi-family housing
- industrial/office
- recreational facilities
- utilities
- transportation

Sites with the following characteristics may require a soil survey regardless of development type:

- sites with steep slopes (gradients over 12%) on more than one-tenth of their total area
- sites with obvious erosion problems
- sites within 500 feet of a stream, drainage way, or lake (with the exception of single residential lots)

A soil survey includes a set of maps on which the location and extent of different soil types are outlined and identified by symbols. The soil survey report also includes a legend which identifies each symbol and describes each type of soil on the map.

Each soil series and mapping unit is described in terms of its most important physical and chemical properties. Interpretations are made on the suitability of the different soil series and mapping units for various uses.

Of particular interest in soil erosion and sedimentation control planning are the properties that affect the erodibility of the soil. The erodibility of all Michigan soils has been calculated. A chart listing the erodibility ratings of each soil type is available from the Soil Conservation District Office. By using a soil survey, it is relatively simple to identify the different soils present on a site or corridor and to check their erodibility ratings.

Four principal soil properties determine erodibility:

1. particle size and gradation
2. percentage of organic content
3. soil structure
4. soil permeability

These soil characteristics can be measured in a series of laboratory tests and their values used in an erodibility equation which yields the soil's erodibility rating.

The soil erodibility rating (or K factor) is one of the five factors that make up the Universal Soil Loss equation. This equation is used to estimate the amount of soil that will be lost from a site in tons per acre per year. The Universal Soil Loss equation is as follows:

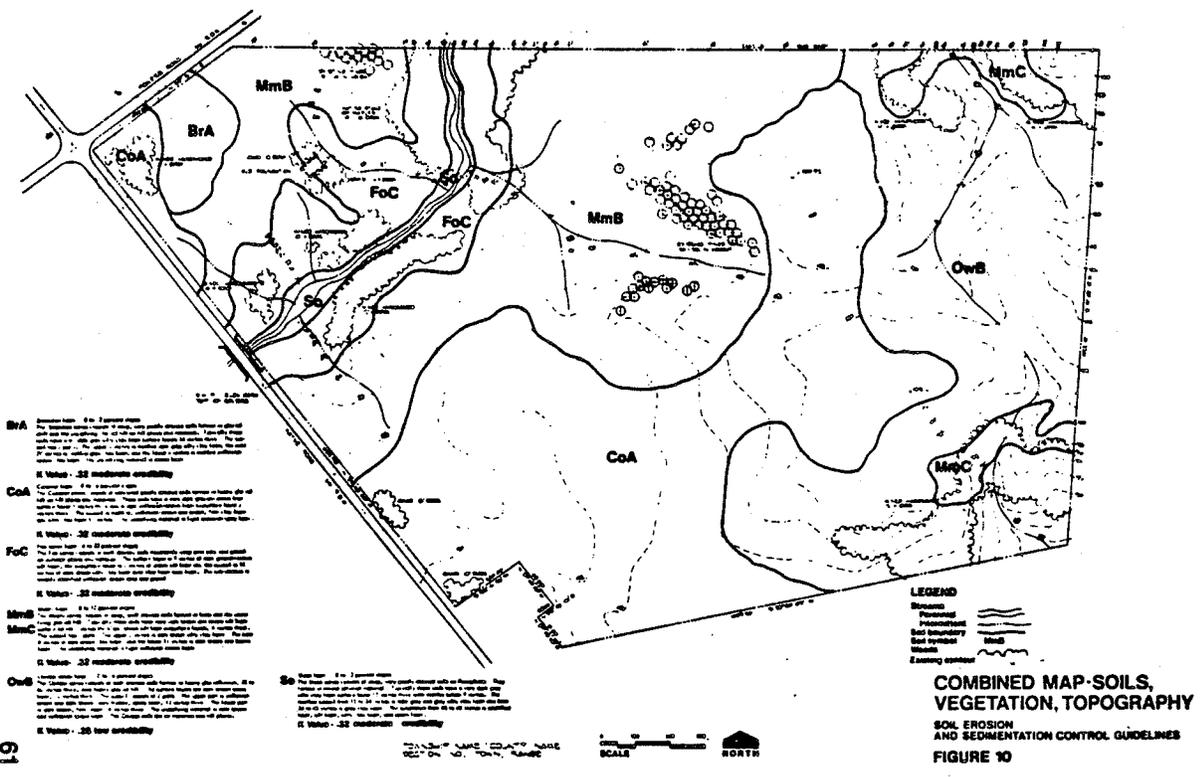
$$\text{soil loss} = KRLSCP$$

(K = soil erodibility factor, R = rainfall factor, LS = slope length and steepness, C = vegetative cover, P = conservation/construction practices)

Even where the Universal Soil Loss equation is not used, identifying the soil erodibility factors for each soil type which exists on a site or in a corridor can enable the earth changer to make comparative judgments about the suitability of different areas for development. The higher the numerical K factor, the more erodible is the soil.

On a site where borings will be taken to determine subsurface conditions, the earth changer should specify the estimated erodibility of the soil. This consideration is important since the erodibility of subsurface soils which are likely to be encountered at construction sites may differ from the erodibility of surface soils on which published K factors are based. Figure 9 provides K values for all soils commonly found in Michigan.

1. W. H. Wischmeier and D. Smith, *Predicting Rainfall Erosion Losses from Cropland East of the Rocky Mountains*, Agricultural Handbook 282 (Washington, D.C.: U.S. Government Printing Office, 1965).



**BrA**  
 BrA is a 10-acre zone located in the upper left corner of the site. It is characterized by a high degree of soil erodibility and a steep slope. The value for this zone is 25, indicating a high risk of soil erosion and sedimentation. Critical areas for erosion control are identified within this zone.

**CoA**  
 CoA is a 15-acre zone located in the center of the site. It consists of a large, relatively flat area with moderate soil erodibility. The value for this zone is 20, indicating a moderate risk of soil erosion and sedimentation. Critical areas for erosion control are identified within this zone.

**FoC**  
 FoC is a 10-acre zone located in the center of the site. It consists of a large, relatively flat area with moderate soil erodibility. The value for this zone is 20, indicating a moderate risk of soil erosion and sedimentation. Critical areas for erosion control are identified within this zone.

**MmB**  
 MmB is a 10-acre zone located in the center of the site. It consists of a large, relatively flat area with moderate soil erodibility. The value for this zone is 20, indicating a moderate risk of soil erosion and sedimentation. Critical areas for erosion control are identified within this zone.

**MmC**  
 MmC is a 10-acre zone located in the center of the site. It consists of a large, relatively flat area with moderate soil erodibility. The value for this zone is 20, indicating a moderate risk of soil erosion and sedimentation. Critical areas for erosion control are identified within this zone.

**Owb**  
 Owb is a 10-acre zone located in the center of the site. It consists of a large, relatively flat area with moderate soil erodibility. The value for this zone is 20, indicating a moderate risk of soil erosion and sedimentation. Critical areas for erosion control are identified within this zone.

**MmC**  
 MmC is a 10-acre zone located in the center of the site. It consists of a large, relatively flat area with moderate soil erodibility. The value for this zone is 20, indicating a moderate risk of soil erosion and sedimentation. Critical areas for erosion control are identified within this zone.

**LEGEND**  
 Stream  
 Road  
 Field Boundary  
 Erosion Control

**COMBINED MAP-SOILS, VEGETATION, TOPOGRAPHY SOIL EROSION AND SEDIMENTATION CONTROL GUIDELINES**  
**FIGURE 10**

61 71

**SECTION 2: site and corridor analysis**

The term **analyste**, in this case, means drawing conclusions about the information gathered during the site or corridor investigation. The objective of the analysis is to pinpoint those site or corridor areas which are especially vulnerable to erosion or sedimentation because of existing topography, soils, vegetation, or drainage patterns. These characteristics must be interrelated in assessing the hazards of erosion and sedimentation for different site areas. The inventory and analysis information is of little value, however, if it is not used as a basis for later site planning decisions. After an erosion vulnerability assessment has been made, the earth change plan can be developed so that the disturbance of vulnerable or critical areas will be minimized.

The process of making specific conclusions about critically erodible areas involves interpretation of the inventory information already gathered for topography and soils (specifically, the slope interpretation and soils survey). Figure 12 illustrates site conditions or combinations of conditions which determine critically erodible areas.

**FIGURE 12**

- CONDITION 1:** High erodibility soil
  - CONDITION 2:** High erosion hazard slope
  - CONDITION 3:** Moderate erodibility soil
- CRITICAL AREA**  
**CRITICAL AREA**  
**CRITICAL AREA**

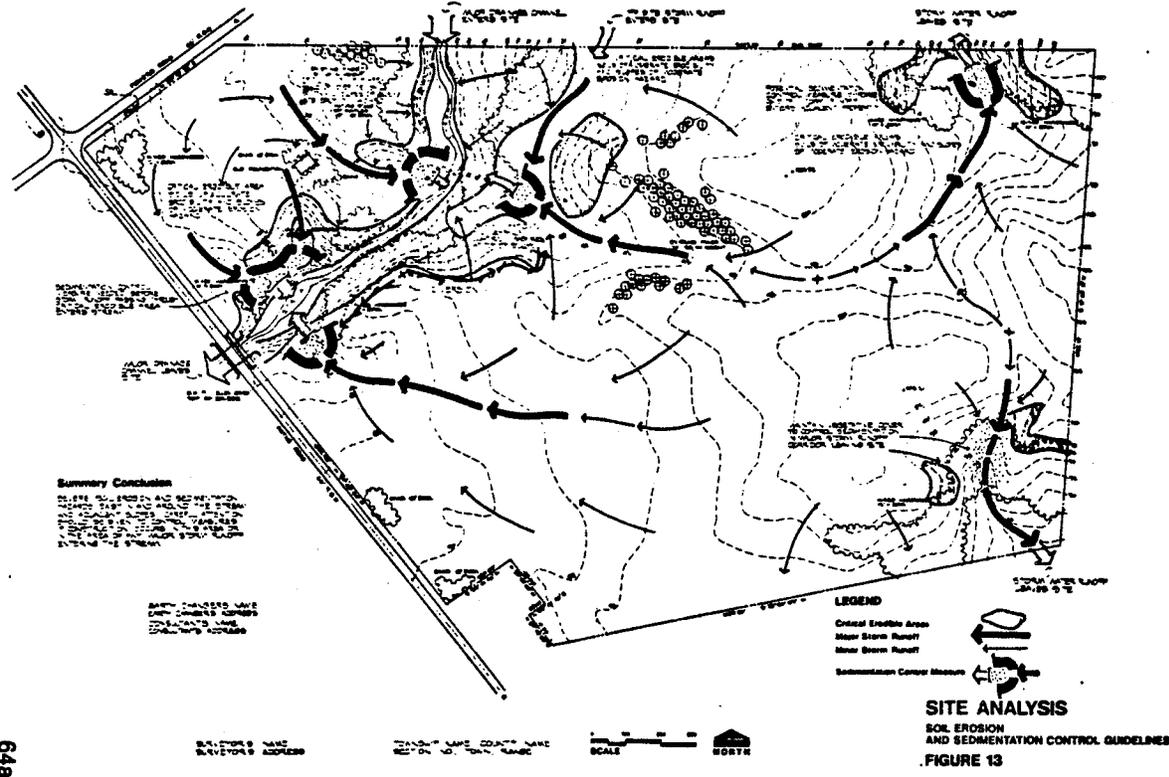
64

**ANALYSIS CONCLUSIONS**

The considerations that should be addressed in an analysis of the site investigation information on topography, vegetation, soils, and existing drainage, both for site and corridor development, are outlined below. Specific conclusions about these issues should be noted on the analysis.

1. Indicate where soils, topography, and or vegetation combine to create critically erodible areas.
2. Indicate how the site or corridor relates to surrounding streams, drainageways, or other bodies of water. Assess the vulnerability to erosion and sediment damage of these drainageways and surface waters and all off-site areas.
3. Indicate where storm water runoff crosses the site or corridor boundaries. Indicate the potential options for disposing of storm water runoff by including potential locations of sediment control structures.
4. Indicate how areas disturbed by construction might be protected from increasing surface storm water runoff.

Figure 13 provides a graphic example of what a site analysis might look like. By using the conclusions noted in the analysis above to guide the process of preparing an earth change plan, a plan which strongly relates to site and corridor conditions and minimizes soil erosion can be developed. An earth change plan developed in this way will be a direct response to soil erosion and sedimentation as well as other considerations of function, economics, engineering feasibility, and aesthetics.



Summary Conclusions

64a 72

### SECTION 3: earth change plan

A logical step in meeting the requirements of Michigan's Act 347 and its corresponding General Rules is the preparation of an earth change plan. The conclusions of a site or corridor analysis should indicate which areas can best accept development and which areas should remain undisturbed. The earth change plan combines these conclusions of the analysis about development potential with the program requirements for circulation routes, building zones, recreation areas, and other facilities. The goal in developing an earth change plan is to find the most harmonious fit between the natural character of the site or corridor and the uses intended.

In corridor development, the earth change plan usually consists primarily of an evaluation of the relative vulnerability to development of a series of alternative corridor alignments. The three major factors related to erosion and sedimentation control which must be considered are:

1. the corridor's proximity to surface waters
2. the severity of topography
3. the erodibility of soils

For the development of a site the earth change plan illustrates the general character of the development planned for the site by indicating the following factors:

- the location of buildings
- vehicular and pedestrian routes
- parking areas
- open space areas
- other site facilities

In addition, the earth change plan, both for site and corridor developments, should include the grading and drainage plans, a planting program based on the maximum retention of existing vegetation, and other measures that will be used to control erosion and collect sediment.

The following erosion and sedimentation control principles should guide the development of the earth change plan.

1. The earth change plan should minimize the amount of earth change necessary to accommodate development and maintain

2. The disturbance of critical areas (such as steep slopes, areas of highly erodible soil, stream banks, and drainage ways), as documented in the site analysis, should be held to a minimum.

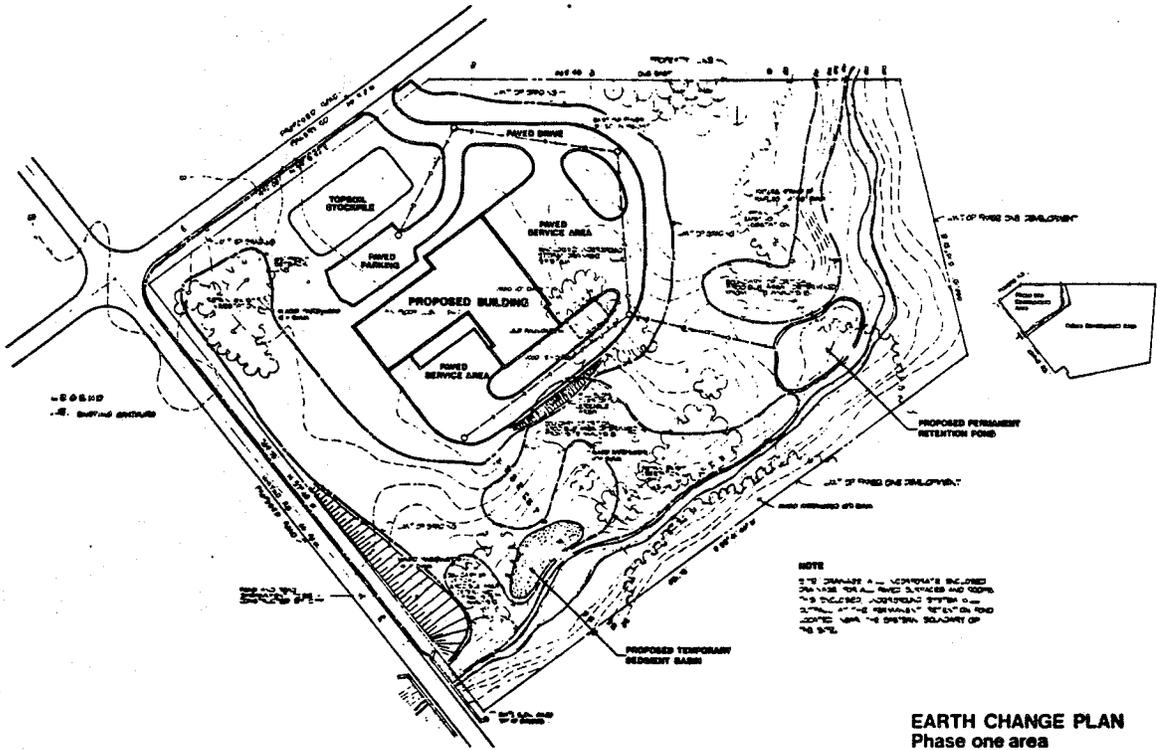
Some sites and corridors may have many limitations on what can be done without creating severe erosion hazards. Sites with large areas of steep slopes (over 16%) or highly erodible soils are not well suited for development. These sites, however, may be able to accept development of a lesser intensity if it is carefully planned to avoid the disturbance of highly vulnerable areas. By selecting sites and corridor alignments which can readily accommodate the program requirements of the proposed development, potentially high levels of erosion and sedimentation, and the costs of controlling them, can be avoided.

3. Major development activity and areas of high intensity use should be located in site or corridor areas which are least vulnerable to erosion.

When planning the location of different use areas on the site (such as building zones, circulation routes, parking areas, and recreation areas) the site's vulnerability to erosion should be taken into consideration. If possible, major earth change activity should be planned only for those areas which are least vulnerable to erosion.

Certain site facilities attract heavy use and this can create erosion problems. All roads, parking areas, building entrances, and recreation areas have such high use potential. In general, it is best to locate roads and high use pedestrian areas away from vulnerable slopes, stream banks, and drainage channels unless special stabilization measures are planned. Roads properly designed and constructed early in development may serve as diversions that cut across long slopes. Storm water velocities can be controlled and erosion reduced by such planning.

4. The plan should illustrate how the increased volumes and velocities of runoff generated by development will be accommodated without causing erosion. The manner in which the volume, velocity, and sediment content of runoff released to off-site areas will be controlled should also be indicated.



NOTE  
 1. THE GRANITE A - CONTRACTOR'S BELIEVED  
 2. THE GRANITE A - CONTRACTOR'S BELIEVED  
 3. THE GRANITE A - CONTRACTOR'S BELIEVED  
 4. THE GRANITE A - CONTRACTOR'S BELIEVED  
 5. THE GRANITE A - CONTRACTOR'S BELIEVED

**EARTH CHANGE PLAN**  
 Phase one area  
 SOIL EROSION  
 AND SEDIMENTATION CONTROL GUIDELINES  
 FIGURE 14

708

OWNER'S NAME  
 SURVEYOR'S ADDRESS

TOWNSHIP NAME / COUNTY NAME  
 SECTION NO. / TOWNSHIP RANGE

SCALE



73

MODEL ORDINANCE TO REGULATE  
EROSION, SEDIMENT, ONSITE DETENTION  
AND RUNOFF CONTROL FOR GENERAL  
LAND DISTURBING ACTIVITIES FOR THE  
(GOVERNMENTAL UNIT)

ABBREVIATIONS USED IN THIS MODEL

I. GENERAL

[ ] Material enclosed in brackets means optional material - a choice must be made between alternate clauses/phrases but if a second alternative is not included then a decision of whether to retain or delete the material must be made.

( ) Parenthesis connected with underlining means that a particular value, citation or thing must be supplied. In several cases, sample or tentative values have been suggested but clearly these may be replaced with different terms.

COMMENT: Explanatory material which is not intended for adoption within the ordinance.

II. SPECIFIC

(administrative authority)

Means that an administrative authority must be selected and specifically named in the ordinance, i.e., city engineer, county public works director. It is not necessary that the same administrative authority be selected to administer all portions of this ordinance. That is, the functions and duties may be shared or split. However, if more than one authority is going to be used, caution is urged in completing this ordinance to assure that the chosen authority is assigned the desired functions and duties throughout the entire ordinance.

(unit of government)

or  
(governmental unit)

Means the unit of government which will be adopting the ordinance.

(governing body)

Means the body of elected officials which governs the unit of government. The body will adopt the ordinance.

Prepared As A Component Of The Section 208

Water Quality Planning Process

Dane County Regional Planning Commission  
Environmental Resources Planning Division  
Room 114, City-County Building  
Madison, Wisconsin 53709

This project has been financed in part with federal funds from the Environmental Protection Agency under grant number P00-5227-01. The contents do not necessarily reflect the views and policies of the Environmental Protection Agency, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

GENERAL APPROACH USED IN THIS MODEL

This model seeks to regulate erosion/sedimentation from general land disturbing uses (nonagricultural) and to control runoff on lands larger than a given minimum area, with this minimum to be chosen by the adopting unit of government. Both the regulation of land disturbing activities (resulting in erosion or sedimentation) and the control of runoff are guaranteed through the use of a single permit. The permitting process typically requires the submission of a control plan, a permit application and the appropriate fee as set out in a fee schedule as adopted by the governing body either in the ordinance or in a contemporaneous resolution. However, this model optionally provides that the adopting unit of government (upon receipt of a request by the applicant and receipt of an additional fee) may prepare plans in lieu of plan preparation by the applicant.

With one exception, this model ordinance simply establishes performance standards for erosion/sedimentation and runoff, and the land user/applicant is given almost unbridled discretion in developing a control plan to meet these standards. An exception was thought to be warranted for land disturbing activities occurring on less than a certain acreage, i.e., one or three are suggested with the adopting governmental unit to make the final selection. Thus, on these smaller land areas the model does prescribe certain practices which are to be used to control both erosion/sedimentation and runoff. However, the applicant may opt to follow the typical plan development approach and develop his own control plan in lieu of instituting these specified control practices.

It is intended that any governmental unit which adopts this model will also make contemporaneous amendments to both their building code and subdivision control ordinances prohibiting the issuance of a building permit and withholding plat approval until a permit (if required) is obtained under the provisions of this model. Clearly, it is intended that the typical subdivision of land and building of residences would require two permits under this ordinance (unless the subdivider is also the builder). First, a permit would be required for the land disturbing activity, the subdivision of the land and second, the building of the homes would generally also come under the permitting process (unless involving land of less than the minimum area as specified in the ordinance).

OUTLINE

SECTION 1.0	INTRODUCTION
1.01	Authority
1.02	Title
1.03	Findings and Declaration of Policy
1.04	Purpose and Intent
1.05	Applicability
1.06	Abrogation and Greater Restrictions
1.07	Interpretation
1.08	Severability of Ordinance Provisions
1.09	Effective Date
SECTION 2.0	DEFINITIONS
SECTION 3.0	LAND DISTURBING ACTIVITIES SUBJECT TO EROSION, SEDIMENT, ONSITE DETENTION AND RUNOFF CONTROLS
3.01	General Requirement
3.02	Land Disturbing Activities Subject to Erosion and Sediment Controls
3.03	Land Disturbing Activities Subject to Onsite Detention and Runoff Controls
3.04	Compliance with This Section
SECTION 4.0	EROSION AND SEDIMENT CONTROL REGULATIONS FOR LANDS NOT OTHERWISE SUBJECT TO THIS ORDINANCE
SECTION 5.0	STANDARDS AND CRITERIA
5.01	Effect of Compliance
5.02	Standard for Erosion and Sediment Control
5.03	Standard for Onsite Detention and Runoff Control
5.04	Standard for Tracking
5.05	Design Criteria, Engineering Standards and General Principles

OUTLINE (con't.)

SECTION 1.0 INTRODUCTION

1.01 Authority

This ordinance is adopted under the authority granted by (for counties, section 92.09, for cities, section 62.11(5), and for villages, section 61.34(1)) Wis. Stats.

1.02 Title

This ordinance shall be known as, referred to, and may be cited as "AN ORDINANCE TO REGULATE EROSION, SEDIMENT, ONSITE DETENTION AND RUNOFF CONTROL FROM GENERAL LAND DISTURBING ACTIVITIES FOR (GOVERNMENTAL UNIT), WISCONSIN" and hereinafter referred to as the ordinance.

1.03 Findings and Declaration of Policy

The (governing body) finds that urbanizing land uses have accelerated the process of soil erosion, runoff and sediment deposition in the waters of the (governmental unit). It is therefore, declared to be the policy of this ordinance to provide for the control and if possible, the prevention of soil erosion, the prevention of flood water and sediment damage by regulating runoff by requiring onsite detention and the use of other control techniques and devices, and thereby to preserve the natural resources, control floods and prevent impairment of dams and reservoirs, protect the quality of public waters, preserve wildlife, protect the tax base, and protect and promote the health, safety and general welfare of the people of this (governmental unit).

1.04 Purpose and Intent

The purpose of this ordinance is to promote the public health, safety, prosperity, and general welfare of the citizens of this (governmental unit), and to conserve the soil, water and related resources and control erosion, runoff and sedimentation.

SECTION 6.0 APPLICATION AND ISSUANCE OF PERMITS

- 6.01 Permit Required; Procedure and Fees
- 6.02 Control Plan Required
- 6.03 Contents of Control Plan
- 6.04 Plans Prepared by the (Administrative Authority)
- 6.05 Review of the Application
- 6.06 Permit; Conditions
- 6.07 Permit Duration

SECTION 7.0 TIME OF COMPLIANCE

SECTION 8.0 ADMINISTRATION

- 8.01 Delegation of Authority
- 8.02 Administrative Duties
- 8.03 Inspection Authority
- 8.04 Enforcement Authority

SECTION 9.0 VIOLATION

- 9.01 Penalties
- 9.02 Enforcement by Injunction
- 9.03 Performance of Work

SECTION 10.0 APPEAL

- 10.01 Authority
- 10.02 Procedure
- 10.03 Who May Appeal

1.05 Applicability

(This ordinance applies to the use of land outside of incorporated cities and village. It shall be effective in those towns where a majority of electors residing in the area affected and who vote in a referendum have approved this ordinance pursuant to Section 92.09, Wis. Stats..)

(This ordinance applies to the use of lands within the incorporated boundaries of governmental unit.)

1.06 Abrogation and Greater Restrictions

It is not intended by this ordinance to repeal, abrogate, annul, impair, or interfere with any existing easements, covenants, deed restrictions, agreements, rules, regulations, ordinances or permits previously adopted or issued pursuant to law. However, whenever this ordinance imposes greater restrictions, the provisions of this ordinance shall govern.

1.07 Interpretation

In their interpretation and application, the provisions of this ordinance shall be held to the minimum requirements and shall be liberally construed in favor of the (governmental unit) and shall not be deemed a limitation or repeal of any other power granted by the Wisconsin Statutes.

1.08 Severability of Ordinance Provisions

If any section, provision or portion of this ordinance is adjudged unconstitutional or invalid by a court, the remainder of this ordinance shall not be affected thereby.

1.09 Effective Date

This ordinance shall become effective after adoption by the governing body.

SECTION 2.0 DEFINITIONS

2.01 "Administrative Authority" means the governmental employee designated by the governing body to administer this ordinance, and includes any other governmental employees who are supervised by the administrator.

2.02 "Agricultural Lands" are the land used for the production of food and fiber, including but not limited to, general farming, livestock and poultry enterprises, grazing, nurseries, horticulture, viticulture, truck farming, forestry, sod production, cranberry production and wild crop harvesting and includes lands used for onsite structures necessary to carry out such activities.

2.03 "Board of Adjustment" is the body created and appointed pursuant to Section 59.99, Wis. Stats. (for counties).]

2.03 "Board of Appeals" is the body created and appointed pursuant to Section 62.23(7)(e), Wis. Stats. (for cities and villages).]

2.04 "Control Plan" (Erosion and Sediment Control Plan and/or Runoff Control Plan) is a written description approved by the administrative authority, of methods for controlling sediment pollution from accelerated erosion on a development area and/or from erosion caused by accelerated runoff from a development area and controlling runoff.

2.05 "Cubic Yards" means the amount of material in excavation and/or fill measured by the method of "average and areas."

2.06 "Detention Storage" is the temporary detaining or storage of stormwater in reservoirs, on rooftops, in streets, parking lots or other areas under predetermined and controlled conditions, with the rate of discharge therefrom regulated by appropriately installed devices.

- 2.07 "Erosion" (Soil Erosion) is the detachment and movement of soil or rock fragments by water, wind, ice, or gravity.
- 2.08 "Excavation" means any act by which organic matter, earth, sand, gravel, rock or any other similar material is cut into, dug, quarried, uncovered, removed, displaced, relocated or bulldozed and shall include the conditions resulting therefrom.
- 2.09 "Existing Grade" means the vertical location of the existing ground surface prior to excavation or filling.
- 2.10 "Fill" means any act by which earth, sand, gravel, rock or any other material is deposited, placed, replaced, pushed, dumped, pulled, transported or moved by man to a new location and shall include the conditions resulting therefrom.
- 2.11 "Grading" is altering the elevation of the land surface by stripping, excavating, filling, stockpiling of soil materials or any combination thereof and shall include the land from which the material was taken or upon which it was placed.
- 2.12 "Governing Body" means the body of elected officials which governs the unit of government. This body will adopt the ordinance.
- 2.13 "Land Disturbing Activities or Uses" are any land changes which may result in soil erosion, sedimentation and/or the increase in runoff, including but not limited to filling, removal of ground cover, grading, excavating, and filling of land, except that the term shall not include such minor land-disturbing activities as home gardens and repair and maintenance of private roads. Additionally, this term does not include agricultural land uses.
- 2.14 "Land Treatment Measures" are structural or vegetative practices, or combinations of both, used to control erosion and sediment production, including areas to be protected by fencing.
- 2.15 "Land Occupier or Occupier of Land" means any person, partnership, firm or corporation that has a fee simple interest in the land either as sole owner, as a tenant in common or a joint tenant or holds as a trustee, assignee, or hold as a land contract vendee.
- 2.16 "Land Users" are those who use land, individually or collectively as owners, operators, lessors, renters, occupiers or by other arrangement which gives them the responsibility of private or public land use.
- 2.17 "One Hundred-Year Storms" are those rainstorms of varying durations and intensities expected to recur on the average of once every one hundred years.
- 2.18 "One Hundred-Year Storm Runoffs" are the stormwater runoffs from the one hundred-year storms.
- 2.19 "Parcel" is all contiguous lands under the ownership or control of a land occupier or land user.
- 2.20 "Peak Flow" is the maximum rate of flow of water at a given point in a channel, watercourse, or conduit resulting from a predetermined storm or flood.
- 2.21 "Permit" is the signed, written statement issued under this ordinance authorizing the applicant to engage in general land disturbing uses specified and for a specified period of time.
- 2.22 "Permittee" means any person to whom a permit is issued under this ordinance.

- 2.23 "Person" is any individual, corporation, partnership, joint venture, agency, unincorporated association, municipal corporation, county, or state agency within Wisconsin, the federal government, or any combination thereof.
- 2.24 "Public lands" means all lands which are subject to regulation by the governing body which adopts this ordinance; including, but not limited to: (1) all lands owned or controlled by the adopting governmental unit, and (2) all land, within the boundaries or extraterritorial control of the adopting governmental unit, which are owned by another unit of government if that unit of government is acting in a proprietary rather than governmental function.
- 2.25 "Removal" means cutting vegetation to the ground or stumps, complete extraction, or killing by spraying.
- 2.26 "Runoff" is the portion of rainfall, melted snow or irrigation water that flows across the ground surface and eventually is returned to lakes or streams, creeks or other water courses.
- 2.27 "Sediment" is solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice, and has come to rest on the earth's surface at a different site.
- 2.28 "Sedimentation" is the degradation of water quality by the presence of suspended solid particles, derived from other sources; or discharged into surface waters from other sources; or the deposition of water-borne sediments in stream channels, lakes, reservoirs, or on floodplains, usually because of a decrease in the velocity of the water.
- 2.29 "Soil Loss" is soil moved from a given site by the forces of erosion and redeposited at another site on land or in a body of water.

- 2.30 "Stop-Work Order" is a means of giving notice to the permittee that the administrative authority believes that the permittee has violated one or more provisions of this ordinance. Notice is given both by posting upon the lands where the disturbing activity occurs one or more copies of a poster so stating the violation and by mailing a copy of this poster by certified mail to the permittee at the address shown on the permit.
- 2.31 "Storm Frequency" is the average period of time which a storm of a given duration and intensity can be expected to be equalled or exceeded.
- 2.32 "Storm Sewer" is a closed conduit for conducting collected stormwater.
- 2.33 "Stormwater Drainage Facility" is any element in a stormwater drainage system which is made or improved by man.
- 2.34 "Stormwater Drainage System" is all facilities used for conducting stormwater to, through or from a drainage area to the point of final outlet, including but not limited to, any of the following: conduits and appurtenant features, canals, channels, ditches, streams, culverts, streets and pumping stations.
- 2.35 "Stormwater Runoff" are the waters derived from rains falling within a tributary drainage basin, flowing over the surface of the ground or collected in channels, watercourse or conduits.
- 2.36 "Structural Measures" are works of improvement for land stabilization to prevent erosion, sediment or runoff which includes, but are not limited to, gully control structures, grass waterways, riprap, detention basins, sediment basins, flood retention dams, diversions, lining channels with rock, concrete or other materials. Contour strip cropping is not a structural measure.

SECTION 3.0 LAND DISTURBING ACTIVITIES SUBJECT TO EROSION,  
SEDIMENT, ONSITE DETENTION AND RUNOFF CONTROL

3.01 General Requirement

Except as provided in this section any landowner, land occupier or land user who undertakes, begins, commences or performs land disturbing activities; or who permits another person to do the same, on land subject to this section, shall be in violation of this ordinance.

3.02 Land Disturbing Activities Subject to Erosion and Sediment Control

Land disturbing activities on public lands as defined in Section 2.24, and on all private lands shall be subject to the erosion and sediment control provisions of this ordinance, if:

- (1) An area of (5,000) square feet or greater will be disturbed by excavation, grading, filling, or other earth-moving activities, or
- (2) Excavation, fill, or any combination thereof, will exceed five hundred (500) cubic yards, or
- (3) Fill will exceed three (3) feet in vertical depth at its deepest point measured from the natural ground surface, or
- (4) Excavation will exceed three (3) feet in vertical depth at its deepest point, or
- (5) An area of (5,000) square feet or greater will be disturbed by destruction of protective ground cover, or

COMMENT: The governmental body adopting this ordinance is urged to make this ordinance applicable to all but the smallest land disturbing activities by selecting small area, yardage and/or depth figures. Five thousand square feet (5,000 ft. <sup>2</sup>) is strongly suggested because it will more than likely include almost all single family residential construction while still exempting modifications and additions to homes as well as home gardening from coverage by this ordinance. There is little justification for adopting an ordinance which would attempt to regulate some single family residential construction while totally exempting other (smaller) construction. For this reason the 5,000 ft. <sup>2</sup> figure is urged.

COMMENT: If the governmental unit has a street opening permit then this paragraph should be omitted.

3.03 Land Disturbing Activities Subject to Onsite Detention and Runoff Control

Land disturbing activities on public lands as defined in Section 2.24, and on all private lands shall be subject to the onsite detention and runoff control provisions of this ordinance, if:

- (1) The land disturbing activity will be a residential development having a gross aggregated area of five (5) acres or more, or
- (2) The land disturbing activity will be a residential development on less than five acres having fifty percent (50%) or more of the area as impervious surfaces including roads, buildings, parking facilities and other improvements, or
- (3) The land disturbing activity will be a development, other than residential, having a gross aggregated area of three (3) acres or more, or
- (4) In the opinion of the (administrative authority), the runoff from the land disturbing activity will create a hazard by exceeding the safe capacity of

the receiving water body in the area; or will cause undue channel erosion or an undue increase in water pollution by increased scour and transport of particles; or will otherwise endanger the downstream property owners or their property. Safe capacity is defined as the rate of flow that can be handled without flooding.

3.04 Compliance with This Section

The owner, land occupier or land user shall be in compliance with this section if he follows the procedure of section 6.0 and receives from the (administrative authority) an approved control plan and a permit before commencement of any land disturbing activities on lands subject to control under this section.

SECTION 4.0 EROSION AND SEDIMENTATION CONTROL REGULATIONS FOR LANDS NOT OTHERWISE SUBJECT TO THIS ORDINANCE

Any landowner, land occupier or land user who permits excessive erosion to adjacent land, public streets or bodies of water from land not otherwise subject to this ordinance shall be deemed in violation of this ordinance and subject to the penalties provided in Section 9.0. Erosion is held to be excessive if an unsafe condition results in the streets, if undue sedimentation of lakes and streams occurs or if the public health, safety or general welfare of the citizens of the (governmental unit) is harmed.

SECTION 5.0 STANDARDS AND CRITERIA

5.01 Effect of Compliance

Compliance with the standards and criteria of this section shall not bar a nuisance action or other civil action brought by any injured public or private party for damage to property upon which the erosion directly occurred or to property or other rights which were damaged by erosion, sedimentation, or runoff.

**COMMENT:** This subsection seeks to point out that compliance with this ordinance does not act as a bar to legal action by a property owner whose property is damaged or by an individual whose rights are harmed by runoff, erosion or sediment resulting from a land disturbing activity. This subsection attempts to make it clear that even a property owner whose land was eroded as a result of the land occupier/user should not be barred from bringing an action against the land occupier.

Of course there would have to be an independent legal basis, i.e., nuisance, for the subsequent action because this subsection, itself, does not provide any such basis. Further, this subsection does not attempt to reverse or modify the holding of the Wisconsin Supreme Court in *State v. Deetz*, 66 Wis. 2d 1, which placed Wisconsin treatment of surface water (runoff) under the "reasonable use" rule.

5.02 Standard for Erosion and Sediment Control for Land Disturbing Activities

The (administrative authority) shall not approve plans nor issue permits required by this ordinance for land disturbing uses unless erosion and sedimentation during and after the land disturbance [will not exceed a predicted average annual soil loss accumulated (weekly), from the developing area which exceeds fifteen (15) tons per acre the first year commencing from the time of initial disturbance and five (5) tons per acre for any subsequent year that the disturbance continues and after the disturbance will not exceed one (1) ton per acre.] [will not exceed that which would have been eroded if the land had been left in its undisturbed state.] [are controlled in accordance with specifications established in Minimizing Erosion in Urbanizing Areas as developed by the Dane County Soil and Water Conservation District in cooperation with the U.S. Department of Agriculture, Soil Conservation Service.]

**COMMENT:** It is felt to be necessary that the adopting governmental unit include in the ordinance a specific standard instead of simply leaving the adequacy of the control of erosion and sedimentation exclusively within the discretion of the authority charged with evaluating the control plans. The governmental body must choose a standard for those land disturbing activities (non-agricultural and non-forestry) which require plan approval and a permit under this ordinance. Four alternative standards are suggested and each is discussed below.

First, the use of a given number of tons per acre as a standard is seen to be a very rational, equitable standard and one which should be rather easy to administer. Upon receipt of the proposed control plan, the authority charged with evaluating it would use the Universal Soil Loss Equation to determine what the soil loss would be if the proposed control plan were implemented to control erosion and sedimentation resulting from the land disturbing activity. He would then simply have to compare the soil loss with the tons/acre standard and approve or disapprove the plan. The Universal Soil Loss Equation has been successfully adapted and used for urbanizing land disturbing activities and a paper explaining this type of application is attached as an appendix.

The second and third standards suggested are very similar and differ only by the amount of increase in erosion/sedimentation which they would permit. The former standard would allow no increase in the erosion/sedimentation over that of the pre-existing values, while the later standard would permit an increase up to a certain percentage of the pre-existing situation. Adoption of either of these standards is not encouraged since administratively they require the authority who evaluates the plans to perform two calculations of soil loss: (1) what was the pre-existing loss, and (2) what will be the loss if the proposed control plan is used to control soil loss resulting from the land disturbing activity. Since the administrative burden of these standards is sufficient to discourage their use, it is not necessary to even attempt to determine whether limiting soil loss to pre-existing conditions is technologically feasible.

The fourth suggestion is an illusory standard and is only included because of its widespread use by other jurisdictions. The publication cited appears to contain only technical standards and design criteria as they pertain to specific control measures and practices. These should not be confused with the overall performance standards similar to the previous standards. The unit of government should not adopt technical standards in lieu of a performance standard. A control plan may consist of several

Specific control measures which should of course follow good design criteria (comply with technical standards) but the control plan should have an expressly stated goal or standard (performance) upon which the applicant should base the design of the overall control plan.

In conclusion the staggered tons per acre performance standard is strongly recommended to any unit of government which is considering the adoption of this ordinance.

5.03 Standards for Onsite Detention and Runoff Control for Land Disturbing Activities

Land disturbing activities subject to onsite detention and runoff control regulation under this ordinance shall not exceed the more stringent of the two following standards:

(1) The peak rate of runoff after the proposed activities should not be greater than the peak rate which would have resulted from the same storm event occurring over the site of the proposed activity with the land in its natural undeveloped state, or

COMMENT: This standard as worded could be somewhat inequitable to an owner of already developed land who wanted to redevelop or change the land use. In such instances he would be required to limit peak runoff from new land use to that of the land in its undeveloped state; while if he did not change the use at all the runoff rate would be unregulated. This result is not seen as performing injustice to any great degree, instead runoff rate control is simply the price everyone must pay if he desires to undertake a regulated land disturbing activity.

(2) The peak runoff rate shall be limited to a rate prorated on the basis of the safe capacity of the existing or proposed stormwater drainage facilities.

Further, land disturbing activities subject to onsite detention and runoff control regulation by this ordinance shall provide for detention of the increased stormwater runoff which would result from the proposed land disturbing activity. Storage shall be sufficient to store this increased runoff for a hundred year rainfall of any duration. Stormwater detention may be provided by the landowner/land user onsite or adjacent to the site or may be provided by the (governmental unit)

with the landowner/user paying an amount of money sufficient to cover the prorated costs for the offsite storage of this increased runoff. The amount is to be determined by the (administrative authority).

5.04 Standard for Tracking

The (administrative authority) shall not approve any plan nor issue a permit for any land disturbing activity under this ordinance unless he is satisfied that there will be adequate provisions to prevent the tracking or dropping of dirt or other materials from the site, on to any public or private street.

5.05 Design Criteria, Engineering Standards and General Principles

The ordinance does not require the use of any particular type of structural or nonstructural measures to meet the standards of Sections 5.02 and 5.03. The applicant for a permit may employ any structural or non-structural measures which he believes to be necessary to achieve all applicable standards set out in this ordinance. However, the (administrative authority) is required to evaluate these measures to determine that they follow currently accepted design criteria and engineering standards.

The following general principles shall be used by the (administrative authority) when evaluating control plans and granting permits under this ordinance:

(1) The smallest practical area of land shall be exposed at any given time during development.

(2) Such minimum area exposure shall be kept to as short a duration of time as is practicable.

(3) If at all practicable, temporary vegetation, mulching or other cover shall be used to protect areas exposed during development.

(4) Provision shall be made to effectively accommodate the increased runoff caused by changed soil and surface conditions during and after development according to the standards contained in this ordinance.

SECTION 6.0 APPLICATION AND ISSUANCE OF PERMITS

6.01 Permit Required; Procedure and Fee

(a) Unless specifically excluded by this ordinance, no land occupier or land user may undertake a land disturbing activity subject to this ordinance without receiving a permit from the (administrative authority) prior to commencing the proposed activity. Each land occupier or land user desiring to undertake a regulated activity subject to this ordinance shall submit to the (administrative authority) an application for a permit together with the appropriate fee required by the fee schedule as adopted by the (governing body).

(Note: the fee schedule can be incorporated by reference or included here directly in the ordinance.)

(b) Exceptions to this requirement are as follows:

(1) The owner and occupier of public lands are exempt from payment of any permit fees;

(2) For its convenience, the (administrative authority) may enter into an agreement with public or private utilities and governmental units to waive the need for a permit for each individual and disturbing activity, if the utility or governmental unit will agree to adopt and follow a procedure for each land disturbing activity which meets all applicable standards contained in this ordinance. Further, the agreement shall provide that in the event that a utility or governmental unit activity fails to meet the standard, the agreement shall terminate and the utility or governmental unit shall be subject to the penalties of this ordinance.

OPTIONAL (3) [The permit fee required by this ordinance is waived if the applicant applies for a building permit under Section ( ) of the (building code ordinance) and submits the appropriate fee for the building permit.]

(Note: the governing body may wish to extend this fee waiver to include other situations such as subdivisions where the land occupier/user/owner has to pay a fee for plat review.)

(5) Permanent, final plant covering or structures shall be installed as soon as possible.

(6) The plan of development shall relate to the topography and soils of the site so that the lowest potential for erosion is created.

(7) Natural plant covering shall be retained and protected and shall be deemed a dominating factor in developing the site.

COMMENT: It is believed that better control of runoff, erosion and sediment will be obtained if the person proposing the land disturbing activity is not required to use specific control measures and practices. Thus unless the governmental unit is absolutely sure that under no circumstances will they approve, for example slopes in excess of one foot of elevation to two lateral feet, should specific design criteria be included.

OPTIONAL

(4) [Land disturbing activities consisting of the construction of individual single-family residences on less than ( ) acres are exempted from the permit requirement as specified in this section.]

COMMENT: Recall that Section 3.0 already exempts all land disturbing activities occurring on less than ( ) ft.<sup>2</sup> from this ordinance. It is felt to be unwise to specially exempt single family home construction from the permit required by this ordinance. There is little justification for viewing homes on certain size lots as a separate class of land disturbing activity, since the erosion, sedimentation and runoff are equally a problem here as during other activities. In addition, there is even less justification for exempting them from the provisions of this ordinance despite arguments to the contrary which cite high costs to that homeowner and lack of adequately demonstrated control practices and measure as reasons for exemption. However, to avoid political pressure against the adoption of this ordinance there might be those who would urge this exemption. There is no basis for it because it is felt that there are adequate low cost, technical control practices and measures. Additionally, if it is felt to be too burdensome to require a single family home builder to develop a control plan which meets the standards set out in Section 5.0, then the governing body should adopt Section 6.04 and make this Planning service available to the homeowner/builder at a nominal cost.

ALTERNATE OPTION

(4) [Land disturbing activities consisting of the construction of an individual single-family residence on less than (1 acre) are not exempt from the permit as specified in this section; however, the cost of any control measures or practices required as a condition for this permit may not exceed (\$1,000 of the proposed cost of the construction of the residence exclusive of any sodding which would have reasonably been assumed to be installed anyway); ((five) % of the construction costs of the residence); or ((five) % of the construction cost if the slope at the construction site is less than 6% and (ten) % if the slope is greater than 6%].

COMMENT: Arguments similar to those set out in the preceding comment are equally applicable here. Again, it is felt to be unwise to provide this form of a cost ceiling special exception for what is certainly not a sufficiently unique activity to be called

a separate class of land disturbing activities (single-family residential home building). That is erosion, sedimentation and runoff resulting from construction of a structure which is to ultimately be used as a single-family home is not significantly different from that resulting from construction of a similar (in area, construction technique, etc.) structure which is ultimately to be used as a something other than a residence. It would appear that any such attempt to create such an arbitrary class distinction might be subject to an equal protection or other (due process-arbitrary) constitutionally based attack. Such an attack would quite possibly be successful.

However, if it becomes politically expedient to include some form of single-family residential exemption this cost ceiling exemption is favored over a total outright exemption of all such residential activity. The exemption sets maximum limits upon the costs of control techniques and practices to which the homeowner/builder will be subjected. These limits could be set as follows: (1) The cost of controls may not exceed a fixed dollar amount, i.e., \$1000.00 exclusive of any sodding or landscaping which would have been reasonable assumed to have been installed anyway; (2) The costs may not exceed a set percentage of the construction costs of the residence (documented perhaps by the building permit application); (3) costs may not exceed a sliding percentage of the construction costs of the residence which is tied to an erosion and runoff hazard parameter such as slope.

The arguments favoring such a ceiling type exception are the same as set out in the previous option exception: (1) The costs are prohibitively expensive; (2) The area is often inadequate to permit use of typical control devices, i.e., detention ponds. This alternative option solves the first objection by imposing a cost ceiling. The second objection about control devices/techniques on limited area is a false issue since adequate devices and controls do exist for small areas. Additionally the governing body may want to only make this cost ceiling available to homes on less than ( ) ft.<sup>2</sup> the reasoning being that larger areas might permit the use of less costly controls.

6.02

Control Plan Required

(a) Unless specifically exempted by this ordinance every applicant for a permit under Section 6.01 of this ordinance shall develop or have developed for him and shall submit a plan to control erosion, sedimentation and runoff which would result from the proposed activity.

(b) Permit applicants are exempted from the requirement of the development and submission of a control plan if:

- (1) The permit applicant elects to have the (administrative authority) prepare the control plan under the procedure of Section 6.04; or
- (2) The permit applicant proposes a land disturbing activity regulated by this ordinance on less than (three) acres of land, and he agrees to install all the control devices and to implement all the control techniques which are set out as follows:

(to be developed)

If the applicant elects to follow either of these two exceptions, the plan as specified in these exceptions shall be deemed to be the control plan and further this control plan shall be deemed to adequately meet all applicable standards in Section 5.0; and the (administrative authority) shall issue the permit according to the procedure of Section 6.05.]

**COMMENT:** These exceptions are strictly optional and each unit of government considering the adoption of this ordinance must determine whether it wants to provide an alternative(s) to the requirement that each permit applicant must develop (or have developed for him) and submit a plan to control soil erosion, sedimentation and runoff.

The first exception is adequately explained by the COMMENT following Section 6.04. Suffice it to say that if at all possible, governmental units should seriously consider supplying adequate number of staff to permit them to prepare control plans for those applicants who desire such a service. Offering this service, is a big step in ameliorating any actual hardship which some applicants (typically homeowners/builders) might have in developing their own control plans.

The second exception requires more explanation. It seeks to aid applicants who desire to undertake regulated activities upon small land areas. The adopting unit of government might select one to three acres as the upper limit of the exception. The reasoning behind this exception assumes that there are a limited

number of control devices and techniques which could be used on small land areas. Thus, for land disturbing activities occurring on land areas ranging from the minimum land area covered by this ordinance to the chosen maximum (i.e., 1 or 3 acres), applicants could be exempted from the requirement of developing a control plan. Instead they would simply agree to install all appropriate control devices and follow all appropriate control techniques. Appropriate devices and techniques would have to be developed and preferably included in the ordinance when adopted by the individual governmental unit. While appropriate devices and techniques are known to exist, there has not been sufficient time available to include a written description of them and their proper application here in this model ordinance. As an alternative these control devices and techniques would not have to be directly included in the ordinance. Instead they could be incorporated into the ordinance by reference to a document or another action by the governing body, i.e., adoption of a resolution which listed the appropriate devices and techniques.

In conclusion, it must be reiterated that the governing body adopting this ordinance must decide whether it wants to provide any exceptions to development of a control plan exception.

#### 6.03 Contents of the Control Plan

The control plan required by Section 6.02 shall contain any such information which the (administrative authority) may need to determine soil erosion, sedimentation and runoff control. The (administrative authority) may require the following as well as, any other information which in, his judgment, is needed to evaluate the control plan:

- (1) A map of the site location at a scale of one (1) inch equals \_\_\_\_\_ feet showing the location of the predominant soil types and the existing vegetative cover.
- (2) A topographic map of the site location, including enough of the contiguous properties to show existing drainage patterns and course that may affect or be affected by the proposed development of the site, and also show the site boundaries. Scale of one (1) inch equals \_\_\_\_\_ feet is to be used.
- (3) A plan of the site at a scale of one (1) inch equals \_\_\_\_\_ feet showing:

(Note: Map scales for Sections 6.03(1), (2) and (3) are to be determined by the unit of government adopting this ordinance.)

- (a) Name, address and telephone number of the land occupier.
- (b) Limits of natural floodplain(s), if any.
- (c) A timing schedule indicating the anticipated starting and completion dates of the development sequence and the time of exposure of each area of soil disturbing activity prior to the completion of effective measures for erosion and sediment control.
- (d) Proposed topography of the site location with a maximum of five (5) foot contour intervals showing:
  - (aa) Location of proposed land disturbing activity, proposed disturbance of protective cover, any proposed additional structure on the site, areas to be seeded or mulched, areas to be vegetatively stabilized and areas to be left undisturbed.
  - (bb) Elevations, dimensions, locations of all proposed soil disturbing activities including where topsoil will be stockpiled, so it will not contribute to erosion and sedimentation.
  - (cc) The finished grade, stated in feet horizontal to feet vertical, of cut and fill slopes.
  - (dd) Kinds of utilities and proposed areas of installation.
  - (ee) Proposed paved and covered areas in square feet or to scale on a plan map.
  - (ff) Makeup of proposed surface soil (upper six inches) on areas not covered by buildings, structures, or pavement. Description shall be in such terms as: original surface soil, subsoil, sandy, heavy clay, stony, etc.

COMMENT: This lists a wider array of information that will be required in the typical case.

- (gg) Proposed kind of cover on areas not covered by buildings, structures, or pavement. Description shall be in such terms as: lawn, turfgrass, shrubbery, trees, forest cover, riprap, mulch, etc.
- (e) Plans of all temporary or permanent structural or nonstructural measures or other protective devices to be constructed in connection with, or as a part of, the proposed work showing:
  - (aa) Estimated surface runoff of the area based upon two (2), five (5), ten (10), 25, 50 and 100 year frequency storm events. Peak flows based upon synthetic storm frequency events shall be required in the event that storm collection or stream flow data is not available in the area.
  - (bb) Estimated rate of discharge in cubic feet per second at the point of discharge from the site location based upon two (2), five (5), ten (10), 25, 50 and 100 year frequency storm events.
  - (cc) The frequency storm event and discharge rate in cubic feet per second for which the design of plans for the site location is based upon.
  - (dd) Proposed provisions to carry runoff to the nearest adequate outlet, such as a curbed street, storm drain or natural drainage way.
  - (ee) Design computations and applicable assumptions for all structural measures for erosion and sediment pollution control and water management. Volume and velocity of flow must be given for all surface water conveyance measures and pipe outfalls.

(ff) Estimate of cost of erosion and sediment control and water management structures and features.

(gg) Provisions for maintenance of control facilities including easements to insure short as well as long-term erosion and sediment pollution control and stormwater management.

(hh) Seeding mixtures and rates, lime and fertilizer application rates, and kind and quantity of mulching for both temporary and permanent vegetative control measures.

(ii) Methods to prevent tracking of soil off the site of the land disturbing activity.

#### 6.04 Plans Prepared by the (administrative authority)

As an alternative to submitting the control plan as specified in subsection 6.02, the (administrative authority), may, if time permits him to do so, prepare a soil erosion, sedimentation and runoff control plan for the applicant's proposed land disturbing activity, adequate to meet the appropriate standards of Section 5.0. The (administrative authority) may require the applicant to submit any data or information which is necessary to prepare such a plan. Also, the applicant must submit the permit application and appropriate application fee as specified in subsection 6.01.

In addition to the permit application fee, the applicant must pay the plan preparation fee as specified in the schedule as adopted by the (governing body).

(Note: This fee schedule may be included here in this subsection or may be incorporated by reference by the governing body.)

COMMENT: This plan preparation function is optional and the decision to offer this service will depend upon the availability of staff time. Any hardship that such a requirement of developing and submitting a control plan might impose could be ameliorated by setting a small fee for the preparation of erosion, sediment and runoff control plans. For example, planning fees for single-family residences on less than (5,000 ft.<sup>2</sup>) could be set at a nominal (\$10.00), while activities on larger and nonresidential land disturbing activities could be set as a function of area, cost of proposed construction (similar to some building permit fees) and hazard parameters such as soil type, slope, etc.

#### 6.05 Review of Application

The (administrative authority) shall receive and review all permit applications which are accompanied by the control plan, if required by Section 6.02, and the appropriate fee. The (administrative authority) shall determine if measures included in the plan to control erosion, sedimentation and runoff during and after the land disturbing activities are adequate to meet all the applicable standards as set out in Section 5.0. The (administrative authority) shall within (30) days from the receipt of the control plan or the completed permit application and the appropriate fee, inform the applicant in writing whether he approves, disapproves or modifies the control plan. If the (administrative authority) approves the control plan he shall issue the permit. If additional information is required he shall so notify the applicant and the (administrative authority) has 30 days from the receipt of the additional information in which to approve, disapprove or modify the plan. Failure to render a written decision within 30 days shall be deemed to mean approval of the plan, as submitted, and the applicant may proceed as if a permit had been issued.

In the event that the plan is disapproved the applicant may resubmit a new control plan or may appeal the (administrative authority's) decision as provided in Section 10.0 of this ordinance. If the control plan is modified by the (administrative authority), the applicant (must modify his permit application and control plan accordingly and reapply for the permit; however, no

additional permit fee is required.) (will be deemed to have modified his permit application and control plan to conform to the modifications if the applicant commences any portion of the proposed land disturbing activity); or may appeal the decision as provided in Section 10.0 of this ordinance.

COMMENT: The first of these two options is the more preferred despite the fact that the amount of permit processing would be increased. The reapplication method is much tighter and clearly makes the applicant aware of all modifications to his proposal plan.

6.06 Permit; Conditions

All permits issued under this ordinance shall be issued subject to the following conditions and requirements and any permittee who begins to perform any land disturbing activity authorized by his permit shall be deemed to have accepted all of these conditions:

(1) That all land disturbances, construction and development will be done pursuant to the control plan as approved by the (administrative authority).

(2) That the permittee shall give (48) hours notice to the (administrative authority) in advance of the start of any land disturbing activity.

(Note: It is recommended that this notice provision be included in the permitting process even if the administrative authority will not have sufficient staff to inspect all activities);

(3) That the permittee shall file a notice of completion of all land disturbing activities and/or the completion of installation of all onsite detention facilities within 10 days after completion;

(4) That approval in writing must be obtained from the (administrative authority) prior to any modifications to the approved control plan;

(5) That the permittee will be responsible for maintaining all roads, road right-of-ways, streets, runoff and drainage facilities and drainage ways as specified in the approved plan until they are accepted and become the responsibility of a governmental entity;

COMMENT: There are several other alternative methods for distributing the responsibility for maintenance of onsite runoff control facilities and drainage facilities.

(6) That the permittee will be responsible for repairing any damage at his expense to all adjoining surfaces and drainageways caused by runoff and/or sedimentation resulting from activities which are not in compliance as described in the approved plan;

COMMENT: This is a provision similar to the one made in Section 5.0 regarding the effect of compliance with the standards enumerated in that section. The above provision, however deals with the additional possibility - actions which do not meet the standard - and attempts to impose liability directly upon those permittees who fail to meet the standard.

(7) That the permittee must provide and install at his expense all drainage, runoff control and erosion control improvements as required by this ordinance and the approved control plan, and also must bear his proportionate share of the total cost of off-site improvements to drainageways based upon the existing developed drainage area or planned development of the drainage area, as determined by the (administrative authority);

OPTIONAL (8) [That no work will be done on the site during any period of time that the average hourly wind velocity at (location of wind velocity measurements) exceeds twenty (20) miles per hour.]

COMMENT: Wind erosion is recognized to be a possible source of sediment and this clause is currently included in the Middleton land grading permit ordinance.)

OPTIONAL (9) [That no portion of the land which undergoes the land disturbing activity will be allowed to remain uncovered for greater than (two) weeks after notice is given to the (administrative authority) that the land disturbing activity is completed.

COMMENT: Clearly, the control plan itself must contain a schedule for seeding and/or mulching or other covering technique. This requirement would be included in the ordinance simply to show that (two) weeks is the maximum period of time which land may remain contracted. Middleton has included in its current ordinance an

additional factor which should be considered: The maximum time period is deferred until the completion of any construction for which a building permit has been issued.

(10) That the permittee agrees to permit the (administrative authority) to enter onto the land regulated under this ordinance for the purpose of inspecting for compliance with the approved control plan and permit;

(11) That the permittee authorized the (administrative authority or his agent) to perform and work or operations necessary to bring the condition of the lands into conformity with the approved control plan or plan as modified by the (administrative authority) and further consents to the (governing body) placing the total of the costs and expenses of such work and operations upon the tax roll as a special tax against the property.

#### 6.07 Permit Duration

Permits issued under this ordinance shall be valid for a period of ( ) month(s) from the date of issuance by the (administrative authority); and all work must be completed prior to the expiration date of the permit. However, the (administrative authority) is authorized to extend the expiration date of the permit if he finds that such an extension will not cause an increase in erosion, sedimentation or runoff. The (administrative authority) is further authorized to modify the plans if necessary to prevent any increase in sedimentation, erosion or runoff resulting from any extension.

#### SECTION 7.0

#### TIME FOR COMPLIANCE

Land disturbing activities commenced after the effective date of this ordinance shall be in compliance with all provisions of the ordinance.

SECTION 8.0 ADMINISTRATION

8.01 Delegation of Authority

The (governing body) shall designate the (administrative authority) to administer and enforce the provisions of this ordinance. The (administrative authority) may appoint assistants to aid in the performance of his duties and may seek the technical advice of the (district) as to the adequacy of any proposed plan and permit application submitted to him.

8.02 Administrative Duties

In the administration and enforcement of this ordinance, the (administrative authority) shall perform the following duties:

- (1) Keep an accurate record of all plan data received, plans approved, permits issued, inspections made and other official actions.
- (2) Prepare plans for erosion, sediment and runoff control when requested to do so by the permit applicant pursuant to Section 6.03, but only after the appropriate fee is received.]
- (3) Review all plans and permit applications received when accompanied with the necessary information and the appropriate fee and issue the permits required by Section 6.01 of this ordinance in accordance with the procedure as set out in this ordinance, but only when the erosion, sedimentation and runoff will be controlled to meet the standards of Section 5.0.
- (4) Investigate all complaints made to the application of this ordinance.

8.03

Inspection Authority

(5) Revoke any permit granted under this ordinance if he finds that the holder of the permit has misrepresented any material fact in his permit application or plan; or has failed to comply with the plan as originally approved or as modified in writing subsequently by the (administrative authority); or has violated any of the other conditions of the permit as issued to applicant.

8.04

Enforcement Authority

The (administrative authority) is authorized to enter upon any public or private lands affected by this ordinance to inspect the land prior to permit issuance for the purpose of determining whether to approve the plan and after permit issuance to determine compliance with this ordinance. If permission cannot be received from the land occupier or user, entry by the (administrative authority) shall be according to Sections 66.122 and 66.123 Wis. Stats.

The (administrative authority) is authorized to post stop work order upon land which has had a permit revoked or to post a stop work order upon land which is currently undergoing any land disturbing activity in violation of this ordinance. The (administrative authority) shall supply a copy of each stop work order to the legal counsel for the (unit of government). In lieu of the stop work order, the (administrative authority) may issue a written cease and desist order to any land occupier or land user whose activity is in violation of this ordinance. These orders shall specify that the activity must be ceased or brought into compliance with the ordinance within \_\_\_ days. Any revocation, stop work order or cease and desist order shall remain in effect unless retracted by the (board of appeals) [board of adjustment], the (administrative authority) or by a court of general jurisdiction; or until the land disturbing activity is brought into compliance with the ordinance. The (administrative authority) is authorized to refer any violation of this ordinance or of a stop work order and desist order issued pursuant to this ordinance to the (city attorney) [village attorney] [district attorney] [corporation counsel] for the commencement of further legal proceedings.

SECTION 9.0 VIOLATIONS

9.01 Penalties

Any person, firm, company, or corporation, either owner or occupant of the premises, who violates, disobeys, omits, neglects or refuses to comply with or resists the enforcement of any of the provisions of this ordinance, shall be subject to a forfeiture of not less than the sum of \$10.00 nor more than the sum of \$200.00 and costs of prosecution for each violation. Each day that a violation exists or continues shall constitute a separate offense.

9.02 Enforcement by Injunction

Compliance with the provisions of this ordinance may also be enforced by injunctive order at the suit of the (unit of government). It shall not be necessary to prosecute for forfeiture before resorting to injunctive proceedings.

19.03 Performance of Work by the (administrative authority)

Where the (administrative authority) determines that the holder of a permit issued pursuant to this ordinance has failed to make any improvements or follow practices as approved in the plan; or has failed to comply with the time schedule for as included in the plan, the (administrative authority or a party designated by him) may enter upon the land and perform the work or other operations necessary to bring the condition of said lands into conformity with the requirements of the approved plan. The (administrative authority) shall keep a detailed accounting of the costs and expenses of performing this work and these costs and expenses shall be entered on the tax roll as a special tax against the property and collected with any other taxes levied thereon for the year in which the work is completed.]

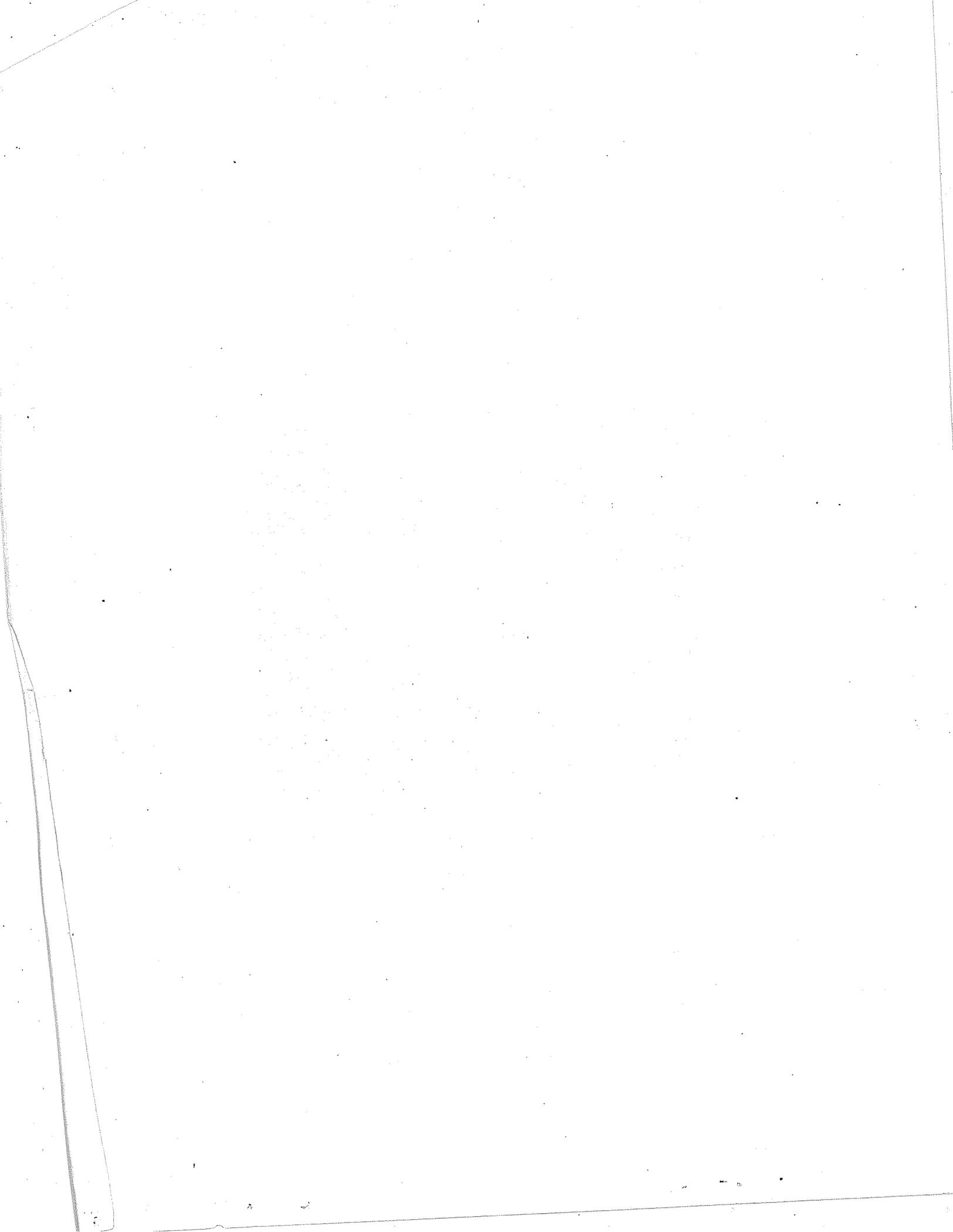
**COMMENT:** This provision should be found to be valid even though cities and villages lack direct statutory authority to perform this work and add the costs to the tax rolls as a special tax. Clearly, the districts under Chapter 92, Wis. Stats. have such authority. The cities and villages would find their authority in the fact that the permittee agreed to this remedy as one of the conditions set out on his permit as described in Section 6.06.

19.03 Performance of Work by the (administrative authority)

(1) Where the (administrative authority) finds that any of the provisions of this ordinance are not being observed on particular lands, and that such non-observance tends to increase erosion, runoff and sedimentation on such lands or is interfering with the prevention or control of erosion, runoff and sedimentation on other lands within the jurisdiction of the (unit of government) the (administrative authority) is hereby authorized to require the land occupier to perform the work or avoidances within a reasonable time and to order that if the land occupier fails so to perform, the (administrative authority or his designated representative) may go on the land, perform the work or other operations or otherwise bring the condition of said lands into conformity with the requirements of this ordinance, and recover the costs and expenses thereof, with interest at the rate authorized by statute from the land occupier.

(2) If the land occupier fails to perform the work, the (administrative authority or his representative) is also hereby authorized to perform the necessary work and shall submit a bill to the land occupier for the amount of the costs and expenses plus interest. In the event that the land occupier fails to pay the amount due, it shall be entered by the clerk upon the tax rolls and collected as a special tax upon the property.

**COMMENT:** This alternate section is much broader in scope since it seeks to authorize the (administrative authority) to enter onto and perform work on any land in the jurisdiction of the governing body which is causing an increase in erosion, sedimentation or runoff. Thus, this alternative section would extend the authorization from simply those lands which are not in compliance with plans and permits to cover all lands upon which there is an increase in erosion, sedimentation or runoff. While it might be possible for districts under Chapter 92, Wis. Stats., to find the requisite authority, it is not known whether cities and villages could so broaden the scope of lands subject to work being performed by their administrative authorities.



SECTION 10.0 APPEALS

10.01 Authority

The (governmental unit) shall appoint the (board of adjustments) (board of appeals) created pursuant to section ( ) (of the governmental unit's zoning ordinances) pursuant to section (59.99 (for the county), 62.23(7)(e) (for cities and villages)) Wis. Stats. to:

- (1) Hear and decide appeals where it is alleged that there is error in any order, requirement, decision or determination made by the (administrative authority) in administering this ordinance.
- (2) Authorize upon appeal in specific cases such variances from the terms of this ordinance as will not be contrary to the public interest, where owing to special conditions a literal enforcement of the provisions of this ordinance will result in unnecessary hardship, so that the spirit of this ordinance shall be observed, public safety and welfare secured, and substantial justice done.

10.02 Procedure

The rules, procedures, duties and powers of the (board of adjustment or board of appeals) shall apply to this ordinance.

10.03 Who May Appeal

Appeals may be taken by any person aggrieved or by any officer, department, board or bureau of the (governing body) affected by the order, requirement, decision or determination made by the (administrative authority). For the purpose of this ordinance aggrieved person shall include applicant and property owners who own land which is subject to the ordinance.