ARTICLE XIII
WATERSHED OVERLAY DISTRICTS

A. CRYSTAL LAKE WATERSHED OVERLAY DISTRICT

Section 13.1 Intent - The purpose of this Article is to protect the environmental quality of Crystal Lake, the Crystal Lake shoreline, and the Crystal Lake watershed through appropriate land use and design regulations. The protection of the Crystal Lake watershed is deemed a public purpose in order to preserve important environmental, historical, residential, recreational, culture, scenic and economic attributes of Lake Township and the region.

More specifically, the purpose of this Article is to protect the public health, safety, and welfare; to prevent and control water pollution; to protect fish spawning grounds, aquatic life, bird and other wildlife habitat; to protect buildings and lands from accelerated erosion; to protect wetlands; to control building sites, placement of structures, and land uses; to conserve shore cover; to conserve natural beauty and open space; and to anticipate and respond to the impacts of development in shoreland areas.

Section 13.2 Watershed Overlay District - All areas of Lake Township that are in the Crystal Lake Watershed, according to the Crystal Lake Watershed Overlay Map of Lake Township shall meet all requirements of this Article. The Crystal Lake Watershed Overlay Map shall be on file with the Township Clerk and the Township Zoning Administrator at all times. Any interpretations of the boundaries of this map shall be the responsibility of the Zoning Administrator, whose decision may be appealed to the Township Board of Appeals.

In cases where a parcel is partially inside and partially outside of the overlay district, only those portions located within the overlay district are required to comply with the regulations of this Article.

Section 13.3 Uses Permitted - All uses permitted by right or by special land use permit in the underlying zoning district shall be permitted in the Crystal Lake Watershed Overlay District, except for:

1. Confined Feedlots
2. Slaughterhouses
3. Gas Stations
4. Auto Repair Shops
5. Auto Washes
6. Oil-change establishments
7. Industrial uses involved in the manufacturing, compounding, processing or treating of products.

Section 13.4 Lot Size, Width and Setback - Minimum lot size, lot width, and setback requirements of the underlying zoning district shall be met unless this Article specifically states otherwise.

Section 13.5 Approval Process - All of the following uses or buildings (including additions or extensions to such uses or buildings) that are located wholly or partially within the Watershed Overlay District shall be required to obtain site plan approval pursuant to Article XI and Section 13.6.

1. Commercial Establishments
2. Industrial Establishments
3. Multifamily Housing Developments
4. Subdivisions and Site Condominium Subdivisions
5. Parking Areas Containing Four of More Parking Spaces
6. Private Roads or Paved Areas Exceeding Four Thousand (4,000) Square Feet.
7. Planned Residential Developments, Planned Unit Developments, Open Space Developments.

All single-family and two-family dwellings and their respective accessory uses not included in a subdivision or site condominium subdivision shall require a sketch plan provided that the Zoning Administrator and Planning Commission may require any additional information to ensure that all of the conditions of the zoning ordinance are met.

Section 13.6 Design Requirements - The purpose of the design requirements of this section are to slow the rate of stormwater runoff, to reduce erosion and sedimentation, to protect water quality, to keep nutrients from entering lakes and streams, to maintain water temperatures at natural levels, to preserve fish and wildlife habitat, and to preserve aesthetic and scenic values of the watershed environments.

A. Setbacks from Crystal Lake: All principal buildings shall be set back at least thirty-five (35) feet from the ordinary high-water mark of Crystal Lake.

B. Within thirty-five (35) feet of the ordinary high-water mark of Crystal Lake, a maximum of four hundred (400) square feet of land may be covered by impervious surfaces, including all structures and paving, for each one hundred (100) linear feet of lake frontage.

C. No unsightly, offensive, or potentially polluting material, including but not limited to lawn clippings, leaves, garbage, trash, refuse, or toxic materials, may be dumped or stored within thirty-five (35) feet of the ordinary high-water mark of Crystal Lake.

D. Vegetative Buffer: All existing vegetation located within thirty-five (35) feet of the ordinary high-water mark of Crystal Lake shall be maintained as a vegetative buffer in accordance with this section.

E. Removal of vegetation in the natural vegetative buffer shall be limited to no more than twenty-five (25) percent of the length of this buffer, provided that cutting of this twenty-five (25) percent shall not create a clear-cut opening greater than twenty-five (25) feet wide for every one hundred (100) feet of shoreline.

F. Natural shrubbery, trees, or other vegetation shall be preserved as far as practical and, where removed, shall be replaced with other naturally occurring vegetation that is equally effective in retarding runoff, preventing erosion and preserving natural beauty. A mowed lawn is not a desirable vegetative buffer adjacent to the shoreline.

G. Native plants, shrubbery, and trees are encouraged when new vegetation is planted.

H. Existing soil and organic matter shall not be altered or disturbed within the natural vegetative buffer. These provisions shall not apply to the removal of dead, diseased, or dying trees at the discretion of the landowner.

I. Development on Steep Slopes: Development on slopes of twelve (12) percent or greater shall meet the design requirements of this section.

J. Density: The permitted density of residential dwellings shall be based on the existing slope of the site. The permitted number of dwellings shall be based on the procedures outlined in Section 13.6 (J) by applying the maximum density requirements of this section.

Maximum Density Without Sewers	Maximum Density With Sewers	Existing Slope
1.00 Unit Per Acre	2.00 Units Per Acre	12 to 17 Percent
0.75 Unit Per Acre	1.50 Units Per Acre	18 to 24 Percent
0.50 Unit Per Acre	1.00 Unit Per Acre	25+ Percent

K. Lot Coverage: The amount of land allowed to be covered by impervious surfaces shall be based on the existing slope of the site. Lot coverage shall be defined as the percentage of the lot (excluding rights-of-way and wetlands) that is covered by impervious surfaces, including structures and paving. In the case of PUDs, PRDs and Site Condos, each individual lot need not meet the requirements of this section, provided that the total project does meet the requirements of this section.

The maximum lot coverage shall be as follows:

Lot Coverage	Existing Slope

30 Percent	12 to 17 Percent
20 Percent	18 to 24 Percent
10 Percent	25+ Percent

L. Natural Vegetative Cover: As much of the existing vegetation, including bushes, shrubs, natural ground cover, and trees, shall remain on the site as possible. Lawn areas shall not qualify as natural vegetative cover required in this section. The required amount of vegetative area to remain undisturbed shall be based on the existing slope on the site and shall be clearly indicated on the proposed site plan or sketch plan. The natural vegetative areas shall be located along lot lines, natural drainage courses, wetlands, and steep slopes to the extent possible. In the case of PUDs, PRDs, Site Condos and Open Space Residential Developments**,** each individual lot need not meet the requirements of the section, provided that the total project does meet the requirements of this section.

Percent of Lot to Remain in Natural Vegetative Cover	Existing Slope
30 Percent	12 to 17 Percent
40 Percent	18 to 24 Percent
50 Percent	25+ Percent

Development of Slopes of Twenty-five (25) Percent Or Greater: Development on slopes of twenty-five (25) percent or greater shall be prohibited unless there are no other reasonable or prudent alternatives. If the property owner believes that no reasonable or prudent alternatives exist, he or she must first obtain a Special Land Use Permit pursuant to Article XII prior to any development of slopes of twenty-five (25) percent or greater. In reviewing the special land use request, the Zoning Administrator or Planning Commission must find that the following conditions are met:

1. That no other reasonable or prudent alternatives exist.
2. That the development will not create excessive soil erosion or sedimentation and that it will not impair the quality of water discharged from the site.
3. That the peak rate of stormwater runoff after development will not exceed the peak rate of stormwater runoff that has occurred prior to the proposed development.
4. That all design requirements of this section are met.

M. Determination of Slope: The determination of slope shall be made by the Zoning Administrator based on the Lake Township Slope Map. The Lake Township Slope Map shall be on file with the Township Clerk and the Township Zoning Administrator at all times. The Zoning Administrator shall make the best possible determination using the scale of the map and shall record his or her determination on a site plan that is made available by the property owner. In cases where there is more than one slope category on a lot or proposed development, the Zoning Administrator shall indicate these areas on the site plan.

If the property owner disagrees with the slope determination made by the Zoning Administrator, he or she may request a review of the determination by the Planning Commission during the site plan review process. In making its case, the property owner shall present topographic mapping or a survey prepared and sealed by a registered civil engineer or surveyor. Based on the evidence presented by the Zoning Administrator and the property owners, the Planning Commission shall make a slope determination and shall record its decision on the proposed site plan.

N. Development on Ridge Lines: A "ridge line" shall be defined as a line at which a critical slope area breaks to a slope of less than eight (8) percent for a distance of at least twenty (20) feet. A "critical slope area" shall be defined as all slopes facing Crystal lake that have a significant portion of their grade being twelve (12) percent or greater for a distance of at least one hundred (100) feet.

1. All principal buildings shall be set back at least fifty (50) feet from all ridgelines.
2. All principal or accessory buildings or structures located within one hundred (100) feet of a ridgeline shall not exceed eighteen (18) feet in height.
3. All accessory structures, such as but not limited to signs, sheds, garages, and satellite dishes, shall be set back at least thirty (30) feet from all ridgelines.
4. A building setback from the ridge line of only twenty (20) feet may be permitted if any of the following conditions exist:

    a. There are no other reasonable or prudent alternatives to achieve the required fifty (50) foot setback.

    b. There would be significant environmental consequences if the fifty (50) foot setback was required.

    c. The building is not located within a special or unique viewing area or view shed within the Crystal Lake Overlay District.

    d. All existing vegetation located within twenty (20) feet on either side of the ridgeline shall be maintained as a vegetative buffer in accordance with this section.

5. Removal of vegetation in the natural vegetative buffer shall be limited to no more than twenty-five (25) percent of the length of this buffer, provided that cutting of this twenty-five (25) percent shall not create a clear-cut opening greater than twenty-five (25) feet wide for every one hundred (100) feet of ridge line.

6. Natural shrubbery, trees, or other vegetation shall be preserved as far as practical and, where removed, shall be replaced with other naturally occurring vegetation that is equally effective in retarding runoff, preventing erosion, and preserving natural beauty. A mowed lawn is not a desirable vegetative buffer adjacent to the ridgeline.

7. Native plants, shrubbery, and trees are encouraged when new vegetation is planted.

8. Existing soil and organic matter shall not be altered or disturbed within the natural vegetative buffer.

O. Private Roads: All private roads located in the Watershed Overlay District shall meet the requirements of this section:

Private roads shall not be located within thirty (30) feet of Crystal Lake or within ten (10) feet of a wetland or stream.

P. Private roads in hilly terrain shall be encouraged to locate along natural contours of the land in order to minimize cutting, filling and erosion.

Q. General Design Standards: For all developments in the Watershed Overlay District, the following general design standards shall be followed:

1. Natural vegetation shall be maintained wherever possible. If the removal of vegetation is required, reestablishment of a compatible plant material shall be required.

2. Existing mature trees shall be incorporated into the project design where feasible.

3. Natural drainage courses shall be protected from grading activity.

4. Where known, groundwater flow patterns shall not be interrupted.

5. Slopes created by the grading of the site should generally not exceed a slope ratio of one (1) foot of vertical slope to three (3) feet of horizontal distance.

6. Buildings shall be clustered as much as possible to retain open space and surrounding tree cover and to minimize changes in topography.

7. Screening along roadways shall make maximum use of berming and landscaping but shall not interfere with site distances.

R. Construction Guidelines: For all developments in the Watershed overlay District, the following construction guidelines shall be followed:

S. Whenever feasible, natural vegetation shall be retained and protected. Where inadequate vegetation exists, temporary or permanent vegetation shall be established.

T. All exposed slopes and graded areas shall be landscaped with ground cover, shrubs, and trees as soon as possible.

U. The smallest practical area of land shall be exposed at any one time during development.

V. When land is exposed during development, the exposure shall be kept to the shortest practical period of time and, if possible, shall be scheduled during seasons of minimum precipitation.

W. The permanent final vegetation and all structures shall be installed as soon as practical.

X. Trees are susceptible to all development in their immediate vicinity, and, unless extreme measures are taken during construction to protect them, their life span will inevitable be shortened. The developer must demonstrate how trees will be protected during construction or how to relocate trees if necessary.

1. For relocating trees, the root ball must be approximately ten (10) to twelve (12) inches in diameter for every inch of the tree's diameter. Adequate drainage and backfill shall be necessary to complete the relocation.

2. Root protection during construction is essential in saving mature trees. Recommended techniques include using a geotextile aeration mat to allow structures to have adequate ventilation, while protecting the roots from excessive compaction and steel-reinforced concrete paving patterned with voids to be filled with gravel or grass that allow drainage, while protecting the tree from root compaction in highly trafficked areas.

B. PLATTE LAKES AREA MANAGEMENT PLAN

Section 13.7 Intent - The Platte Lakes Area Management Plan is intended to protect the health, safety and welfare of the Platte Lakes Area by promoting the preservation of natural features, protecting water quality and regulating development and the use of property which borders, encompasses or contacts the surface waters, watercourses and drainage ways to the Platte Lakes Area. The shape, size and character of the property located within this district may vary greatly due to circumstances imposed by the existing water bodies, watercourses, wetlands, drainage ways and varying slopes. Additionally, it is the intent of the ordinance to establish land management practices and procedures

within the Platte Lakes Area that will help in the attainment and compliance with the court ordered Big Platte lake water quality standard of 8.0 micrograms per liter for phosphorus. (Ref: Ingham County Circuit Court File NO. 86-57122 CE Platte Lake Improvement Association versus Michigan Department of Natural Resources March 10, 2000 CONSENT JUDGMENT Sec. 3 Operation of the Hatchery, Paragraph F Platte Lake Phosphorus Limit, Sub-paragraph ii.)

Section 13.8 Definitions - This district is designed to provide protection to water resources from activities pertaining to construction, development or redevelopment, on properties located adjacent to, bordering or encompassing surface water, water courses, wetland areas, or drainage ways.

Bottom – land The land area of an inland lake or stream which lies below the ordinary high water mark and which may or may not be covered by water at a particular time.
Buffer strip Natural, landscaped and open space areas or any combination thereof used to filter or impede storm water runoff or physically separate or screen one use or land feature from another in order to visually shield or reduce noise, artificial lighting, or other nuisances.
Easement to water The interest in or the ownership or use of property having water frontage on a water resource by the occupants of one or more easement grantee lots.
Impervious surface Any surface including streets, roads, driveways, parking areas, sidewalks, patios, and roof tops, which prevents stormwater from percolating into the ground.
Lot, Water Front A lot that has water frontage on a water body.
Lot line, Water Front The ordinary high water mark of surface water or watercourses or boundary line of a wetland area (as defined by Section 307 of 1994 P. A. 451).
Mowing and Bagging The process of using a lawn mower to cut the grass or ground vegetation in a way which allows the cuttings to be removed for deposition elsewhere.
Non-Point Source Pollution General storm water runoff from impervious surfaces and sediment from urban, agriculture and forestry sources, as well as subterranean water influx to a waterbody.
Ordinary High Water Marks The line between upland and bottom land which persists through successive changes in water levels, below which the presence and action of the water is so common or recurrent that the character of the land is marked distinctly from the upland and is apparent in the soil itself, the configuration of the surface of the soil and the vegetation.
Organic Beach Debris Organic matter that washes up on the shoreline. To include but not be limited to leaves, aquatic plants, chara, filamental algae, dead fish, dead animals and shoreline vegetation that has broken loose and washed up, etc.
Permeable Materials Materials that permit full or partial absorption of storm water into underlying soils, including, but not limited to shredded bark, wood chips, paving bricks if installed without mortared joints, landscape stone and wood decks.
Phosphate Containing Fertilizer – Any fertilizer of any type that contains phosphorus.
Platte Lakes Area The Platte Lakes Area is defined as the property immediately surrounding the Platte Lakes. Boundaries may vary due to slopes and permeability of the soils; the greater of either increases the distance of the boundary from the water's edge.

The interpretation of the boundaries of this area shall be the responsibility of the Zoning Administrator, whose decision may be appealed to the Board of Appeals. In cases where a parcel is not entirely within the boundaries of the Platte Lakes Area only those portions within the Platte Lakes area are required to comply with the regulations of this Article.

Removal of Vegetation Includes, but is not limited to, the cutting, pruning, pulling, digging out, chemical treatment, etc. such that a sufficient amount of the plant and/or related root structure are removed/destroyed such that the plant will no longer continue to grow and bare soil is exposed.

Sediment Solid particulate matter, mineral or organic that has been deposited in water, is in suspension, or being transported by water, or has been removed from its site of origin by the process of soil erosion whether natural or induced.

Slope A portion of land that has either an upward or downward inclination.

Slope, Steep A slope that has a topographic grade of eighteen percent (18%) or greater.

Soil Erosion The wearing away of land by the action of wind, water, gravity or a combination thereof including ice.

Stream Any natural flow of water, which has a defined bank and bottom, whether it be continuous or intermittent.

Upland The land area that lies above the ordinary high water mark or wetland.

Water Body Any natural or artificial inland lake or stream, all being water resources.

Water Frontage The straight-line horizontal distance measured between the two most widely separated points along the water front line.

Wetland Land characterized by the presence of water at a frequency and duration sufficient to support, and that under normal circumstances does support, wetland vegetation or aquatic life and is commonly referred to as a bog, swamp or marsh. Additionally, any area that has the presence of saturated hydrological conditions during ten percent (10%) of the growing season and a dominant presence of hydrophilic vegetation or hydric soils.

Wildlife Habitats Areas of environment upon which wildlife depend for survival as self-sustaining populations in the wild, including land and water needed for cover, protection or food supply.

Yard, Waterside The open space extending across the full width of a lot between the building line and the ordinary high water mark of any water resource and measured perpendicular to the building at the closest point to the ordinary high water mark. This shall be the rear of the yard for a water front lot.

Section 13.9 Water Resources subject to Ordinance Regulation - Navigable water bodies and watercourses, wetland area 0.5 acre or larger in size, non-navigable waterways with tributaries from other non-navigable waterways whose origin is from surface run off, or spring fed, excepting from a wetland area.

Section 13.10 District Regulations – All Structures and Developments:

A. Dwelling and Accessory Structures

1. One dwelling per lot

2. Newly created building lots must be a minimum of one hundred (100) feet in width at the building line.

B. Impervious Surfaces

1. Impervious surfaces must be engineered and sloped in a manner that will not allow direct drainage into a water resource.

2. Drainage of surface runoff from an impervious surface must be directed to a retention area or rock filled void large enough to allow natural absorption of storm water runoff from a twenty-five (25) year storm event of three and one-half (3.5) inches of rain in a twenty-four (24) hour period.

C. Steep Slopes

1. Engineered slopes must be less than eighteen (18%) percent when located within one hundred (100) feet of a water resource. The surface must be maintained with a vegetative cover to minimize surface runoff.

2. Natural slopes greater than eighteen (18%) percent must be maintained with a vegetative cover or retaining systems to minimize surface runoff.

D. Buffer Strips In order to protect water quality, preserve sensitive wildlife habitat and reduce soil erosion and sedimentation, any proposed development or redevelopment, as defined in this subsection, on properties subject to this overlay district shall be separated from the high water mark or bottom land of any subject water resource, by a buffer strip a minimum of twenty-five (25) feet in width as described below.

1. For purposes of this district, constructions, development or redevelopment shall be defined as any of the following activities:

   a. The enlargement of the principle building square footage by more than one hundred (100) square feet.

   b. The demolition of an existing principle building and the building of a new principle building, within the same footprint.

2. The buffer strip shall consist of vegetation and or grass in living condition with the intent of minimizing sediment runoff into the adjacent water resource. A limited amount of improvement may be permitted within the strip as described below:

   a. Buffer Strip: The depth of the buffer strip shall measure twenty-five (25) feet from the ordinary high water mark of the water body. This area is extremely sensitive and must be treated carefully when considering vegetation removal. Specifically any vegetative

removal that would cause or enhance erosion is prohibited unless approved measures to eliminate or reduce erosion are implemented simultaneously. Subsequently, any existing erosion within the buffer zone to the adjacent water body, when identified by the zoning administrator or soil erosion control agent, must be corrected per approved soil erosion control measures.

b. Therefore, the removal of any vegetation within the buffer strip shall be limited to an area equal in width to twenty-five (25%) percent of the length of the water frontage of the parcel, or twenty-five (25) feet, which ever is greater. No contiguous area of clearance shall be wider than twenty-five (25) feet. Consistent with the spirit of the district intent, as much as possible of the mature vegetation shall be preserved. Areas within this strip that do not include abundant native vegetation so as to permit relatively unimpeded pedestrian access to the water resource and/or to permit a virtually open view of the water from the principal structure, shall be included as a portion of the total clear area. Features permitted in the buffer strip shall include footpaths constructed of permeable materials, stairways, fences and walls. The buffer strip may not be used for the dumping of brush, clippings, fill dirt, trash, debris or other materials. Under no circumstances shall the removal of vegetation be allowed where the slope is greater than eighteen (18%) percent.

c. The mowing and or cutting of the vegetation within the buffer strip is an appropriate phosphorus reduction measure as long as the mowing height is such as to enable continued plant growth and the clippings from the mowing are removed to an area outside of the buffer strip where their decay and re-entry to the buffer strip is prevented. In any case, this distance for deposition of organic debris from the water body is no less than the distance of the approved septic drain field from the water body for the property in question. If the property has a holding tank, the mowed clippings must be deposited at a location that meets the above criteria. If such a site cannot be arranged, then the buffer strip cannot be mowed. Under no circumstances can the mowed or cut vegetation be allowed to be deposited directly into the buffer strip or the adjacent water body.

d. Removal of trees and shrubs within the buffer strip must be replaced with vegetation possessing equal or greater soil retaining potential. Grasses are preferred over trees as trees deposit leaves and or needles into the buffer zone and adjacent water body. Re-vegetation may be conducted per NRCS or Benzie County Soil Erosion Control Plans. The removed material must be properly

disposed of as indicated in Sec. 13.10 paragraph D subparagraph 2b.

e. Removal of organic beach debris as well as tree leaves, etc. is encouraged as a phosphorus reduction measure such that phosphorus and other nutrients in the debris cannot decay and re-enter the water. The debris must be disposed of as indicated in Sec. 13.10 paragraph D subparagraph 2c.

f. Fertilization of any type is prohibited with the twenty-five (25) foot buffer zone.

E. Redirection of Water Resources: Redirection of a water resource, in part or in whole, may only be conducted under the Michigan Department of Natural resources and Environment (MDNRE).

F. Construction within the Platte Lakes Area District

1. Construction activities within the district shall not encroach or impact the designated buffer strip.

2. A Soil Erosion Control Permit is required for earth changes within five hundred (500) feet of a lake or stream or for any earth change amounting to one (1) acre or more.

G. Fertilization within the district: All fertilization within the district for non-agricultural operations is limited to phosphate free fertilizer.

H. Agricultural Operations

1. No grazing of livestock shall be permitted within fifty feet (50) of the high water mark.

2. An agricultural operation may operate under an approved NRCS conservation plan that will allow agricultural activity within a buffer strip while maintaining protection of the water resource.