

# Article 4. ENVIRONMENTAL AND LAKE PROTECTION STANDARDS

## Section 4.1 Intent & Applicability

A. **Intent.** The purpose of this Article is to protect the environmental quality of Lakes, lake shorelines, and the watersheds through appropriate land use and design regulations. The protection of the Township watersheds 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 protect water quality, 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.

### B. Applicability.

1. **General Requirements:** All areas of Lake Township shall meet the general requirements of this Article.
2. **Environmentally Sensitive Area Requirements:** Environmentally Sensitive areas regulated by this article include the Shoreline Protection Area, the Steep Slopes Overlay, and a Ridge Line. Any development located in whole or in part in an environmentally sensitive area is subject to the requirements of that subsection.

## Section 4.2 Review & Approval Process

- A. Development or redevelopment of any building or site requiring a Site Plan Review shall provide adequate information to confirm compliance with the requirements of this Article.
- B. Development or redevelopment of any building or site requiring a Land Use Permit shall provide adequate information to confirm compliance with the requirements of this Article.
- C. The Zoning Administrator and Planning Commission may require any additional information to ensure that all of the conditions of the Article are met.

- D. **Permit Requirements.** In addition to required documentation submitted for a land use permit, when development is proposed within the Steep Slope Overlay, the following additional information may be required:
1. A plan by a Registered Professional Engineer or Surveyor which accurately locates the proposed use and development with respect to the Steep Slope Overlay District boundaries, with all pertinent information describing the proposal, and a topographical survey with contour elevations at no greater than 2-foot intervals for the entire parcel.
    - a. If the area of proposed development is to be located on a steep slope over 18%, the following additional information shall be provided:
      - 1) Proposed modifications to the existing topography and vegetative cover, as well as the means of accommodating stormwater runoff.
      - 2) Specifications for building construction and materials, including filling, grading, storage of materials, and water supply and sewerage facilities.
      - 3) Documentation of any additional engineering and/or conservation techniques designed to alleviate environmental problems that may be created by the proposed activities, in compliance with municipal sedimentation and erosion control regulations.
- E. For any development occurring in an environmentally sensitive area, a sworn statement of compliance with planting requirements, limits of disturbance, and exclusion of phosphate-containing fertilizer, to be re-verified within one year of final inspection or occupancy certificate issuance.

## Section 4.3 General Requirements

The General Requirements of this section apply to all development and redevelopment in the Township.

### A. **Plant Requirements.**

1. Existing mature trees shall be incorporated into the project design where feasible.
2. A minimum of ninety percent (90%) of all site plantings (by count) shall be native plant species indigenous to northern Michigan, selected from Native Plant Recommendation List maintained by the Northwest Michigan Invasive Species Network.
3. Turf grass shall be limited to active recreation areas and functional lawn areas.
4. Landscaped areas not used for active recreation shall incorporate native grasses, wildflowers, shrubs, or groundcovers requiring minimal irrigation, fertilization, and mowing.
5. Invasive species identified on the Prohibited Planting List maintained by the Northwest Michigan Invasive Species Network are strictly prohibited.

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

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

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

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

F. The maximum grade of a road or driveway shall not exceed ten percent (10%).

G. **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 (MDNR) or EGLE.

- H. **Fertilization within the Township:** All fertilization within the district for non-agricultural operations is limited to phosphate free fertilizer.
- I. **Construction Guidelines:** For all developments in the Watershed Overlay Districts, the following construction guidelines shall be followed:
1. Whenever feasible, natural vegetation shall be retained and protected. Where inadequate vegetation exists, temporary or permanent vegetation shall be established.
    - a. All exposed slopes and graded areas shall be landscaped with ground cover, shrubs, and trees as soon as possible.
    - b. The smallest practical area of land shall be exposed at any one time during development.
    - c. 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.
    - d. The permanent final vegetation and all structures shall be installed as soon as practical.
  2. 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 inevitably be shortened. The developer must demonstrate how trees will be protected during construction or how to relocate trees if necessary.
    - a. 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. Root protection during construction is essential in saving mature trees.
    - b. 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.
- J. **Performance Guarantee:** The Township reserves the right to use a performance guarantee to ensure plantings are completed and vegetation is maintained according to plan within one year of construction.
- K. **Private Roads:** All private roads located in the Township shall meet the requirements of this section:
1. Private roads shall not be located within the Shoreline Protection Strip.
  2. Private roads in hilly terrain shall be encouraged to locate along natural contours of the land in order to minimize cutting, filling and erosion.

## Section 4.4 Shoreline Protection Strip

- A. **Definition:** The Shoreline Protection Strip is defined as the area within 35 feet of the ordinary high water mark of any subject water body.
1. Where there is ambiguity on the location of a shoreline protection strip, the burden of proving the correct boundary shall be on the applicant, supported by engineering and/or surveying data or mapping, testimony of a soil scientist, or other acceptable evidence.
- B. **Intent:** The intent of the Shoreline Protection Strip is to stabilize waterfronts, protect water quality, maintain water temperature at natural levels, preserve sensitive wildlife habitat and reduce soil erosion, sediment runoff into the adjacent water body, and also to preserve the scenic values of waterfront areas. The area adjacent to water bodies 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.

- C. **Applicability:** The restoration of a natural shoreline protection strip conforming to the requirements of this Article shall be a condition of a site plan review approval or land use permit for a new dwelling being issued for a lot or parcel.
- D. **Development Standards:** A limited amount of improvement may be permitted within the Shoreline Protection Strip, as described below:
1. 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.
  2. Features permitted in the Shoreline Protection Strip shall include footpaths constructed of permeable materials, stairways, fences and walls.
- E. **Shoreline Protection Strip Maintenance Standards:**
1. 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 the Shoreline Protection Strip.
  2. All existing vegetation shall be maintained as a vegetative buffer in accordance with this section.
    - a. 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. 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.
    - b. No contiguous area of clearance shall be wider than twenty-five (25) feet.
    - c. 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.
    - d. Dead, diseased, unsafe or fallen trees and non-native exotic or noxious plants and shrubs, including poison ivy, poison sumac, purple loosestrife, Phragmites, etc. may be removed at the property owner's discretion provided that no stumps are removed. Landowners are encouraged to consult with the Zoning Administrator before removing dead, diseased, unsafe or fallen trees from within the shoreline protection strip.
    - e. 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.
    - f. Native plants, shrubbery, and trees are encouraged when new vegetation is planted.
    - g. 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.

- 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. Fertilization of any type is prohibited.
  - j. Grazing of agriculture is prohibited.
  - k. Private Roads are prohibited
- F. It is in violation of the zoning ordinance to alter or disturb the shoreland protection strip except as provided in this section. If altered or disturbed, the following corrective measures are required:
- 1. Any and all fill material placed within the shoreland protection strip shall be removed. Only soils or rocks, consistent with the composition of the pre-existing on-site soil and rocks, shall be allowed when necessary for growth of new vegetation. Placement of beach sand is prohibited unless it is to maintain an existing beach area.
  - 2. The shoreland protection strip shall be replanted. The replanted area shall consist solely of native vegetation and any replacement trees, similar in size and species to those removed. Any tree greater than 8 inches in diameter (8 inch in diameter measured at 4.5 feet above the ground) which was removed, shall be replaced at a rate of two trees for the first 8 inches in diameter, and one additional tree for each additional 4 inches in diameter of the original tree removed (i.e. if a 20" tree is removed—5 replacement trees would be required, 2 for the first 8" and 3 for the other [20"-8"] 12 inches of diameter of the removed tree.)

## Section 4.5 Steep Slopes Overlay

- A. **Definition:** A steep slope is defined and established as areas containing slopes of 18% or greater as delineated on the Steep Slope Map for Lake Township and are located in the Steep Slope Overlay.
- 1. The Steep Slope Overlay District shall be further divided into the following two categories:
    - a. Slopes of 18% but less than 25%. Slopes of eighteen (18) percent or greater slope (e.g., sloping eighteen (18) feet or more vertical per one hundred (100) feet horizontal) when there are five (5) adjacent contour intervals of two (2) feet each such that, in aggregate, they delineate a slope of at least eighteen (18) percent.
    - b. Slopes of 25% or more. Slopes of twenty-five (25) percent or greater slope (e.g., sloping twenty-five (25) feet or more vertical per one hundred (100) feet horizontal) when there are five (5) adjacent contour intervals of two (2) feet each such that, in aggregate, they delineate a slope of at least twenty-five (25) percent.
  - 2. The boundaries shown on the Steep Slope Map may be supplemented or modified by examination of an on-site survey prepared and sealed by a Registered Professional Engineer or Surveyor and submitted to Lake Township for review.
  - 3. The Zoning Administrator shall decide whether or not the steep slope area has been shown with sufficient accuracy on the applicant's plans.
    - a. The burden of proving the correct boundary shall be on the applicant, supported by engineering and/or surveying data or mapping, testimony of a soil scientist, or other acceptable evidence.

- B. **Intent:** The purpose of this section is to provide for the reasonable use of steep slopes while ensuring development will not induce soil erosion, require excessive grading, increase slope instability, or create sewage disposal problems and shall be in conformance with the following objectives:
1. Guard against property damage and personal injury, and minimize the potential for erosion, slope failure, stream siltation, increased runoff, flooding and contamination of surface waters caused by the adverse effects of site preparation and construction on steep slopes.
  2. Conserve existing woodlands for air and water quality benefits.
  3. Permit land uses by right that are compatible with protection of steep slope areas and encourage the use of steep slope areas for open space and conservation uses.
  4. Require development to avoid steep slope areas wherever possible, and require all land use, clearing, grading, and construction to satisfy development standards.
  5. Regulate expansion of land use or development that existed on steep slope areas prior to enactment of these requirements.
  6. Protect adjoining properties from harmful consequences of development permitted under these requirements.
- C. **Applicability:** These regulations apply to development where a land use permit is required or where any land is disturbed on a parcel located in the Steep Slope Overlay District.
- D. **Development Standards:**
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. No retaining wall shall exceed the height permitted in the zoning district and there shall be at least 10 feet between stepped retaining walls. All retaining walls require a certification by a professional engineer that the wall was constructed in accordance with approved plans and applicable building codes. All retaining walls shall be in place prior to any construction of a structure.
  3. No new parcel shall be created from a parent parcel containing steep slopes unless all new parcels contain at least the minimum lot area for the zone district on land with slopes less than 25%. If it is infeasible to provide this area in accordance with the setbacks required by the underlying district, the lot shall not be divided.
  4. **Prohibited Uses on Slopes of 25% or More:** The following are specifically prohibited on slopes of 25% or more:
    - a. Removal of topsoil.
    - b. Stairs, landings, and decks.
    - c. Structures, roads, driveways, parking areas, construction or other development.
    - d. Clearing of vegetation or grading, including the addition of fill except as permitted by this article.
    - e. On-lot sewage disposal systems.
    - f. Utility transmission lines and above ground utility line structures.
  5. 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 8 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:
    - a. That no other reasonable or prudent alternatives exist.

- b. 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.
- c. 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.
- d. That all design requirements of this section are met.

**E. Steep Slopes Maintenance Standards:**

1. Natural slopes greater than eighteen (18%) percent must be maintained with a vegetative cover or retaining systems to minimize surface runoff.
  - a. As much of the existing vegetation, including bushes, shrubs, natural ground cover, and trees, shall remain on the site as possible.
  - b. Lawn areas shall not qualify as natural vegetative cover required in this section.
2. **Natural Vegetative Cover:** 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.

Existing Slope	Percent of Lot to Remain in Natural Vegetative Cover
12 to 17.99 Percent	30 Percent
18 to 24.99 Percent	40 Percent
25+	50 Percent

- F. Remediation on Steep Slopes.** If work on a steep slope occurs in violation of this ordinance, the property owner shall cause for the steep slope to be replanted and restored to the previous condition prior to the work in violation of the ordinance. Trees, measured at four (4) feet above grade for canopy trees, shall be replaced at the following rate. Trees shall be maintained to retain the soil retention and replaced if dead or diseased.

Vegetation Removed	Maturation Planting Required
Canopy Tree 3" or less caliper	1:1
Canopy Tree 3" to 6" caliper	1:2
Canopy Tree 6" to 9" caliper	1:3
Canopy Tree 9" to 12" caliper	1:4
Canopy Tree Greater than 12" caliper	1:5
Evergreen or Flowering Tree 8' or less in height	1:1
Evergreen or Flowering Tree 8' to 12' in height	1:2
Evergreen or Flowering Tree 12' to 16' in height	1:3
Evergreen or Flowering Tree Greater than 16' in height	1:4
Shrub Any Size	1:1

## Section 4.6 Development of Ridgelines

- A. **Definition:** 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 a Lake with the Township that has a significant portion of their grade being twelve (12) percent or greater for a distance of at least one hundred (100) feet.
1. Where there is ambiguity on the location of a critical slope area or ridge line, the burden of proving the correct boundary shall be on the applicant, supported by engineering and/or surveying data or mapping, testimony of a soil scientist, or other acceptable evidence.
- B. **Intent:** The intent of regulating the development of ridgelines is to preserve the visual character, scenic quality, and natural landforms of the Township by guiding development in and around ridgelines in a manner that minimizes adverse impacts on the landscape. These regulations are intended to reduce the visual prominence of buildings and site improvements, protect significant views from public roads and waterways, limit erosion and slope instability, preserve existing vegetation, and maintain the ecological functions of steep slopes while allowing reasonable use of private property consistent with the health, safety, and welfare of the community.
- C. **Applicability:** These regulations apply to development where a site plan review or land use permit is required or where any land is disturbed on a parcel located in the Steep Slope Overlay District.
- D. **Development Standards:**
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
    - c. (50) foot setback was required.
    - d. The building is not located within a special or unique viewing area or view shed.
    - e. 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.
    - f. The building is not visible from a public road, trail, or water access point.
    - g. A recent land division is not the cause for the request.
- E. **Ridgeline Maintenance Standards:**
1. 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.
  2. 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.

3. 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.
4. Existing soil and organic matter shall not be altered or disturbed within the natural vegetative buffer.
5. All cuts shall be supported by retaining walls or other appropriate retaining structures when, depending upon the nature of the soil characteristics, such structures are approved by Benzie County Soil Erosion, Sedimentation, and Stormwater Control (SESC) and the Township in order to prevent erosion.
6. Any fill placed on the lot shall be properly stabilized and when found necessary depending upon existing slopes and soil types, supported by retaining walls or other appropriate structures as approved by the Benzie County Soil Erosion, Sedimentation, and Stormwater Control (SESC) and the Township.
7. No retaining wall shall exceed the height permitted in the zoning district and there shall be at least 10 feet between stepped retaining walls. All retaining walls require a certification by a professional engineer that the wall was constructed in accordance with approved plans and applicable building codes. All retaining walls shall be in place prior to any construction of a structure.
8. Any disturbance of steep slopes shall be completed within one construction season, and disturbed areas shall not be left bare and exposed during the winter and spring thaw periods.
9. Permanent vegetative cover shall be planted within three days after completion of grading.

## **Section 4.7 ADDITIONAL REGULATION & COORDINATION**

- A. Other Environmentally Sensitive Areas Not Regulated by the Ordinance: The Zoning Administrator reserves the right to require evidence of compliance with other regulation including but not limited to the following:
  1. Dune Formation and other sandy soil limitations are sensitive areas because some are unique natural features under protection of the Sand Dunes Protection Act, Part 353, 1994 PA 451.
  2. Wetlands are defined by degree of soil wetness, generally including those soils classified by the Wetlands Act, Part 303, 1994 PA 451 as being able to support aquatic vegetation regardless of whether it has standing water or not. Any activity shall be prohibited unless a wetlands permit has been obtained from EGLE.
  3. Sensitive Riverine Areas are defined as areas on each side of streams that could be subject to flooding or erosions in Part 301 and 315, 1994 PA 451.
  4. Sensitive Inland Lakes are sensitive areas around the water body, including the watershed, which could be subject to flooding, erosion, or pollution per Part 301, 1994 PA 451.
  5. Flood Plain Areas are low areas adjacent to inland lakes and streams subject to flooding according to the one hundred (100) year flood hazard boundary map as administered by the Federal Emergency Management Agency (FEMA). Part 31, 1994 PA 451.
  6. Steep Slopes when the proposed building site has slopes in excess of eighteen (18) percent, questionable soil stability or evidence of erosion, the Zoning Administrator shall require the applicant to obtain a site analysis, Part 91, 1994 PA 451.
  7. Groundwater Protection – Aquifers are at risk of pollution when recharged by surface waters and therefore must be protected in accordance with PA 98 of 1913 and CPA 282 of 1945.
- B. Coordination with Other Requirements

1. **County Soil Erosion and Stormwater Control:** A Soil Erosion Control (SESC) 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.
2. **Retaining Wall Permit:** No shoreline retaining wall shall be erected without first having obtained a permit from EGLE.
3. **State and Federal Permits:** Compliance with this Article does not exempt applicants from obtaining permits required by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), the U.S. Army Corps of Engineers, or other agencies with jurisdiction.
4. **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).
5. **Conflict Resolution:** Where requirements of this Article and other regulations overlap, the more restrictive standard shall apply.

## Section 4.8 LOW IMPACT DEVELOPMENT INCENTIVE PROGRAM

- A. **Purpose.** Lake Township seeks to protect and enhance the natural environment through Low Impact Development (LID) techniques that manage stormwater, preserve natural features, and reduce environmental impacts. This section establishes standards for commercial development and voluntary incentives for residential property owners that reward enhanced environmental performance with increased development flexibility.
- B. **Residential Impervious Surface Incentive.** For residential development or redevelopment that will result in disturbance to fifty percent (50%) or more of the lot area, property owners may increase the maximum allowable impervious surface coverage by implementing approved LID techniques as specified throughout this Article.
  1. **Incentive Structure.** For each approved LID technique implemented, the maximum allowable impervious surface coverage increases by five percent (5%), up to a maximum total impervious surface coverage of fifteen percent (15%) greater than the maximum impervious surface for the zone district.
- C. **Eligible Techniques.** Approved LID techniques eligible for incentive credit are identified throughout this Article with the abbreviation LID and include:
  - a. Enhanced stormwater management techniques (Section 4.9)
  - b. Tree preservation beyond minimum requirements (Section 4.10)
- D. **Application Requirements.** Property owners seeking incentive credit shall:
  - a. Clearly identify all proposed LID techniques on the site plan or zoning permit application
  - b. Demonstrate compliance with all applicable setbacks, performance, and safety standards
  - c. Demonstrate that LID features will not negatively impact septic systems or wells
  - d. Submit a maintenance plan identifying responsible parties and ongoing maintenance requirements
- E. **Review and Approval:** The Zoning Administrator shall review applications for LID incentive credit and may consult with the Planning Commission as needed.
- F. **Commercial and Industrial LID Requirements:** All new commercial, industrial, and institutional development, and any change of use requiring site plan review, shall incorporate a minimum of three (3) approved LID techniques from those identified throughout this Article with the symbol **[LID]**.
- G. **General Compliance Requirements:** All LID techniques implemented under this incentive program must:

1. Comply with all applicable provisions of this Article, including shoreline buffers, steep slope protections, clearing restrictions, and stormwater management standards. Implementation of approved LID incentive techniques does not exempt applicants from compliance with any other Section of Article 4.
2. Maintain required setbacks from septic systems, wells, and other sensitive features as required by EGLE or the local health department
3. Not increase erosion, slope instability, or stormwater impacts on adjacent properties
4. Be maintained in perpetuity by the property owner or homeowners association

## Section 4.9 STORMWATER MANAGEMENT

- A. **Intent.** 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.
- B. **Applicability:** These regulations apply to any development requiring a site plan review or land use permit is required, where earth changes are proposed within five hundred (500) feet of a body of water, or for any earth change amounting to one (1) acre or more.
- C. **General Standards.** When any land in the Township is developed or altered in any way which affects stormwater runoff, the owner shall detain such stormwater from runoff onto adjacent properties, including roads and other rights-of-way, in such a manner which shall result in the maximum amount of stormwater runoff not exceeding that which existed prior to the development or improvement of the property.
1. Stormwater shall not adversely affect neighboring properties or the surface water quality of the Township's lakes and streams.
  2. Impervious surfaces must be engineered and sloped in a manner that will not allow direct drainage into a water resource.
  3. All developments shall be designed, constructed, and maintained to protect the water quality of the Township's lakes and streams.
  4. Impervious surfaces must be engineered and sloped in a manner that will not allow direct drainage into a water resource.
  5. Drainage of surface runoff from an impervious surface must be directed to storm water management system designed to accommodate 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. Storm water management systems must be designed in accordance with the Michigan Nonpoint Source Practices Manual.
- D. **Natural Drainage Courses:** Natural drainage courses shall be protected from grading activity.
- E. **Groundwater Flow Patterns:** Where known, groundwater flow patterns shall not be interrupted.
- F. **Stormwater Control Requirements.** Stormwater control mechanisms shall be required to ensure that the peak rate of stormwater runoff, after development, does not exceed the rate prior to development.
1. **Residential Development.** Residential development shall implement one or more of the following stormwater control mechanisms:
    - a. Retention basin
    - b. Detention basin
    - c. Vegetative buffer with drainage swale

- d. Infiltration trench
  - e. Low impact development technique meeting the standards of subsection 4.9.G.
2. **Non-Residential Development.** All new commercial, industrial, and institutional development, and any change of use requiring site plan review, shall incorporate a minimum of two (2) LID stormwater techniques from subsection F.1, above.
- G. **LID Incentive Credit, Stormwater Management Techniques.** Property owners may earn LID incentive credit as described in Section 4.8 by implementing the following approved stormwater management techniques.
- 1. **Rain Gardens and Bioswales**
    - a. Vegetated stormwater features shall be designed to capture, infiltrate, and filter runoff
    - b. Shall be sized to capture runoff from contributing drainage area per Michigan Nonpoint Source Practices Manual
    - c. Shall be planted with native species selected from Native Plant Recommendation List maintained by the Northwest Michigan Invasive Species Network.
    - d. Shall maintain minimum setbacks: 10 feet from foundations, 50 feet from wells, 100 feet from septic (or per EGLE)
    - e. Shall comply with steep slope requirements (Section 4.5) where applicable
  - 2. **Permeable Pavement**
    - a. The installation of porous asphalt, pervious concrete, or permeable pavers allowing water infiltration
    - b. Appropriate for residential driveways, overflow parking, pedestrian pathways
    - c. Shall include minimum 12-inch aggregate subbase for structural support and storage
    - d. Shall not be installed on slopes exceeding 5% without Township Engineer approval
    - e. Shall maintain setbacks per subsection C.1.d above
    - f. Property owner responsible for maintenance through vacuuming/pressure washing
  - 3. **Rainwater Collection Systems**
    - a. Cisterns, rain barrels, blue roofs, or stormwater vaults capturing rooftop runoff
    - b. Minimum capacity: 500 gallons (residential), 1,000 gallons (commercial/industrial)
    - c. Shall include overflow directing water away from foundations toward vegetated areas
    - d. Shall include screens/filters to prevent debris and mosquito breeding
  - 4. **Green Roofs**
    - a. Vegetated roof systems absorbing rainfall and reducing runoff
    - b. Shall be designed by qualified professional meeting structural load requirements
    - c. Shall include minimum 4-inch depth of lightweight growing media
    - d. Native, drought-tolerant species strongly encouraged
    - e. Maintenance plan required
  - 5. **Parking Lot Bioretention Features (non-residential)**
    - a. Landscaped islands or bioswales within parking areas
    - b. Ratio: one island per 15 parking spaces

- c. Designed with depressed elevation and curb cuts to receive runoff
  - d. Minimum 18-inch engineered soil mix, planted with native stormwater-tolerant species
  - e. Each island shall include at least one canopy tree
- H. **Maintenance and Inspection.** All stormwater management features shall be maintained in perpetuity. Commercial and industrial developments shall submit a maintenance plan and recorded maintenance agreement per Section 12.7, Posting of Financial Guarantee.

## Section 4.10 VEGETATION PRESERVATION AND CLEARING OF LAND

Land within Lake Township shall not be cleared of trees in any manner, without first obtaining a land use permit.

### A. General Requirements

1. **Cutting Standards.** Cutting shall be done in such a manner as to avoid erosion, to preserve rare species of trees or greenery, to preserve scenic qualities, and to preserve desirable screening.
  - a. **Clear Cutting Prohibition.** Clear cutting of property shall be prohibited unless provided for in a forestry management plan completed by a Certified Arborist.
  - b. **Ridge Line Vegetation Removal.** Removal of vegetation on a ridge line shall be limited to no more than twenty-five (25) percent of the length of this ridge on the property, 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.

- B. **Vegetation Retention Standards.** 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.

- C. **LID Incentive Credit, Vegetation Preservation on Steep Slopes.** Property owners may earn LID incentive credit as described in Section 4.15 by preserving existing trees and vegetation on steep slopes of 18% or greater beyond the minimum requirements of Section 4.12.E.

1. **Eligibility:** Credit is granted for voluntary preservation of twenty-five percent (25%) more vegetated area on steep slopes than required by the Slope-Based Retention Requirements Table of Section 4.12.E.
  - a. **Protection Requirements:** Preserved trees and vegetation must be protected during construction with tree protection fencing installed at the drip line and shown on the site plan.

### D. Tree Protection Standards

1. **Marking of Preserved Trees.** All trees intended to remain standing and undamaged shall be clearly marked on the proposed site plan.
  - a. **Setback from Preserved Trees.** In order to protect the trees and the roots of the trees, all structures and roads shall be set back at least ten (10) feet from the trees identified on the site plan to be left standing or undamaged.
  - b. **Group Preservation.** Wherever feasible, groups or clumps of trees shall be preserved to encourage survival of the root zone.

- E. **Application Requirements.** The applicant shall submit the following to the Zoning Administrator for review and approval.
1. **Application.** Application with information provided by the Township
    - a. **Site Plan Information.** In addition to the information required on a site plan per Article 7, a landscaping plan prepared by a Michigan licensed landscape architect containing the following shall be required:
      - 1) Trees larger than 6 inches in diameter at breast height
      - 2) The number of trees to be removed and location on the site
      - 3) The number of trees to remain and location on the site
      - 4) The acreage of the area to be disturbed and location on the site
- F. **Exemptions.** Activities exempt from permit:
1. **Minor Tree Removal.** Removal of trees during a one-year period that includes less than 10,000 sq ft or 10% of disturbance to a site, whichever is less.
    - a. **Small Trees Outside environmentally sensitive areas.** Removal of trees less than 6 inches in diameter at breast height outside of Watershed Overlay.
    - b. **Utilities and Rights-of-Way.** Removal of trees when associated with the maintenance or access for public utilities and right-of-ways.
    - c. **Dead, Diseased, or Damaged Trees.** Removal or trimming of dead, diseased, or damaged trees, where the damage resulted from an accident or non-human cause.
    - d. **Agricultural Operations.** Tree removal or transplanting occurring during use of land for agriculture or the operation of a commercial nursery or tree farm.
    - e. **Emergency Actions.** Actions made necessary by an emergency, such as a tornado, windstorm, flood, freeze, dangerous and infectious insect infestation or disease, or other disaster, in order to prevent injury or damage to persons or property or to restore order.
    - f. **Governmental Agencies.** Tree trimming, removal or transplanting performed by or on behalf of any governmental agencies.

## Section 4.11 FORESTRY

- A. **Applicability.**
1. Forestry and timber harvesting activities shall be permitted only in zoning districts where such uses are allowed by this Ordinance and shall comply with the provisions of this Section. Approval of forestry activities under this Ordinance shall not relieve any person from compliance with state or federal permits, soil erosion and sedimentation control requirements, or other applicable laws and regulations.
- B. **Best Management Practices.**
1. All forestry activities shall be conducted in accordance with the Forestry Best Management Practices for Soil Erosion and Sedimentation Control, as published and periodically updated by the Michigan Department of Natural Resources pursuant to Part 91 of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended.
- C. **Zoning and Development Review.**

1. Forestry activities involving land clearing, access road construction, grading, or other site disturbance shall be subject to applicable zoning review and approval requirements, including land use approval and site plan review, in accordance with Article 3 and Article 7, unless expressly exempted by this Ordinance.

## **Section 4.12 GRADING AND MINING**

For any construction or operation disturbing more than 3,000 cubic yards of soil, the Benzie County Soil Erosion, Sedimentation, and Stormwater Control Ordinance (SESC) shall apply.