ORDINANCE NO. 2006-#04 **AN ORDINANCE TO SUPPLEMENT THE REVISED ORDINANCES OF THE BOROUGH OF RINGWOOD TO ADD A CHAPTER 27 A ENTITLED "STORMWATER MANAGEMENT REGULATIONS"**

BE IT ORDAINED by the Municipal Council of the Borough of Ringwood, County of Passaic and State of New Jersey, as follows:

SECTION 1. The Revised Ordinances of the Borough of Ringwood are hereby supplemented by the addition of the following Chapter 27A entitled "Stormwater Management Regulations"

CHAPTER 27A STORMWATER MANAGEMENT REGULATIONS

27A-1. Article 1. General Provisions.

27A-1.1 Short Title. The provisions of this Chapter shall be known and may be cited as the "Stormwater Management Ordinance of the Borough of Ringwood" or the "Stormwater Management Ordinance."

27A-1.2 Purpose.

It is the purpose of Chapter to establish minimum stormwater management requirements and controls for major development (as hereinafter defined) in the Borough of Ringwood. This Chapter is enacted to implement the Borough's responsibility to the Department (as hereinafter defined) pursuant to regulations and permits issued in accordance with State and Federal law.

27A-1.3 Applicability.

The requirements of this Chapter shall apply to all major developments (as hereinafter defined) requiring subdivision approval pursuant to Chapter 23 of the Revised Ordinances of the Borough or site plan approval (including, but not limited to, residential site plan approval) pursuant to Chapter 24 of the said Revised Ordinances.

27A-1.4 Policy Statement.

In construing and implementing this Chapter, flood control, groundwater recharge, and pollutant reduction through nonstructural or low impact techniques shall be explored and, if feasible required, in preference to structural BMPs (as hereinafter defined). Structural BMPs, when necessary, shall be integrated with nonstructural stormwater management measures and proper maintenance plans. Nonstructural techniques include both environmentally sensitive site design and source controls that prevent pollutants from being placed on the site. Source control plans should be developed based upon physical site conditions and the origin, nature, and the anticipated loading of potential pollutants. Multiple stormwater management BMPs may be necessary to achieve the performance standards for water quality, quantity, and groundwater recharge established by this Chapter.

27A-1.5 Compatibility with Other Permit and Ordinance Requirements

The requirements of this Chapter are an integral part of development approvals under the subdivision and site plan review Chapters and do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act, or ordinance. The provisions of this Chapter shall be held to be the minimum requirements for the promotion of the public health, safety, and general welfare. This Chapter; is not intended to interfere with, abrogate, or annul any other Chapters of the said Code or any rule, regulation, statute, or other provision of law except that, when any provision of this Chapter imposes restrictions different from those imposed by any other such Chapter, rule, regulation, or other provision of law, the more restrictive provisions or higher standards shall control.

27A-2. Article 2. Definitions.

27A-2.1 General Provision.

Unless specifically defined in this Article, words or phrases used in this Chapter shall be interpreted so as to give them the meaning they have in common usage and to give this ordinance its most reasonable application.

27A-2.2 Definitions. For purposes of this Chapter the following words and phrases shall have the following meanings"

"Adverse hydraulic impact" means (but is not limited to) exacerbating a naturally or seasonally high water table so as to cause surficial ponding, flooding of basements, or interference with the proper operation of subsurface sewage disposal systems and other subsurface structures in the vicinity or downgradient of a groundwater recharge area.

"Agricultural Development" means land uses normally associated with the production of food, fiber and livestock for sale. Such uses do not include the development of land for the processing or sale of food and the manufacturing of agriculturally related products.

"BMP" means a Best Management Practice as defined in the New Jersey Stormwater Best Practices Manual. The plural of BMP is BMPs.

"Category One waters" means waters designated by the Department as Category One waters in N.J.A.C. 7:9B, as it may hereinafter be amended which is incorporated in this Chapter by reference. Category One waters shall also include Highlands open waters as defined in N.J.A.C. 7:38, as it may hereafter be amended, which is incorporated in this Chapter by reference.

"Compaction" means the increase in soil bulk density.

"Core" means a pedestrian-oriented area of commercial and civic uses serving the surrounding municipality, generally including housing and access to public transportation.

"County review agency" means the Passaic County Planning Board or other agency designated by the County Board of Chosen Freeholders to review municipal stormwater management plans and implementing ordinances.

"Department" means the New Jersey Department of Environmental Protection.

"Designated Center" means a State Development and Redevelopment Plan Center as designated by the State Planning Commission such as urban, regional, town, village, or hamlet.

"Design engineer" means a person professionally qualified and duly licensed in New Jersey to perform engineering services that may include, but not necessarily be limited to, development of project requirements, creation and development of project design and preparation of drawings and specifications.

"Development" means the division of a parcel of land into two or more parcels, the construction, reconstruction, conversion, structural alteration, relocation or enlargement of any building or structure, any mining excavation or landfill, and any use or change in the use of any building or other structure, or land or extension of use of land for which permission may be required pursuant to the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq. In the case of development of agricultural lands, development means: any activity that requires a State permit; any activity reviewed by the County Agricultural Board (CAB) and the State Agricultural Development Committee (SADC), and municipal review of any activity not exempted by the Right to Farm Act, N.J.S.A 4:1C-1 et seq.

"Disturbance" means the placement of impervious surface or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation.

"Drainage area" means a geographic area within which stormwater, sediments, or dissolved materials drain to a particular receiving waterbody or to a particular point along a receiving waterbody.

"Environmentally constrained area" means the following areas where the physical alteration of the land is in some way restricted, either through regulation, easement, deed restriction or ownership such as: wetlands, floodplains, threatened and endangered species sites or designated habitats, and parks and preserves.

"Environmentally critical areas" means an area or feature which is of significant environmental value, including but not limited to: stream corridors; natural heritage priority sites; habitat of endangered or threatened species; large areas of contiguous open space or upland forest; steep slopes; and well head protection and groundwater recharge areas.

"EPA" means the United States Environmental Protection Agency, or any successor agency or department responsible under Federal law for ground water pollution control.

"Erosion" means the detachment and movement of soil or rock fragments by water, wind, ice or gravity.

"Impervious surface" means a surface that has been covered with a layer of material so that it is highly resistant to infiltration by water.

"Habitats of endangered or threatened species" means those habitats identified using the Department's Landscape Project as approved by the Department's Endangered and Nongame Species Program.

"Infiltration" is the process by which water that seeps into the soil from precipitation.

"Major development" means any "development" that provides for ultimately disturbing one or more acres of land or increasing impervious surface by one-quarter acre or more. [Projects undertaken by any government agency which otherwise meet the definition of "major development" but which do not require approval under the MLUL are also considered "major development."]*

"MLUL" means the New Jersey Municipal Land Use Law, N.J.S.A. 40:55D-51 et seq.

"Municipality" means the Borough of Ringwood.

"New Jersey Stormwater Best Practices Manual" means the document bearing that title promulgated by the Department, as it may be hereafter amended, which is incorporated by reference.

"Node" means an area designated by the State Planning Commission concentrating facilities and activities which are not organized in a compact form.

"Nutrient" means a chemical element or compound, such as nitrogen or phosphorus, which is essential to and promotes the development of organisms.

"Person" means any individual, corporation, company, partnership, firm, association, or political subdivision of this State and any state, interstate or federal agency.

"Pollutant" means any dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, refuse, oil, grease, sewage sludge, munitions, chemical wastes, biological materials, medical wastes, radioactive substance (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.), thermal waste, wrecked or discarded equipment, rock, sand, cellar dirt, industrial, municipal, agricultural, and construction waste or runoff, or other residue discharged directly or indirectly to the land, ground waters or surface waters of the State, or to a domestic treatment works. Pollutant includes both hazardous and nonhazardous pollutants.

"Recharge" means the amount of water from precipitation that infiltrates into the ground and is not evapotranspired.

"Reviewing Agency" means the Planning Board or the Board of Adjustment of the Borough of Ringwood when acting pursuant to their respective jurisdictions under MLUL or, in the case of a residential site plan pursuant to Article 24-1, the Borough Engineer.

"RSIS" means the Residential Site Improvement Standards at N.J.A.C. 5:21, as they may hereinafter be amended.

"Sediment" means solid material, mineral or organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water or gravity as a product of erosion.

"Site" means the lot or lots upon which a major development is to occur or has occurred.

"Soil" means all unconsolidated mineral and organic material of any origin.

"Soil Erosion and Sediment Control Act" means N.J.S.A. 4:24-39 et seq. and any implementing rules.

"Soil Erosion Standards" means the "Standards for Soil Erosion and Sediment Control in New Jersey, established under the Soil Erosion and Sediment Control Act and incorporated into N.J.A.C. 2:9.

"Source material" means any materials or machinery, located at an industrial facility, that is directly or indirectly related to process, manufacturing or other industrial activities, which could be a source of pollutants in any industrial stormwater discharge to groundwater. Source materials include, but are not limited to, raw materials; intermediate products; final products; waste materials; by-products; industrial machinery and fuels, and lubricants, solvents, and detergents that are related to process, manufacturing, or other industrial activities that are exposed to stormwater.

"State Plan Policy Map" is defined as the geographic application of the State Development and Redevelopment Plan's goals and statewide policies, and the official map of these goals and policies.

"Steep Slope" means land area with a grade greater than 10%.

"Stormwater" means water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, or is captured by separate storm sewers or other sewage or drainage facilities.

"Stormwater runoff" means water flow on the surface of the ground or in storm sewers, resulting from precipitation.

"Stormwater management basin" means an excavation or embankment and related areas designed to retain stormwater runoff. A stormwater management basin may either be normally dry (that is, a "detention basin" or "infiltration basin"), retain water in a permanent pool (a "retention basin"), or be planted mainly with wetland vegetation ("stormwater wetlands").

"Stormwater management measure" means any structural or nonstructural strategy, practice, technology, process, program, or other method intended to control or reduce stormwater runoff and associated pollutants, or to induce or control the infiltration or groundwater recharge of stormwater or to eliminate illicit or illegal non-stormwater discharges into stormwater conveyances.

"Time of concentration" means the time it takes for runoff to travel from the hydraulically most distant point of the watershed to the point of interest within a watershed.

"Waters of the State" means the ocean and its estuaries, all springs, streams, wetlands, and bodies of surface or ground water, whether natural or artificial, within the boundaries of the State of New Jersey or subject to its jurisdiction.

"Wetlands" or "wetland" means an area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation.

27A-3. Article 3. General Standards.

27A-3.1 General Provisions.

Stormwater management measures for major development shall be developed to meet the erosion control, groundwater recharge, stormwater runoff quantity, and stormwater runoff quality standards in this Chapter. To the maximum extent feasible, these standards shall be met by incorporating nonstructural stormwater management strategies into the design. If these strategies alone are not sufficient to meet these standards, structural stormwater management measures necessary to meet these standards shall be incorporated into the design.

27A-3.2 Applicability.

The standards in this Chapter apply only to new major development and are intended to minimize the impact of stormwater runoff on water quality and water quantity in receiving water bodies and maintain groundwater recharge. The standards do not apply to new major development to the extent that alternative design and performance standards are applicable under a regional Stormwater Management Plan or Water Quality Management Plan adopted in accordance with rules of the Department. Such alternative standards shall provide at least as much protection from stormwater-related loss of groundwater recharge, stormwater quantity and water quality impacts of major development projects as would be provided under the standards in this Chapter.

27A-3.3 RSIS.

For site improvements regulated under the RSIS, the RSIS shall apply in addition to this Chapter except to the extent the RSIS are superseded by this Chapter or alternative standards applicable

under a regional stormwater management plan or Water Quality Management Plan adopted in accordance with the rules of the Department.

27A-4. Article 4. Stormwater Management Requirements for Major Development.

27A-4.1 Maintenance Plan.

Each major development subject to review under this Chapter shall incorporate a maintenance plan for the stormwater management measures incorporated into the design of such development.

27A-4.2 Threatened or Endangered Species.

Stormwater management measures shall avoid adverse impacts of concentrated flow on habitat for threatened and endangered species.

27A-4.3 Exemptions for Certain Linear Developments.

The following linear developments are exempt from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements at Sections 27A-4.6 and 4.7.

27A-4.3.1 The construction of an underground utility line provided that the disturbed areas are revegetated upon completion;

27A-4.3.2 The construction of an aboveground utility line provided that the existing conditions are maintained to the maximum extent practicable; and

27A-4.3.3 The construction of a public pedestrian access, such as a sidewalk or trail with a maximum width of 14 feet, provided that the access is made of permeable material.

27A-4.4 A waiver from strict compliance from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements at Sections 27A-4.6 and 4.7**27A-4.3.** may be obtained for the enlargement of an existing public roadway or railroad; or the construction or enlargement of a public pedestrian access, provided that the following conditions are met:

27A-4.4.1 The applicant demonstrates that there is a public need for the project that cannot be accomplished by any other means;

27A-4.4.2 The applicant demonstrates through an alternatives analysis, that through the use of nonstructural and structural stormwater management strategies and measures, the option selected complies with the requirements of Sections 27A-4.6 and 4.7 to the maximum extent practicable;

27A-4.4.3 The applicant demonstrates that, in order to meet the requirements at Sections 27A-4.6 and 4.7, existing structures currently in use, such as homes and buildings would need to be condemned; and

27A-4.4.4 The applicant demonstrates that it does not own or have other rights to areas, including the potential to obtain through condemnation lands not falling under 27A-4.4.3. above within the upstream drainage area of the receiving stream, that would provide additional opportunities to mitigate for requirements of Sections 27A-4.6 and 4.7 that were not achievable on-site.

27A-4.5. Nonstructural Stormwater Management Strategies.

27A-4.5.1 To the maximum extent practicable, the standards in Sections 27A-4.6 and 4.7 shall be met by incorporating nonstructural stormwater management strategies described in this Section 27A-4.5 into the design. The applicant shall identify the nonstructural measures incorporated into the design of the project. If the applicant contends that it is not feasible for engineering, environmental, or safety reasons to incorporate any nonstructural stormwater management measures identified in Paragraph 27A-4.5.2 into the design of a particular project, the applicant shall identify the strategy considered and provide a basis for the contention.

27A-4.5.2 Nonstructural stormwater management measures incorporated into site design shall:

a. Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss;

b. Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces;

c. Maximize the protection of natural drainage features and vegetation;

d. Minimize the decrease in the "time of concentration" from pre-construction to post construction;

e. Minimize land disturbance including clearing and grading;

f. Minimize soil compaction;

g. Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides;

h. Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas;

i. Provide other source controls to prevent or minimize the use or exposure of pollutants at the site in order to prevent or minimize the release of those pollutants into stormwater runoff. These source controls include, but are not limited to:

(1) Site design features that help to prevent accumulation of trash and debris in drainage systems;

(2) Site design features that help to prevent discharge of trash and debris from drainage systems;

(3) Site design features that help to prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments; and

(4) When establishing vegetation after land disturbance, applying fertilizer in accordance with the requirements established under the Soil Erosion and Sediment Control Act.

27A-4.5.3 Any land area used as a nonstructural stormwater management measure to meet the performance standards in Sections 27A-4.6 and 4.7 shall either be dedicated to a government agency, be subjected to a conservation restriction filed with the Passaic County Clerk's office, or be subjected to an approved equivalent restriction that ensures that the stormwater management measure approved by the reviewing agency shall be maintained in perpetuity.

27A-4.5.4 Guidance for nonstructural stormwater management measures is available in the New Jersey Stormwater Best Management Practices Manual.

27A-4.6. <u>Erosion Control, Groundwater Recharge and Runoff Quantity Standards.</u>

27A-4.6.1 This Chapter contains minimum design and performance standards to control erosion, to encourage and control infiltration and groundwater recharge, and to control stormwater runoff quantity impacts of major development.

a. The minimum design and performance standards for erosion control are those established under the Soil Erosion and Sediment Control Act.

b. The minimum design and performance standards for groundwater recharge are as follows:

(1) The design engineer, using the assumptions and factors for stormwater runoff and groundwater recharge calculations at Article 27A-5, shall either:

(a) Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100% of the average annual pre-construction groundwater recharge volume for the site; or

(b) Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the 2-year storm will be infiltrated.

(2) This groundwater recharge requirement does not apply to projects subject to Subparagraph 27A-4.6.1(b)(3) below.

(3) The following types of stormwater shall not be recharged:

(a) Stormwater from areas of high pollutant loading. High pollutant loading areas are areas in industrial and commercial developments in which solvents and/or petroleum products are loaded/unloaded, stored, or applied; areas in which pesticides are loaded/unloaded or stored; areas in which hazardous materials are expected to be present in greater than 'reportable quantities' as defined by the EPA at 40 CFR 302.4; areas in which recharge would be inconsistent with a Department approved remedial action work plan or landfill closure plan; and areas in which high risks for spills of toxic materials, (such as but not limited to gas stations and vehicle maintenance facilities); and

(b) Industrial stormwater exposed to source material.

(4) The design engineer shall assess the hydraulic impact on the groundwater table and design the site so as to avoid adverse hydraulic impacts.

c. In order to control stormwater runoff quantity impacts, the design engineer, using the assumptions and factors for stormwater runoff calculations in Article 27A-5, shall complete one of the following:

(1) Demonstrate through hydrologic and hydraulic analysis that, for stormwater leaving the site, post-construction runoff, hydrographs for the 2, 10, and 100 year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events; or

(2) Demonstrate through hydrologic and hydraulic analysis that there is no increase, as compared to the pre-construction condition, in the peak runoff rates of stormwater leaving the site for the 2, 10, and 100 year storm events and that the increased volume or change in timing of stormwater runoff will not increase flood damage at or downstream of the site. This analysis shall include the analysis of impacts of existing land uses and projected land uses assuming full development under existing zoning and land use ordinances in the drainage area; or

(3) Design stormwater management measures so that the post-construction peak runoff rates for the 2, 10 and 100 year storm events are 50, 75 and 80 percent, respectively, of the preconstruction peak runoff rates. The percentages apply only to the post-construction stormwater runoff that is

attributable to the portion of the site on which the proposed development or project is to be constructed.

27A-4.6.2 Any application for a new agricultural development that meets the definition of major development shall be submitted to the appropriate Soil Conservation District for review and approval in accordance with the requirements of this Chapter and any applicable Soil Conservation District guidelines for stormwater runoff quantity and erosion control.

27A-4.7. Stormwater Runoff Quality Standards.

27A-4.7.1 Stormwater management measures shall be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff by 80 percent of the anticipated load from the developed site, expressed as an annual average. Stormwater management measures shall be required for water quality control only if the major development invoices increasing Impervious Surface by one quarter acre or more. The requirement to reduce TSS does not apply to any stormwater runoff in a discharge regulated under a numeric effluent limitation for TSS imposed under the New Jersey Pollution Discharge Elimination System (NJPDES) rules, N.J.A.C. 7:14A, or in a discharge specifically exempt under a NJPDES permit from this requirement. The water quality design storm is 1.25 inches of rainfall in two hours. Water quality calculations shall take into account the distribution of rain from the water quality design storm, as reflected in Table 1. The calculation of the volume of runoff may take into account the implementation of non-structural and structural stormwater management measures.

Table 1: Water Quality Design Storm Distribution

Time (Minutes)	Cumulative Rainfall (Inches)	Time (Minutes)	Cumulative Rainfall (Inches)
0	0.0000	65	0.8917
5	0.0083	70	0.9917
10	0.0166	75	1.0500
15	0.0250	80	1.0840
20	0.0500	85	1.1170
25	0.0750	90	1.1500
30	0.1000	95	1.1750
35	0.1330	100	1.2000
40	0.1660	105	1.2250
45	0.2000	110	1.2334
50	0.2583	115	1.2417
55	0.3583	120	1.2500
60	0.6250		

27A-4.7.2 For purposes of TSS reduction calculations, Table 2 below presents the presumed removal rates for certain BMPs designed in accordance with the New Jersey Stormwater Best Management Practices Manual. TSS reduction shall be calculated based on the removal rates for the BMPs in Table 2 below. Alternative removal rates and methods of calculating removal rates may be used if the design engineer provides documentation demonstrating the capability of these alternative rates and methods to the review agency. A copy of any approved alternative rate or method of calculating the removal rate shall be provided to the Department at the following address: Division of Watershed Management, New Jersey Department of Environmental Protection, P.O. Box 41 8 Trenton, New Jersey, 08625-0418.

27A-4.7.3 If more than one BMP in series is necessary to achieve the required 80% TSS reduction for a site, the applicant shall utilize the following formula to calculate TSS reduction:

$$R = A + B – (AXB)/100$$

Where

R = total TSS percent load removal from application of both BMPs, and
A = the TSS percent removal rate applicable to the first BMP
B = the TSS percent removal rate applicable to the second BMP

Table 2: TSS Removal Rates for BMPs

Best Management Practice	TSS % Removal Rate
Bioretention Systems	90
Constructed Stormwater Wetland	90
Extended Detention Basin	40-60
Infiltration Structure	80
Manufactured Treatment Device	As approved pursuant to Section 27A-5.3
Sand Filter	80
Vegetative Filter Strip	60-80
Wet Pond	50-90

27A-4.7.4 If there is more than one onsite drainage area, the 80% TSS removal rate shall apply to each drainage area, unless the runoff from the subareas converge on site in which case the removal rate can be demonstrated through a calculation using a weighted average.

27A-4.7.5 Stormwater management measures shall also be designed to reduce, to the maximum extent feasible, the post-construction nutrient load of the anticipated load from the developed site in Stormwater runoff generated from the water quality design storm. In achieving reduction of nutrients to the maximum extent feasible, the design of the site shall include nonstructural strategies and structural measures that optimize nutrient removal while still achieving the performance standards in Sections 27A-4.6 and 4.7.

27A-4.7.6 Additional information and examples are contained in the New Jersey Stormwater Best Management Practices Manual.

27A-4.7.7 In accordance with the definition of FW1 at N.J.A.C. 7:9B-1.4, stormwater management measures shall be designed to prevent any increase in stormwater runoff to waters classified as FW1.

27A-4.7.8 Special water resource protection areas shall be established along all Category One waters and perennial or intermittent streams that drain into or upstream of the Category One waters as shown on the USGS Quadrangle Maps or in the County Soil Surveys, within the associated HUC14 drainage area. These special water resource properties areas shall be established for the protection of the water quality, aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, and exceptional fisherys significance of the Category One waters. These areas shall be designated and protected as follows:

a. The applicant shall preserve and maintain a special water resource protection area in accordance with one of the following:

(1) A 300-foot special water resource protection area shall be provided on each side of the waterway, measured perpendicular to the waterway from the top of the bank outwards or from the centerline of the waterway where the bank is not defined, consisting of existing vegetation or vegetation allowed to follow natural succession is provided.

(2) Encroachment within the designated special water resource protection area under Subsection (1) above shall only be allowed where previous development or disturbance has occurred (for example, active agricultural use, parking area or maintained lawn area). The encroachment shall only be allowed where applicant demonstrates that the functional value and overall condition of the special water resource protection area will be maintained to the maximum extent practicable. In no case shall the remaining special water resource protection area be reduced to less than 150 feet as measured perpendicular to the top of bank of the waterway or centerline of the waterway where the bank is undefined. Any approval of an encroachment under this subparagraph by the reviewing agency shall be expressly subject to review and approval by the Department and shall not be effective until such approval has been obtained.

b. All stormwater shall be discharged outside of and flow through the special water resource protection area and shall comply with the Standard For Off-Site Stability in the Soil Erosion Standards.

c. If stormwater discharged outside of and flowing through the special water resource protection area cannot comply with the Standard For Off-Site Stability in

the Soil Erosion Standards, then the stabilization measures in accordance with the requirements of the Soil Erosion Standards may be placed within the special water resource protection area, provided that:

(1) Stabilization measures shall not be placed within 150 feet of the Category One waterway as measured perpendicular to the top of the bank of the waterway or centerline of the waterway where the bank is undefined;

(2) Stormwater associated with discharges allowed by this Chapter shall achieve a 95% TSS post construction removal rate;

(3) Temperature shall be addressed to ensure no impact on receiving waterway;

(4) The encroachment shall be allowed only when the applicant demonstrates that the functional value and overall condition of the special water resource protection area will be maintained to the maximum extent practicable;

(5) Any approval of an encroachment under this subparagraph by the reviewing agency shall be expressly subject to the following:

(i) A conceptual project design meeting shall be held with the appropriate Department staff and Soil Conservation District staff to identify necessary stabilization measures; and

(ii) All encroachments proposed under this Chapter shall be subject to review and approval by the Department, and shall not be effective until such approval has been approved.

d. A stream corridor protection plan may be developed by a regional stormwater management planning committee as an element of a regional stormwater management plan, or by a municipality through an adopted municipal stormwater management plan. If a stream corridor protection plan for a waterway subject to Section 27A-4.7.8 has been approved by the Department, then the provisions of the plan shall be the applicable special water resource protection area requirements for that waterway. A stream corridor protection plan for a waterway subject to 27A-4.7.8 shall maintain or enhance the current functional value and overall condition of the special water resource protection area as defined in 27A-4.7.8a(1) above. In no case shall a stream corridor protection plan allow the reduction of the special water resource protection area to less than 150 feet as measured perpendicular to the waterway subject to this subsection.

e. This subsection 27A-4.7.8 does not apply to the construction of one individual single family dwelling that is not part of a larger development on a lot receiving

preliminary or final subdivision approval on or before February 2, 2004, provided that the construction begins on or before February 1, 2009.

27A-5. Article 5. Calculation of Stormwater Runoff and Groundwater Recharge.

27A-5.1 Stormwater Runoff.

Stormwater runoff shall be calculated in accordance with the following:

27A-5.1.1 The design engineer shall calculate runoff using one of the following methods:

a. The USDA Natural Resources Conservation Service (NRCS) methodology, including the NRCS Runoff Equation and Dimensionless Unit Hydrograph, as described in the NRCS National Engineering Handbook Section 4 – Hydrology and Technical Release 55 – Urban Hydrology for Small Watersheds; or

b. The Rational Method for peak flow and the Modified Rational Method for hydrograph computations.

27A-5.1.2 For the purpose of calculating runoff coefficients and groundwater recharge, there is a presumption that the pre-construction condition of a site or portion thereof is a wooded land use with good hydrologic condition. The term "runoff coefficient" applies to both the NRCS methodology at Section 27A-5.1.1.a and the Rational and Modified Rational Methods at Section 27A-5.1.1.b. A runoff coefficient or a groundwater recharge land cover for an existing condition may be used on all or a portion of the site if the design engineer verifies that the hydrologic condition has existed on the site or portion of the site for at least five years without interruption prior to the time of application. If more than one land cover has existed on the site during the five years immediately prior to the time of application, the land cover with the lowest runoff potential shall be used for the computations. In addition, there is the presumption that the site is in good hydrologic condition (if the land use type is pasture, lawn, or park), with good cover (if the land use type is woods), or with good hydrologic condition and conservation treatment (if the land use type is cultivation).

27A-5.1.3 In computing pre-construction stormwater runoff, the design engineer shall account for all significant land features and structures, such as ponds, wetlands, depressions, hedgerows, or culverts, that may reduce pre-construction stormwater runoff rates and volumes.

27A-5.1.4 In computing stormwater runoff from all design storms, the design engineer shall consider the relative stormwater runoff rates and/or volumes of pervious and impervious surfaces separately to accurately compute the rates and volume of stormwater runoff from the site. To calculate runoff from unconnected impervious cover, urban impervious area modifications as described in the NRCS Technical Release-55, Urban Hydrology for Small Watersheds and other methods may be employed.

27A-5.1.5 If the invert of the outlet structure of a stormwater management measure is below the flood hazard design flood elevation as defined at N.J.A.C. 7:13, the design engineer shall take into account the effects of tailwater in the design of structural stormwater management measures.

27A-5.2 Ground Water Recharge.

Groundwater recharge may be calculated in accordance with the following:

27A-5.2.1 The New Jersey Geological Survey Geological Survey Report GSR-32 A Method for Evaluating Ground-Water Recharge Areas in New Jersey, incorporated herein by reference as amended and supplemented. Information regarding the methodology is available from the New Jersey Stormwater Best Management Practices Manual; at http://www.state.nj.us/dep/njgs/; or at New Jersey Geological Survey, 29 Arctic Parkway, P.O. Box 427 Trenton, New Jersey 08625-0427; (609) 984-6587.

27A-6. Article 6. Standards for Structural Stormwater Management Measures.

27A-6.1 Structural Stormwater Management Measures.

Standards for structural stormwater management measures are as follows:

27A-6.1.1 Structural stormwater management measures shall be designed to take into account the existing site conditions, including, for example, environmentally critical areas, wetlands; flood-prone areas; steep slopes; depth to seasonal high water table; soil type, permeability and texture; drainage area and drainage patterns; and the presence of solution-prone carbonate rocks (limestone).

27A-6.1.2 Structural stormwater management measures shall be designed to minimize maintenance, facilitate maintenance and repairs, and ensure proper functioning. Trash racks shall be installed at the intake to the outlet structure as appropriate, and shall have parallel bars with one-inch (1") spacing between the bars to the elevation of the water quality design storm. For elevations higher than the water quality design storm, the parallel bars at the outlet structure shall be spaced no greater than one-third (1/3) the width of the diameter of the orifice or one-third (1/3) the width of the weir, with a minimum spacing between bars of one-inch and a maximum spacing between bars of six inches. In addition, the design of trash racks must comply with the requirements of Section 27A-8.4.

27A-6.1.3 Structural stormwater management measures shall be designed, constructed, and installed to be strong, durable, and corrosion resistant. Measures that are consistent with the relevant portions of the RSIS at N.J.A.C. 5:21-7.3, 7.4, and 7.5 shall be deemed to meet this requirement.

27A-6.1.4 At the intake to the outlet from the stormwater management basin, the orifice size shall be a minimum of two and one-half inches in diameter.

27A-6.1.5 Stormwater management basins shall be designed to meet the minimum safety standards for stormwater management basins set forth in Article 27A-8.

27A-6.2 Best Management Practices.

Stormwater management measure guidelines are available in the New Jersey Stormwater Best Management Practices Manual. Other stormwater management measures may be utilized provided the design engineer demonstrates that the proposed measure and its design will accomplish the required water quantity, groundwater recharge and water quality design and performance standards established by this Chapter.

27A-6.3 Manufactured Treatment Devices.

Manufactured treatment devices may be used to meet the requirements of this Chapter, provided the pollutant removal rates are verified by the New Jersey Corporation for Advanced Technology and certified by the Department.

27A-7. Article 7. Sources for Technical Guidance.

27A-7.1 Department Sources.

Technical guidance for stormwater management measures can be found in the documents listed in this Paragraph, which are available at the date of enactment of this Chapter from Maps and Publications, New Jersey Department of Environmental Protection, 428 East State Street, P.O. Box 420, Trenton, New Jersey, 08625; telephone (609) 777-1038.

27A-7.1.1 The New Jersey Stormwater Best Management Practices Manual, as amended, which is also found at http://www.stormwater.org.

27A-7.1.2 The New Jersey Department of Environmental Protection Stormwater Management Facilities Maintenance Manual, as amended.

27A-7.2 Other Sources.

Additional technical guidance for stormwater management measures can be obtained from the following:

27A-7.2.1 The Soil Erosion Standards may be obtained by contacting the State Soil Conservation Committee or any of the Soil Conservation Districts listed in N.J.A.C. 2:90-1.3(a)4. The location, address, and telephone number of each Soil Conservation District may be obtained from the State Soil Conservation Committee, P.O. Box 330, Trenton, New Jersey 08625; (609) 292-5540;

27A-7.2.2 The Rutgers Cooperative Extension Service, 732-932-9306; and

27A-7.2.3 The Soil Conservation Districts listed in N.J.A.C. 2:90-1.3(a)4. The location, address, and telephone number of each Soil Conservation District may be obtained from the State Soil Conservation Committee, P.O. Box 330, Trenton, New Jersey, 08625, (609) 292-5540.

27A-8. Article 8. Safety Standards for Stormwater Management Basins.

27A-8.1 Purpose and Applicability.

This Chapter sets forth requirements to protect public safety through the proper design and operation of stormwater management basins. This subchapter applies to any new stormwater management basin.

27A-8.2 No Preemption.

The provisions of this Chapter are not intended to preempt more stringent municipal or county safety requirements for new or existing stormwater management basins.

27A-8.3 Requirements for Trash Racks, Overflow Grates and Escape Provisions.

27A-8.3.1 A trash rack is a device designed to catch trash and debris and prevent the clogging of outlet structures. Trash racks shall be installed at the intake to the outlet from the stormwater management basin to ensure proper functioning of the basin outlets in accordance with the following:

a. The trash rack shall have parallel bars, with no greater than six inch spacing between the bars.

b. The trash rack shall be designed so as not to adversely affect the hydraulic performance of the outlet pipe or structure.

c. The average velocity of flow through a clean trash rack is not to exceed 2.5 feet per second under the full range of stage and discharge. Velocity is to be computed on the basis of the net area of opening through the rack.

d. The trash rack shall be constructed and installed to be rigid, durable, and corrosion resistant, and shall be designed to withstand a perpendicular live loading of 300 lbs/ft sq.

27A-8.3.2 An overflow grate is designed to prevent obstruction of the overflow structure. If an outlet structure has an overflow grate, such grate shall meet the following requirements:

a. The overflow grate shall be secured to the outlet structure but removable for emergencies and maintenance.

b. The overflow grate spacing shall be no less than two inches across the smallest dimension.

c. The overflow grate shall be constructed and installed to be rigid, durable, and corrosion resistant, and shall be designed to withstand a perpendicular live loading of 300 lbs/ft sq.

27A-8.3.3 For purposes of this subsection, escape provisions means the permanent installation of ladders, steps, rungs, or other features that provide easily accessible means of egress from stormwater management basins. Stormwater management basins shall include escape provisions as follows:

a. If a stormwater management basin has an outlet structure, escape provisions shall be incorporated in or on the structure. With the prior approval of the reviewing agency identified in Section 27A-8.4 a freestanding outlet structure may be exempted from this requirement.

b. Safety ledges shall be constructed on the slopes of all new stormwater management basins having a permanent pool of water deeper than two and one-half feet. Such safety ledges shall be comprised of two steps. Each step shall be four to six feet in width. One step shall be located approximately two and one-half feet below the permanent water surface, and the second step shall be located one to one and one-half feet above the permanent water surface. See Section 7.E for an illustration of safety ledges in a stormwater management basin.

c. In new stormwater management basins, the maximum interior slope for an earthen dam, embankment, or berm shall not be steeper than 3 horizontal to 1 vertical.

27A-8.4 Waiver or Exemption from Safety Standards.

A waiver or exemption from the safety standards for stormwater management basins may be granted only upon a written finding by the reviewing agency that the waiver or exemption will not constitute a threat to public safety.

27A-8.5 Illustration of Safety Ledges in a New Stormwater Management Basin.

Appendix A contains an illustration of safety ledgers in new stormwater management basins.

27A-9. Article 9. Requirements for a Site Development Stormwater Plan.

27A-9.1 Submission of Site Development Stormwater Plan.

27A-9.1.1 Whenever an applicant seeks reviewing agency approval of a development subject to this Chapter, the applicant shall submit all of the required components of the checklist for the site development stormwater plan at Section 27A-9.1.3 as part of the submission of a complete application for subdivision or site plan approval.

27A-9.1.2 The applicant shall demonstrate that the project meets the standards set forth in this Chapter.

27A-9.1.3 The applicant shall submit sixteen (16) copies of the materials listed in the checklist for site development stormwater plans in accordance with Section 27A-9.3.1 of this ordinance.

27A-9.1.4 The checklist requirements of this Chapter are supplemental to the checklist requirements of Chapters 22A, 23 and 24 of the Revised Ordinances and the more stringent checklist requirements shall apply.

27A-9.1.5 Any application for a site development stormwater plan approval shall be accompanied by a fee of $1,000 payable to the Borough of Ringwood, which fee shall be in addition to any other fees required to be paid under any other ordinance.

27A-9.1.6 The costs of the reviewing agency for professional services of its Engineer, Planner, Attorney or other specifically retained expert in connection with any application for site development stormwater plan approval pursuant to this Chapter shall be included in, and paid from, escrows deposited pursuant to Sections 23-9.6 and 24-3.6 of the Revised Ordinance in the manner set forth in such Sections.

27A-9.2 Site Development Stormwater Plan Approval.

The applicant's site development stormwater plan for a major development shall be reviewed as a part of the subdivision or site plan review process by the municipal board or by the Borough Engineer in the case of a residential site plan for a single family residential major development official from which municipal approval is sought. That municipal board or official shall consult the engineer retained by the reviewing agency to determine if all the checklist requirements have been satisfied and to determine if the project meets the standards set forth in this ordinance.

27A-9.3 Checklist Requirements.

27A-9.3.1 The following information shall be required:

a. Topographic Base Map

The reviewing engineer may require upstream tributary drainage system information as necessary. It is recommended that the topographic base map of the site be submitted which extends a minimum of 200 feet beyond the limits of the proposed development, at a scale of 1"=200' or greater, showing 2-foot contour intervals. The map as appropriate may indicate the following: existing surface water drainage, shorelines, steep slopes, soils, erodible soils, perennial or intermittent streams that drain into or upstream of the Category 1 waters, wetlands and flood plains along with their appropriate buffer strips, marshlands and other wetlands, pervious or vegetative surfaces, existing man-made structures, roads, bearing and distances of property lines, and significant natural and manmade features not otherwise shown.

b. Environmental Site Analysis

A written and graphic description of the natural and man-made features of the site and its environs. This description should include a discussion of soil conditions, steep slopes, wetlands, waterways and vegetation on the site. Particular attention should be given to unique, unusual, or environmentally sensitive features and to those that provide particular opportunities or constraints for development.

c. Project Description and Site Plan(s)

A map (or maps) at the scale of the topographical base map indicating the location of existing and proposed buildings, roads, parking areas, utilities, structural facilities for stormwater management and sediment control, and other permanent structures. The map(s) shall also clearly show areas where alterations occur in the natural terrain and cover, including lawns and other landscaping, and seasonal high ground water elevations. A written description of the site plan and justification of proposed changes in natural conditions may also be provided.

d. Land Use Planning and Source Control Plan

This plan shall provide a demonstration of how the goals and standards of Articles 27A-3 through 27A-6 are being met. The focus of this plan shall be to describe how the site is being developed to meet the objective of controlling groundwater recharge, stormwater quality and stormwater quantity problems at the source by land management and source controls whenever possible.

e. Stormwater Management Facilities Map

The following information, illustrated on a map of the same scale as the topographic base map, shall be included:

1. Total area to be paved or built upon, proposed surface contours, land area to be occupied by the stormwater management facilities and the type of vegetation thereon, and details of the proposed plan to control and dispose of stormwater.

2. Details of all stormwater management facility designs, during and after construction, including discharge provisions, discharge capacity for each outlet at different levels of detention and emergency spillway provisions with maximum discharge capacity of each spillway.

f. Calculations

1. Comprehensive hydrologic and hydraulic design calculations for the pre-development and post development conditions for the design storms specified in Article 27A-4 of this ordinance.

2. When the proposed stormwater management control measures (e.g. infiltration basins) depends on the hydrologic properties of soils, then a soils report shall be submitted. The soils report shall be based on onsite boring logs or soil pit profiles. The number and location of required soil borings or soil pits shall be determined based on what is needed to determine the suitability and distribution of soil types present at the location of the control measure.

g. Maintenance and Repair Plan

The design and planning of the stormwater management facility shall meet the maintenance requirements of Article 27A-10.

h. Department Checklist for low impact development.

The Department's "Low Impact Development Checklist found at Appendix A to the New Jersey Stormwater Best Management Practices Manual.

27A-9.3.2

The municipal official or reviewing agency on application under this Chapter may, in consultation with the municipal engineer, waive submission of any of the requirements in Paragraphs 27A-9.3.1 (a) through (h) when it can be demonstrated that the information requested is impossible to obtain or it would create a hardship on the applicant to obtain and its absence will not materially affect the review process.

27A-9.4 Appeal.

Any person approved by a decision of the Borough Engineer in connection with single family residential site plan review shall have the right to appeal to the Board of Adjustment pursuant to N.J.S.A. 40:55D-70(a) or for a variance pursuant to N.J.S.A. 40:55D-70(c).

27A-10. Article 10. Maintenance and Repair

27A-10.1 Applicability.

27A-10.1.1 Projects subject to review as in Section 27A-1.3 of this ordinance shall comply with the requirements of Sections 27A-10.2 and 27A-10.3.

27A-10.2 General Maintenance.

27A-10.2.1 The design engineer shall prepare a maintenance plan for the stormwater management measures incorporated into the design of a major development.

27A-10.2.2 The maintenance plan shall contain specific preventative maintenance tasks and schedules; cost estimates, including estimated cost of sediment, debris, or trash removal; and the

name, address, and telephone number of the person or persons responsible for preventative and corrective maintenance (including replacement). Maintenance guidelines for stormwater management measures are available in the New Jersey Stormwater Best Management Practices Manual. If the maintenance plan identifies a person other than the developer (for example, a public agency or homeowners' association) as having the responsibility for maintenance, the plan shall include documentation of such person's agreement to assume this responsibility, or of the developer's obligation to dedicate a stormwater management facility to such person under an applicable ordinance or regulation.

27A-10.2.3 Responsibility for maintenance shall not be assigned or transferred to the owner or tenant of an individual property in a residential development or project, unless such owner or tenant owns or leases the entire residential development or project.

27A-10.2.4 If the person responsible for maintenance identified under Section 27A-10.2.2 above is not a public agency, the maintenance plan and any future revisions based on Section 27A-10.2.7 below shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.

27A-10.2.5 Preventative and corrective maintenance shall be performed to maintain the function of the Stormwater management measure, including repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of nonvegetated linings.

27A-10.2.6 The person responsible for maintenance identified under Section 27A-10.2.2 above shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

27A-10.2.7 The person responsible for maintenance identified under Section 27A-10.2.2 above shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed.

27A-10.2.8 The person responsible for maintenance identified under Section 27A-10.2.2 above shall retain and make available, upon request by any public entity with administrative, health, environmental, or safety authority over the site, the maintenance plan and the documentation required by Sections 27A-10.2.6 and 27A-10.2.7 above.

27A-10.2.9 The requirements of Sections 27A-2.3 and 27A-2.4 do not apply to stormwater management facilities that are dedicated to and accepted by the municipality or another governmental agency.

27A-10.2.10 In the event that the stormwater management facility becomes a danger to public safety or public health, or if it is in need of maintenance, the municipality shall so notify the responsible person in writing. Upon receipt of that notice, the responsible person shall have fourteen (14) days to effect maintenance and repair of the facility in a manner that is approved by

the municipal engineer or his designee. If the responsible person fails or refuses to perform such maintenance and repair, the municipality or County may immediately proceed to do so and shall bill the cost thereof to the responsible person.

27A-10.3 Performance and Maintenance Guarantees.

Performance and maintenance guarantees required or permitted by the MLUL or the Revised Ordinances of the Borough shall be applicable to all stormwater management measures required by this Chapter.

27A-10.4 Penalties.

Any responsible person who violates any portion or section of this Chapter shall be subject to the penalties set forth in Section 1-1.9 of the Revised Ordinances.

27

SECTION 2.

This ordinance shall take effect upon the approval by the county review agency, or sixty (60) days after submission to the county review agency if it fails to act within such period.

(NOTE: This model ordinance does not include a section on fees. The Department expects that the review of development applications under this ordinance would be an integral part of the municipal review of subdivisions and site plans. As a result, the costs to municipalities of reviewing development applications under this ordinance can be defrayed by fees charged for review of subdivisions and site plans under N.J.S.A. 40:55D 8.b).

SECTION 3.

If the provisions of any article, section, subsection, paragraph, subdivision, or clause of this ordinance shall be judged invalid by a court of competent jurisdiction, such order of judgment shall not affect or invalidate the remainder of any article, section, subsection, paragraph, subdivision, or clause of this ordinance.

Introduced: February 21, 2006

Adopted: April 4, 2006

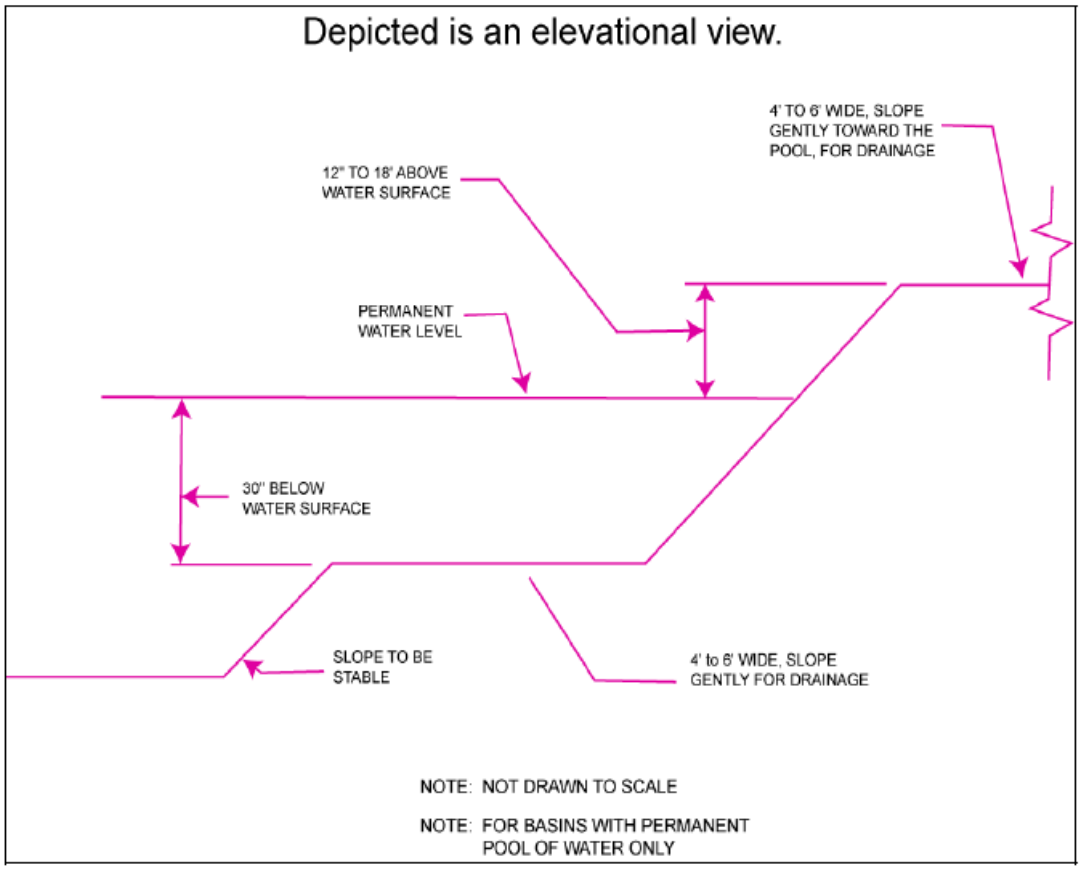
_____

JOANNE ATLAS, MAYOR

Attest:

_____

KELLEY A. ROHDE, RMC
Borough Clerk


Depicted is an elevational view.
4' TO 6' WIDE, SLOPE GENTLY TOWARD THE POOL, FOR DRAINAGE
12" TO 18" ABOVE WATER SURFACE
PERMANENT WATER LEVEL
30" BELOW WATER SURFACE
SLOPE TO BE STABLE
4' to 6' WIDE, SLOPE GENTLY FOR DRAINAGE
NOTE: NOT DRAWN TO SCALE
NOTE: FOR BASINS WITH PERMANENT POOL OF WATER ONLY

APPENDIX A