Town of Oxford

Stormwater Management and Land Disturbance Regulations

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Section 1. Purpose

The purpose of these Regulations is to protect, maintain and enhance public health, safety, the environment, and general welfare by establishing minimum requirements and procedures to control the adverse effects of increased runoff, decreased ground water recharge, erosion and sedimentation, and nonpoint source pollution associated with new development and redevelopment of land, pursuant to the Town of Oxford **Stormwater Management and Land Disturbance By-law,** Chapter 66 of the General By-laws.

Development of land including loss of vegetative cover to create impervious surfaces, regrading, and other land use changes, permanently alter the hydrologic system of local watersheds by decreasing transpiration and infiltration, and increasing stormwater runoff rates and volumes, causing an increase in flooding, stream channel erosion, sediment transport and deposition, and water quality degradation. This additional runoff contributes to increased nonpoint source pollution and degradation of receiving waters.

Stormwater management systems that are properly designed utilizing low impact development (LID) and green infrastructure (GI) techniques and appropriate best management practices (BMPs) can better simulate the natural hydrologic condition and reduce adverse impacts.

During the construction process, soil is often exposed for periods of time and most vulnerable to erosion by wind and water. The eroded soil endangers water resources by reducing water quality, and causing the siltation of valuable wetland resources including swamps, streams, rivers, lakes and aquatic habitat for fish and other desirable species.

The impacts of construction and post-development stormwater runoff quantity and quality can adversely affect public safety, public and private property, surface water drinking water supplies, groundwater resources including drinking water supplies, recreation, aquatic habitats, fish and other aquatic life, property values and other uses of lands and waters.

These Stormwater Regulations (the "Regulations") have been developed to provide reasonable guidance for the regulation of project design, construction and post-development stormwater runoff for the purpose of protecting local water resources from degradation. It is in the public interest to regulate construction and post-development stormwater runoff discharges in order to control and minimize increases in stormwater runoff rates and volumes, soil erosion and sedimentation, stream channel erosion, and nonpoint source pollution associated with construction site and post-development stormwater runoff.

Section 2. Definitions

The following definitions and provisions shall apply throughout these Regulations. Additional applicable definitions can be found in Section 2 of the Stormwater Management and Land Disturbance By-law.

CERTIFICATE OF COMPLETION (COC): A document issued by the Stormwater Authority after all construction activities have been completed, which states that all conditions of an issued Land Disturbance Permit have been met and that a project has been completed in compliance with the conditions set forth in the permit.

CONSTRUCTION AND WASTE MATERIALS: Excess or discarded building or site materials, including but not limited to concrete truck washout, chemicals, litter and sanitary waste at a construction site that may adversely impact water quality.

CRITICAL ROOT ZONE (CRZ): The minimum area beneath the canopy of a tree which must be left undisturbed in order to preserve a sufficient root mass to give a tree a reasonable chance of survival. The CRZ is represented by a concentric circle centering on the tree's trunk and extending outward towards the tree's drip-line. The minimum area of the CRZ shall be dependent on the required minimum radius of the CRZ; the required minimum radius of the CRZ shall be determined by multiplying a tree's diameter at breast height (in inches) by eighteen (18) inches, with the resulting product constituting the minimum radius of the CRZ.

DISTURBANCE OF LAND: See also LAND DISTURBING ACTIVITY in Section 2 of the Stormwater Management and Land Disturbance By-law.

DRAINAGE EASEMENT: A legal right granted by a landowner to a grantee allowing the use of private land for stormwater management purposes.

DRIP-LINE: The area surrounding a tree from the trunk to the outermost branches. This area is distinguished from, and not to be confused with Critical Root Zone.

EROSION CONTROL: The prevention or reduction of the movement of soil particles or rock fragments due to stormwater runoff.

ESTIMATED HABITAT OF RARE WILDLIFE AND CERTIFIED VERNAL POOLS: Habitats delineated for state-protected rare wildlife and certified vernal pools under the Wetlands Protection Act Regulations (310 CMR 10.00, *et seq.*) and the Forest Cutting Practices Act Regulations (304 CMR 11.00, *et seq.*).

HAZARDOUS MATERIAL: Any material which, because of its quantity, concentration, chemical, corrosive, flammable, reactive, toxic, infectious or radioactive characteristics, either separately or in combination with any substance or substances, constitutes a present or potential threat to human health, safety, welfare, or to the environment. Toxic or hazardous materials include any synthetic organic chemical, petroleum product, heavy metal, radioactive or infectious waste, acid and alkali, and any substance defined as "toxic" or "hazardous" under MGL c. 21C and c. 21E, and the regulations at 310 CMR 30.000, *et seq.* and 310 CMR 40.0000, *et seq.*

ILLICIT DISCHARGE: Direct or indirect discharge to the municipal storm drain system that is not composed entirely of stormwater, except as exempted in Section 6 of the Discharges to the Municipal Storm Drain System By-law, Chapter 65 of the Town of Oxford General By-laws.

IMPERVIOUS SURFACE: Any surface that prevents or significantly impedes the infiltration of water into the underlying soil. This can include but is not limited to: roads, driveways, parking areas and other areas created using nonporous material; buildings, rooftops, structures, artificial turf and compacted gravel or soil.

IMPOUNDMENT: A stormwater pond created by either constructing an embankment or

excavating a pit which retains a permanent pool of water.

LAND USE WITH HIGHER POTENTIAL POLLUTANT LOAD (LUHPPL): Land uses such as auto salvage yards, auto fueling facilities, exterior fleet storage yards, vehicle service and equipment cleaning areas, commercial parking lots with high intensity use, road salt storage areas, outdoor storage and loading areas of hazardous substances, confined disposal facilities and disposal sites, marinas, boat yards or other uses as identified by the Massachusetts Stormwater Handbook.

LOT: An individual tract of land as shown on the current Assessor's Map for which an individual tax assessment is made. For the purposes of these regulations, a lot also refers to an area of a leasehold on a larger parcel of land, as defined in the lease agreement and shown by approximation on the Assessor's Map.

MASSACHUSETTS STORMWATER MANAGEMENT STANDARDS: The performance standards as further defined by the Massachusetts Stormwater Handbook, issued by the Department of Environmental Protection, and as amended, that coordinate the requirements prescribed by state regulations promulgated under the authority of the Massachusetts Wetlands Protection Act G.L. c. 131, § 40 and Massachusetts Clean Waters Act G.L. c. 21, §§ 23-56 to prevent or reduce pollutants from reaching water bodies and control the quantity of runoff from a site.

NEW DEVELOPMENT: any construction activities or land alteration on an area that has not previously been developed to include impervious cover.

OFF-SITE COMPLIANCE: an approach whereby pollutant removal practices are implemented at redevelopment or retrofit sites at another location in the same HUC12 watershed, as approved by the Stormwater Authority.

OUTFALL: The point at which stormwater flows out from a point source discernible, confined and discrete conveyance into Waters of the Commonwealth.

PRIORITY HABITAT OF RARE SPECIES: Habitats delineated for rare plant and animal populations protected pursuant to the Massachusetts Endangered Species Act (M.G.L. c. 131A) and its regulations.

STABILIZATION: The use, singly or in combination, of mechanical, structural, or vegetative methods, to prevent or limit erosion.

STRIP: Any activity which removes the vegetative ground surface cover, including tree removal, clearing, grubbing, and storage or removal of topsoil.

TOTAL SUSPENDED SOLIDS or TSS: Undissolved organic or inorganic particles in water**.**

VERNAL POOLS: Temporary bodies of freshwater which provide critical habitat for a number of vertebrate and invertebrate wildlife species.

WETLAND RESOURCE AREA: Areas specified in the Massachusetts Wetlands Protection Act G.L. c. 131, § 40.

WETLANDS: Tidal and non-tidal areas characterized by saturated or nearly saturated soils most of the year that are located between terrestrial (land-based) and aquatic (water-based) environments, including freshwater marshes around ponds and channels (rivers and streams), brackish and salt marshes; common names include marshes, swamps and bogs.

Section 3. Authority and Administration

A. The Planning Board is designated as the Stormwater Authority under the **Stormwater Management and Land Disturbance By-law.** These Stormwater Regulations have been adopted by the Stormwater Authority in accordance with Section 9 of the **Stormwater Management and Land Disturbance By-law**. The **Planning Board** shall administer, implement and enforce these Regulations, with assistance from the Oxford Department of Public Works (DPW) as set forth herein. Any powers granted to or duties imposed upon the Stormwater Authority may be delegated in writing by the Stormwater Authority to its employees or agents of the Town. For projects requiring an Order of Conditions from the Conservation Commission, the Conservation Commission shall administer, implement and enforce this bylaw with the assistance of the DPW or any other duly authorized agent.

B. In accordance with Section 6.02 of the Stormwater Management and Land Disturbance By-law, the Conservation Commission shall require documentation showing compliance with the By-Law and these regulations, in addition to other submission requirements of 310 CMR 10.00, et seq. Any Order of Conditions issued shall incorporate by reference the requirements of the Administrative Land Disturbance Approval and/or Land Disturbance Permit ("LDP") issued by the Conservation Commission.

C. The Stormwater Authority may periodically amend these regulations pursuant to Section 9.01 of the Stormwater Management and Land Disturbance By-law**.**

D. Nothing in these Regulations is intended to replace or be in derogation of the requirements of any other Town by-law.

Section 4. Administrative Land Disturbance Approval Review Procedure and Standards

A. **Administrative Review and Approval Required**. Unless exempt pursuant to Section 4.04 of the Stormwater Management and Land Disturbance By-law, an Administrative Land Disturbance Approval must be obtained prior to the commencement of construction activity or land disturbing activity that individually or as part of a Common Plan of Development will result in the disturbance of land in excess of the thresholds below.

(1) Administrative Land Disturbance Approval is required for projects disturbing between 1,000 square feet and 10,000 square feet where the slope of the disturbance area is 10% or greater.

(2) Administrative Land Disturbance Approval is required for projects disturbing between 10,000 square feet and one acre of land.

B. **Application**. A completed application for an Administrative Land Disturbance Approval shall be filed with the Stormwater Authority. The Administrative Land Disturbance Approval Application package shall include:

(1) A completed Application Form with original signatures of all property owners;

(2) Narrative describing the proposed work including existing and proposed site conditions (including structures, vegetation, changes in grade, and drainage), measures to mitigate any stormwater impacts, and anticipated maintenance requirements;

(4) An operation and maintenance plan to inspect, properly maintain and repair installed best management practices (BMPs) after project completion to ensure that they are functioning according to manufacturer or design specifications for the life of the BMP;

(5) Three (3) copies of scaled plans that include:

(a) Existing site features including structures, pavement, plantings, changes in grade, wetlands and water bodies in the area, and stormwater management systems etc.;

(b) Proposed work including proposed stormwater management systems and limits of disturbance; and

(c) Basic erosion and sedimentation controls.

(6) Payment of the application fee. Each application must be accompanied by the appropriate application fee as established by the Stormwater Authority. Applicants shall also pay review fees as determined by the Stormwater Authority sufficient to cover any expenses connected with the review of the Administrative Land Disturbance Approval Application before the review process commences. The Stormwater Authority is authorized to retain a registered Professional Engineer (PE) or other professional consultant to advise the Stormwater Authority on any or all aspects of the Application. Additional fee information is provided in Section 6.

C. Performance Standards

(1) To the extent that the project will discharge, directly or indirectly, to a water body subject to one or more pollutant-specific Total Maximum Daily Loads (TMDLs), implement structural and non-structural stormwater best management practices (BMPs) that are consistent with each such TMDL.

(2) To the extent the project will discharge, directly or indirectly, to an impaired water body not subject to a TMDL, implement structural and non-structural stormwater BMPs optimized to remove the pollutant or pollutants responsible for the impairment.

(3) Avoid disturbance of areas susceptible to erosion and sediment loss.

(4) Use Low Impact Development (LID) techniques where adequate soil, groundwater and topographic conditions allow. These may include but not be limited to reduction in impervious surfaces, disconnection of impervious surfaces, bioretention (rain gardens), and infiltration systems.

(5) Mitigate negative impacts of stormwater runoff (water quality, volume, and rate of runoff) to abutters, Waters of the Commonwealth, and the

Town's MS4 through stormwater controls during construction and in perpetuity. Applicants must demonstrate compliance with Massachusetts Stormwater Management Standards 1, 8, 9, and 10; the other Standards should be met to the maximum extent practicable unless otherwise specified by the Stormwater Authority.

E. Additional permit review requirements and procedures are provided in Section 7 of the Stormwater Management and Land Disturbance By-law.

Section 5. Land Disturbance Permit and Procedure

A. Land Disturbance Permit Required. Unless exempt pursuant to Section 4.04 of the Stormwater Management and Land Disturbance By-law, a Land Disturbance Permit (LDP) must be obtained prior to the commencement of construction activity or land disturbing activity that individually or as part of a Common Plan of Development will result in the disturbance of land in excess of the thresholds below.

(1) A Land Disturbance Permit (LDP) is required for disturbance of one-acre or more of land.

(2) A Land Disturbance Permit (LDP) is required for the disturbance of more than 10,000 square feet of land where:

(a) the proposed use is a land use of higher potential pollutant loads pursuant to the Massachusetts Stormwater Management Standards; or

(b) the Stormwater Authority determines that an Administrative Land Disturbance Approval is not sufficient.

(3) A LDP is required for all subdivisions regardless of size. The LDP issued for a subdivision shall also govern the development of individual lots.

B. **Application**. A completed application for a Land Disturbance Permit shall be filed with the Stormwater Authority. The Land Disturbance Permit Application package shall include:

(1) A completed Application Form with original signatures of all property owners;

(2) A list of abutters within 100 feet of the property, certified by the Oxford Assessors Office;

(3) Three (3) copies each of the

(a) Stormwater Management Plan;

(b) Erosion and Sediment Control Plan; and

(c) Operation and Maintenance Plan.

(4) Payment of the initial application fee (see below for further information about fees).

C. Determination of Completeness: The Stormwater Authority shall make a determination as to the completeness of the application and adequacy of the

materials submitted. No review shall take place until the application is determined complete.

D. Fees. Each application must be accompanied by the appropriate application fee as established by the Stormwater Authority. Applicants shall also pay review fees as determined by the Stormwater Authority sufficient to cover any expenses connected with the public hearing and review of the Land Disturbance Permit Application before the review process commences. The Stormwater Authority is authorized to retain a registered Professional Engineer (PE) or other professional consultant to advise the Stormwater Authority on any or all aspects of the Application. Additional fee information is provided in Section 7.

E. Action by the Stormwater Authority. The Stormwater Authority may approve, approve with Conditions, or disapprove the LDP Application according to Section 7.08 of the Stormwater Management and Land Disturbance By-law. Final approval, if granted, shall be endorsed on the Land Disturbance Permit by the signature of the majority of the Stormwater Authority. In accordance with Section 6 of the Stormwater Management and Land Disturbance By-law, an Order of Conditions issued by the Conservation Commission shall incorporate by reference the requirements of the LDP.

F. Project Changes. The permittee, or their agent, must notify the Stormwater Authority in writing of any change or alteration of a land-disturbing activity authorized in a Land Disturbance Permit before any change or alteration occurs. If the Stormwater Authority determines that the change or alteration is significant, based on the design requirements listed in Section 7 below and accepted construction practices, the Stormwater Authority may require that an amended Land Disturbance Permit application be filed and a public hearing held. If any change or alteration from the Land Disturbance Permit occurs during any land disturbing activities, Stormwater Authority may require the installation of interim erosion and sedimentation control measures before approving the change or alteration.

G. As-Built Drawings. Applicants shall submit a final report and as-built drawings upon project completion in accordance with Section 11 of these Regulations in order to receive a Certificate of Completion.

H. Additional permit review requirements and procedures are provided in Section 7 of the Stormwater Management and Land Disturbance By-law.

Section 6. Fees

A. Initial application fees shall be as follows:

(1) Administrative Land Disturbance Approval: $150 residential and $300 non-residential projects.

(2) Land Disturbance Permit: $250 small residential, $500 large residential (subdivision or multi-family), $750 commercial and other non-residential development or redevelopment.

B. Consultant Fees

(1) Purpose. As provided by G.L. Ch. 44 §53G and in Section 7.04 of the Stormwater Management and Land Disturbance By-law, the Stormwater Authority may impose reasonable fees for the employment of outside consultants, engaged by the Stormwater Authority, for specific expert services to assist the Stormwater Authority in its review of applications for Administrative Land Disturbance Approval and Land Disturbance Permits and oversight of permit compliance.

(2) Special Account. Funds received pursuant to these regulations shall be deposited with the municipal treasurer who shall establish a special account for this purpose. Expenditures from this special account may be made at the direction of the Stormwater Authority without further appropriation as provided in G.L. Ch. 44 §53G. Expenditures from this account shall be made only in connection with a specific project or projects for which a consultant fee has been collected from the applicant. Expenditures of accrued interest may also be made for these purposes.

(3) Consultant Services. Specific consultant services may include but are not limited to technical or legal review of the permit application and associated information, on-site monitoring during construction, or other services related to the project deemed necessary by the Stormwater Authority. The consultant shall be chosen by, and report only to, the Stormwater Authority or its staff.

(4) Notice. The Stormwater Authority shall give written notice to the applicant of the selection of an outside consultant. Such notice shall state the identity of the consultant, the amount of the fee to be charged to the applicant, and a request for payment of said fee in its entirety. Such notice shall be deemed to have been given on the date it is mailed or delivered. No such costs or expenses shall be incurred by the applicant if the application or request is withdrawn within five days of the date notice is given.

(5) Payment of Fee. The fee must be received prior to the initiation of consulting services. The Stormwater Authority may request additional consultant fees if necessary review requires a larger expenditure than originally anticipated or new information requires additional consultant services. Failure by the applicant to pay the consultant fee specified by the Commission within ten (10) business days of the request for payment, or refusal of payment, shall be cause for the Stormwater Authority to deny the application based on lack of sufficient information to evaluate whether the project meets applicable performance standards. An appeal stops the clock on the above deadline; the countdown resumes on the first business day after the appeal is either denied or upheld.

(6) Appeals. The applicant may appeal the selection of the outside consultant to the Board of Selectmen, who may only disqualify the outside consultant selected on the grounds that the consultant has a conflict of interest or

does not possess the minimum required qualifications. The minimum qualifications shall consist of either an educational degree or three or more years of practice in the field at issue or a related field. Such an appeal must be in writing and received by the Board of Selectmen and a copy received by the Stormwater Authority, so as to be received within ten (10) days of the date consultant fees were requested by the Stormwater Authority. The required time limits for action upon the application shall be extended by the duration of the administrative appeal.

(7) Return of Unspent Fees. When the Stormwater Authority's review of a permit application and oversight of the permitted project is complete, any balance in the special account attributable to that project shall be returned within 30 days. The excess amount, including interest, shall be repaid to the applicant or the applicant's successor in interest. For the purpose of this regulation, any person or entity claiming to be an applicant's successor in interest shall provide the Stormwater Authority with appropriate documentation. A final report of said account shall be made available to the applicant or applicant's successor in interest.

Section 7. Stormwater Management Plan for LDP Applications

A. The application for a Land Disturbance Permit shall include a Stormwater Management Plan. The Stormwater Management Plan shall contain sufficient information for the Stormwater Authority to evaluate the environmental impact, effectiveness, and acceptability of the site planning process and the measures proposed by the applicant to reduce adverse impacts from stormwater runoff during construction, and post-construction in the long-term.

B. The Stormwater Management Plan shall fully describe the project in narrative, drawings, and calculations. It shall at a minimum include:

(1) Contact Information. The name, address, and telephone number of all persons having a legal interest in the property and the tax reference number and parcel number of the property or properties affected;

(2) Narrative describing:

(a) Purpose;

(b) Methodologies and assumptions;

(c) Existing and proposed uses and conditions;

(d) Project impacts and mitigation techniques including:

i. Summary of proposed land area to be cleared, existing and proposed impervious area, work within proximity of regulated wetland resources, aquifer protection zones, earthwork within 4 feet of seasonal high groundwater elevations, and other sensitive environmental areas;

ii. LID techniques considered for this project and an explanation as to why they were included or excluded from the project;

iii. Proposed best management practices;

iv. Identifying the watershed basin that the project is located in and the immediate down gradient waterbody(s) that stormwater runoff from the project site discharges to, EPA's watershed and waterbody assessment and TMDL and/or impairment status of the watershed and waterbody(s), and the LIDs and BMPs included in the project to address the pollutant(s) of concern;

(e) Summary of pre- and post-development peak rates and volumes of stormwater runoff demonstrating no adverse impacts to down-gradient properties, stormwater management systems and wetland resources; and

(f) Summary of how project meets stormwater management criteria.

(3) Plans stamped and signed by a registered Professional Engineer (PE) licensed in the Commonwealth of Massachusetts. Such plans shall show:

(a) Portion of the USGS Map indicating the site locus and properties within a minimum of 500 feet of project property line;

(b) Existing conditions and proposed design plans showing:

i. Buildings and/or structures including materials, approximate height;

ii. Utilities including size, material and invert data;

iii. Regulated wetland resource areas within proximity of the site; and

iv. Existing trees with a Diameter at Breast Height of 10 inches or greater.

(c) Stormwater management design plan(s) and details showing:

i. Location, size, material, inverts data and details for all existing and proposed stormwater management system components including structures, pipes, swales, detention, retention, and infiltration systems and any other LID techniques or BMPs;

ii. Profiles of drainage trunk lines; and

iii. Drainage easements.

(d) Separate Pre- and Post- Construction Watershed Plans indicating:

i. Structures, pavements, surface vegetation and other ground cover materials;

ii. Topography sufficient to delineate watershed areas;

iii. Point(s) of analysis;

iv. Watershed areas including upgradient areas that contribute stormwater flow onto the project site, labeled to be easily identified in calculations. Total pre and post watershed areas should be equivalent;

v. Breakdown summary of various surface conditions by soil hydrologic group rating; and

vi. Flow path for time of concentration (Tc) calculation.

(4) Calculations

(a) Hydrologic calculation to determine pre and post peak rates and volumes of stormwater runoff for 2, 10, 25 and 100 year 24 hour storm events;

(b) Groundwater recharge calculations and BMP drawdown (time to empty);

(c) Water quality calculations including (if applicable):

i. TSS removal calculation for each watershed;

ii. Specific BMPs utilized in critical areas;

iii. Specific BMPs utilized for land uses of higher potential pollutant loads (LUHPPL); and

iv. Specific treatment for pollutant causing impairment of down-gradient waterbody identified by U.S. Environmental Protection Agency and Massachusetts Department of Environmental Protection.

(d) Hydraulic calculations to size drainage pipes, swales and culverts; and

(e) Supplemental calculations for sizing LID and BMPs and addressing impairments to water bodies.

(5) Soil mapping and test data.

(6) Massachusetts Department of Environmental Protection Checklist for Stormwater Report completed, stamped and signed by a registered Professional Engineer (PE) licensed in the Commonwealth of Massachusetts to certify that the Stormwater Management Plan is in accordance with the criteria established in the Massachusetts Stormwater Management Standards, Oxford's Stormwater Management and Land Disturbance By-law, and these regulations.

(7) Any other information requested by the Stormwater Authority.

C. General Performance Standards for All Sites.

(1) LID site planning and design strategies must be utilized to the maximum extent feasible. Refer to the Massachusetts Stormwater Handbook for more information about LID techniques and environmentally sensitive site design.

(2) The selection, design and construction of all pre-treatment, treatment and infiltration BMPs shall be in accordance with Massachusetts Stormwater Handbook and shall be consistent with all elements of the Massachusetts Stormwater Standards including but not limited to those regarding new stormwater conveyances, peak runoff rates, recharge, land uses with higher potential pollutant loads, discharges to Zone II or interim wellhead protection areas, sediment and erosion control, and illicit discharges.

(3) Tree Protection and Preservation. Trees can be an important tool for retention and detention of stormwater runoff. Trees provide additional benefits, including cleaner air, reduction of heat island effects, carbon sequestration, reduced noise pollution, reduced pavement maintenance needs, and cooler cars in shaded parking lots. The Town therefore deems that the preservation and protection of certain trees on public and private property, and the requirement to replant trees to replace those removed, are public purposes that protect the public health, welfare, environment and aesthetics. At the discretion of the Stormwater Authority, existing trees on private property with a diameter at breast height of 10 inches or greater and existing trees within the right-of-way or on Town property may be considered protected trees to be retained on the property. Such trees shall be protected and delineated within the submitted Erosion and Sedimentation Plan and described in the Land Disturbance Permit. The area surrounding a tree which includes at a minimum the Critical Root Zone ("CRZ") and Drip-Line of all Protected Trees must be enclosed within a fence prior to land disturbing activity and remain undisturbed until work is completed on the property so as to prevent damage to the tree. The Stormwater Authority may require tree replanting either on the applicant's land or on land abutting the applicant's land, with the express written approval of the owner of such abutting land, where protected trees cannot be saved.

(4) Protection of Riparian Buffers. Riparian buffers, also known as a vegetated buffer or forest buffers, are vegetated areas along a stream, usually forested, which help shade and partially protect a stream from the impact of adjacent land uses. Where possible, establish and protect a naturally vegetated buffer system along all perennial streams and other water features that encompass critical environmental features such as the 100-year floodplain, steep slopes (in excess of 15%), lake shorelands, and wetlands.

Riparian stream buffers should be preserved or restored with native vegetation. Buffers are most effective when maintained in an undisturbed condition, mowing and brush hogging should not take place within a buffer.

(5) Mitigation of Thermal Impacts of Stormwater Runoff. Stormwater BMPs must mitigate potential temperature impacts of development and land use conversions to Cold Water Fisheries. Elevated temperatures are caused by reduced shading in developed riparian areas, warming of stormwater as it runs over hot roofs and pavement, and heating of water stored in stormwater management ponds. Traditional peak reduction outlet structures and simple spillway outlets do nothing to cool the water before discharge. Cold Water Fisheries located in the **Town of Oxford** include, but are not limited to the following:

Coldwater Fish Resources (CWF) in Oxford (September 2021)

Name	**Stream and River Inventory System (SARIS) ID**
French River	4230075
Piggery Creek (UNT to UNT to Wellington Brook)	4230329
UNT to Wellington Brook	4230327
Wellington Brook	4230325
UNT to Buffumville Reservoir (1)	4230277
UNT to French River	4230258

Applicants must consult the MA Division of Fisheries and Wildlife (MassWildlife) Coldwater Fish Resource (CFR Map for the most up to date information: https://www.mass.gov/info-details/coldwater-fish-resources

Land Disturbance Permit sites located near Cold Water Fisheries shall address the following additional design considerations.

(a) To mitigate thermal impacts to Cold Water Fisheries from stormwater, alternative BMPs to stormwater ponds, such as buffers, infiltration or under-drained filters should be used, or, if ponds are required, under-drained outlet structures can provide effective cooling.

(b) Equally important to maintaining cool stream temperature is preservation and/or restoration of riparian trees and shrubs to provide shade. To the maximum extent feasible, trees and other existing vegetation shall be conserved. To the extent that existing vegetation cannot be conserved, new natural areas shall be established by planting additional vegetation, establishing no-mow zones, clustering tree areas, and using native plants in revegetation.

D. Performance Standards for New Development.

(1) Stormwater management systems on new development shall be designed to meet an average annual pollutant removal equivalent to 90% of the average annual load of Total Suspended Solids (TSS) related to the total post-construction impervious area on the site AND 60% of the average annual load of Total Phosphorus (TP) related to the total postconstruction impervious surface area on the site. Average annual pollutant removal requirements shall be achieved through one of the following methods:

(a) installing stormwater BMPs that meet the pollutant removal percentages required in Section 7(D)(1) based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, then any federally or State-approved BMP design guidance or performance standards (e.g., State stormwater handbooks and design guidance manuals) may be used to calculate BMP performance; or

(b) retaining the volume of runoff equivalent to, or greater than, one (1.0) inch multiplied by the total post-construction impervious surface area on the new development site; or

(c) meeting a combination of retention and treatment that achieves the above standards.

E. Performance Standards for Redevelopment Sites.

(1) Stormwater management systems on redevelopment sites shall be designed to meet an average annual pollutant removal equivalent to 80% of the average annual postconstruction load of Total Suspended Solids (TSS) related to the total post-construction impervious area on the site AND 50% of the average annual load of Total Phosphorus (TP) related to the total post-construction impervious surface area on the site. Average annual pollutant removal requirements shall be achieved through one of the following methods:

(a) installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, then any federally or State-approved BMP design guidance or performance standards (e.g., State stormwater handbooks and design guidance manuals) may be used to calculate BMP performance; or

(b) retaining the volume of runoff equivalent to, or greater than, 0.8 inch multiplied by the total post-construction impervious surface area on the redeveloped site; or

(c) meeting a combination of retention and treatment that achieves the above standards.

F. Stormwater Management Design Standards

(1) Projects must be designed to collect and dispose of stormwater runoff from the project site in accordance with Massachusetts Stormwater Management Standards, the Small MS4 General Permit, other applicable local requirements, recognized engineering methodologies, and these regulations with an emphasis on including LID techniques in the design.

(2) Projects must manage surface runoff so that no proposed flows are conducted over public ways, nor over land not owned or controlled by the Applicant unless a drainage easement in proper form is obtained permitting such discharge.

(3) Projects must use LID techniques where adequate soil, groundwater and topographic conditions allow. These may include but are not limited to reduction in impervious surfaces, disconnection of impervious surfaces, bioretention (rain gardens) and infiltration systems.

The use of one or more LID site design measures by the applicant may allow for a reduction in the water quality treatment volume required by these regulations. The applicant may, if approved by the Stormwater Authority, take credit for the use of stormwater LID measures to reduce some of the requirements specified in these regulations. The site design practices that qualify for these credits and procedures for applying and calculating credits are identified in the Massachusetts Stormwater Handbook.

(4) Projects must use TR-55 and TR-20 methodologies to calculate peak rate and volume of runoff from pre-development to post-development conditions.

(5) Stormwater management systems shall be designed to avoid disturbance of areas susceptible to erosion and sediment loss, avoiding, to the greatest extent practicable: the damaging of large forest stands; building on steep slopes (15% or greater); and disturbing land in wetland buffer zones and floodplains.

(6) Watershed area for hydrologic analysis and BMP sizing calculations must include at a minimum the site area and all upgradient areas from which stormwater runoff flows onto the site.

(7) For purposes of computing runoff, all pervious lands in the site are assumed prior to Development to be in “good hydrologic condition” regardless of the conditions existing at the time of the computation.

(8) Length of sheet flow used for times of concentration is to be no more than 50 feet.

(9) Utilize the 24-hour rainfall data taken from the National Oceanic and Atmospheric Administration Atlas 14, Precipitation-Frequency Atlas of

the United States (Vol. 10, Northeastern States, published 2015, revised 2019), as it may be amended.

(10) Soil tests to be conducted by a Registered Professional Engineer or Massachusetts Soil Evaluator, performed at the location of all proposed LID techniques and BMPs, to identify soil descriptions, depth to estimated seasonal high groundwater, depth to bedrock, and soil texture.

(11) The design infiltration rate shall be determined from the on-site soil texture and Rawls rates as published in the Massachusetts Stormwater Handbook or saturated hydraulic conductivity tests.

(12) Size drainage pipes to accommodate the 25-year storm event and maintain velocities between 2.5 and 10 feet per second, and provide calculations using the Mannings Equation.

(13) Size drainage swales to accommodate the 25-year storm event and velocities below 4 feet per second.

(14) Size culverts to accommodate the 50 year storm event and design adequate erosion protection. Design stream crossing culverts in accordance with the latest addition of the Massachusetts Stream Crossing Handbook.

(15) Size stormwater basins to accommodate the 100-year storm event with a minimum of one foot of freeboard.

(16) All drainage structures are to be able to accommodate HS-20 loading.

(17) A catch basin to manhole drain configuration shall be used. Manholes shall be installed at intervals not to exceed 300 feet, at all changes of direction, and at pipe junctions. All drainpipes are to be reinforced concrete pipe or High Density Polyethylene (HDPE) pipe and have a minimum inside diameter of 12 inches. Drainpipes shall have a minimum cover of 3 feet over pipes through manholes and 2-1/2 feet over pipes at catch basins.

(18) Catch basins shall have a sump of 48 inches or greater and shall be located to avoid ponding at cul-de-sacs and at appropriate intervals to avoid gutter flooding during the design storm. The DPW may require that catch basins in low points of road and on roads with profile grades greater than 5 percent be fitted with double grates (parallel with curb).

(19) Outfalls are to be designed to prevent erosion of soils, and pipes 24 inches or larger are to be fitted with grates or bars to prevent ingress.

(20) Drainage easements are to provide sufficient access for maintenance and repairs of system components and be at least 20 feet wide.

(21) Minimize permanently dewatering soils by:

(a) Limiting grading within 4 feet of seasonal high groundwater elevation (SHGWE);

(b) Raising roadways to keep roadway section above SHGWE; and

(c) Setting bottom floor elevation of building(s) a minimum of 2 feet above SHGWE.

Section 8. Erosion and Sedimentation Control Plan for LDP Applications

A. The Erosion and Sediment Control Plan shall be designed to ensure compliance with these regulations, the MS4, and if applicable, the NPDES *General Permit for Storm Water Discharges from Construction Activities*. In addition, the plan shall ensure that the Massachusetts Surface Water Quality Standards (314 CMR 4.00, *et seq.*) are met in all seasons.

B. If a project requires a Stormwater Pollution Prevention Plan (SWPPP) per the NPDES General Permit for Storm Water Discharges From Construction Activities (and as amended), then the applicant is required to submit a complete copy of the SWPPP and the signed Notice of Intent. If the SWPPP meets the requirements of the General Permit, it will be considered equivalent to the Erosion and Sediment Control Plan described in this section.

C. The Erosion and Sediment Control Plan shall remain on file with the Stormwater Authority. Refer to the latest version of the Massachusetts Erosion and Sediment Control Guidelines for Urban & Suburban Areas for detailed guidance.

D. Erosion and Sedimentation Control Plan Content. The Plan shall contain the following information:

(1) Names, addresses, and telephone numbers of the owner, applicant, and person(s) or firm(s) preparing the plan;

(2) Title, date, north arrow, names of abutters, scale, legend, and locus map;

(3) Location and description of natural features including:

(a) Watercourses and water bodies, wetland resource areas and all floodplain information, including the 100-year flood elevation based upon the most recent Flood Insurance Rate Map, or as calculated by a registered Professional Engineer (PE) for areas not assessed on these maps;

(b) Existing vegetation including tree lines, canopy layer, shrub layer, and ground cover, and trees with a caliper twelve (12) inches or larger, noting specimen trees and forest communities; and

(c) Habitats mapped by the Massachusetts Natural Heritage & Endangered Species Program as Endangered, Threatened or of Special Concern, Estimated Habitats of Rare Wildlife and Certified Vernal Pools, and Priority Habitats of Rare Species within five hundred (500) feet of any construction activity.

(4) Lines of existing abutting streets showing drainage and driveway locations and curb cuts;

(5) Existing soils and volume and nature of imported soil materials, with the Soil Erodibility Factor from NRCS Soil Survey Data for all soils;

(6) Topographical features including existing and proposed contours at intervals no greater than two (2) feet with spot elevations provided when needed;

(7) Surveyed property lines showing distances and monument locations, all existing and proposed easements, rights-of-way, and other encumbrances, the size of the entire parcel, and the delineation and number of square feet of the land area to be disturbed;

(8) Drainage patterns and approximate slopes anticipated after major grading activities (Construction Phase Grading Plans);

(9) Location and details of erosion and sediment control measures with a narrative of the construction sequence/phasing of the project, including both operation and maintenance for structural and non-structural measures, interim grading, and material stockpiling areas;

(10) Path and mechanism to divert uncontaminated water around disturbed areas, to the maximum extent practicable. When determining whether the requirements have been met, the Stormwater Authority shall consider all stormwater management practices available and capable of being implemented after taking into consideration costs, existing technology, proposed use, and logistics in light of overall project purposes. Project purposes shall be defined generally (*e.g.*, single family home or expansion of a commercial development);

(11) Location and description of industrial discharges, including stormwater discharges from dedicated asphalt plants and dedicated concrete plants, which are covered by this permit;

(12) Stormwater runoff calculations in accordance with the Massachusetts Department of Environmental Protection's Stormwater Management Handbook and Stormwater Standards;

(13) Location and description of and implementation schedule for temporary and permanent seeding, vegetative controls, and other stabilization measures;

(14) A description of construction and waste materials expected to be stored on-site. The Plan shall include a description of controls to reduce pollutants from these materials, including storage practices to minimize exposure of the materials to stormwater, and spill prevention and response;

(15) A description of provisions for phasing the project where one acre of area or greater is to be altered or disturbed;

(16) Plans must be stamped and certified by a qualified Professional Engineer registered in Massachusetts or a Certified Professional in Erosion and Sediment Control; and

(17) Such other information as is required by the Stormwater Authority.

E. Erosion Controls Design Standards. The Sediment and Erosion Control Plan shall be developed to comply with the Small MS4 General Permit and shall meet the following standards:

(1) Minimize total area of disturbance;

(2) Sequence activities to minimize simultaneous areas of disturbance;

(3) Minimize peak rate of runoff in accordance with the Massachusetts Department of Environmental Protection Stormwater Standards;

(4) Minimize soil erosion and control sedimentation during construction;

(5) Divert uncontaminated water around disturbed areas;

(6) Maximize groundwater recharge;

(7) Install and maintain all Erosion and Sediment Control measures in accordance with the Massachusetts Erosion and Sedimentation Control Guidelines for Urban and Suburban Areas, manufacturers' specifications and good engineering practices;

(8) Prevent off-site transport of sediment;

(9) Protect and manage on and off-site material storage areas (overburden and stockpiles of dirt, borrow areas, or other areas used solely by the permitted project are considered a part of the project);

(10) Comply with applicable Federal, State and local laws and regulations including waste disposal, sanitary sewer or septic system regulations, and air quality requirements, including dust control;

(11) Protect natural resources and prevent significant alteration of habitats mapped by the Massachusetts Natural Heritage & Endangered Species Program as Endangered, Threatened or Of Special Concern, Estimated Habitats of Rare Wildlife and Certified Vernal Pools, and Priority Habitats of Rare Species from the proposed activities;

(12) Institute interim and permanent stabilization measures, which shall be instituted on a disturbed area as soon as practicable but no more than 14 days after construction activity has temporarily or permanently ceased on that portion of the site;

(13) Properly manage on-site construction and waste materials, including truck washing and cement concrete washout facilities;

(14) Prevent off-site vehicle tracking of sediments; and

(15) Incorporate appropriate BMPs designed to comply with the Massachusetts Stormwater Handbook.

Section 9. Operation and Maintenance Plan for LDP Applications

A. A stand-alone Operation and Maintenance Plan is required at the time of application for all projects that include structural and non-structural stormwater BMPs. The Operation and Maintenance Plan shall be designed to ensure

compliance with the Permit and these regulations for the life of the system. The Operation and Maintenance Plan shall be recorded with the Worcester County Registry of Deeds and shall remain on file with the Stormwater Authority and shall be an ongoing requirement. The Applicant shall provide copies of the Operation and Maintenance Plan to all persons responsible for maintenance and repairs.

B. The Operation and Maintenance Plan shall include:

(1) The name(s) of the owner(s) for all components of the system;

(2) A map showing the location of the systems and facilities including all structural and nonstructural stormwater best management practices (BMPs), catch basins, manholes/access lids, pipes, snow storage areas, and other stormwater devices. BMPs and structures should be labeled for ease of understanding and implementing the inspection and maintenance instructions and schedule and ongoing reporting. The plan showing such systems and facilities to be privately maintained, including associated easements shall be recorded with the Worcester County Registry of Deeds prior to issuance of a Certificate of Completion by the Stormwater Authority pursuant to Section 12.

(3) Maintenance Agreement that specifies:

(a) The names and addresses of the person(s) responsible for operation and maintenance;

(b) The person(s) financially responsible for maintenance and emergency repairs;

(c) An Inspection and Maintenance Schedule for all stormwater management facilities including routine and non-routine maintenance tasks to be performed. Where applicable, this schedule shall refer to the Maintenance Criteria provided in the Stormwater Handbook or the EPA National Menu of Stormwater Best Management Practices or equivalent;

(d) Instructions for routine and long-term operation and maintenance shall have sufficient detail for responsible parties to perform necessary maintenance activities and prevent actions that may adversely affect the performance of each structural and/or nonstructural stormwater BMP.

(e) A list of easements with the purpose and location of each; and

(f) The signature(s) of the owner(s) and all persons responsible for operation and maintenance, financing, and emergency repairs, as defined in the Maintenance Agreement, if maintenance is to be performed by an entity other than the owner.

(4) Stormwater Management Easement(s)

(a) Stormwater Management easements shall be provided by the property owner(s) as necessary for:

i. Access for facility inspections and maintenance;

ii. Preservation of stormwater runoff conveyance, infiltration, and detention areas and facilities, including flood routes for the 100-year storm event; and

iii. Direct maintenance access by heavy equipment to structures requiring maintenance.

(b) The purpose of each easement shall be specified in the Maintenance Agreement signed by the property owner.

(c) Stormwater Management easements are required for all areas used for permanent stormwater control, unless a waiver is granted by the Stormwater Authority pursuant to Section 8 of the Stormwater Management and Land Disturbance By-Law.

(d) Easements shall be recorded with the **Worcester County** Registry of Deeds prior to issuance of a Certificate of Compliance by the Stormwater Authority pursuant to Section 12.

(5) Changes to Operation and Maintenance Plans

(a) The owner(s) of record of the Stormwater Management system must notify the Stormwater Authority of changes in ownership, assignment of Operation and Maintenance responsibilities, or assignment of financial responsibility within 30 days of the change in ownership. The owner of record shall be responsible for Operation and Maintenance activities until a copy of the updated Operation and Maintenance Plan has been furnished to the Stormwater Authority signed by the new owner or any new responsible person.

(b) The maintenance schedule in the Maintenance Agreement may be amended to achieve the purposes of the Stormwater Management and Land Disturbance By-law and these Regulations by mutual agreement of the Stormwater Authority and the Responsible Parties. Amendments must be in writing and signed by all Responsible Parties. Responsible Parties shall include owner(s), persons with financial responsibility, and persons with operational and/or maintenance responsibility.

(6) Enforcement. To ensure adequate long-term operation and maintenance of stormwater management practices, applicants are required to file an annual Operation and Maintenance Report and Certification with the Stormwater Authority on a form specified by the Stormwater Authority, accompanied by an annual filing fee of $50 for administration and oversight of long-term operation and maintenance plans. This Report will be due annually on or before February 15 and shall document the work that has been done

during the prior calendar year to properly operate and maintain the stormwater control measures. The certification shall be signed by the person(s) or authorized agent of the person(s) named in the permit as being responsible for ongoing operation and management.

Section 10. Inspection and Site Supervision for LDP Applications

A. Pre-construction Meeting. Prior to starting the clearing, excavation, construction, redevelopment or land disturbing activity, the applicant, the applicant's technical representative, the general contractor or any other person with authority to make changes to the project, may be required to meet with the Stormwater Authority, DPW, or authorized agent, to review the approved plans and their proposed implementation. The need for a pre-construction meeting shall be determined by the Stormwater Authority based on the project scope.

B. Construction may not commence until the applicant has submitted EPA's approval of the Construction General Permit Notice of Intent to the Stormwater Authority and the final SWPPP is posted at the site.

C. Stormwater Authority Inspections. The Stormwater Authority or its designated agent shall make inspections as herein required and shall either approve that portion of the work completed or shall notify the applicant wherein the work fails to comply with the Erosion and Sedimentation Control Plan or the Stormwater Management Plan as approved.

(1) Inspections will be conducted by a "qualified person" from the Stormwater Authority, their designee (DPW), or a third party hired to conduct such inspections. A "qualified person" is a person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality, and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of these Regulations.

(2) The approved Erosion and Sedimentation Control Plan and associated plans for grading, stripping, excavating, and filling work, bearing the signature of approval of the Stormwater Authority, shall be maintained at the site during the progress of the work.

(3) In order to obtain inspections, the applicant shall notify the DPW and Stormwater Authority at least two (2) working days before each of the following events:

(a) Erosion and sedimentation control measures are in place and stabilized;

(b) Site Clearing has been substantially completed;

(c) Rough Grading has been substantially completed;

(d) Final Grading has been substantially completed;

(e) Stormwater BMPs and Drainage Structures. An inspection will be made of the completed stormwater management system, prior to backfilling of any underground drainage, stormwater conveyance structures, or infiltration structure.

(e) Close of the Construction Season; and,

(f) Final Landscaping (permanent stabilization) and project final completion.

D. Applicant Inspections. The applicant or his/her agent shall conduct and document inspections of all control measures no less than weekly or as specified in the permit, and prior to and following anticipated storm events. The purpose of such inspections will be to determine the overall effectiveness of the Erosion and Sedimentation Control Plan, and the need for maintenance or additional control measures as well as verifying compliance with the Stormwater Management Plan. The applicant or his/her agent shall submit weekly reports to the Stormwater Authority or designated agent in a format approved by the Stormwater Authority.

Section 11. Final Reports and As-Built Plans

Upon completion of the work and no later than 180 days after completion of construction, the permittee shall submit a report (including certified as-built construction plans) from a Registered Professional Engineer (PE) or Land Surveyor certifying that the project has been completed in accordance with the conditions of the Land Disturbance Permit. The as-built drawings must depict all on site controls, both structural and non-structural, designed to manage the stormwater associated with the completed site (post construction stormwater management). Any discrepancies with the approved permit plans shall be noted in the cover letter submitting the report and as-built plans. The permittee shall provide proof of recording of the Operation and Maintenance Plan at the Registry of Deeds. The Final Report and as-built plans shall be electronically submitted in PDF format, and the Stormwater Authority may also require as-built plans to be submitted as a digital AutoCAD drawing and/or Geographic Information System (GIS) file compatible with Oxford's GIS platform.

Section 12. Certificate of Completion

The Stormwater Authority shall issue a letter certifying completion upon receipt and approval of the final reports, conducting a final site inspection, and/or upon otherwise determining that all work has been conducted in conformance with these regulations and the conditions of the LDP or Administrative Land Disturbance Approval and the site is completely stabilized.

Section 13. Permit Expiration/Extension

An approved Land Disturbance Permit or Administrative Land Disturbance Approval is valid for three (3) years from the date of issuance. If work has not been completed within three years, the permittee may request in writing to the Stormwater Authority a one-time extension of up to three years. This request shall be submitted at least thirty (30) days prior to expiration of the approved Permit or Approval. The Stormwater Authority may re-evaluate the originally approved Permit or Approval to determine whether the plan still satisfies applicable state and local requirements and to verify that all design factors are still valid. If the Stormwater Authority finds the previously filed plan to be inadequate, an updatedplan shall be submitted and approved prior to

issuance of the Extension per the procedures in Section 7 of the Stormwater Management and Land Disturbance By-law.