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Town of Newington Stormwater Management Project

Town of Newington

Town of Newington Stormwater Management Project
PREP Community Technical Assistance Program
Final Project Report – March 2010

Summary

The UNH Stormwater Center worked with the Newington Planning Board to improve the town's site plan review regulations to better manage stormwater.

Overview

In 2008, the Town of Newington's Planning Board applied for assistance through Round 3 of the Piscataqua Region Estuaries Partnership Estuaries Project's (PREP's) Community Technical Assistance Program. The UNH Stormwater Center (UNHSC) was selected as the technical assistance provider for the project. The project scope was developed with input from the Newington Planning Board, Conservation Commission, and Town Planner. Over the course of the project, UNHSC and PREP staff met with the Planning Board town several times to develop and refine specific edits and additions to the town's site plan review regulations, which largely apply to commercial development (including re-development).

The new proposed regulations were the subject of two public hearings held by the Planning Board, and the final regulations were adopted by the Newington Planning Board on December 14, 2009. Newington also passed recommended amendments to the zoning ordinance to eliminate the exemption from the wetlands setback for parking lots, and also amended the zoning ordinance to change the 'minimum' parking lot travel lane dimensions to a 'maximum', as recommended by UNHSC's analysis work.

Attachments

• Final Adopted Stormwater Management Language in Newington's Site Plan Review Regulations

This project was supported through the PREP's Community Technical Assistance Program, with funding from the US Environmental Protection Agency through an agreement with the University of New Hampshire.

Public Notice

The Newington Planning Board will hold a public hearing on **Monday December 14, 2009** at **6:30 PM** at the **Town Hall** to consider amending the Town's land use regulations in order to regulate the discharge of storm water. The Planning Board proposes the following:

1) Add the following definitions to Section 3 of the Site Plan Review Regulations:

Best Management Practices (BMP): Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from non-point sources.

Buffer: A buffer is a special type of preserved area along a watercourse or wetland where development is restricted or prohibited. Buffers protect and physically separate a resource from development. Buffers also provide stormwater control flood storage and habitat values. Wherever possible, riparian buffers should be sized to include the 100-year floodplain as well as steep banks and freshwater wetlands.

Disturbance: Any activity that significantly alter the characteristics of the terrain in such a manner as to impede the natural runoff or create an unnatural runoff.

Groundwater Recharge Volume (GRv): The post-development design recharge volume (i.e., on a storm event basis) required to minimize the loss of annual pre-development groundwater recharge. The GRv is determined as a function of annual pre-development recharge for site-specific soils or surficial materials,

Hydrologic Soil Group (HSG): A Natural Resource Conservation Service classification system in which soils are categorized into four runoff potential groups. The groups range from A soils, with high permeability and little runoff production, to D soils, which have low permeability rates and produce much more runoff.

Impervious Surface: Those surfaces that cannot effectively infiltrate rainfall consisting of surfaces such as building rooftops, pavement, sidewalks, driveways, compacted gravel (e.g., driveways and parking lots).

Low Impact Development (LID): Low impact development is a site planning and design strategy intended to maintain or replicate predevelopment hydrology through the use of site planning, source control, and small-scale practices integrated throughout the site to prevent, infiltrate and manage runoff as close to its source as possible.

Maximum Extent Practicable (MEP): To show that a proposed development has met a standard to the maximum extent practicable, the applicant must demonstrate the following: (1) all reasonable efforts have been made to meet the standard, (2) a complete evaluation of all possible management measures has been performed, and (3) if full

compliance cannot be achieved, the highest practicable level of management is being implemented.

Native Plants: Plants that are adapted to the local soil and rainfall conditions and that require minimal watering, fertilizer, and pesticide application.

Redevelopment: Any construction, alteration, or improvement that disturbs a total of 20,000 square feet or more of existing impervious area where the existing land use is commercial, industrial, institutional, or governmental. Building demolition is included as an activity defined as "redevelopment", but building renovation is not. Similarly, removing of roadway materials down to the erodible soil surface is an activity defined as "redevelopment", but simply resurfacing of a roadway surface is not. In general, the requirements in this regulation do not apply to projects or portions of projects when the total existing impervious area disturbed is less than 20,000 square feet. Any creation of new impervious area over portions of the site that are currently pervious is required to comply fully with the requirements of these site plan regulations.

Seasonally High Groundwater Table: The highest elevation of the groundwater table typically observed during the year.

Stormwater Management Plan: Plan describing the proposed methods and measures to prevent or minimize water quality and quantity impacts associated with a development or redevelopment project both during and after construction. It identifies selected LID source controls and treatment practices to address those potential impacts, the engineering design of the treatment practices, and maintenance requirements for proper performance of the selected practices.

Structural BMPs: Devices that are constructed to manage stormwater runoff.

Water Quality Treatment: the capture of sediment, nutrients, metals and hydrocarbons suspended in stormwater runoff from impervious surfaces before being conveyed to a storm sewer network or to another water quality treatment system. In most cases where no other local water body impairments exist, adequate treatment refers to documenting the treatment systems ability to remove 80% of the total suspended solids (TSS) on an annual basis. Where water quality impairments do exist adequate treatment refers to a systems ability to meet maximum load allocations or not further impair the receiving water.

Water Quality Volume (WQv): The storage needed to capture and treat 90% of the average annual stormwater runoff volume. In New Hampshire, this equates to 1-inch of runoff from impervious surfaces. WQV should be calculated using the following equation:
WQV = (P)(Rv)(A), where: P = 1 inch Rv = the unitless runoff coefficient, Rv = 0.05 + 0.9(I) I = the percent impervious cover draining to the structure, in decimal form, and A = total site area draining to the structure.

2) Add the following to Section 7 of the Site Plan Review Regulations:

"**g) Stormwater:** All stormwater management systems and site drainage designs should be designed by a Registered Professional Engineer consistent with the following requirements and all drainage and sizing calculations should be included in the Stormwater Management Plan. Submittal of the following is required in order to assess the impact of storm water:

1) Surface water and wetlands, drainage patterns, and watershed boundaries

2) Soils information for design purposes with coding as HSG-A, B, C, or D

3) Temporary and permanent stormwater management and erosion and sediment control BMPs

4) Areas and timing of soil disturbance

5) A schedule for the inspection and maintenance of all BMPs

6) Water well and septic locations, including protective radii and reserve areas. Including distance to seasonal high water (SHGW) and shallow depth to bedrock.

7) Calculations (Pre- and Post-Development) relating to stormwater runoff (rates and volumes) based on a one inch (WQV), and 50-year 24-hour storm frequency.

8) A Stormwater Management and Erosion Control Plan

9) Any additional permits as may be required, in compliance with Environmental Protection Agency (EPA) guidelines.

3) Add a new Section 14 to the Site Plan Review Regulations, and re-number subsequent sections accordingly:

SECTION 14 – Parking Lot Design Requirements:

a) A minimum eight (8) foot wide planting median shall be provided between adjacent rows of parking. Median shall be depressed and may be associated with curb cuts allowing sheet flow to pond to a maximum depth of 8" in the median. Water quality swales or rain garden beds (if sheet flow is allowed) will be designed to promote detention time and infiltration. Soils must be designed for infiltration and evaluated for need of amendments. Overflow contingencies shall be provided and plumbed to adjacent drainage network if necessary.

b) All areas that receive rainfall must be designed to drain within a maximum of 72 hours for vector control.

c) Every effort shall be made to use pervious parking surfaces as an alternative to impervious asphalt or concrete for overflow parking areas. Porous pavement shall be appropriately sited for traffic and vehicle loading conditions.

4) Add a new Section 15 to the Site Plan Review Regulations, and re-number subsequent sections accordingly:

SECTION 15 - Landscaping Standards

a) Purpose: The intent of landscaping regulations is to achieve a high quality site appearance, to assure design compatibility, to direct character and form, to conserve water, and to enhance the overall value of the community. The purpose of specific provisions contained in these regulations is to:

1) Avoid extensive grading

2) Retain as much of the original vegetation as possible and incorporate into site design.

3) Encourage preservation and enhancement of community character

4) Provide buffers between incompatible land-uses or sites

5) Control airborne particulates such as soot and dirt

6) Enhance the public or private streetscape

7) Provide screening of service structures (dumpsters, etc.)

8) Provide visual, impervious cover, and climatic relief from broad expanses of pavement and define areas for pedestrian and vehicular circulation

9) Create a pedestrian-friendly environment

10) Break up the mass of buildings and impervious areas

11) Soften architectural and structural materials

b) Landscaping Plan: A landscaping plan shall be submitted with each application for major site plan review showing existing and proposed features, and the locations of all plant materials. A plant schedule shall accompany the plan, indicating the botanical and common names, size, quantity, and description for all proposed plants. Existing trees, shrubs and plant beds to be retained shall be described. Landscape plans shall incorporate water conservation planting techniques and hardy plant materials. The landscaping plan shall incorporate the following:

1) All setbacks and areas of open space as required by the Zoning Ordinance shall retain existing natural features or be landscaped as required by this Section. Natural features and existing native vegetation should be retained where possible. Wherever possible landscape features shall be designed to receive sheet flow runoff from adjacent impervious areas.
2) Existing non-native invasive plants (including grasses, shrubs and trees) shall be removed and destroyed.

3) Existing healthy mature native trees (6" caliper or greater) shall be retained as practical and incorporated into the overall landscape plan.

4) No loam or other topsoil shall be removed from the site as part of site development. Topsoil shall be appropriately stockpiled and stabilized for redistribution within new planting areas.

5) Existing soils will be evaluated for need of soil amendments to promote infiltration and plant growth as needed.

6) Existing topography shall be maintained wherever feasible and extensive grading avoided. Those areas that shall be disturbed shall be replaced with a minimum of 4" of suitable topsoil either from the stockpile or off-site and then be replanted with grass seed, sod or other vegetative groundcover.

7) Re-vegetated areas shall be replanted with hardy native species appropriate to the site.

8) Dead vegetation shall be replaced within one growing season, based on standard seasonal planting practices with healthy living plants in all required landscape areas. All planting areas shall be landscaped with a combination of climate tolerant plant material and protective ground cover. Bare soil is not permitted. Where wildlife habitat requires unmaintained vegetation an exemption may be adopted.

9) All proposed plantings shall be appropriate for the soils, weather and environmental conditions of the site. Particular attention shall be paid to potential road salt and other deicing chemicals. Plant materials shall be of specimen quality conforming to the American Standards for Nursery Stock

(ANSI Z60.1-1980 or later revision) and should be guaranteed for at least one and one half years.

10) Side slopes shall not exceed fifteen (15) percent (2:1 slope), and shall be appropriately stabilized with loam and seed, hydroseed, sod, ground cover or mulching materials.

11) Existing landscaping, trees and planting materials to be retained shall be protected as necessary during construction to avoid damage.

12) Tree wells and raingardens where possible shall be designed to receive and filter stormwater runoff and provide for up to 8 inches of ponding depth with appropriate overflow and underdrain connections to existing drainage structures. Such structures that have the potential to present a falling hazard to the public shall have grates, fences or other protective measures installed.

13) All areas that receive rainfall must be designed to drain within a maximum of 72 hours for vector control.

c) Planting Requirements: Native plants should be used as much as feasible to enhance the long-term survival prospects of the plant materials used in site landscaping. These standards are also meant to ensure that the benefits of site landscaping (buffering, aesthetic enhancement, erosion control, etc.) are realized as early after planting as possible.

d) Maintenance and Replacement of Landscaping:

1) Landscaping shall be maintained in good condition. The property owner will remove and replace dead or diseased plant materials immediately with the same type, size and quantity of plant materials as originally installed, unless alternative plantings are requested, justified, and approved by the Board.

2) Avoid replacing landscape materials in the period from November– March.

3) A maintenance bond to cover the cost of replacement plant materials and maintenance equipment shall be provided for one year after the date of site plan approval.

4) A note shall be provided on the Site Plan stating: “All conditions on this Plan shall remain in effect in perpetuity”.

5) Add a new Section 16 to the Site Plan Review Regulations, and re-number subsequent sections accordingly:

SECTION 16 - Stormwater Management

a) Stormwater Management and Erosion Control Plan Requirements: The applicant shall submit a Stormwater Management and Erosion Control Plan to the Planning Board for any tract of land being developed, where one or more of the following conditions are proposed for a combined area greater than 20,000 square feet:

1) Construction or reconstruction (but not maintenance) of a street, road or parking lot;

2) New development resulting in soil disturbance or creation of impervious cover; or

3) Redevelopment resulting in soil disturbance or creation of impervious cover.

Phased development of subdividable commercial/industrial properties: design requirements of this regulation shall apply to phased applications for the original parcel as though the development of the entire parcel were proposed in one application at one time.

b) Minimum Requirements: Stormwater and Erosion Control Plans shall meet the following requirements and /or show the following information:

1) The plan shall be in compliance with the EPA Phase II Stormwater Rules, as amended.

2) All measures in the plan shall meet as a minimum the Best Management Practices (BMP) set forth in the NH Stormwater Management Manual volume 2 (stormwater BMPs), and volume 3 (erosion and sediment controls), December 2008 as amended, a copy of which is available from NHDES: des.nh.gov/organization/divisions/water/stormwater/manual.htm

3) A report section that includes:

a) Design calculations for all temporary and permanent structural BMP measures.

b) A comprehensive maintenance plan including the proposed schedule for the inspection and maintenance of all BMPs.

c) Identification of all permanent control measures and responsibility for continued maintenance.

d) Drainage report with calculations showing volume, peak discharge, and velocity of all subwatersheds for pre-developed and developed conditions.

e) All designs will conform to the criteria outlined for those types of structures given in the NH Stormwater Management Manual.

c) Water Quality Protection: All aspects of the application shall be designed so that:

1) No person shall locate, store, discharge, or permit the discharge of any treated, untreated, or inadequately treated liquid, gaseous, or solid materials of such nature, quantity, noxiousness, toxicity, or temperature that may run off, seep, percolate, or wash into surface or groundwaters so as to contaminate, pollute, or harm such waters.

2) All storage facilities for fuel, chemicals, chemical or industrial wastes, and biodegradable raw materials, shall meet the standards of the New Hampshire Department of Environmental Protection (NHDES), Water Supply and Pollution Control.

3) All projects of such magnitude as to require a stormwater permit from EPA or NHDES shall comply with the standards of EPA and/or NHDES AOT program, with respect to the export of total suspended solids and other pollutants. If the project does not require a stormwater permit from EPA or NHDES, it shall be designed to achieve 80% removal of total suspended solids, and 50% removal of both total nitrogen and phosphorus.

d) Stormwater Management for new development or development in undisturbed areas: Adequate provisions shall be made for the collection and disposal of all stormwater that runs off proposed streets, parking areas, roofs, and other surfaces. For activities labeled redevelopment treatment shall include all of the listed requirements below but subject to the provisions in Section 16e. All construction activities, regardless of the area of disturbance, shall meet the following performance guidelines:

1) Existing surface waters, including lakes, ponds, rivers, perennial and intermittent streams (natural or channelized), and wetlands (including vernal pools) shall be protected by a minimum 100 foot no disturbance naturally-vegetated buffer. Stormwater and erosion and sediment control BMPs shall be located outside the 100-foot buffer zone. Stream and wetland crossings shall be eliminated whenever possible. When necessary, stream and wetland crossings shall comply with state recommended design standards to minimize impacts to flow and animal passage (see University of New Hampshire Stream Crossing Guidelines May 2009, as amended).

2) LID site planning and design strategies must be used to the maximum extent practicable in order to reduce the generation of the water runoff volume for both new and redevelopment projects. An applicant must document why LID strategies are not appropriate if not used to manage stormwater.

3) All stormwater treatment areas, shall be planted with grasses, shrubs and/or other plantings sufficient to prevent soil erosion and to promote proper treatment of the proposed runoff.

4) All areas that receive rainfall must be designed to drain within a maximum of 72 hours for vector control.

5) Buildings, streets, parking lots and other construction shall be located out of the post-development flood plain to reduce construction and post-construction drainage problems.

6) Snow and salt storage areas shall be covered or located such that no direct untreated discharges to receiving waters are possible from the storage site. Runoff from snow and salt storage areas shall enter treatment areas as specified above before being discharged to receiving waters or allowed to infiltrate into the groundwater.

7) Sheet flow or runoff flows should be directed into recessed vegetated areas to the maximum extent practicable so as to reduce Effective Impervious Cover (EIC) and reduce the need for water supply systems.

8) The plan shall attempt to retain stormwater on the site using the natural flow patterns of the site. Effort shall be made to utilize natural filtration and or infiltration best management practices (ie. bioretention areas, subsurface infiltration systems, ponds, swales, etc). All best management practices shall be permitted with an acceptable maintenance plan as required in Section 9.7.

9) Measures shall be taken to control the post-development peak rate and volume of runoff so that it does not exceed pre-development runoff for the 10-year and 50-year, 24-hour storm event and for additional storm event frequencies as specified in the channel protection volume design criteria of the NH Stormwater

Management Manual, December 2008 amended, a copy of which is available from NHDES:
http://des.nh.gov/organization/divisions/water/stormwater/manual.htm

10) The applicant shall demonstrate that on- and off-site downstream channel or system capacity is sufficient to carry the flow without adverse effects, such as flooding and erosion of stream banks and shoreland areas. Stormwater management of site development or re-development should incorporate considerations of existing stream geomorphic status.

11) The biological and chemical properties of the receiving waters shall not be degraded by the stormwater runoff from the development site.

12) The design of the stormwater drainage system shall provide for the disposal of stormwater without damage or functional impairment to streets, adjacent properties, downstream properties, soils, or vegetation.

13) The design of the storm drainage systems shall take into account upstream runoff that passes over or through the site to be developed or re-developed and provide for this movement.

14) Whenever practical, natural vegetation shall be retained, protected, or supplemented. Any stripping of vegetation shall be done in a manner that minimizes soil erosion.

15) Appropriate erosion and sediment control measures shall be installed prior to any soil disturbance such that the area of disturbance shall be kept to a minimum. Disturbed areas remaining idle for more than 30 days shall be stabilized.

16) Measures shall be taken to control erosion within the project area. Sediment in runoff water shall be trapped and retained within the project area using approved measures. Wetland areas and surface waters shall be protected from sediment.

17) All temporary control measures shall be removed after final site stabilization. Trapped sediment and other disturbed soil areas resulting from the removal of temporary measures shall be permanently stabilized prior to removal of temporary control measures.

e) Redevelopment Project Requirements: For sites meeting the definition of a redevelopment project and having more than 40% existing impervious surface coverage, modified stormwater management requirements (below) will apply. For sites with less than 40% existing impervious surface coverage, the stormwater management requirements will be the same as other new development projects with the important distinction that the applicant can meet those requirements either on-site or at an approved off-site location within the same watershed provided the applicant satisfactorily

demonstrates that impervious area reduction, LID techniques and/or structural BMPs have been implemented on-site to the maximum extent practicable.

Because redevelopment may present a wide range of constraints and limitations, this standard allows for flexibility and an evaluation of options that can work in conjunction with broader state watershed goals and local initiatives. Stormwater requirements for redevelopment vary based upon the surface area of the site that is covered by existing impervious surfaces. In order to determine the stormwater requirements for redevelopment projects, the percentage of the site covered by existing impervious areas must be calculated. The term "site" is defined as one or more lots, tracts, or parcels of land to be developed or redeveloped for a complex of uses, units or structures, including but not limited to commercial, institutional, governmental, and/or mixed uses. For sites with less than 40% existing impervious surface coverage, the stormwater management requirements for redevelopment will be the same as for new development. The applicant can meet those requirements either on-site or at an approved off-site location within the same watershed provided the applicant satisfactorily demonstrates that impervious area reduction, LID strategies, and/or structural BMPs have been implemented on-site to the maximum extent practicable.

For redevelopment sites with more than 40% existing impervious surface coverage, stormwater shall be managed for water quality in accordance with one or more of the following techniques listed in order of preference:

1) Reduce existing impervious area by at least 50% of the redevelopment area through the application of porous media; or

2) Implement other LID techniques to the maximum extent practicable to provide treatment for at least 50% of the redevelopment area; or

3) Use on-site structural BMPs to provide adequate treatment for at least 50% of redevelopment area; or

4) Any combination of impervious area reduction, other LID techniques, or on-site structural BMPs for at least 50% of redevelopment area.

5) Off-site structural BMPs to provide adequate water quality treatment for an area equal to or greater than 50% of redevelopment areas may be used to meet these requirements provided that the applicant satisfactorily demonstrates that impervious area reduction, LID strategies, and/or onsite structural BMPs have been implemented to the maximum extent practicable. An approved off-site location must be identified, the specific management measures identified, and an implementation schedule developed in accordance with local review. The applicant must also demonstrate that there are no downstream drainage or flooding impacts as a result of not providing on-site management for large storm events. To comply with local watershed objectives the mitigation site should be

situated in the same subwatershed as the development and impact the same receiving water.

f) Responsibility for Installation and Construction: The applicant shall bear final responsibility for the installation, construction, inspection, and disposition of all stormwater management and erosion control measures required by the provisions of these regulations. Site development shall not begin before the stormwater management and erosion control plan receives written approval. Best Management Practices shall be installed as designed and scheduled as a condition of final approval of the plan.

g) Bonding: The Planning Board may require a bond or other security in an amount and with surety conditions satisfactory to the Board, providing for the actual construction and installation of such measures within a period specified by the Planning Board and expressed in the bond or the surety.

h) Plan Approval and Review: The Planning Board shall approve the stormwater management and erosion control plan if it complies with the requirements of these regulations and other requirements as provided by law. Technical review of any stormwater management and erosion control plan prepared under these regulations shall be reviewed by a qualified professional consultant, as determined by the Planning Board, at the expense of the applicant.

i) Maintenance and Inspection:

1) After final Planning Board approval and as a condition precedent thereto, the owner of record of the property shall cause notice of the requirements for maintenance pursuant to the stormwater management and erosion and sediment control plans, as approved by the Planning Board, to be recorded at the Registry of Deeds sufficient to provide notice to all persons that may acquire any property subject to the stormwater management and sediment control plans. See RSA 477:3-a. The notice shall comply with the applicable requirements for recording contained in RSA 477 and 478. The notice need not set forth the requirements at length so long as it is sufficient to provide notice to prospective purchasers of the requirements for maintenance pursuant to the stormwater management and erosion and sediment control plans as approved by the Planning Board. The planning board may require routine inspections to insure compliance with the Stormwater Management, Groundwater Protection, Impervious Surfaces, and Erosion and Sedimentation Control sections of these regulations. Such inspections shall be performed by a designated agent with appropriate certifications at reasonable times to the landowner.

2) If permission to inspect is denied by the landowner, the designated agent shall secure an administrative inspection warrant from the district or superior court under RSA 595-B.

3) Prior to the issuance of any certificate of occupancy, the applicant/developer shall post a bond or other security to cover the cost of installation of any stormwater management and erosion control measures.

4) A set of As-Built Plans shall be submitted to the Planning Board within thirty (30) days of the completion of construction, before any certificate of occupancy can be issued. A post construction inspection will be scheduled as soon as possible after the As-Built Plans have been received. If the Planning Board determines that the stormwater management and erosion control measures do not meet the above requirements or conditions of approval, the Planning Board may revoke the site plan at a properly noticed public hearing.

6) Add a new Section 17 to the Site Plan Review Regulations, and re-number subsequent sections accordingly:

SECTION 17 - Impervious Surfaces can negatively impact surface and ground water quality in a number of ways. Impervious surfaces, such as paved parking lots decrease infiltration and recharge of groundwater, provide an express route for runoff to reach waterways, provide a surface upon which pollutants can accumulate, and prevent the natural processing of pollutants in soil, plants, and wetlands. Therefore, all final applications shall minimize the area of impervious surfaces, and address the potential negative impact of impervious surfaces on surface and groundwater resources.

The total overall impervious cover of a site shall not exceed 30%. For purposes of complying with this requirement, impervious cover draining to green roofs (with living vegetation), porous pavements, or other Low Impact Development filter treatment systems can be subtracted from the calculation of total impervious cover.

7) Add a new Section 18 to the Site Plan Review Regulations, and re-number subsequent sections accordingly:

SECTION 18 - Reimbursement: The applicant shall reimburse the Town for the board's administrative expenses and costs of special investigation and the review of documents and other matters that may be required by particular applications. This includes, but is not limited to, review by consulting engineers or other consultants to assess the environmental impact, hydrological impact, ground water quality impact, traffic impact, or any other study deemed necessary by the Planning Board in order to make an informed decision."

8) Add a new Section 19 to the Site Plan Review Regulations, and re-number subsequent sections accordingly:

SECTION 19 – Waivers: For good reason shown, the Planning Board may waive one or more of these regulations.

Denis Hebert, Chair

Newington Planning Board