Walker Brook Farm Subdivision

New Milford, Connecticut

King’s Mark Environmental Review Team Report

King’s Mark Resource Conservation and Development Area, Inc.

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New Milford, Connecticut

Environmental Review Team Report

Prepared by the
King's Mark Environmental Review Team
of the King's Mark
Resource Conservation and Development Area, Inc.

for the

Inland Wetlands Commission
New Milford, Connecticut

March 2005

Report #329

CT Environmental Review Teams
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Acknowledgments

This report is an outgrowth of a request from the New Milford Inland Wetlands Commission to the Northwest Conservation District (NWCD) and the King's Mark Resource Conservation and Development Area (RC&D) Council for their consideration and approval. The request was approved and the measure reviewed by the King's Mark Environmental Review Team (ERT).

The King's Mark Environmental Review Team Coordinator, Elaine Sych, would like to thank and gratefully acknowledge the following Team members whose professionalism and expertise were invaluable to the completion of this report.

The field review took place on, Tuesday, January 11, 2005.

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**Report not yet submitted.*

I would also like to thank James Ferlow, inland wetland enforcement officer, Sarah Acheson, inland wetland commission member, Adam Halasi-Kun, conservation commission member, Kathy Castagnetts, zoning official, and Larry Edwards, engineer for the project, for their cooperation and assistance during this environmental review.

Prior to the review day, each Team member received a summary of the proposed project with location and soils maps. During the field review Team members were given plans, reports and related documents. Some Team members made separate/follow-up visits to the site, while others conducted a plan review only. Following the review, reports from each Team member were submitted to the ERT coordinator for compilation and editing into this final report.

This report represents the Team's findings. It is not meant to compete with private consultants by providing site plans or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project - all final decisions rest with the town and landowner/applicant. This report identifies the existing resource base and evaluates its significance to the proposed use, and also suggests considerations that should be of concern to the town. The

results of this Team action are oriented toward the development of better environmental quality and the long term economics of land use.

The King's Mark RC&D Executive Council hopes you will find this report of value and assistance in the review of this proposed subdivision.

If you require additional information please contact:

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Introduction

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The New Milford Inland Wetlands Commission has requested Environmental Review Team (ERT) assistance in reviewing an application for a proposed residential subdivision.

The Walker Brook Farm subdivision is comprised of two parcels consisting of a total of 210.8 acres on Chestnut Land Road (Route 109) and Walker Brook Road. The property adjoins the town of Washington on the east. The southerly 60 acres are open meadows which are being used for haying, and the remainder of the site is wooded with timber harvested within the past 10 years. The site had been a dairy farm until a few decades ago, and all the buildings have been removed.

The site contains a series of knolls running north to south which direct the runoff into two (2) large wetlands along the east and west sides of the property. These wetlands are headwaters to two distinct watersheds. The southerly portion of the property flows to the south into Walker Brook, while the northerly part of the property flows north into an unnamed tributary of the East Branch of the Aspetuck River. The site contains 47.9 acres of designated wetlands. A total of 3.7 acres have slopes greater than 25%.

The project is proposed to be developed under the newly created Cluster Conservation Subdivision District (CCSD). The intent of the zone is to provide an opportunity for flexibility in the design so as to create larger tracts of undeveloped open space. This zone would provide 40,000 square feet per lot with on-site wells and septic systems. The subdivision plans show 79 lots with 116 acres of open space. The site will be developed around a new road network off of Chestnut Land Road and possibly a second access or emergency access from Walker Brook Road. All driveways will access the new road system.

Objectives of the ERT Study

The New Milford Inland Wetlands Commission has requested the ERT to assist in understanding the environmental concerns and limitations for this property. This particular area of New Milford has seen limited development and as such the commission has little information concerning the natural resources for this part of town. They also feel that a project of this magnitude and scope should have an expert review from various environmental disciplines to judge the total impacts associated with the proposal. Specific areas of concern and information requested include: soil types, hydrology, stormwater management, wetlands, water quality, a

watershed perspective, septic suitability, aquatic and wildlife resources. The commission looks to the information to help improve the environmental soundness of the project.

The ERT Process

Through the efforts of the New Milford Inland Wetlands Commission this environmental review and report was prepared for the Town of New Milford.

This report provides an information base and a series of recommendations and guidelines which cover the topics requested by the town. Team members were able to review maps, plans and supporting documentation provided by the applicant.

The review process consisted of four phases:

1. Inventory of the site's natural resources;
2. Assessment of these resources;
3. Identification of resource areas and review of plans; and
4. Presentation of education, management and land use guidelines.

The data collection phase involved both literature and field research. The field review was conducted Tuesday, January 11, 2005. The emphasis of the field review was on the exchange of ideas, concerns and recommendations. Being on site allowed Team members to verify information and to identify other resources.

Once Team members had assimilated an adequate data base, they were able to analyze and interpret their findings. Individual Team members then prepared and submitted their reports to the ERT coordinator for compilation into this final ERT report.

Figure 1

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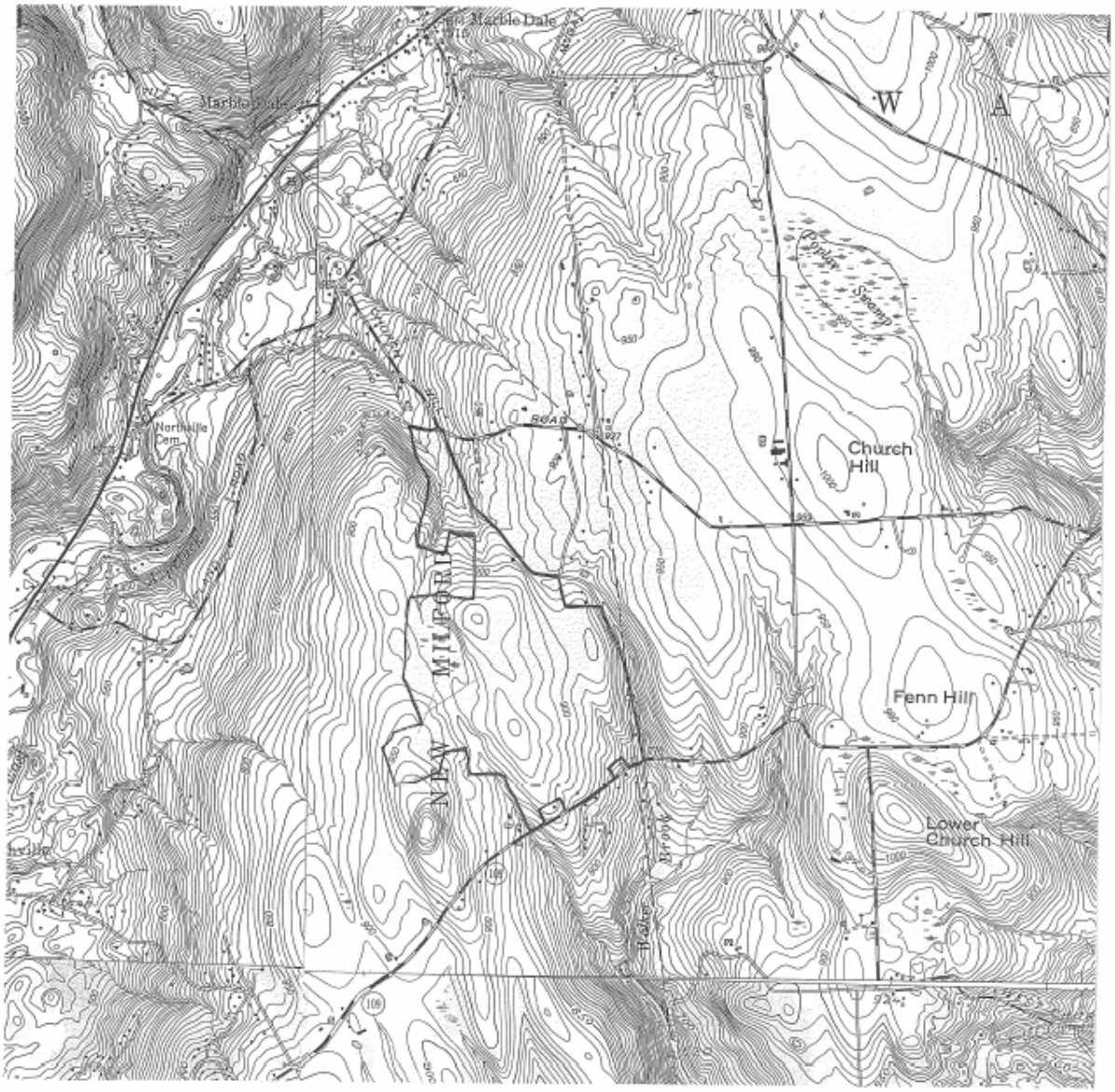
Topographic/Location Map

Scale 1" = 2000'



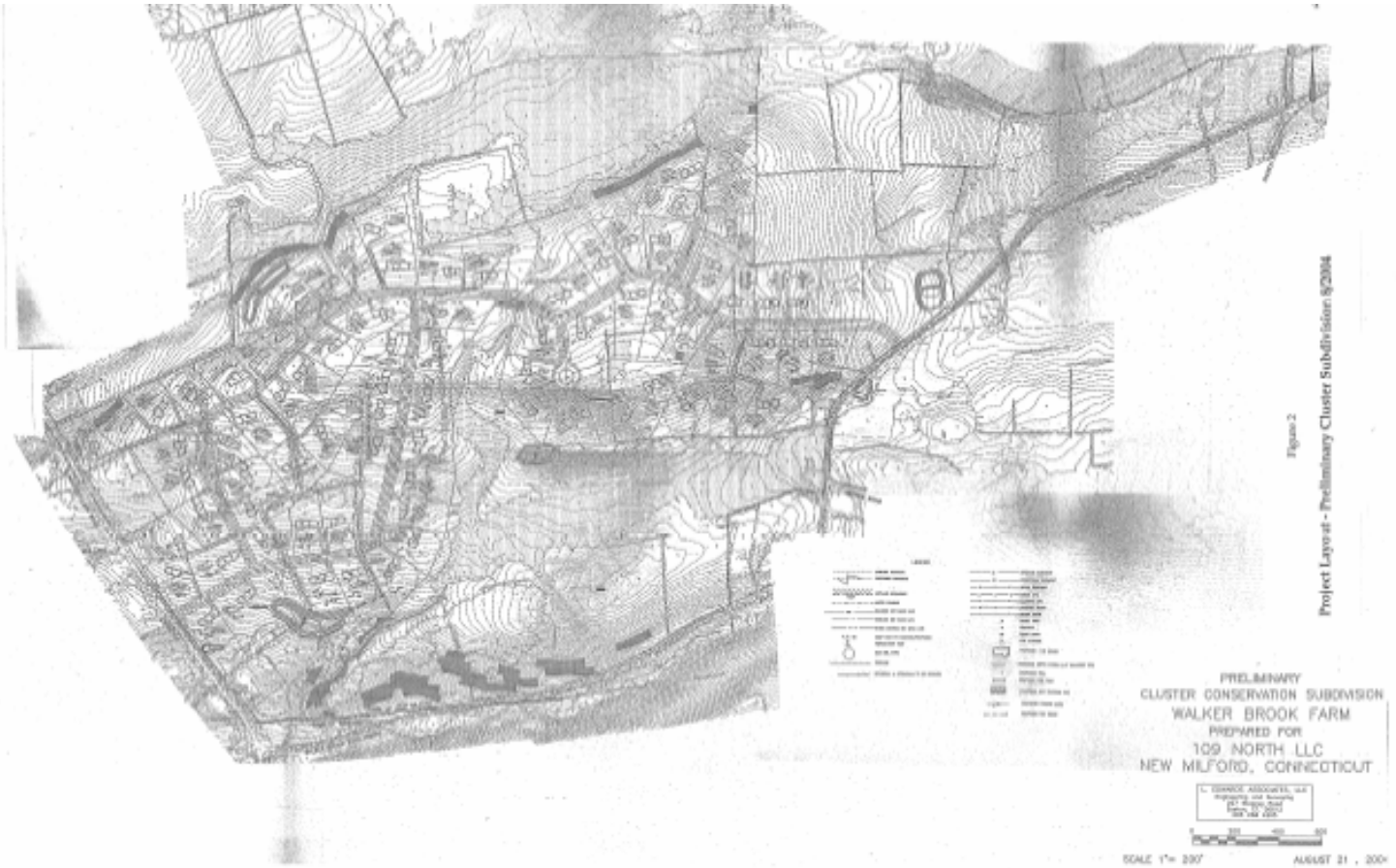


Figure 2
Project Layout - Preliminary Cluster Subdivision 9/2004
PRELIMINARY
CLUSTER CONSERVATION SUBDIVISION
WALKER BROOK FARM
PREPARED FOR
109 NORTH LLC
NEW MILFORD, CONNECTICUT
SCALE 1"= 200'
AUGUST 31 , 200

Figure 3

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Soils Map

Northwest Conservation District (NCD) Review

Soil Properties, Capabilities and Limitations

Soil Properties

All the upland soils proposed for development have a subsoil layer of dense, low-permeability, glacial till. Approximately half of the area to be developed has a thick glacial till sub-soil. The upland areas to be developed contain soils of the Paxton, Woodbridge and Charlton Soil Series. The inability of these soil types to infiltrate water is well documented. Therefore, much of the water that falls on site during large rain events runs off to the adjacent wetlands. The addition of approximately eight (8) acres of impervious surface (roads, houses and driveways) will increase this property's inability to absorb stormwater runoff. The removal of many acres of trees will also increase stormwater runoff (see evapo-transpiration discussion below).

Once vegetation on site has been removed and the Paxton and Charlton soils and sub-soils are exposed, these disturbed areas will become highly erodible. Unprotected and allowed to erode, these soils will quickly be entrained in stormwater runoff and carry large amounts of sediment off site (see section on Soil Erosion and Sediment Control on how to avoid this).

Wetland Delineation Verification

At the time of the site walk in mid-January there was not ample opportunity for the Team soil scientist to verify the wetland delineations. Deep snow cover and the time constraints of the site visit only allowed him the opportunity to generally characterize the wetland locations. If the New Milford Inland Wetland Commission visits the site within the next few months there will appear to be a lot more wetland soils on site than actually exist. There will most likely be many areas where water will move along the soil surface mimicking a wetland. This will likely occur in many areas where there are no wetland flags. However, this does not indicate that a wetland soil is present, especially with the "hard pan" soil types that exist on the property. The reasons why saturated areas occur in late winter and early spring are as follows:

- The soils of the site have a dense impervious sub-soil layer of glacial till, allowing the surface layers of soil to absorb only small amounts of rain and then any excess runs off.
- Trees, shrubs and herbaceous plants are not using any water from the soil. During the growing season water lost to evapo-transpiration can significantly

reduce soil moisture which in-turn reduces the occurrence of saturated soil conditions.
- Cool temperatures do not allow water to evaporate off the surface of the soil and any water that falls either has to soak into the soil or runoff.
- If the commission walks the site before frost is out of the ground, this is also a time when water is held at the soils surface.

All the above mentioned environmental conditions will create many areas of excess runoff during late winter and spring with typical precipitation.

Prime Farmland and Wetland Soils

The site proposed for development is uniquely rich in prime farmland soils. Approximately 13% of Litchfield County is classified as prime farmland soils (USDA, 1970). Approximately 50% of the proposed subdivision is comprised of prime farmland soils (PbB and PbC). The project area is also surrounded by a large headwater wetland system that services both Walker Brook and the East Aspetuck River. Many Federal, State and Local regulations exist to protect the wetland soils of Connecticut; however there are no comparable regulations that protect prime farmland. Given the importance of prime farmland soils to food security, and the lack of regulatory protection, the NCD would recommend that all parties involved in the application process consider the unique nature of this site, and advocate for the wise use and management of this valuable and highly productive natural resource. As proposed, most of the Prime Farmland Soils on the property will be developed.

Walker Brook Watershed

This subdivision will develop approximately ~90 acres at the top of the Walker Brook Watershed. Given this development and the other recent developments within the watershed, stream bank and wetland erosion, sediment deposition, and water quality degradation will be more pronounced throughout the watershed. Activities that change hydrology high in a stream's headwaters will tend to amplify negative environmental impacts along the entire main stem (in this case Walker Brook). However, if the New Milford Inland Wetland Commission requires the applicant to implement the following comments and recommendations in the sections below, the negative effects on the watershed can be reduced.

Project Layout Issues

The following issues need to be addressed during the refinement of this application.

1. Moving the very large (southern) stormwater management basin off the steep slope and away from an existing stream that already has deeply incised, actively eroding banks.
2. Many house lots are "stacked" one above the other. Given the soil types on site, this layout will inevitably create stormwater runoff headaches for the home owners and the town. Stormwater from one house will run on to the house below, the home owner below will modify flow to go around their property and it will dump on the next and so on. The plan-of-development needs detail how stormwater will be managed on each lot (infiltrated, channeled to a vegetated swale or put in a basin.

Major Environmental Limitations to Development

Given the specifics of the project proposal and the environmental characteristics of the site listed below, it will require a rigorous Soil Erosion and Sediment Control Plan as well as a thorough (pre, during and post construction) Stormwater Management Plan complete with current stormwater quality improvement measures.

- The site is surrounded by headwater wetlands of streams with existing development pressures.
- Glacial till and thick glacial till sub-soils in all areas of development
- The high concentrations of Prime Farmland Soils
- Highly erodible soil and sub-soils
- The large increase in the coverage of impervious surfaces
- The large area of soil disturbance and the removal of established plant communities.
- Precariously placed stormwater management basins
- Stacked house lots

Given the physical characteristics of the soils on site and the substantial size of the development, its proximity to valuable headwater wetland systems, please consider requiring the applicant to include the following comments and recommendations into plan-of development.

Stormwater Management Assessment

To manage stormwater runoff on site there will need to be a well designed stormwater management system which should include;

- Temporary and Permanent Grass Lined, Rock Lined and Turf Reinforcing Mat Lined Swales, and if needed, in-channel Rock Check Dams
- Temporary Sediment Traps (lots of them)
- The commission should require that the applicant implement an alternative cul-de-sac design such as the one outlined in the 2004 Connecticut Stormwater Quality Manual (CT-DEP, 2004). www.dep.state.ct.us/wtr/stormwater/strmwtrman.htm
- Because infiltration technology will not be a good option for large portions of the site, alternative measures must be employed to detain, treat and slowly release stormwater runoff. This will be important to maintaining the environmental integrity of the main stem of Walker Brook which is already showing signs of excess erosion pressure. This erosion is clearly evident in the stream corridor behind proposed lots # 58, 59 and 60.

Soil Erosion and Sediment Control Plan

The Soil Erosion and Sediment Control plan will need to meet the concepts outlined in the *Connecticut 2002 Guidelines for Soil Erosion and Sediment Control* (CT-DEP 2002). This document describes many of the measures needed to create and implement a successful Soil Erosion and Sediment Control Plan. It is realized that it is early in the application process, but a Soil Erosion and Sediment Control Plan will need to be drafted soon. The following comments and recommendation are details that should be incorporated in the E+S plan to minimize soil movement on-site, control the movement of sediments off site and improve the quality of water that leaves the site. A comprehensive and rigorous Soil Erosion and Sediment Control Plan is necessary for this site because of the highly erodible nature of the soil and the fact that a large portion of the project will be constructed on slopes.

Slope Stabilization

Any cut, fill or exposed slopes proposed on-site that have a steeper than 3:1 slope ratio will need erosion control blankets installed and seed mixtures applied once they are constructed to their final grade. A rolled erosion control product that is easy to install and that this Team member has seen work well in this application is "North American Green® C125" (a coconut fiber blanket stitched and netted together with degradable nylon thread). Properly installed this measure alone can drastically reduce the amount of soil being destabilized by rainfall and runoff on steeper slopes.

This material also works well to armor a grass lined swale before vegetation is established in the channel.

Sediment Barriers

Consider requiring the applicant to use redundant sediment barriers where silt fences are being proposed adjacent to wetlands. There are many alternatives to doubling up the sediment barrier and one method is pictured below. Other alternatives could include dirt-berm/silt-fence or woodchip-berm/silt-fence or hay-bale/silt-fence. This will be important given the large areas of soil to be disturbed.

Temporary and Permanent Seeding

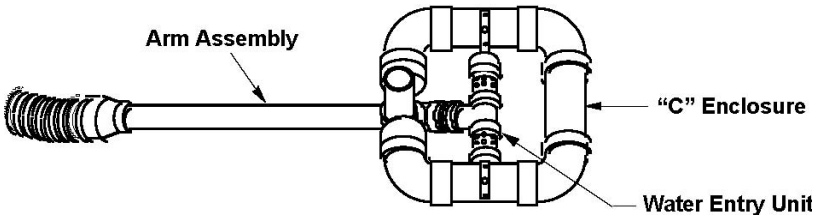
The best available measure (hands down) to minimize soil erosion is to establish a layer of rooted vegetation on disturbed soil. The Soil Erosion and Sediment Control Plan narrative should include a statement that requires the site contractor to apply a grass seed mixture to any disturbed soil that will not be accessed for a period of 30 days or more (including stock piles). This statement should also include a grass seed mix application rate (lbs/acre) and the species that make up the mix. A sample statement could read like this. "An application of Annual Rye Grass at 40 lbs/acre will be broadcast on disturbed soil that will not be accessed for 30 days or more. If construction is taking place out of the growing season, non-living mulches should be applied to disturbed soil."

Sediment Basins/Wet Detention and Water Quality Maintenance Ponds

The comments on proposed temporary sediment traps and basins assume that these structures will be transformed into a permanent stormwater quality improvement measures such as a wet or dry detention pond (this will be required to meet the requirement outlined in the Connecticut General Permit for the Discharge of Stormwater). During construction the detention ponds will be acting as temporary sediment traps. Before the site is stabilized, it is a given that these basins will intermittently receive large sediment loads. Therefore, the applicant should use a skimmer for the construction phase to drain the basins. The device pictured below will drain the very top layer of water off the ponds. The top of the pond is the best

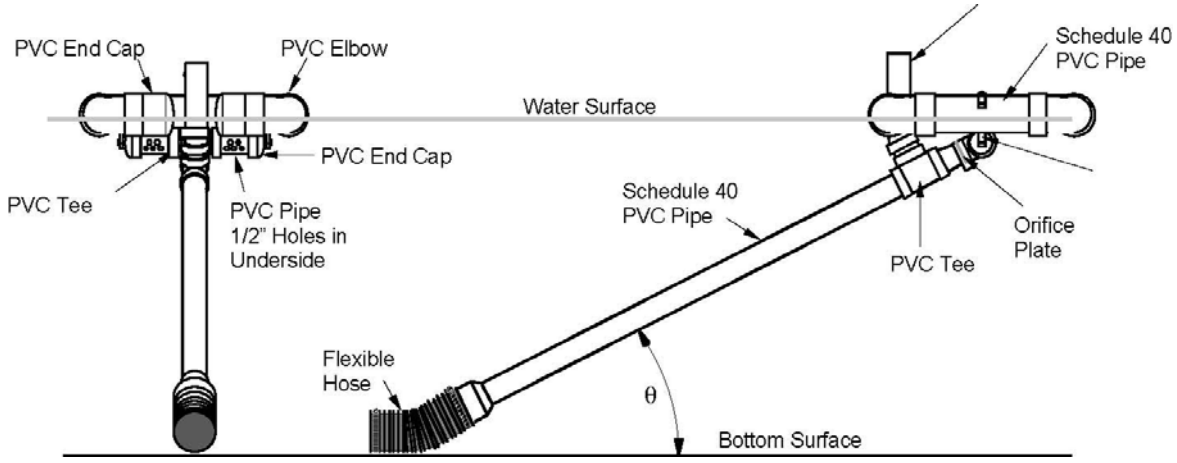
place to drain the water from, because it contains the lowest concentrations of suspended pollutants. Post construction (when the entire site has been stabilized) the skimmer should be removed and a system of permanent baffles should be added to the detention ponds. Baffles will force stormwater entering the basin to take a long circuitous route to exit. As a result, sediments will have a longer opportunity to drop out of suspension, thus improving the quality of water leaving the site. Skimmer type technology works well during construction. However, the applicant will need to show how stormwater will be metered out of the basins post construction (such as a V-notch weir). The design sheet supplied to Team members showed the proposed location of all proposed basins. However, there needs to be a design sheet that illustrates how they will be accessed for construction and periodic maintenance.

Faircloth Skimmer® Illustration



PERSPECTIVE VIEW

PVC Vent Pipe



SIDE VIEW

Connecticut General Stormwater Permit

Because this project will disturb an upland area greater than five acres the applicant will also need to comply with the conditions of the General Stormwater Permit administered by the CT -DEP. A copy of Connecticut's General Stormwater Discharge Permit can be down loaded at www.cicacenter.org. The filing of this general permit is only accomplished when the town's application process has been concluded. It has been this Team member's experience that the general permits are usually filed at least 30 days prior to the commencement of construction activities. Please note that complying with the stringent requirements of this permit will only further protect the quality of water leaving the project site. As proposed this project meets many of the requirements of the general permit. However, the general permit also requires a post construction stormwater quality/management plan.

Post Construction Water Quality Improvement and Infiltration Measures

This proposal will require a large network of vegetated swales to convey stormwater runoff. Grass lined swales are one alternative to help address the lot "stacking" problem that will create surface water headaches. These swales can also be used to convey water to the detention pond system that will be required to minimize impacts to Walker Brook and a small tributary to the East Aspetuck River. Provided below is a sample picture of a typical grass lined swale below.

This type of water conveyance system is extremely efficient at cleaning, infiltrating and transporting stormwater runoff. These can capture most of the stormwater runoff on site, and allow the detention ponds and any infiltration technology a greater opportunity to improve the water quality before it leaves the site.

The area being proposed for development is underlain by a dense impervious glacial till. Glacial till soils are very poor at supporting stormwater infiltration measures. If test pits are excavated on site to find areas of high permeability which can rapidly infiltrate water, additional stormwater infiltration measures could potentially be employed. Infiltration measures could include the creation of "rain gardens", "gutter gardens" and the cul-de-sac alternative. These types of structures work well to infiltrate stormwater runoff from driveways and roofs. Any measure that can be employed to infiltrate water and reduce stormwater runoff will improve the quality of water leaving the site and reduce its quantity. Many examples of infiltration technology can be found at the Center for Watershed Protection web site www.cwp.org. A picture of a typical "rain garden" is illustrated below. Please note that these are very soil specific technologies and site specific placement can best be assessed once sub-soils are exposed.

Additional reasons for employing as much infiltration technology as possible are to reduce any sudden stormwater loading to Walker Brook. There is bank erosion evidence on site that indicates that intermittently stream flow in the stream has become "flashier" most likely do to land use changes in the upper part of the watershed. It has been well documented that watershed development causes higher peak flows in stream and as a result stream banks erode more quickly. Therefore, an addition of approximately 8 acres of impervious surface to the watershed needs to be mitigated with the type of stormwater management technologies mentioned above.

Summary and Conclusions

If NCD's comments and recommendations are incorporated into the plan-of-development, it will add an additional level of protection against soil movement on site and water quality degradation and sedimentation off site. Things to consider include:

- Consider using rolled erosion control products on all slopes steeper than 3:1
- Double up the silt barriers where activities are proposed in close proximity to wetlands.
- Include temporary and permanent seeding practices into the E+S Control Plan narrative.
- Add skimmers during construction, flow baffles and metered outlets post construction, into the wet basin/pond designs
- Incorporate a liberal number of swales to move surface water.
- Where soil conditions permit, consider implementing infiltration technology (such as rain and gutter gardens) to minimize stormwater runoff.

Wetlands Review

Conditions during the Site walk

At the time of the site visit the property was covered with about six inches of snow. Each step broke through a layer of ice or at times a step slipped across the surface of the ice. It began snowing about half way through the field walk. There were a few areas of open water and some surface flow - there being no infiltration on the frozen ground. In all, due to the snow cover it was less than ideal for observing the surface conditions/hydrologic connections of the wetlands to be reviewed. The seven days previous to the visit had a daily average temperature of 39 degrees F, and an overnight average of 31 degrees.

The team's walk through the proposed subdivision came in from the south around lot 1 passing to the NW through lots 65 and 66, through the "yard" of lot 20 to the west side of the "Y" shaped wetland behind lot 21. From there the Team could observe the large wetland complex to the west. The Team then moved up through lots 24, 30 and 33 to the mapped wetland just west of the proposed road intersection at Walker Brook Road North. The Team came back south and east roughly through lots 36 and 40 to the wetland encircled by lots 41 through 45. From there the Team went to the pooled wetland proposed to be in the backyards of lots 40-52. The final leg of the trip took the Team downslope over lots 53 to 56, across to the seepy area on lot 77, down to the site of the detention basin behind lot 60, and back across lots 61 and 2 to the entry point.

The Mapped Wetlands Observation:

The general network of large mapped wetlands on the parcel occurred in three places as follows: two more-or-less north-south trending, main lobes, of wetland - one along the west of the property and the other just east of center. The third mapped wetland dominates the north finger of the parcel and is not impacted by this proposal. The more in-depth mapping prepared by the applicant, however, showed much more detail. Here was evident a reach of wetland area extending across the middle of the two main wetland units nearly connecting them by a series of small impoundments and surface flow. Two smaller isolated wetland pockets or seeps were also mapped. The surficial materials maps show the area to be completely underlain by till with the south and southeast portion on thick till.

The east central wetland system on this property is a headwater wetland and thus water quality is an issue. Walker Brook to the east side of the parcel passes the property boundary and flows 3.2 miles downstream to its confluence with the Shepaug River.

Field Wetland Observations

In general, the two large north-south wetlands are dominated by, as best as could be ascertained, red maple swamps. Within these wet areas the denser maple stands feature a fairly full summer canopy cover, while in some places the trees were scattered. The scrub shrub below varied in density with the undulating micro-topography and the immediate hydrology that result from it. The absence, presence, or extent of the herb layer could not be established due to the snow cover.

Three other wetlands were observed on the site walk. These were **1)**: the "Y" shaped wetland abutting the proposed main road and lots 20 and 21; **2)**: the wetland proposed to be encircled by proposed lots 41 to 45; and **3)**: the oblong wetland behind proposed lots 49-52.

The "Y" wetland showed surface water flow from its western-most tip downslope into the large wetland to the west. The Team crossed through this various-width (two to six or seven feet) less than one-inch-deep flowage. Because of its location near the large wetland, the 100 foot review area to the south, west and north is mostly unimpacted. However, about one third of the proposed lot 21 enters the 100 foot review area. In addition, the proposed road dominates the southeast portion of this wetland's 100 foot review area.

Wetland 2 is roughly one half acre in size. There were exposed wetland areas which showed mossy rocks in standing water, much coarse woody debris, "leafless" fern fronds and some invasive species. This area was puzzling because of the snow cover. There could have been areas of standing frozen water indicating the potential to pond water for long periods of time. There was clearly out-flow from this wetland, but its exact direction will need to be determined due to the fact the out-flow path could be intercepted and/or redirected by the stonewall that passes across this wetland. There is a great amount of species interspersion here due to the varied micro-topography, contributed to, in part, by the branches and deadfall of red maple, red oak, and birch. More than one half of the proposed lot 44 is in this wetland's 100 foot review area. And more than two thirds of lot 45 is in the review area, which very nearly abuts the corners of the proposed house.

Wetland 3 measures roughly two to three thousand square feet. It was fully impounded and frozen over at the time of the visit. This is likely a vernal pool, though because of the season it could not be shown if it is a breeding pool. It exhibits many of the typical vernal pool signs, those being: no inlet or outlet at this time, likely depth of 18 to 24 inches (water sufficient to last through a breeding season), a small drainage area, and ample coarse woody debris for amphibian egg mass attachment. Here proposed lot 50 takes up about one third of the review area and lot 49 several hundred square feet of the review area.

Wetland Concerns

Without exact species inventories it is impossible to speak definitively on the subject of vernal pools, especially as they regard the amphibian breeding possibilities of wetlands 2 and 3. However, the physical setting and the hydrologic regime are typical for a breeding pool. Normally, observation and inventory would be done to assess the amphibian populations for each wetland in question. The end of February and into March is excellent time to get these observations underway. This will establish the vernal pools' status as breeding pools and allow for discussion with the applicant to provide for their protection.

A few issues regarding vernal pools are apparent and need to be explored before any impacts to these areas begin. These points are discussed below.

The largest integral part of the vernal pool system is the upland area neighboring the pool. This typically extends away from the pool uphill or upslope to drier soil types. The slopes can vary from gentle to steep. It is in these slopey areas that salamanders spend over 90% of their adult lives. In places some slopes can approach 45 or more degrees. Often, the drainage areas for these pools found on typical till based soils are 2 or 3 to 5 - 6 acres. Thus, impacts that are local can be dramatically damaging to the vernal pool ecology.

There is extensive information in print about vernal pools. Much of it points to the fact that the reduction of more than a certain percentage of critical habitat and adjacent upland could have telling impacts on the pool ecology.

The USGS's Northeast Region Amphibian Research and Monitoring Initiative produced a document for their vernal pool survey method protocol entitled: *Wood Frog and Spotted Salamander Double Observer Egg Mass Count Protocol*. In it they state that …"(spotted) salamanders require both wetlands (usually vernal pools) for breeding and surrounding upland woodlands, where they spend about 95% of their lifetime burrowed underground, for survival". (This document may be obtained via

http://www.pwrc.usgs.gov/nearmi/projects/EGG%20MASS%20COUNT%20PROTOCOL%20and%20DATASHEETS%202004-FINAL.pdf)
Dr. Michael Klemens suggests in his recent book, co-authored with Dr. Aram J.K. Calhoun, entitled: "*Best Development Practices – Conserving Pool Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States*" that there be no development in the 100 foot buffer around the vernal pool and no more than 25% in the critical terrestrial habitat, that is, the distance from 100 feet to 750 feet away from the pool. Indeed, the upland use by various vernal pool amphibians can range from 386 feet from the pool for spotted salamanders to 1,550 feet from the pool for juvenile wood frogs (3,835 feet for adults). Incorporating these guidelines, the southeast vernal pool between proposed lots 50 and 51 will likely lose its value as a breeding pool over the long term. The proximity of backyards, the impacted uplands and the potential for compromised water quality entering the pool will all take their toll unless structural proximity to the pool can be increased. (This document may be obtained from the DEP Store: http://www.dep.state.ct.us.)

- Due to the fragile nature of the pools, it is important that they are not linked with any detention basins before, during, or after construction. Due to their size these smaller more fragile wetlands are less likely to be able to absorb the impacts of fertilizers, pesticides, lawn and shrub trimmings and backyard trash.

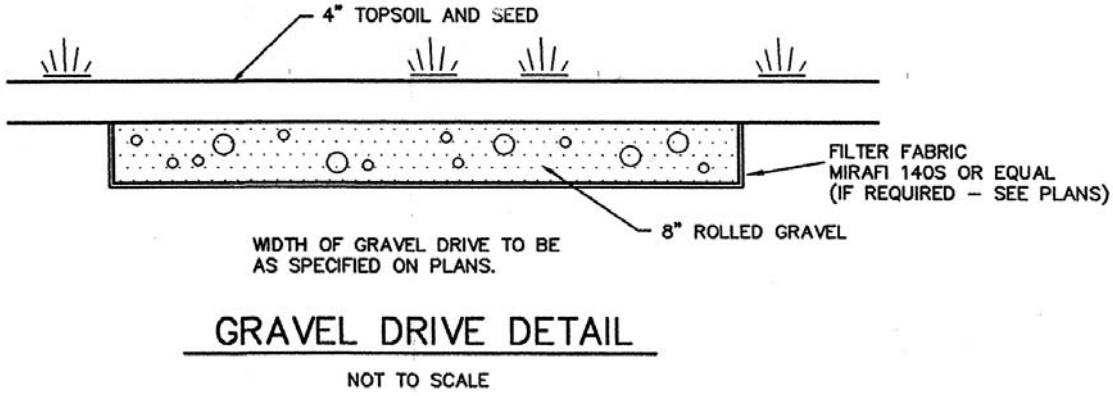
- The hydrology function of wetland 3 needs to be maintained exactly as it is. An inventory of amphibian species has not been made for this proposal thus the hydrologic needs (quantity, timing, etc.) of any amphibian populations are unknown. However, altering the hydro-period (when they fill and when they dry out) of these wet areas may have implications on the existing populations.

If the town proceeds on the assumption that these are breeding pools and that there are amphibians present, then those populations will be impacted by this proposal.

Other Comments:

- Only one of five detention basins shows any means of access for maintenance. The other four are all but inaccessible making it necessary for heavy equipment to pass through what will then be private homeowners' backyards to gain access. Specifications for a right-of-way should be depicted on the final plans and incorporated into the deed of the home. This is a long-term concern. For the basins to remain effective over time, cleanouts must be conducted. Included below is a Gravel Drive Detail plan currently in use by the Town of South Windsor. An undisputed access to detention and sedimentation basins will

provide for the long term effectiveness of the structures and thereby the health of the wetlands they ultimately discharge into.



GRAVEL DRIVE DETAIL

NOT TO SCALE

- The back yards of eighteen proposed lots (numbers 38, 39, 46, 47, 51, 52, 53, 54, 55, 56, 57, 58, 59, 15, 16, 17, 19, 20) are within 100 feet of the two large wetlands described above. It is all too typical that the owners or their landscapers will use the wetlands and woodlands behind the house for all manner of vegetative disposal, a kind of back yard "creep." This is a concern especially as the housing units are built and sold; this type of land use is rarely, if ever, monitored. This is of special concern where the yard boundaries are in actual contact with the mapped wetlands. Provisions should be made to protect the wetland resources through deed restrictions or, preferably, removing those lots from the plan to ensure the wetlands a safe and reasonable buffer strip.

- As the town continues to oversee the development of large parcels, it would benefit the wildlife, wetlands and water quality to create or maintain hydrologic and or wildlife corridors between parcels. On this parcel the north-south corridors are easily seen. Less readily apparent is the fragile east-west connection as mapped on the proposal. An open corridor could be maintained here except for a road crossing. It would take a reduction of 4 to 6 lots to honor the 100 foot review area as a setback, and with an appropriate culverted passage under the road this corridor could become a reality.

Stormwater Permitting

Since the site construction involves the disturbance of over five acres, Connecticut's General Permit for the Discharge of Stormwater and Dewatering Wastewaters (the "Permit") will cover the project. The permit requires that the site register with the Department of Environmental Protection (CTDEP) at least 30 days before the start of construction. The registrant must also prepare, submit and keep on site during the construction project a Stormwater Pollution Control Plan (the "Plan").

Please note that while this review is based primarily on the state Permit, many of the erosion and sedimentation issues are included in the Connecticut Guidelines for Soil Erosion and Sediment Control (the "guidelines"), and are issues that must be dealt with on a local level before being included in the Plan. It should also be noted that the permit requires compliance with the guidelines. The developer must register for the permit, and the contractor and any subcontractors involved in grading must sign the contractor certification statement in the permit. Any registration submitted by anyone other than the developer will be rejected.

The Plan must include a site map as described in Section 6(b)(6)(A) of the General Permit and a copy of the erosion and sedimentation (E & S) control plan for the site. The E & S plan that has been approved by the Town in conjunction with the CTDEP Inland Water Resources Division (IWRD) and the local Soil and Water Conservation District may be included in the Plan. This plan and site map must include specifics on controls that will be used during each phase of construction. Specific site maps and controls must be described in the Plan, as well as construction details for each control used. The permit requires that "the plan shall ensure and demonstrate compliance with" the guidelines.

The Plan must be flexible to account for adjustment of controls as necessary to meet field conditions. At a minimum, the plan must include interior controls appropriate to different phases of construction. Structural practices including sedimentation basins are required for any discharge point that serves an area greater than 5 disturbed acres at one time. The basin must be designed in accordance with the guidelines and provide a minimum of 134 cubic yards of water storage per acre drained. At a minimum, for discharge points that serve an area with between 2 and 5 disturbed acres at one time, a sediment basin, sediment trap, or other control as may be defined in the guidelines for such drainage area, designed in accordance with the guidelines, shall be designed and installed. All sediment traps or basins shall provide a minimum of 134 cubic yards of water storage per acre drained and shall be maintained until final stabilization of the contributing area. Outlet structures from sedimentation basins shall not encroach upon a wetland. The

commissioner must approve any exceptions in writing. Silt fence installation must comply with the guidelines, and may be used only in drainage areas of one acre or less. Maintenance of all structural practices shall be performed in accordance with the guidelines, provided that if additional maintenance is required to protect the waters of the state from pollution, the Plan shall include a description of the procedures to maintain in good and effective operating conditions.

Due to the amount of soil disturbance, one of the best ways to minimize erosion potential is to phase construction in order to minimize unstable areas. The Plan must be flexible to account for adjustment of controls as necessary to meet field conditions. The project proposal did not discuss phasing of the project. The Department recommends that wherever possible, the site shall be phased to avoid the disturbance of over five acres at one time.

This project has some steep slopes, some poorly draining soils, and numerous wetland areas to be protected during and post-construction, which will make ongoing inspections and adjustments of controls a critical aspect of this that must be which will makes weekly inspections and modifications to erosion controls an important part of this project. The permit (Section 6(b)(6)(D)) requires inspections of all areas at least once every seven calendar days and after every storm of 0.1 inches or greater. The plan must also allow for the inspector to require additional control measures if the inspection finds them necessary, and should note the qualifications of personnel doing the inspections. In addition, the plan must include monthly inspections of stabilized areas for at least three months following stabilization and the end of construction. Due to the scope and potential wetland and stream impacts of this project, there must be someone available to design and adjust E&S controls for changing site conditions, which has the authority and resources to ensure that such necessary changes are implemented. Section 6(b)(6)(C)(ii) of the permit requires the plan to address dewatering wastewaters that this site may generate.

Particular attention must be paid to construction in the area of the site which has steep slopes. Soil type and the location of water table must be considered when cutting and filling of slopes during the construction process. Also, when the cutting and filling portion of the project is conducted please ensure that the tops of the slopes are stabilized with berms or other means that comply with the guidelines. The Department recommends erosion control matting for slopes greater than 3 to 1.

Due to the size and potential impacts on natural resources of this project, the Department has recommended to the developer that the pollution control plan be submitted 180 days prior to the start construction. If the Department finds that the Plan is inadequate, Connecticut General Statutes Section 22a-430b and general permit Section 7(c) allow the Commissioner to require an individual permit, a process that could delay approval of the project for several months. In order to prevent this and to ensure adequate review time, the Department has requested early submittal of the plan.

General permit stabilization requirements include the following: "where construction activities have permanently ceased or have temporarily been suspended for more than seven days or where final grades are reached in any portion of the site, stabilization practices shall be implemented within three days."

Post-construction stormwater treatment

The permit (Section 6(b)(6)(C)(iii)) requires that the plan include a design for post-construction stormwater treatment of 80% of total suspended solids from the completed site. In order to comply with this requirement, the Department recommends incorporating swirl concentrator technology. Although, swirl concentrators are effective at removing sediment, they require a long-term maintenance commitment from the town or a homeowners association, greater than that required for a basin once it is fully grown-in and stabilized. If an in-ground, "black-box" solution is used, swirl-concentrator technology is a minimum requirement. Some newer generation swirl concentrators also incorporate filtration systems to address other pollutant issues, but these also require long-term maintenance plans.

Other Issues

Wetlands and watercourses including but not limited to the unnamed tributary to the Aspetuck River and Walker Brook must be monitored carefully especially during road construction.

It is strongly recommended that the local wetland and zoning commissions ensure that the bond required for this project be adequate to remediate all wetlands and watercourses in the event of control failures on this site. The developer should be aware that regardless of the storm event size, they would be responsible for remediation of any impacts. The developer is responsible for maintenance of all control structures for three months after final stabilization of the site.

This report addresses some of the major issues concerning the project and does not constitute a complete review of the Plans for permitting purposes.

Subsurface Sewage Disposal

These following comments are based on a cursory review of the plans, this Team member was unable to attend the field review.

1. All proposed subsurface sewage disposal systems must be located at least 50 feet up gradient of all soil cuts such as those required to construct driveways or roads.

2. Please locale and clearly label all drainage. This includes road, under, detention ponds and footing drains. All foundation drain outlets and overflows from the roof drainage structures must be at least 25 feet from all subsurface sewage disposal systems including proposed reserve areas. The outlets should also be directed away from leaching areas.

3. The proposed lots and septic areas scale needs to be 1"= 40' or 1"= 50'. Also, please provide 2' countours with labels.

4. Additional soils testing will be needed to demonstrate feasibility in primary and reserve septic areas not located in an area previously tested.

5. Soils testing data needs to be submitted on the plan or in a bound book signed, stamped and dated by the design engineer. If a separate report is to be submitted the plan details shall reference bound report as part of the plan. Also, please indicate the title and person from the local health department who witnessed deep test pits and include a written detail description for each test pit. Do not use "same as" to describe individual pits. Also, indicate the presence or absence of mottling, water, ledge rock and layers deemed restrictive.

6. All proposed locations for underground utilities need to be located on the plan.

A more detailed review of revised subdivision plans will be required to address feasibility. It is recommended that the New Milford health department confirm the above items are satisfactory addressed by the design engineer prior to submittal the DPH for continued review.

The DOH-Environmental Engineering Section is available to discuss any of the above comments or any other sewage disposal concerns.

The Natural Diversity Data Base

The Natural Diversity Data Base maps and files regarding the project area have been reviewed. According to our information, there are no known extant populations of Federal or State Endangered, Threatened or Special Concern Species that occur at this project site. However, our information indicates that s State Species of Special Concern *Metarranthis apiciaria* (Barrens Metarranthis) was known to occur in this area in 1968. We also have current extant populations of State Endangered *Accipiter striatus* (sharp-shinned hawk) and *Vermivora chrysoptera* (golden-winged warbler) from the nearby Elliot Pratt Center that is to the southwest of this project site.

Barrens Metarranthis is a species of moth. Their habitat is not well understood. It may range from dry rocky woods to pitch pine barrens.

Our data on Sharp-shinned hawk *(Accipiter striatus)* distribution and abundance in Connecticut is poorly documented. Sharp-shinned hawks build a large platform nest

almost 2 feet across on the low side-limbs of an evergreen, usually only 12-14 feet from the ground. While conifers are preferred for nesting and for hiding their nests from predators, they can be found in mixed deciduous/conifer habitats. This species raises 6-8 young, the most of any raptor. With the feeding requirements and quantity of prey necessary to maintain the young during the breeding season, chances are a nesting sharp-shinned hawk is foraging close to its nesting site.

Golden-winged warblers nest along brier-grown edges and in openings of swampy deciduous woodlands or in old pastures and hillsides overgrown with dense shrubby

thickets. Most warblers roost in places similar to the place that they nest. Golden-winged warblers winter in Central and South America and are considered a neotropical migrant. Neotropical migrants are the bird group that has recently, made news because they are declining in number and are subject to habitat loss and degradation on their wintering grounds.

The Wildlife Division recommends that a lepidopterist and ornithologist familiar with the habitat requirements of these species conduct surveys. A report summarizing the results of such surveys should include habitat descriptions, invertebrate and avian species list and a statement/resume giving the lepidopterist' and ornithologists' qualifications. The DEP does not maintain a list of lepidopterists or ornithologists in the state. A DEP permit may be required by the lepidopterist or ornithologist to conduct survey work; you should ask if your lepidopterist or ornithologist has one. The results of this investigation can be forwarded to the Wildlife Division and, after evaluation, recommendations for additional surveys, if any, will be made.

The Wildlife Division has not made an on-site inspection of the project area nor been provided with details or a timetable of the work to be done. Again, please be advised that should state permits be required or should state involvement occur in some other fashion, specific restrictions or conditions relating to the species discussed above may apply. In this situation, additional evaluation of the proposal by the DEP Wildlife Division should be requested. Consultation with the Wildlife Division should not be substituted for site-specific surveys that may be required for environmental assessments

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Natural Resources Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

Wildlife Resources

A site inspection was conducted to evaluate existing wildlife habitat on the property. The property is approximately 210 acres. The southerly 60 acres are open meadows used for hay while the remainder of the property is hardwood forest that has been harvested within the past 10 years. There are 47.9 acres of designated wetlands, with a series of knolls directing the runoff into two large wetland areas along the east and west sides of the property. These wetlands are headwaters to two distinct watersheds (south to Walker Brook and north into an unnamed tributary of the East Branch of the Aspetuck River). The proposed development is for a 79-lot cluster subdivision with 116 acres of open space.

Existing Wildlife Habitats

Hayfields

Currently, the property contains 60 acres of fields used for haying. Although current field management practices (mowing schedule, etc.) and wildlife use of the fields are unknown, early successional habitat (grasslands, hayfields, meadows, etc.), particularly of this large size, has the potential to provide critical habitat for grassland-dependent specialists.

With proper management, a host of grassland songbirds, such as state-listed bobolinks, eastern meadowlarks and Savannah sparrows will use grasslands of this size all summer for breeding, nesting, and feeding. Grassland specialists require a long undisturbed nesting season. Nesting and fledging is usually not completed until mid-July, sometimes later if the birds need to renest. Under today's agricultural practices, hay fields are typically mowed 2 to 3 times from May to September, not allowing grassland birds to complete the nesting cycle. Kestrels, also a state-listed species, will use grasslands for foraging while nesting in the adjacent woodlands. Other species that utilize grasslands include eastern kingbirds, red-winged blackbird, and field sparrows. Additionally, grasslands provide a good food source for rodents and insectivores such as shrews, and foraging opportunities for species that feed on small mammals, including hawks and owls.

Grasslands of this large size are being lost at an alarming rate, due to intensive agricultural practices, lack of fire, natural succession, and development. The remaining grasslands are often too small to be of value to those species with large breeding acreage requirements. Those agricultural haylands that are sufficiently large are usually mowed too frequently to allow these birds to complete their

nesting cycle. The result has been dramatic declines in species such as bobolinks and grasshopper sparrows. While bobolinks will breed in 5-10 acre grasslands, other grassland birds such as eastern meadowlarks require 15-20 acres, and Savannah sparrows and vesper sparrows require 30-40 acres. Even with grasslands of appropriate sizes, intensive farming practices have also negatively affected grassland birds. Mowing during nesting season and use of has contributed significantly to the decline in grassland birds. Proper management of remaining large grasslands is critical to the survival of these species.

Upland Forested Area

Housing units are proposed in an area that is currently hardwood forest, dominated by black oak, red oak, white oak and red maple. Forested areas are valuable to wildlife, providing cover, food, nesting and roosting places and denning sites. Mast produced by oaks provides excellent forage for a wide variety of mammals and birds including white-tailed deer, gray squirrel, southern flying squirrel, eastern chipmunk, white-footed mouse, eastern wild turkey and blue jay. Trees, both living and dead, also serve as a home for a variety of insects, which, in turn, are eaten by many species of birds, including woodpeckers, warblers and nuthatches. Other wildlife species found in this habitat type include scarlet tanager, ovenbird, white-breasted nuthatch, American redstart, barred owl, broad-winged hawk, redback salamander and northern ring neck snake.

Wetlands

Depressions noted in the forested portion of the site indicate that the potential exists for vernal pools to form. Vernal pools are critical to the survival of many species of reptiles and amphibians, such as the gray tree frog and the spotted salamander, that use wetlands for breeding and spend the balance of their time in forested uplands. Other wildlife likely utilizing this habitat for food and cover are raccoons, star-nosed moles, wood frogs, pickerel frogs, spring peepers and eastern garter snakes. Spring surveying should be conducted by a qualified individual in order to determine if vernal pools exist and, if so, what species are utilizing them.

There are additional wetlands found on the eastern and western sides of the property that are the headwaters to the two watersheds. These wetlands are included in the proposed open space areas.

Impacts

Development in the meadows will dramatically and completely alter the kinds of wildlife species currently and potentially using this habitat. The change from grasslands (particularly of this size) to lawns will result in further loss of habitat for state-listed grassland specialists as well as declines in other species that utilize both the direct and indirect foraging opportunities that grasslands provide, including swallows and red-tailed hawks. Common urban species such as American robins, crows, skunks, and raccoons are likely to increase.

Although portions of the forested area as well as the wetlands will remain open space, the development that will occur will impact not only upland species, but also many wetland-dependent species. Outright habitat loss will affect and change the species composition of the upland area and will also have significant impact on the wetland species, many of which require extensive areas of upland habitat. If vernal pools are found, Calhoun and Klemens (2002) recommend that the upland areas around these breeding pools up to a distance of 750 feet be considered critical upland habitat, that at least 75% of that zone be kept undisturbed and that a partially closed-canopy stand be maintained.

Reducing Impacts

As the amount of development or habitat conversion to highly disturbed construction area increases, the value for wildlife proportionally decreases. This is of particular concern in the hayfield portion of this property, as grasslands and other early success ional habitats are in severe decline and are habitats of conservation concern in Connecticut. As discussed above, many grassland bird species are in decline due to habitat loss and fragmentation, and frequent mowing during the growing season. As farmland becomes increasingly fragmented, remaining medium and large grasslands such as these have become critically important to those species that cannot make use of smaller tracts, such as Savannah sparrows and eastern meadowlarks. In order to reduce impacts to the declining suite of grassland specialists, the development plan should be reconfigured. The meadows should be retained as grasslands to allow foraging and breeding by a variety of grassland birds and other species. If the objective is to maximize wildlife benefits, current field practices should be reviewed and revised. At a minimum, mowing should be delayed during the grassland bird breeding season (no mowing from April 15th to August 15th to avoid crushing nests and young. To increase the area's attractiveness, field borders could be removed to control invasive woody plants and create larger grasslands.

In the forested area, adequate buffer zones around the wetlands (including any vernal ponds that may be found) should be instituted. According to the best science available, a buffer of at least 750 feet from the wetlands into the uplands is needed to somewhat reduce the impacts to reptile and amphibian species using the upland forest area in conjunction with the wetland.

Summary

The proposed project will almost totally replace the existing grassland habitat with residential housing, resulting in a direct loss of this critical habitat type. This particular grassland is made more valuable by its size, and every effort should be made to keep it from being developed. Development in the forested area will also affect the number and composition of species found. While no development is planned for the wetland areas, there are still potential impacts to the reptile and amphibian species that use the wetlands in conjunction with the adjacent uplands. Most reptile and amphibian species are not very mobile and cannot easily seek out suitable habitat elsewhere once disturbance has occurred. While the proposal calls for 116 acres to be kept as open space, the impacts to wildlife should still be expected to be significant.

References

Calhoun, A. J. K. and M.W. Klemens. 2002. Best Development Practices: Conserving Pool Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States. MCA Technical Paper No. 5, WCS, Bronx NY, 57 pp.

Fisheries Resources

Site Description

The 79-lot Walker Brook Farm cluster subdivision is proposed for development on a parcel located northwesterly of Chestnut Land Road (Route 109) intersection with Walker Brook Road. Approximately 60 acres are open meadow that is currently used for haying, 102.9 acres are wooded and 47.9 acres are designated wetland soils.

There are two large wetland areas on the Walker Brook Farm site. The eastern-most form the headwaters of an unnamed, intermittent tributary to Walker Brook *(Basin #: 6700)*. The western-most is the headwaters of an unnamed perennial tributary to the East Aspetuck River *(Basin #: 6502)*.

Fisheries Habitats and Resources

Neither the wetlands nor the intermittent stream on the Walker Brook Farm site provide suitable fish habitat. Fish are likely to inhabit the unnamed stream originating from the western-most wetland given its perennial flow regime. The Inland Fisheries Division has never surveyed the fish population of the unnamed stream on the Walker Brook Farm site. However, fish population surveys were conducted during August of 1991 on Walker Brook and two of its unnamed tributaries within close proximity of the Walker Brook Farm site. The surveys of confirmed the presence of a diverse stream fish community in each stream with the following species found: native brook trout *(Salvelinus fontinalis)*, wild brown trout *(Salmo trutta)*, blacknose dace *(Rhinichthys atratulus)*, and longnose dace *(Rhinichthys cataractae)*. These fish species are commonly found in Connecticut's coldwater streams and are also anticipated to populate the unnamed stream on the Walker Brook Farm site.

Impacts

The Walker Brook Farm cluster subdivision has been designed in a manner to preserve 116 acres of the site as open space. The preservation efforts should offer ample protection of the site's wetlands. This in turn should maintain the

quality of water discharging from the site into either the unnamed tributary to the East Aspetuck River or to Walker Brook.

Recommendations

The development of the Walker Brook Farm cluster subdivision is not anticipated to promote long-term adverse impacts to the habitats and resources of either the unnamed tributary to the East Aspetuck River or to Walker Brook. In effort to eliminate the potential for short-term impacts during construction, it is recommended that all appropriate erosion and sediment control structures (detention-infiltration/water quality basins, haybales, silt fence, etc.) be installed as an initial phase of the site development and that the structures be suitably maintained through all other phases of construction. Also, land clearing and other disturbance should be kept to a minimum with all disturbed areas being protected from storm events and restabilized in a timely manner.

A WATERSHED PERSPECTIVE

Introduction

These comments and recommendations to the New Milford Inland Wetlands Commission (Commission) are given from the perspective of improving and maintaining water quality and supporting designated uses of the State's waters per the State of Connecticut Water Quality Standards[1]. These comments also reflect the Connecticut Department of Environmental Protection's (CT DEP) growing commitment to address water resource concerns from a watershed perspective, taking into account the cumulative impact that assorted land use activities within a given watershed may have on water quality and quantity.

Some of these comments may overlap with those of other Environmental Review Team (ERT) members who are dealing with more specialized aspects of the review (i.e. - wetlands, stormwater, etc.). In such cases, these comments are meant to support or supplement these specialized reviews, not supplant them.

Watershed Context

As a way of describing Connecticut's water resources in terms of the landscape, CT DEP has divided the state along natural drainage divides into eight “major basins” or watersheds. These, in turn, are divided into increasingly smaller watersheds which are described as “regional”, “subregional” and “local” drainage basins. At each level, these watersheds are named after the brook, river or waterbody into which all of the water within that topographically-defined area ultimately flows. Every water feature, no matter how small, has its own distinct watershed.

[1] Connecticut Department of Environmental Protection. Effective 2002 & 1996. Water Quality Standards. Hartford, CT.

The surface and ground waters that flow off of the proposed Walker Brook Farm project (Project) land drain to two different regional watersheds - the Shepaug Regional Drainage Basin and the East Aspetuck Regional Drainage Basin[2]:

- Shepaug Regional Drainage Basin (No. 67) - The majority of the property drains to Walker Brook which lies along the eastern border of the Project area. Walker Brook, in turn, drains to the Shepaug River. The length of the segment of Walker Brook from the southeast corner of the Project area to the brook's confluence with the Shepaug River is approximately 3 miles.
- East Aspetuck Regional Drainage Basin (No. 65) - A smaller portion of the property drains to an unnamed tributary on the western edge of the Project area which flows north and west to the East Aspetuck River. The length of the segment of the unnamed tributary from the northwest corner of the Project area to the tributary's confluence with the East Aspetuck River is approximately 1 mile.

(See accompanying map)

Both the Shepaug River and East Aspetuck River ultimately drain to the Housatonic River. The Shepaug Regional Drainage Basin and East Aspetuck Regional Drainage Basin are two of the ten regional basins which comprise the Housatonic Major Basin (No. 6) in Connecticut.

Addendum

A Watershed Perspective

Walker Brook Subdivision
New Milford, Connecticut

March 2005

King's Mark Environmental Review Team Report

A WATERSHED PERSPECTIVE

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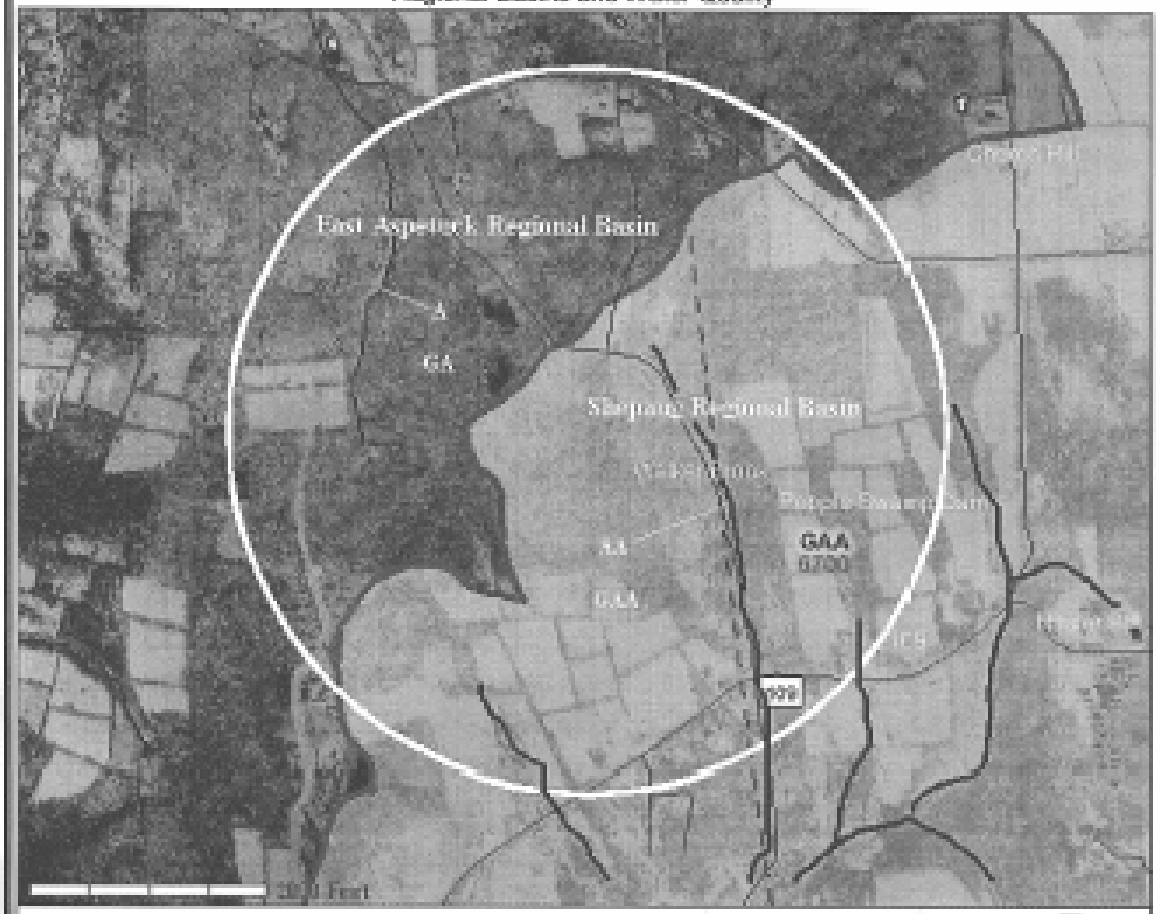
Walker Brook Farm Subdivision

Regional Basins and Water Quality



1:17734

Mar 9, 2005

maps

This map is for illustrative purposes only. Data may not be complete or current. Environmental Data and Geographic Exchange

Source(s):
DEP, DEP/DOT

Legend

Subregional Basin Boundaries

- Major
- Regional
- Subregional
- Shoreline

Ground Water Quality Well Class

- GAA

Surface Water Quality Class Lines

- A, SA
- AA, AA/A
- B, B*,SB
- BA, BAA, CA, SB/SA, SC/SA, SD/SA
- CB, DB, SC/SB, SD/SB
- Change of Class

Surface Water Quality Class

- A, SA
- AA, AA/A
- B, B*,SB
- BA, BAA, CA, SB/SA, SC/SA, SD/SA
- CB, DB, SC/SB, SD/SB

Ground Water Quality Class

- GA
- GAA, GAAs
- GB
- GC
- GA* , GAA* (* May be impaired)

Water Quality Classifications

Per federal Clean Water Act requirements as well as Connecticut's own Clean Water Act, the State has adopted Water Quality Standards which establish policy for water quality management throughout the state. The State classes surface and ground water quality based upon these standards and describes water quality goals in terms of designated uses and criteria for each water quality class. Using these classifications, the State's water resources have been broadly evaluated and assigned a classification based upon presumed or known water quality as well as desired use goals. These classifications are used to make decisions as to how these water resources will be managed and what sorts of water-related withdrawals or discharges will be allowed or not allowed. In the water quality classifications listed below (and further defined in the footnotes) for the Project site, "AA" and "A" are associated with waters which are of drinking water quality, whereas "B" indicates waters that are considered "fishable-swimmable" but are not of drinking water quality. According to water quality classification maps:

- the surface waters (including Walker Brook) and groundwaters within the portion of the Project area that lies within the Shepaug Regional Drainage Basin are classified as Class AA[3] and Class GAA[4], respectively.
- the surface waters (including the unnamed tributary) and groundwaters within the portion of the Project area that lies within the East Aspetuck Regional Drainage Basin are classified as Class A[5] and Class GA[6], respectively.

[2] Connecticut Geological and Natural History Survey. (Compiled by Marianne McElroy). 1981. Natural Drainage Basins in Connecticut (Map). CT DEP Natural Resources Center in cooperation with the USGS. Hartford, CT.

[3] **Class AA surface waters** have overall excellent water quality and the following designated uses: existing or potential drinking water supply; fish and wildlife habitat; recreational use; agricultural, industrial supply and other purposes, (recreational uses may be restricted).

[4] **Class GAA ground waters** have overall excellent water quality and the following designated uses: existing or potential public supply of water suitable for drinking without treatment; baseflow for hydraulically-connected surface water bodies.

[5] **Class A surface waters** have overall excellent water quality and the following designated uses: potential drinking water supply; fish and wildlife habitat; recreational use; agricultural, industrial supply and other legitimate uses, including navigation.

These classifications mean that the surface and ground waters on the project site are presumed to be of high quality, and that it is the State's goal that these waters continue to be treated or used in a manner such that this high quality will be maintained. The water quality classifications for the larger rivers to which the waters from the Project site ultimately flow are a little more complicated. The surface water classification for the Shepaug River - only 3 miles distant from the Project - is B/AA; and the surface water classification for the East Aspetuck River - only 1 mile distant from the Project - is B/A[7]. For waters with a dual classification such as B/AA or B/A, the first letter - in this case "B" - represents the current water quality (i.e. – "fishable-swimmable" quality), and the second set of letter(s) - in this case "AA" or "A" - represents the water quality goal for that surface water resource (i.e. – "drinking water" quality). These designations of B/AA and B/A indicate that although water quality is generally good, it may not be consistently meeting all the Class AA or Class A water quality criteria.

The water quality classification for the Shepaug Basin (and therefore the Walker Brook watershed which is a part of it) has an additional twist. In this case, the "AA" classification identifies the entire Shepaug Basin as a potential future water supply watershed. This designation was given to this basin in the 1970's by the Connecticut Water Resources Planning Program as part of a future water supply planning effort. However, only a portion of the upper Shepaug Basin is part of an existing, active public water supply watershed which provides water to the City of Waterbury. The rest of the Shepaug Basin, including this lower section, is not known to have been officially proposed as a future water supply source by a water supplier in an individual or regional water supply plan. More information about this potential water supply watershed can be found on the Housatonic Valley Council of Elected Officials website at: http://www.hvceo.org/water/WATERNEWMILFORDMAIN.php under the topic heading "New Milford, CT Potential Water Supply Watersheds".

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[6] **Class GA ground waters** have overall excellent water quality and the following designated uses: existing private and potential public or private supplies of water suitable for drinking without treatment; baseflow for hydraulically connected surface water bodies.

[7] **Class B surface waters** have good to excellent water quality and the following designated uses: recreational use, fish and wildlife habitat, agricultural and industrial supply and other legitimate uses including navigation.

Water Quality Concerns from a Watershed Perspective

It is important that the quality of the surface and ground waters flowing off of the Project site continue to meet the existing criteria and support the designated uses associated with Class AA and GAA waters, and Class A and GA waters as described. Likewise, it is essential that the waters flowing off of the Project site to Walker Brook and ultimately to the Shepaug River, continue to support the water quality goals of upgrading the Shepaug River to Class AA; and that the waters flowing off of the Project site to the unnamed tributary and ultimately to the East Aspetuck River continue to support the water quality goals of upgrading the East Aspetuck to Class A. In other words, the quality of the waters leaving the Project site should not be degraded to Class B nor should they contribute to the existing Class B condition of the Shepaug or East Aspetuck.

As old farms and undeveloped open space are gradually converted to more intensive land uses, it is important to keep in mind the cumulative impact that all of these changes have on water quality within a given watershed, over time. Studies have revealed that the "first flush" of stormwater surface flow from our developed landscapes (roads, parking areas, lawns, farms, etc.) to nearby streams and waterbodies is the leading contributor to non-point source pollution. Surface water runoff carries with it pollutants such as fertilizers, pesticides, oils, salts, sand, soil and other materials. With "end-of-pipe" sources of pollution largely under control through stringent regulation, stormwater runoff now represents the greatest threat to our State's water quality.

When a land use change such as this subdivision is proposed, careful consideration should be given not only to prevention of water quality impacts during the construction phase of the project, but also to the type of methods chosen for protecting water quality after the land use change has occurred. Protection of sensitive water resource features through the use of adequately sized vegetative buffers, selection of appropriate

stormwater treatment methods and structures that will be properly operated and maintained as well as education of property owners about environmentally sound methods of caring for their homes, lawns and water resources are all a part of the equation. Further discussion and references on these topics are provided in following sections.

Water Quantity Concerns from a Watershed Perspective

It is also important that the proposed Subdivision is planned in a manner such that the quantity and flow patterns of surface and groundwater on the Project site continue to support or mimic the existing natural conditions and processes as closely as possible. One of the increasingly important water resource issues in Connecticut is maintaining adequate groundwater recharge and streamflow in order to maintain healthy wetlands, waterbodies and watercourses. As with water quality impacts, the cumulative impacts that changes in land use throughout the watershed have on water quantity dynamics should be borne in mind.

At the local level, measures are in place which require developers to design stormwater systems such that there is no net increase in the rate of surface water flow off of the property during storm events to avoid "downstream" flooding problems. However, the manner in which water is handled on-site must go a step farther.

As farms and undeveloped land are converted to other uses, the amount of impervious surface created by roofs, driveways, roads, etc., and how the stormwater coming off these sites is managed affects the quantity of groundwater being recharged on the project site and the rate of surface water runoff. The reduction of pervious surfaces, the use of pervious pavements, the elimination of street curbs and the use of vegetated swales and buffers are just some the techniques currently being used to manage stormwater in a way which promotes increased groundwater recharge throughout a development in a manner that more closely sustains or imitates natural processes. Further discussion and references on this subject are provided in following sections.

Site Evaluation Report and Plans - Water Resource Considerations

In the site evaluation report[8] for the proposed cluster subdivision which was distributed to ERT members during the 1/11/05 meeting and site tour, the Project Applicant describes how their proposal will meet certain objectives which are required by the Town of New Milford (Town) for the Cluster Conservation Subdivision District (CCSD) zone. (See pages 4 & 5 of site evaluation report.) In general, the Applicant asserts that their proposal will be protective of water quality and water resources. However, in most instances, more information is needed to substantiate these assertions. In some cases, clarification is also needed as to how the Town is or is not able to support the Applicant's ability to accomplish these objectives.

To illustrate this matter, an analysis of the Applicant's responses to objectives which specifically refer to water quality and water resources is provided below:

- Objective: "The preservation of areas with unique environmentally sensitive features."

Applicant Response: "The most environmentally sensitive features on this site are the extensive wetlands which are the head waters to the two watersheds. The majority of these wetlands are included in the proposed open space. This will provide for their long term protection ..."

Comments: It is laudable that most of the wetland areas will be located within the proposed open space area which, at least in some locations, will confer additional protection to the wetlands by also protecting surrounding upland areas. However, it is noted on the Project plans[9] that in several instances the wetland boundaries abut individual lot boundaries or are adjacent to steep slopes that, in turn, abut individual lot boundaries. Ideally, the plans would be modified to provide a greater buffer to the wetlands in these areas. This would probably involve reducing and/or rearranging the cluster lots to create this buffer. While it might be argued that there is a sufficient setback from the house sites on the lots to the wetland boundary, it is unclear whether the Applicant or Town is able to place restrictions on the individual lots as to how the owners maintain their property to be protective of adjacent wetlands. As indicated by the Applicant's response above, maintaining the integrity of these wetlands is important to the downstream health of the two watersheds that they feed.

[8] L. Edwards Associates, LLC. No date. Site Evaluation for Cluster Conservation Subdivision District - "Walker Brook Farm" - Chestnut Land & Walker Brook Roads, New Milford, CT. Prepared for 109 North, LLC. 18 pp.

[9] L. Edwards Associates, LLC. August 21, 2004. Preliminary Cluster Conservation Subdivision - Walker Brook Farm. (Site Plans) Prepared for 109 North, LLC. Chestnut Land Road & North Walker Brook Road, New Milford, CT.

Buffers play a major role in helping to maintain the overall health and integrity of a watershed. Determining the appropriate width of a buffer is site-specific and is dependent upon the geography of the land and the intended function of the buffer. Wider buffer may be more appropriate in certain situations due to steep terrain or other considerations.

At the 1/11/05 ERT meeting, the manner in which the open space would be protected was discussed. According to the Applicant's representative, the Applicant had wanted to transfer the open space and/or an easement on the open space directly to a land trust. However, according to Town representatives present, the regulations apparently do not allow for this sort of transfer to occur. Instead, the open space must be placed in a collective "homeowner's trust" and the property owners of the cluster subdivision will decide how to manage this area and/or whether or not to transfer this open space to a local land trust.

This latter approach seems as though it could potentially be less protective of the open space area and associated wetlands and raises questions such as: Would the property owners be able to effectively monitor the open space and take action against encroachments (i.e. - against themselves), particularly in wetland areas? The Town may wish to reconsider its ability for allowing the open space and/or an easement on the open space to pass directly to a land trust. Unless they have since been updated, the "New Milford Subdivision Regulations" (June 2, 2001) that appear on the Town website indicate under Section 2.9.4 "Open Space Ownership and Preservation" that a non-profit land preservation organization is an option for holding land dedicated to open space purposes.

- Objective: "Protection of the quality and quantity of underground and surface waters."

Applicant Response: "As noted in item a above the dedicated open space will include the majority of the wetlands and watercourse located on the property. Prime groundwater recharge areas are preserved. This will provide significant long term protection to both the ground and surface waters of the town."

Comments: It is unclear as to how the Applicant has identified "prime groundwater recharge areas" and how these are being preserved. Wetlands and watercourses are

generally areas of groundwater discharge, not groundwater recharge. The surrounding uplands would be serving as the groundwater recharge areas for the adjacent wetlands and watercourses. This being the case, the amount of impervious surface created within the subdivision by roofs, driveways, roads, etc., and how the stormwater coming off these sites is managed and treated will affect the quantity as well as the quality of groundwater being recharged on the project site. Further discussion of stormwater management is provided in the next section.

In addition to stormwater management, water withdrawal by individual home wells, and the proper use, operation and maintenance of individual septic systems also have the potential to affect the quantity and quality of the groundwater and, in turn, the discharge to adjacent wetlands and watercourses. These issues should be evaluated in terms of the density of the proposed development in relation to their impact on groundwater resources.

- Objective: “Protection of natural drainage systems for assurance of safety from flooding.”

  Applicant Response: "The proposed development will be designated with an extensive storm water and water quality management system. This system will be designed to provide "0" increase in peak site runoff. The extensive wetland systems will be maintained and protected to assure its continual natural function."

  Comments: While this objective primarily focuses on "0" increase in net runoff, more details are needed about the design of the stormwater management system. In the preliminary site plans, the Applicant has indicated that a number of stormwater detention basins will be created at various locations on the property. Discussion during the ERT meeting and site review indicated that these detention basins will drain to the ground, thus recharging groundwater supplies in these areas. More information is needed with regard to how this design will impact groundwater flow on the property as well as wetlands and watercourses associated with or adjacent to property. There may be opportunities to disperse stormwater over the Project site in a more even manner through the use of curbless roads, swales and other techniques, rather than gathering and concentrating the stormwater in a few specific areas.

  It is encouraging that the Applicants' response indicates that they also plan to incorporate water quality protection measures into their stormwater management plan. More information is needed, however, on the methods to be employed to determine how effective this plan will be in terms of stormwater quality renovation.

  Other ERT participants with specific expertise are commenting on this proposed Project with regard to stormwater management considerations where State permits apply (i.e. - general permit for construction sites greater than one acre[10]) or where State issued guidelines should be considered (i.e. - 2002 Connecticut Erosion &

Sedimentation Guidelines[11]). However, the Town and Applicant are strongly encouraged to also consider incorporating new and alternative methods that have been developed to improve stormwater management from a water quality and quantity perspective. The recently published 2004 Connecticut Stormwater Quality Manual has been created specifically for this purpose. The following two chapters should be of particular interest with regard to this proposed Project: Chapter 4 "Site Planning and Design" and Chapter 9 "Developing a Site Stormwater Management Plan". Chapter 4 is especially relevant as it discusses "alternative site design" and "low impact development management practices" with regard to stormwater management.

[10] Connecticut Department of Environmental Protection "General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities" (Available on CT DEP website at: http://www.dep.state.ct.us/pao/download.htm^StormwaterConstructionGP)

In addition, the Town and Applicant may also want to investigate and possibly adopt successful stormwater reduction and renovation techniques employed at the Jordan Cove National Urban Monitoring Project in Waterford, CT. Begun in 1995, this 10 year project funded by the CT DEP through a U.S. Environmental Protection Agency Clean Water Act Section 319 Nonpoint Source Grant is an effort to address the impact of residential development on water quality and quantity by comparing results from a subdivision built using traditional planning and stormwater management techniques to an adjacent subdivision built using alternative, low impact techniques. The University of Connecticut has been leading the research on this project. More information about the Jordan Cove project can be found on the following two websites: http://www.canr.uconn.edu/iordancove/ and : http://nemo.uconn.edu/case studies/Jordan cove ct cs.htm . The Town and/or Applicant may also wish to contact the UCONN Cooperative Extension System - Nonpoint Education for Muncipal Officials (NEMO) program for more information about the Jordan Cove Project. NEMO can be contacted by phone at: (860)345-4511.

The degree to which the Town requires or allows new and innovative stormwater management designs and techniques to be incorporated into the plans of a proposed Project such as this determines, in large part, whether or not the best possible stormwater management plan is developed for the site. Given that this is a Conservation Subdivision, this would seem an ideal opportunity to implement these types of measures.

[11] The Connecticut Council on Soil and Water Conservation in cooperation with the Connecticut Department of Environmental Protection. 2001. 2002 Connecticut Guidelines for Soil Erosion and Sediment Control (DEP Bulletin 34). Hartford, CT.
[12] Connecticut Department of Environmental Protection. 2004. 2004 Connecticut Stormwater Quality Manual. Hartford, CT. (This document can be found on the CT DEP website at: http://www.dep.state.ct.us/wtr/stormwater/stnnwtrman.htni)

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About the Team

The King's Mark Environmental Review Team (ERT) is a group of environmental professionals drawn together from a variety of federal, state and regional agencies. Specialists on the Team include geologists, biologists, soil scientists, foresters, climatologists and landscape architects, recreational specialists, engineers and planners. The ERT operates with state funding under the aegis of the King's Mark Resource Conservation and Development (RC&D) Area - an 83 town area serving western Connecticut.

As a public service activity, the Team is available to serve towns within the King's Mark RC&D Area - *free of charge.*

Purpose of the Environmental Review Team

The Environmental Review Team is available to assist towns in the review of sites proposed for major land use activities or natural resource inventories for critical areas. For example, the ERT has been involved in the review of a wide range of significant land use activities including subdivisions, sanitary landfills, commercial and industrial developments and recreation/open space projects.

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision making. This is done through identifying the natural resource base of the site and highlighting opportunities and limitations for the proposed land use.

Requesting an Environmental Review

Environmental reviews may be requested by the chief elected official of a municipality or the chairman of an administrative agency such as planning and zoning, conservation or inland wetlands. Environmental Review Request Forms are available at your local Conservation District and through the King's Mark ERT Coordinator. This request form must include a summary of the proposed project, a location map of the project site, written permission from the landowner / developer allowing the Team to enter the property for the purposes of a review and a statement identifying the specific areas of concern the Team members should investigate. When this request is reviewed by the local Conservation District and approved by the King's Mark RC&D Executive Council, the Team will undertake the review. At present, the ERT can undertake approximately two reviews per month depending on scheduling and Team member availability.

For additional information regarding the Environmental Review Team, please contact the King's Mark ERT Coordinator, Connecticut Environmental Review Team, P.O. Box 70, Haddam, CT 06438. The telephone number is 860-345-3977.