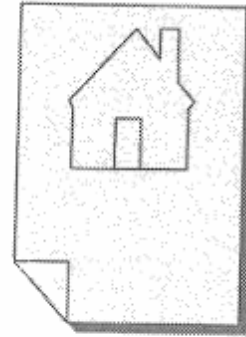


Somerset Homes, LLC

**Proposed
Senior
Residential
Development**



Enfield, Connecticut

**Eastern Connecticut
Environmental Review Team
Report**

Eastern Connecticut Resource Conservation & Development Area, Inc.

**Somerset Homes, LLC
Proposed Senior Residential
Development**

Enfield, Connecticut

Environmental Review Team Report

Prepared by the
Eastern Connecticut Environmental Review Team
of the
Eastern Connecticut
Resource Conservation and Development Area, Inc.

for the
Inland Wetlands and Watercourses Agency
Enfield, Connecticut

October 2004

Report No. 585

CT Environmental Review Teams
1066 Saybrook Road, P.O. Box 70
Haddam, CT 06438
(860) 345-3977

Acknowledgments

This report is an outgrowth of a request from the Enfield Inland Wetland and Watercourses Agency to the NorthCentral Conservation District (NCCD) and the Eastern Connecticut Environmental Review Team Program of the Eastern Connecticut Resource Conservation and Development Area (RC&D) Executive Council for their consideration and approval. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The Eastern Connecticut 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 Wednesday, June 23, 2004.

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Nicholas Bellantoni	State Archaeologist Office of State Archaeology (860) 486-5248
Brian Branciforte	Research Assistant DEP - Franklin Wildlife Management Area (860) 642-7239
Robin Lemieux*	Resource Assistant DEP - Wildlife Division (860) 675-8130

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Nisha Patel	Sanitary Engineer III DEP - Bureau of Water Management Stormwater Management (860) 424-3840
David Poirier	Archaeologist Connecticut Historical Commission (860) 566-3005
Sally Snyder	Connecticut River Basin Coordinator DEP - Watershed Management Program Planning & Standards Division Bureau of Water Management (860) 424-3869
Julie Victoria	Wildlife Biologist DEP - Franklin Swamp Wildlife Management Area (860) 642-7239
Judy Wilson	Wildlife Biologist DEP - Wildlife Division (860) 675-8130

**Primarily responsible for the Wildlife Habitat Review section, in consultation with Judy Wilson.*

I would also like to thank Neil Angus, assistant town planner/wetland agent, Gretchen Pfeifer-Hall, inland wetland commission chair, Mike Harrilchak, Somerset Companies, Wes Wentworth, Wentworth Civil Engineers, Sands Aeschliman and Paul Chanette, Aeschliman Land Surveying, and Michael Gagnolati, soil scientist for the applicant, 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 a revised preliminary plan. 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 applicant. This report identifies the existing resource base and evaluates its significance to potential development, 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 Eastern Connecticut RC&D Executive Council hopes you will find this report of value and assistance in reviewing this proposed senior housing development.

If you require additional information please contact:

Elaine Sych, ERT Coordinator
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P. O. Box 70
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Introduction

The Enfield Inland Wetlands and Watercourses Agency requested assistance from the Eastern Connecticut Environmental Review Team in conducting a review of a proposed senior residential community.

The 95.3 acre site is located east of North Maple Street with access from Mayfield Drive (a private road) and West View Drive. Long Meadow, MA forms the northern boundary and a portion of the site abuts Shaker Pond on the east. A utility line right-of-way crosses the site in the northern portion. This area of Enfield has been identified as having significant natural areas and many known extant populations of State Endangered, Threatened and Special Concern species occur in proximity to the project site.

The proposed project is a 77 unit senior housing development with approximately 5400 feet of new road with two new wetland crossings and the upgrading of an existing crossing. The application was in the preliminary stage and had not yet been submitted to the town.

Objectives of the ERT Study

The Enfield Inland Wetlands and Watercourses Agency requested assistance because of the scale and scope of the proposed project. They are concerned with the sensitive nature of the property, which is in an area of significant imperiled natural communities and populations of state listed insect species and plants occur in close proximity to this property. The town is looking for the ERT to provide additional information on the constraints and opportunities that exist for development of this property.

The ERT Process

Through the efforts of the Enfield Inland Wetlands and Watercourses Agency this environmental review and report was prepared for the Town of Enfield.

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 town and 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 on Wednesday, June 23, 2004. 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 ERT report.

Figure 1

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Location/Topographic Map

Scale 1" = 2000'



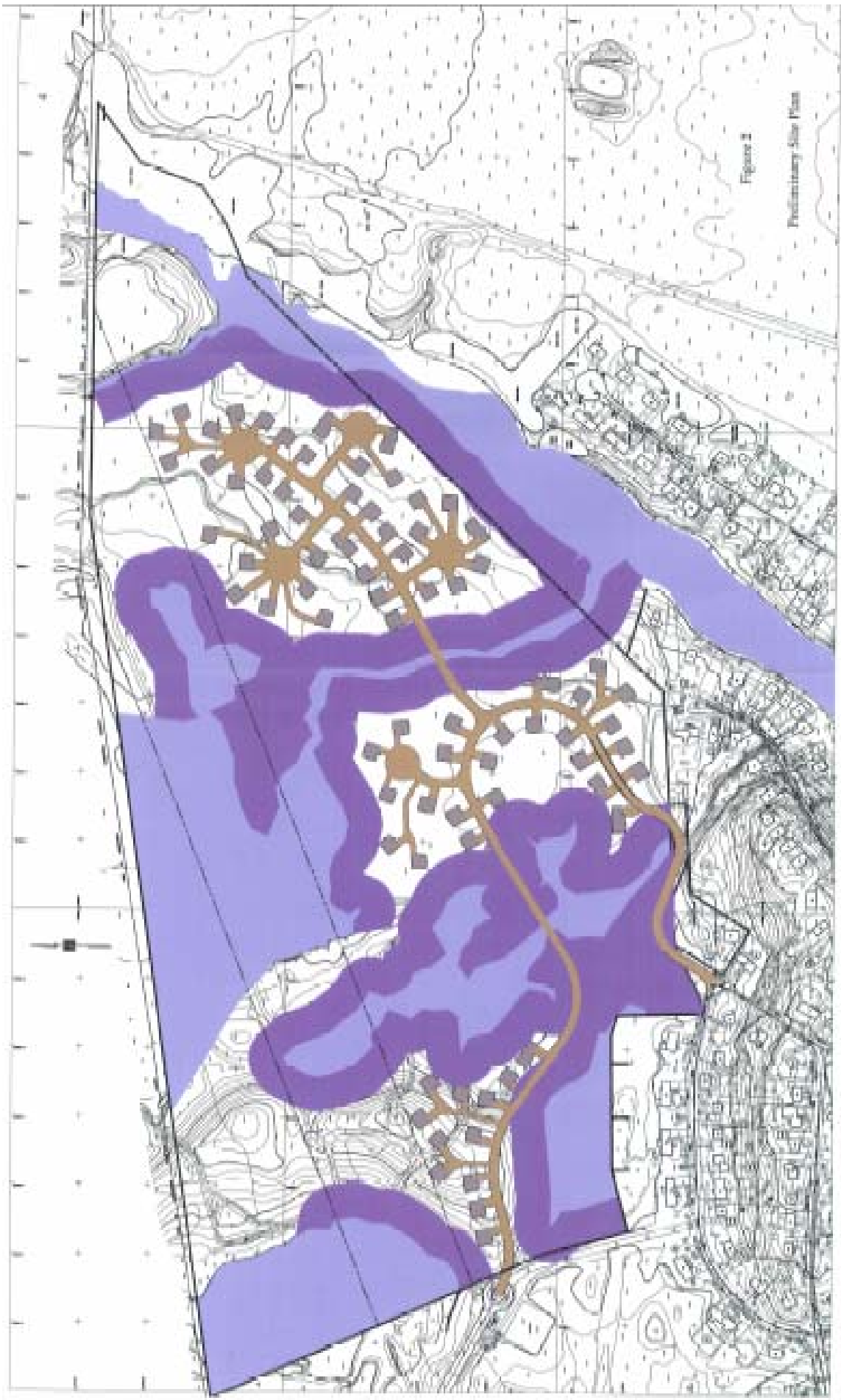


Figure 2

Preliminary Site Plan

A Watershed Perspective

These comments are given from the perspective of improving and maintaining water quality, and support designated uses of the State's waters in accordance with Connecticut's Water Quality Standards.¹ This information also reflects upon the Connecticut Department of Environmental Protection's (CTDEP) growing commitment to address water resource concerns from a watershed perspective, taking into account the cumulative impact that various land use policies and activities within a given watershed may have upon water resources.

The following remarks may overlap with those of other Environmental Review Team (ERT) members who are dealing with more specialized aspects of the review (i.e. wildlife habitat, wetlands, stormwater, erosion and sedimentation control, historic/archaeological significance, etc.). In such cases, these comments are meant to support or supplement their specialized reviews.

In June the ERT met to review the preliminary site plan and revisions to a 77-unit senior residential development that is currently in the pre-application stage. The proposed site is located easterly of Mayfield Drive, a private road. The site consists of 95.3 acres, which abuts the northern portion of Shaker Pond to the east, and the Massachusetts-Connecticut border to the north. Another access will be provided to the south off of West View Drive, west of the intersection with Pine Hill Road.

This cluster-type development is situated on gently rolling to flat land that contains scrub oak and pine forest with two stream crossings proposed; one intermittent and one tributary to Shaker Pond. The forested habitat has been identified by the DEP Natural Diversity Data Base as being a unique and rare

¹ State of Connecticut, Department of Environmental Protection. Effective 1996 & 2002. Water Quality Standards. Bureau of Water Management, Planning and Standards Division. Hartford, CT.

natural community. It was noted that the housing development to the west was previously identified as habitat for a number of state-listed moths, and having scrub-oak barrens, but neither of these has been positively identified at the proposed site. As a consequence, it is feared that further land development may jeopardize the integrity of the ecosystem and its flora and fauna.

Besides providing unique habitat, the forested area also serves as a wildlife corridor. Although the current plans depict that the 100-foot upland review area will be preserved, with the exception of the two road crossings, this conservation effort may not be sufficient to protect and maintain the current assemblage of plants and wildlife.

The CTDEP supports and recommends the use of buffers to protect wetlands and watercourses from environmental impacts. Leaving a vegetated strip around surface water resources, including wetlands helps protect surface and groundwater quality, and fish and wildlife habitats from nonpoint source pollution. The importance of forested streamside buffers has been well documented in the scientific literature. Buffers trap road sands, contaminants and other pollutants contained in stormwater runoff generated from roadways, parking lots, roof tops, and other impervious surfaces, as well as eroded sediments occurring from natural scour or land moving activities such as site development and other soil disturbances, including farming activities. In addition to the benefits described above, these riparian buffers also help moderate the temperature of stormwater runoff before it enters the watercourse, thereby reducing thermal impacts on aquatic wildlife. Riparian wetlands may additionally provide valuable wildlife habitat, flood attenuation, water quality renovation, and groundwater recharge, so it is important to protect these areas from degradation. A 50 foot vegetated buffer is typical, but widths can vary depending on such factors as topography, the erosivity of the soil, and the value

or sensitivity of the water resource. The CTDEP Fisheries Division² recommends a 100-foot buffer along perennial streams and a 50-foot buffer along intermittent streams; measured from the upland boundary of the regulated area, including any riparian wetlands. CTDEP Fisheries further recommends that the buffer remain in a naturally vegetated and undisturbed condition.

Most of the soils that would be disturbed, consist of loamy sand and fine sandy loam that have a low to average erosion potential. To ensure a healthy and productive stream corridor, properly designed, installed and maintained stormwater controls are critical, but because the plan does not contain specific sediment and erosion, or stormwater control details, only general remarks can be made as to how to protect and maintain water quality during and after site development. Basically, any development that involves substantial impervious surfaces (e.g. paved roads, parking lots and community facilities, etc.) should be designed to promote groundwater infiltration. In addition to recharging groundwater supplies, on-site recharge can help filter out minor pollutants and reduce the volume of flow discharging to surface waters, as well as reduce the risk of erosion and sedimentation. To avoid excessive sedimentation and erosion during on-site construction, best management practices should be followed in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.³

From a watershed perspective, the site falls into two subregional watersheds. The majority of the site lies within the Freshwater Brook Subregional Drainage Basin, No. 4003, while the eastern most portion of the site lies within the

² Brian D. Murphy, Technical Assistance Biologist, Inland Fisheries Division. December 13, 1991. Position Statement - Utilization of 100-Foot Buffer Zones to Protect Riparian Areas in Connecticut, Connecticut Department of Environmental Protection, Bureau of Natural Resources, Inland Fisheries Division. Hartford, CT.

³The Connecticut Council on Soil and Water Conservation. May, 2002. 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, Connecticut Department of Environmental Protection, Bureau of Water Management, Inland Water Resources Division. Hartford, CT.

Connecticut River Subregional Drainage Basin, No. 4000; both of which drain to the Connecticut River Main Stem, and ultimately to Long Island Sound.

The surface water quality designation for Shaker Pond is Class A. Class A surface waters are known or presumed to meet the criteria which support the following designated uses: habitat for fish and other aquatic life and wildlife; potential drinking water supplies; recreation; navigation; and water supply for industry and agriculture. Although considered to meet Class A standards, Shaker Pond was closed to bathing for a number of days in June 2001 due to elevated levels of bacteria from stormwater. Additionally, a floating boom had been installed several years ago to contain the spread of duckweed in the pond, which likely occurred as a result of high nutrient input (source unknown).

The groundwater designation for the site is Class GA which has 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.

By itself, the effect of stormwater runoff from the proposed project to the surface waters may seem insignificant. However, the contribution from this site should be viewed with regard to the collective impact of all other land use activities within the watershed. From this perspective, treating and reducing runoff from all developed sites throughout the region will help to minimize surface water pollution and flooding problems caused by storm events. Therefore, it is generally recommended to minimize the use of impervious surfaces where possible. Steps to increase groundwater infiltration include: eliminating road curbing and allowing for sheet flow, construction of vegetated drainage swales, reducing road widths, minimizing sidewalk coverage, designing cul-de-sacs with a pervious center, and promoting pervious driveways. For more information on how to control stormwater, see the new 2004 Connecticut Stormwater Quality Manual now available on CTDEP's website at:

<http://www.dep.state.ct.us/wtr/stormwater/strmwtrman.htm>. This manual provides guidance on the measures necessary to protect the waters of the state from the adverse impacts of post-construction stormwater runoff. The manual focuses on site planning, source control and pollution prevention, and stormwater treatment practices. The manual is intended for use as a planning tool and design guidance document by the regulated and regulatory communities involved in stormwater quality management.

Percolated through the ground, stormwater is filtered by the soil, stored, and gradually released to the river via the hydraulic connection through the riverbed. This slow rate of release benefits the riverine system by moderating fluctuations in the water surface elevation of the river as well as stream temperatures. Discharging stormwater runoff to the river can have a deleterious effect on the riverine system well beyond the point of discharge. These effects include: increased bank erosion and sedimentation of the channel caused by the volume and velocity of the discharge; settling out of suspended sediments carried or eroded by the discharge which can destroy benthic habitat thereby impacting the food chain for fish and wildlife; discharge of excess nutrients from lawn fertilizers and pet wastes which can cause excessive algal growth, depleting oxygen from the water and stressing or suffocating aquatic life; discharge of other contaminants such as automobile oils and fluids, vehicle and tire wear, pesticides, and atmospheric deposition of air-borne pollutants which can adversely affect the aquatic ecosystem; impacts to the aquatic biota due to stress caused by the increased temperature of the stormwater runoff; and exacerbation of the general cumulative effect of stormwater discharges basin wide which can alter stream morphology and dynamics, leading to increased flooding, erosion, and degraded riverine systems.

Where impervious surface reduction is difficult, cul-de-sacs can be designed to incorporate landscaped areas in between to help maintain natural recharge. It is not necessary to have a fully paved 50-foot radius cul-de-sac. Emergency vehicles

and snow removal equipment turning radii have been adequately addressed in other communities with modified cul-de-sacs. The center of the cul-de-sac can then serve as an effective treatment for stormwater runoff before percolating into the ground. This can be accomplished by depressing the unpaved portion in the center of the cul-de-sac. A demonstration of this alternative design can be viewed at the Glen Brook Green Subdivision, located in the Jordan Brook subwatershed in Waterford, CT.

Roadway widths may also be minimized to reduce imperviousness. Driveway standards and paving materials that are supportive of minimizing runoff and maximizing on-site infiltration should be considered. Additionally, in lieu of road curbing which is designed to collect and direct stormwater runoff, road sands and pollutants to the storm drainage collection system, it would be less expensive and more prudent to use sheet flow and vegetated drainage swales to promote groundwater infiltration; thereby replenishing groundwater supplies and reducing road maintenance, such as seasonal street sweeping, catch basin cleaning, and maintenance of the infiltration basin. For additional information, view UCONN - Cooperative Extension System's NEMO (Nonpoint Education for Municipal Officials) website at: <http://www.canr.uconn.edu/ces/nemo/>.

If proposed, the use of a pre-fabricated stormwater treatment unit can typically remove grit contaminated sediments, metals, hydrocarbons and other floatable materials from surface waters. However, for the price of a designed, constructed and properly installed stormwater treatment unit (which are effective with sediment and some nutrient/metals pollutant removal from storm water), the applicant/town may be able to install a properly installed detention basin that addresses clean water issues and peak flow retention, reducing the impacts on the stream corridor. Various other treatment methods include nutrient uptake by hydrophytic vegetation, biodegradation of pollutants by microbial activity, and sediment trapping and filtration by organic or synthetic materials and vegetation.

One particular aspect of the proposed project that is problematic is the design of the proposed road crossings. Large diameter, reinforced concrete pipe is proposed to convey the stream beneath several feet of fill. This is necessary to connect the roadway across the deep stream channel. Due to the steep stream embankments and height of the roadway, significant amounts of fill will be required to safely grade the side slopes upstream and downstream of the crossing. Although the width of the roadway itself is proposed to be reduced by minimizing the snow shelf, the amount of fill proposed to be placed in stream and onto adjacent wetlands could be further reduced by using head walls and retaining walls, or by bridging the stream altogether. This may make connecting the storm sewer system across the stream more difficult, but if vegetated drainage swales and curbless roads are incorporated into the subdivision design as recommended, then this may no longer be required.

To help ensure the protection of water quality in the watershed, maintaining the riparian corridors is essential. Although the applicant has minimized encroachment into wetlands and watercourses, and proposes a 100' buffer, this alone may not fully protect the natural resources. Often existing beyond riparian corridors are wildlife corridors. These are typically wide, linear tracts of land which allow wildlife to move freely between natural habitats containing both wetlands and uplands. The 100' buffer will certainly assist in this goal, but roadways can often segment these corridors resulting in wildlife habitat fragmentation, especially for smaller wildlife like amphibians and reptiles. (For example, ordinary road curbing can obstruct passage, while Cape Cod-style curbing is more traversable.) It may be appropriate to consider preserving forested uplands beyond the 100' buffer as open space. Efforts to preserve open space help maintain these corridors and can provide valuable "edge" habitat for wildlife.

Beyond the proposed design of the subdivision is the actual use by its residents. There is a possibility that future homeowners may be unaware or ignore the 100' buffer. To remedy this, it may be prudent to place the buffer in conservation easement in favor of the town or perhaps the local land trust by way of a deed restriction which specifically identifies what activities (if any) are to be allowed within this area.

Conservation District Review

District comments regarding the proposed development are relatively brief. The critical issues with this project rest on habitat and significant natural communities. The District does not have any particular expertise with the communities described in DEP's letter of September 24, 2003 and defers to the DEP regarding these issues (please see the letter and the Natural Diversity Data Base Review and Wildlife Habitat sections). Some of the other issues listed in the ERT request form, including soils, stormwater, hydrology etc., are briefly addressed below. However, based on the site walk and a review of the proposed preliminary plan, most aspects of the project appear to be routine and the standard review from town staff should be adequate. Although the project is significant in terms of scale, the District did not identify other specific issues of concern, except as discussed below.

The District often comments on wetland issues. With this project, wetland issues are closely linked with the habitat issues and additional detailed comment by the District is redundant. In general, the project team has made an effort to reduce direct wetland alterations. The proposed wetland crossings appear to be in appropriate locations. Based on the preliminary site plan, residential units are located outside the 100-foot review area around wetlands. Unless otherwise indicated in the DEP review due to special habitat concerns, a 100 foot buffer around the wetlands should be protective of wetland functions. This assumes that clearing and grading around the residential units is not excessive and does not extend significantly beyond the limits of the structures shown on the preliminary site plan. Once clearing and grading plans are developed, the District is available to review the final plans.

Except for the road crossings, the only other location where there is an alteration within the 100 upland review area is along the first section of road, north of the

isolated wetland. Based on the site plan, it appears that the location of the road was designed this way to accommodate two additional units. The applicant should provide the town with an assessment of alternatives in this area (an alternatives assessment for the project should be part of the standard wetland application). Water quality in the isolated wetland is vulnerable to alterations because of its limited drainage area. Direct stormwater discharges into the wetland should be avoided.

The applicant originally proposed two new crossings of the central wetland. The developer subsequently purchased a parcel south of the property to allow crossing the wetland at an existing, discontinued crossing. The existing crossing is dilapidated and will have to be replaced. Although this is an improvement over the original proposal since it utilizes an existing disturbed area, the applicant should provide the town an alternatives analysis regarding the need for two crossings. Double crossings like this typically result from town requirements for two accessways. The town may be in a position to allow a single crossing in order to prevent additional wetland alteration.

Soils

Upland soils on the site have few limitations for development, as they are predominantly well drained, sandy loams or sands and gravel. The Tisbury and Sudbury soils, located in the center of the property, have a seasonal high water table, so standard foundation drains will be required if the units have basements. Soils found on the site are listed below (slope designations of A, B, C are in parenthesis) and descriptions may be found in the Appendix. Soils information is based on soil mapping from DEP, which is considered "draft" until formally approved by the Natural Resources Conservation Service.

Upland Soils

Agawam fine sandy loam (0-3 %)

Sudbury sandy loam (0-5% slope)

Ninigrit and Tisbury soils (0-5 % slope)

Windsor loamy sand (3-8 % and 8-15 % slope)

Wetland Soils

Walpole sandy loam

Adrian and Palms Soils

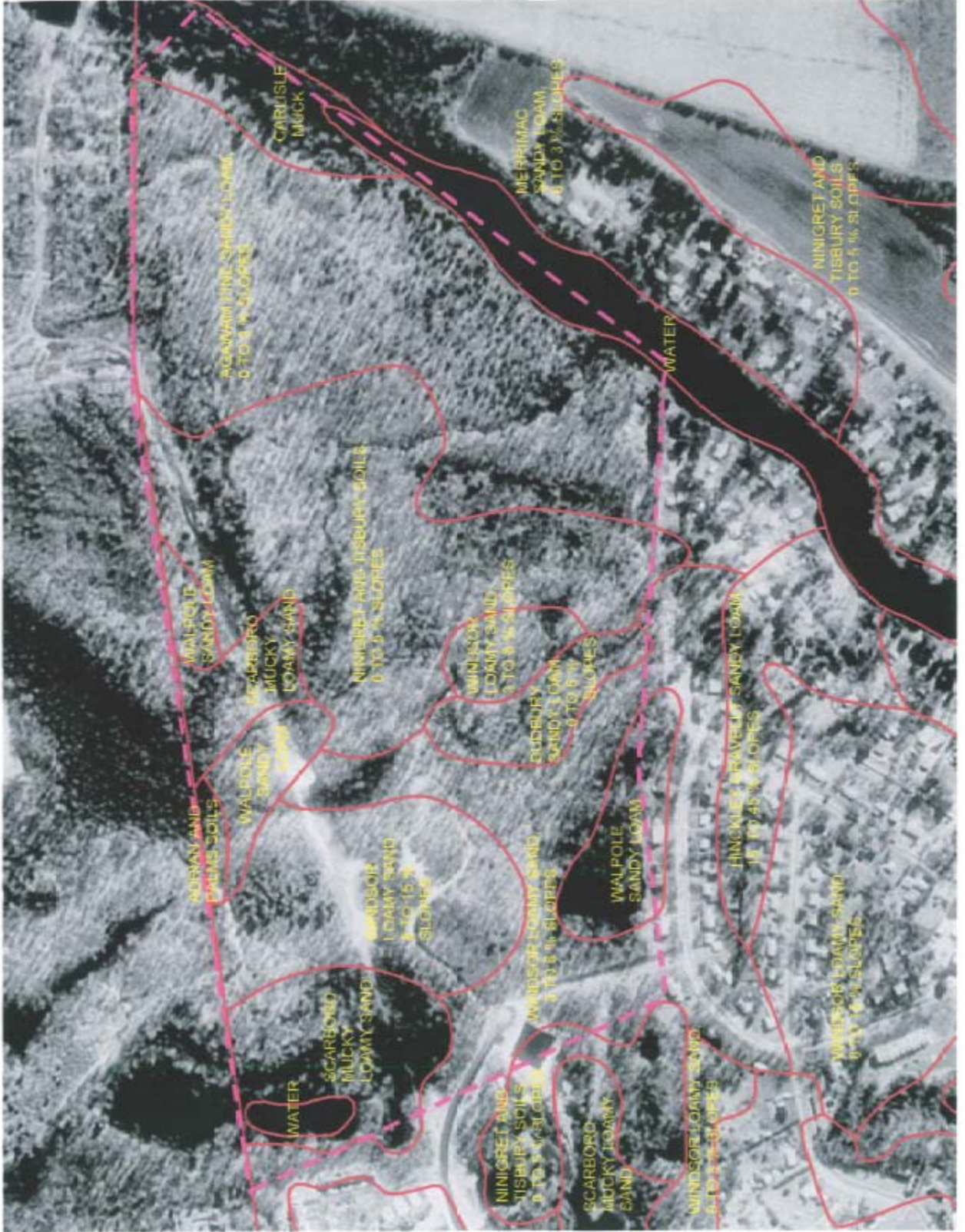
Scarboro mucky loamy sand

Stormwater and Erosion Control

Neither a stormwater management plan nor an erosion control plan has been prepared. Soil erosion hazards for all soils on the property are low to medium. The erosion control plan must comply with the 2002 Connecticut Guideline for Soil Erosion and Sediment Control. Standard erosion control methods should be adequate for development of this parcel. The District is available to review the plan when it is submitted.

The site is divided into three drainage areas. The stormwater management plan has not been developed. However, the project engineer indicated that detention would be required. In addition, the engineer was aware of NPDES requirements for stormwater management and pollution prevention requirements. Unless otherwise indicated in the DEP review to provide additional protection to significant natural communities, standard stormwater management measures should be adequate. The District is available to review the stormwater management plan when it is submitted.

**Figure 3
Soils Map**



Stormwater Comments

The following review comments are based on the requirements of the Department of Environmental Protection's (DEP) General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities ("the construction general permit"). Many of the requirements of the construction general permit overlap with the requirements of local agency(ies) and the Connecticut Guidelines for Soil Erosion and Sediment Control ("the guidelines").

Since the proposed senior housing development involves the disturbance of over five acres, the owner or developer of the site must register with the DEP thirty days prior to the commencement of construction activity. Additionally, a Pollution Control Plan ("the PCP") must be prepared and kept on site during the entire life of the construction project.

The PCP must include a site map as described in Section 6(b)(6)(A) of the construction general permit and a copy of the erosion and sedimentation (E & S) control plan for the site. An E & S plan which has been approved by the Town of Enfield in conjunction with the DEP Inland Water Resources Division (IWRD) and the local Soil and Water Conservation District may be included in the PCP. The PCP and site map must include specifics on controls that will be used during each phase of construction, pursuant to Section 6(b)(6)(B) of the construction general permit. Specific site maps and controls must be described in the PCP, as well as construction details for each control used. The construction general permit requires that the PCP shall ensure and demonstrate compliance with the 2002 CT Erosion and Sediment Control Guidelines. The Plan must be flexible to account for adjustment of controls as necessary to meet field conditions.

The PCP must detail the expected sequence of all major construction activities with a timeline, a description of interim and permanent stabilization practices, and a description of structural practices, such as swales, sediment traps, sediment basins, etc., to be installed. If dewatering is necessary, the PCP must address how dewatering wastewaters generated onsite will be managed in accordance with Section 6(b)(6)(C)(ii) of the construction general permit. Where more than 2 acres will be disturbed at any one time, a sediment trap and/or a sediment basin with the ability to store 134 cubic yards of water storage per acre drained must be installed. If an area greater than 5 acres is disturbed at any time, a sediment basin with an outlet engineered to remove sediment must be installed.

The DEP strongly recommends a buffer area exist between construction areas and any sediment/detention basin outlet(s) and the wetlands areas. Should the basin(s) fail due to inadequate design, lack of maintenance, etc., the presence of the proposed 100' buffer area may reduce the potential for contamination of wetlands/watercourses with sediment. A discharge of sediment to a wetland or watercourse without a permit is a violation of Section 22a-42a(c)(1) of the Connecticut General Statutes and may require remedial action.

The PCP must demonstrate that the post-construction stormwater treatment system has been designed with a goal of 80% removal of total suspended solids, pursuant to Section 6(b)(6)(C)(iii)l) of the construction general permit. Such measures may include, but are not limited to, stormwater detention basins, stormwater retention basins, swirl concentrator technology structures (such as Vortech, Downstream Defender, Stormceptor, Stormtreat, or similar), vegetated swales, deep catch basin sumps (4'+) and stormwater infiltration devices. The PCP must also discuss the installation of velocity dissipation devices at all discharge locations as a post construction stormwater management measure. A detail of proposed measures as well as drainage

calculations must be provided. If site conditions allow, DEP recommends the installation of retention or detention basins because of maintenance, cost, and efficiency considerations. The elimination of point sources through the use of level spreaders or curb elimination should also be evaluated and is strongly recommended.

The construction general 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 PCP 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. Since the proposed site has areas with steep slopes (at the entrance of the site on Mayfield Street) and wetland areas requiring protection, ongoing inspections and adjustments of controls will be an important aspect of this project. Additionally, the PCP must include monthly inspections of stabilized areas for at least three months following stabilization.

Since detailed plans were not provided during the site walk, this reviewer's comments are limited to an outline of the construction general permit's requirement and the following general recommendations. Once design plans have been prepared, a far more detailed review can be conducted.

- In order to minimize the area of disturbance and the amount of impervious area post-construction, DEP recommends that the width of the roadway and the width of any pathway adjacent to the road be minimized to the maximum extent possible. Where possible, roadways with no curbs should be installed to promote the sheet flow of stormwater runoff. In addition to providing environmental benefit, reducing the volume of stormwater collected in the drainage system would result in a cost benefit since any treatment system installed would be sized for smaller flows.

- In order to reduce erosion potential, DEP recommends that construction activities be phased to the maximum extent possible so that unstable areas are minimized. The construction general permit also requires that any inactive area left disturbed for over 7 days be temporarily stabilized. Areas left disturbed over 30 days (including soil stockpiles) must be temporarily seeded. The PCP must specify measures for the stabilization of disturbed area outside of the seeding season.
- For any slopes steeper than 4 horizontal to 1 vertical, DEP strongly recommends the use of an appropriate grade of erosion control matting to provide slope stabilization.
- In order to promote the recharge of groundwater and to reduce the size and impact of a storm drainage system, DEP recommends that roof drain/footing drain runoff be infiltrated.

In evaluating this project, please keep in mind that although the construction general permit requires the installation of all appropriate controls and measures to prevent pollution of the waters of the state, a clear discharge from a construction site, particularly during significant storm events, cannot be expected. Therefore, the potential impacts to the designated uses of sensitive downstream water bodies such as Shaker Pond must be considered.



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL & GEOGRAPHIC INFORMATION CENTER
79 Elm Street, Store Level
Hartford, CT 06106
Natural Diversity Data Base



September 24, 2003

Mr. Wesley J. Wentworth
Wentworth Civil Engineers, LLC
177 West Town Street
Lebanon, CT 06249

re: Somerset Development, 79 Unit Senior
Residential Housing Development in
Enfield, Connecticut

Dear Mr. Wentworth:

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map you provided for the proposed Somerset Development, 79 Unit Senior Residential Housing Development in Enfield. According to our information there are many known extant populations of State Endangered, Threatened and Special Concern Species that occur in close proximity to your project boundaries. In fact, this area of Enfield has two significant imperiled natural communities: Southern New England Scrub Oak Sand Barren and Southern New England Basin Marsh. According to our ecologist, Ken Metzler, these communities have declined dramatically in the state and may represent one of the last known occurrences for Connecticut.

The sandy soil and special vegetation of the scrub oak sand barren community most often provides the only known habitat for several state listed animals, many of them insects. Many of these state-listed insects feed exclusively on sand barren plants that are not found in any other habitats. Other animals such as the State Endangered Eastern Spadfoot Toad (*Scaphiopus Holbrookii*) use sand barrens and may still occur in Enfield. The scrub oak sand barren habitat that occurred within the project boundaries at this site in Enfield was once described as a diverse assemblage of plant communities including scrub oak and wetlands. A basin marsh is a sandy bottom marsh dominated by sedges, grasses and scattered shrubs. The basin marsh at this site in Enfield was once the best example of this community type here in Connecticut.

Major threats to these two unique natural communities and their associated state-listed endangered species include dirt bike traffic, dumping of trash and storm water drainage from nearby residential developments. A qualified ecologist familiar with both sand barren and basin marsh communities should conduct any environmental site assessments for project activities that will require permits. Please contact our program ecologist Ken Metzler (DEP-EGIC 860-424-3585) who would be able to assist in reviewing proper survey protocols to provide for the conservation of these significant Connecticut habitats. Mr. Metzler can also review the credentials of the ecologist hired to conduct these surveys. All activities proposed for this property should be coordinated through Mr. Metzler.

The property boundaries delineated indicate this property is adjacent to Shaker Pond. Our records indicate that a State Endangered plant species *Hemicarpha micrantha* (dwarf bulrush) was known to occur in 1910 at Shaker Pond. This plant should be searched for as part of your site planning. If you have any questions regarding this plant species direct them to Mr. Metzler. Please submit field survey reports along with the credentials of the botanist conducting the site assessments to Ken Metzler, CT DEP/EGIC, 79 Elm Street, Hartford, CT 06106.

The state listed insect species that are known from this area include:

Species Name	Common Name	State Status
<i>Hemileuca maia</i>	Buckmoth	Endangered
<i>Zale submediana</i>	Noctuid Moth	Threatened
<i>Zale curema</i>	Noctuid Moth	Special Concern
<i>Euclyptocnemis fimbriaris</i>	Noctuid Moth	Special Concern
<i>Apodrepanulatrix liberaria</i>	New Jersey Tea Inchworm	Special Concern

I have sent your letter to Julie Victoria (DEP-Wildlife; 860-642-7239) for further review. She will write to you directly with her comments regarding these state-listed species and other state-listed animals that may occupy these unique communities.

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 Resource 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.

Please contact me if you have further questions at 424-3592. Thank you for consulting the Natural Diversity Data Base. 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.

Sincerely,


Dawn M. McKay
Biologist/Environmental Analyst

Cc: Julie Victoria
Ken Metzler
NDDDB File # 12848, 12828 (just west)
Mr. Jose Giner (Director of Planning & Community Development, Town Hall, 820 Enfield Street, Enfield, CT 06082-2997)

The Natural Diversity

Data Base Review

The information provided for the ERT with regard to the least environmentally damaging alternatives to invertebrate and amphibian species has been reviewed. Additionally, Brian Branciforte (DEP Research Assistant) participated in the ERT to assess the overall habitat characteristics of the property.

The Department of Environmental Protection's (DEP) Environmental and Geographic Information Center (EGIC) records indicate that one endangered species, a Buck Moth (*Hemileuca maia*), one threatened species, a noctuid moth (*Zale submediana*) and three state species of special concern, two noctuid moths (*Zale curema* and *Eucroptcnemis fimbriaris*) and the New Jersey Tea Inchworm (*Apodrepanulatrix liberaria*) occur in the vicinity of this project.

The Buck Moth (*Hemileuca maia*) is on the edge of its range in Connecticut and can be found in a scrub oak habitat. The three noctuid moth species (*Zale submediana*, *Zale curema* and *Eucroptcnemis fimbriaris*) are associated with pitch pines (*Pinus rigida*), dry grassy or sandy fields with remnant pine barrens and scrub oak barrens. Protection of their host plants will benefit these species. The New Jersey Tea Inchworm (*Apodrepanulatrix liberaria*) is associated with the New Jersey tea plant (*Ceanothus americana*) which is required by the larvae as a food plant. It is often found in pine barrens. After walking the site, Brian Branciforte's recommendation is that a botanist survey the property. He noted that a rare plant, dwarf bulrush (*Hemicarpha micranthsa*) was known to occur in the area in 1910 and that the host plants for all the target moths should be searched for.

Additionally a state endangered species, Eastern Spadefoot Toad (*Scaphiopus holbrookii*) may occur in the vicinity of this property. Limited information is known about Eastern Spadefoot Toad. They are very secretive and have irregular breeding periods. They are most active from June through August. They are expert burrowers going as deep as 2 meters in sandy well-drained soil. They are very rarely observed outside of the breeding period. Their habitat is described as arid to semi-arid areas, such as fields, farmland, dunes and woodlands with sandy or loose soils. And they breed in temporary bodies of water flooded fields and forested wetlands.

Because this proposed development will probably require a permit (storm water management) from the DEP, the State Endangered Species Act (CGS Chapter 49S, Sec 26-303 through 26-315) is applicable. In part, the Act requires that any proposed activity will not threaten the continued existence of endangered or threatened species nor destroy or adversely modify essential habitat.

The best way to ensure that endangered or threatened species will be protected is to design a project that avoids impacts to the areas where the endangered or threatened species are known to occur. If this is not possible, the landowner (Somerset Development) must convincingly demonstrate that there are no prudent and feasible alternatives and may apply to the DEP for an exemption following the considerations listed in CGS 26-310 (c).

These species have been negatively impacted by the loss of their associated plant species and habitats and the current status of the state-listed species is unknown. Additional survey work is needed in order to assess impacts of the proposed development. The Wildlife Division recommends that a qualified entomologist and herpetologist conduct surveys to determine the distribution and abundance of state-listed species prior to the initiation of construction

activities at the site. Please keep in mind that the appropriate survey period for the state endangered Buck Moth (*Hemileuca maia*) is October. A report summarizing the results of such survey should include habitat descriptions, invertebrate or amphibian species list and a statement/resume giving the entomologist's or herpetologist's qualifications. The Wildlife Division does not maintain a list of entomologists or herpetologists in the state. A DEP Wildlife Division permit may be required by the entomologist and herpetologist to conduct survey work, you should ask if they have one. The results of these investigations can be forwarded to the Wildlife Division and, after evaluation, recommendations for additional surveys, if any, will be made.

The proposed project map depicts multiple wetland crossings. It is recommended that the landowner consider alternatives that would cause minimal to no environmental impacts to wetlands and watercourses. Culverts were discussed at the ERT meeting but no details have been presented for comment. Perhaps cantilevered roads or bridges can be investigated to maintain the integrity of the wetlands.

Consultation with the Wildlife Division should not be substituted for on-site surveys required for environmental assessments.

Wildlife Resources

A site inspection was conducted on June 23, 2004 to evaluate existing wildlife habitat on the property. The property is approximately 95 acres, with large wetland systems in two different watersheds. There is a utility power line right-of-way in the northern half of the property. The proposed project is a 77-unit senior housing development, which would necessitate approximately 5,400 linear feet of new roadway and two wetland crossings. Currently, there are no conservation easements proposed.

Existing Wildlife Habitats

Upland Forested Area

The roadway and housing units are proposed in an area that is currently mature, mixed deciduous-coniferous 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 found in this habitat type include scarlet tanager, ovenbird, white-breasted nuthatch, American redstart, barred owl, broad-winged hawk, redback salamander and northern ringneck snake.

Wetlands

There are large wetland areas in the northern and western parts of the property, and a 24 acre pond (Shaker Pond) to the east. Road crossings are proposed in areas containing intermittent drainage streams. North of the proposed roadway is a large wetland area that, per soil scientist Michael Gagnolati, contains vernal pools. Many species of reptiles and amphibians, such as the gray tree frog and the spotted salamander, use wetlands for breeding and spend the balance of their time in the adjacent forested uplands. Many species of birds use forested wetlands at varying times of the year for breeding, feeding and shelter. Examples include wood thrush, northern water thrush, common yellowthroat and eastern phoebe. 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.

Impacts

Development in the forested uplands 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. Calhoun and Klemens (2002) recommend that the upland areas around 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. Based on the best, most current science, the existing 100' wetland buffer would not be sufficient to prevent impact to wetland-dependent species. Potential impacts to state listed threatened and endangered species have been addressed in the Natural Diversity Data Base Review section.

Reducing Impacts

As the amount of development or habitat conversion to highly disturbed construction area increases, the value for wildlife proportionally decreases. Minimally, based on the quality of the wetlands both on- and off-site, adequate buffer zones 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. The best way to protect threatened and endangered species is to design a project that avoids impacts to the areas where the endangered or threatened species are known to occur.

Summary

The proposed project will almost totally replace the existing upland forest habitat with residential housing, allowing for only limited wildlife use of the area. While no development other than the two proposed crossings is planned for the wetland areas, the greatest potential impact will be 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.

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.

Archaeological and Historical Review

The Office of State Archaeology (OSA) and the State Historic Preservation Office (SHPO) have reviewed the State of Connecticut Archaeological Site Files and Maps and believe that the project area possesses moderate to high sensitivity for prehistoric and historic archaeological resources. In particular our maps show that the project boundaries are located in immediate proximity to the Enfield Shakers farming community, which is listed on the National Register of Historic Places.

The Connecticut State Historic Preservation Office and Office of State Archaeology strongly encourages the Enfield Inland Wetlands and Watercourses Agency to recommend that a reconnaissance survey be professionally undertaken in order to locate, evaluate and responsibly consider all archaeological resources which may exist within the proposed project limits, including equipment storage and associated work areas. All archaeological studies must be carried out pursuant to the *Environmental Review Primer for Connecticut's Archaeological Resources*.

No ground disturbance or construction-related activities should be initiated until the SHPO and the OSA have had an opportunity to review the recommended archaeological survey report and to subsequently provide further substantive guidance to the Enfield Inland Wetlands and Watercourse Agency.

The SHPO and the OSA are prepared to offer the Town of Enfield and the applicant any technical assistance in conducting the recommended survey. Please contact the OSA for a list of qualified archaeological consultants that can conduct the recommended survey.

Appendix

Non-Technical Soil Descriptions

Contact the ERT Office for Appendix Information at (860)345-3977

ABOUT THE TEAM

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a variety of federal, state and regional agencies. Specialists on the Team include geologists, biologists, foresters, soil specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area — an 86 town region.

**The services of the Team are available as a public service
at no cost to Connecticut towns.**

PURPOSE OF THE TEAM

The Environmental Review Team is available to help towns and developers in the review of sites proposed for major land use activities. To date, the ERT has been involved in reviewing a wide range of projects including subdivisions, landfills, commercial and industrial developments, sand and gravel excavations, elderly housing, recreation/open space projects, watershed studies and resource inventories.

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 project site and highlighting opportunities and limitations for the proposed land use.

REQUESTING A REVIEW

Environmental reviews may be requested by the chief elected official of a municipality or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the chairman of your local Soil and Water Conservation District and the ERT Coordinator. A request form should be completely filled out and should include the required materials. When this request is approved by the local Soil and Water Conservation District and the Eastern Connecticut RC&D Executive Council, the Team will undertake the review on a priority basis.

For additional information and request forms regarding the Environmental Review Team please contact the ERT Coordinator: 860-345-3977, Eastern Connecticut RC&D Area, P.O. Box 70, Haddam, Connecticut 06438.