

AGENDA

Mansfield Conservation Commission
Wednesday, January 19, 2011
Audrey P. Beck Building
CONFERENCE ROOM B
7:30 PM

- 1. Call to Order**
- 2. Roll Call**
- 3. Opportunity for Public Comment**
- 4. Minutes**
 - a. December 15, 2010
- 5. New Business**
 - a. IWA Referrals:
 - o W1467- Listro- Candide Lane- Resubdivision
 - o W1469 - Town of Mansfield- Statutory Regulation Revision
 - b. Storrs Center Update (memo from Director of Planning)
 - c. Draft Report: Water Source Study for the Four Corners Area
 - d. Other
- 6. Continuing Business**
 - a. 12/1/10 Draft Revisions to Mansfield's Subdivision Regulations (PZC Public Hearing Postponed until 2/7/11)
 - b. Swan Lake Discharge Mirror Lake Dredging and other UConn Drainage Issues
 - c. UConn Agronomy Farm Irrigation Project
 - d. Eagleville Brook Impervious Surface TMDL Project
 - e. Natchaug River Basin project (Awaiting Compact)
 - f. UConn Hazardous Waste Transfer Station (no new information)
 - g. Ponde Place Student Housing Project (12/15/10 letter from State Dept. of Public Health)
 - h. CL&P "Interstate Reliability Project" (no new information)
 - i. Other
- 7. Communications**
 - a. Minutes
 - Open Space (12/21/10) • PZC (1/3/11) • IWA (1/3/11)
 - b. Inland Wetland Agent Monthly Activity Report
 - c. November/December CT Wildlife
 - d. Other Correspondence
- 8. Other**
- 9. Future Agendas**
- 10. Adjournment**

PAGE
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Town of Mansfield
CONSERVATION COMMISSION
Meeting of 15 December 2010
Conference B, Audrey P. Beck Building
(DRAFT) MINUTES

Members present: Robert Dahn, Neil Facchinetti (Alt.), Quentin Kessel, Scott Lehmann, John Silander. *Members absent:* Joan Buck (Alt.), Peter Drzewiecki, Joan Stevenson, Frank Trainor. *Others present:* Grant Meitzler (Wetlands Agent).

1. The meeting was **called to order** at 7:32p by Chair Quentin Kessel.
2. The draft **minutes of the 17 November meeting** were approved, with the substitution of “in a letter dated 10/28” for “two weeks later” in item 5.
3. **IWA referrals.** Lehmann’s report on the 12/14 IWA Field Trip is attached.
 - a. **W1465 (Eric Carlson property, Dunham Pond Rd)** A single family house is proposed for a lot across Dunham Pond Rd and uphill from the pond and its associated wetlands; the lower portions of its driveway and reserve septic field lie within 150 ft of wetlands. The plan shows the driveway running straight down the slope at the north edge of the property, an alignment that could deliver large volumes of water and sediment onto the road and into wetlands beyond during a heavy rain. After some discussion the Commission agreed (motion: Silander, Lehmann; all in favor save Kessel, who abstained in virtue of long acquaintance with the Carlsons) that:

The proposed development appears to have a minimal impact on wetlands, provided appropriate sediment controls are employed during construction and the driveway is realigned with level spreaders to reduce runoff onto the road and into wetlands on the other side.
 - b. **W1466 (Peter Rich property, 42 Fern Rd)** Mr. Rich proposes to expand his garage to enclose an existing concrete parking area and to erect a lean-to roof over a concrete tractor pad adjacent to a shed. A small intermittent stream flows against the footings of the parking slab beside the garage; the shed is about 65 ft from it. There was general agreement that the proposed construction would probably have a marginal impact on wetlands, given that foundations were already in place. Nobody knew whether Mr. Rich had obtained a wetland permit for them; those adjacent to the garage appear to be of recent vintage. A **motion** (Kessel, Facchinetti) that no significant negative impact on wetlands was to be expected was adopted (Dahn, Facchinetti, & Lehmann in favor, Kessel and Silander abstaining – the former in virtue of long acquaintance with Mr. Rich, the latter from concern about endorsing work that may have been done without a permit).
4. **Storrs Center project.** At last week’s hearing, concerns were aired about the residential portion of this development turning into student housing. Its developer specializes in dorm construction, and Silander recalled that Celeron Square was initially advertised as housing for non-students. According to Facchinetti, the developer’s representative responded by noting that student housing would be designed differently (suites instead of the 1- or 2-bedroom units planned for Storrs Center) and that management (as well as relatively high rents) would limit the number of students.

5. UConn Water System. Silander wondered how the University proposes to reconcile increased demand for water from the Storrs Center development (and possibly others) with supply that is currently not adequate during drought conditions. Its current plan seems to be to make up the deficit by reclaiming water: facilities for doing so are to be in place before Storrs Center needs significant water. UConn has informed the Ponde Place developers that it will not supply water for this project, either for regular or emergency use. Kessel will try to attend tomorrow's Water and Wastewater Advisory Committee meeting for an update.

6. Briefly noted.

- a. **Proposed revisions to Subdivision regulations.** A hearing will be held in January.
- b. **4 Corners sewer and water.** Various sources of water for this area are under study.
- c. **Agromony Farm monitoring.** Water samples will be drawn from monitoring wells tomorrow to test for pesticide residues from turf management studies at the farm.

7. Adjourned at 8:25p.

Scott Lehmann, Secretary, 16 December 2010

Attachment: Report on 10/14 IWA Field Trip

W1465 (Carlson property, Dunham Pond Rd). A single family home is proposed on a lot across the road and uphill from Dunham Pond & associated wetlands. A portion of the driveway and the reserve septic area would be within 150 ft of these wetlands. As currently drawn, the driveway runs straight down a rather steep slope to the road at the north edge of the lot and could deliver a lot of water and products of erosion to wetlands during an extreme rain event. This could be mitigated by curving the driveway up from farther south on the road – which would also improve the sight-line to the north and make it possible to drive up the east-facing slope to the house in the winter.

W1466 (Rich property, 42 Fern Rd). Mr. Rich would like to extend his garage to enclose a small adjacent parking area and to construct a lean-to against a shed to shelter a tractor pad. Both these sites are within 150 ft of wetlands; indeed, the parking area beside the garage is inches away from a small stream that descends along the driveway and to and across Fern Rd. However, the effect on wetlands is likely to be marginal, since no foundation work is required: both areas are currently surfaced with concrete.

Scott Lehmann, 15 December 2010

Memorandum:

December 29, 2010

To: Inland Wetland Agency
From: Grant Meitzler, Inland Wetland Agent
Re: New Business for the January 3, 2011 meeting

New Application:

W1467 - Listro - Candide La - 1 lot resubdivision

	yes	no
	-----	-----
fee paid	x	
certified receipts	x	
map dated		11.04.2010

This application is for a split of two present lots into three, creating one new lot. The driveway and a portion of the work around the proposed house are within the 150' regulate area. The driveway crosses a seasonal flow area.

Receipt and referral to the Conservation Commission is appropriate.

Modification Request:

W1468 - Storrs Center Alliance LLC - phasing 1A & 1B

	yes	no
	-----	-----
fee paid	x	
certified receipts	n.a.	
map dated		12.29.2010

This application presents phasing modification defining Phases 1A & 1B.

The project was approved in total previously with an understanding there would be phasing which was undefined at that point in time; Storrs Center Alliance LLC, W1378.

Parking modification has been added at the rear of the Bishop Center, and a short term sediment control structure has been added to contain sediment from construction in Phase 1A until Phase 1B stabilizes the areas with the final drainage improvements originally approved.

I suggest scheduling a special meeting for Tuesday, January 18, 2011 to allow for a field trip before further consideration.

Regulation Revisions:

1469 - Town of Mansfield - statutory regulation revisions

This session of the legislature made changes to the sections of the

regulations dealing with conservation and preservation restrictions.
These need to be incorporated into our regulations.

See communication from the DEP in this packet.

APPLICATION FOR PERMIT
MANSFIELD INLAND WETLANDS AGENCY
4 SOUTH EAGLEVILLE ROAD, STORRS, CT 06268
TEL: 860-429-3334 OR 429-3331
FAX: 860-429-6863

FOR OFFICE USE ONLY

File # #1467
 W 12-23-10
 Fee Paid 12-23-10
 Official Date of Receipt 12-23-10

Applicants are referred to the Mansfield Inland Wetlands and Watercourses Regulations for complete requirements, and are obligated to follow them. For assistance, please contact Grant Meitzler, Inland Wetlands Agent at the telephone numbers above.

Please print or type or use similar format for computer; attach additional pages as necessary.

Part A - Applicant

Name John Listro

Mailing Address 12 Candide Lane, Mansfield, CT
Zip 06268

Telephone-Home 860-453-7188 Telephone-Business _____

Title and Brief Description of Project

Proposed re-subdivision of two existing developed lots to create
a third lot

Location of Project #12 Candide Lane & 260 Stearns Road, Mansfield, CT

Intended Start Date April 2011

Part B - Property Owner (if applicant is the owner, just write "same")

Name Suzanne Listro / John Listro

Mailing Address S. Listro, 260 Stearns Road, Mansfield, CT 06268
J. Listro, 12 Candide Lane, Mansfield, CT Zip 06268

Telephone-Home _____ Telephone-Business _____

Owner's written consent to the filing of this application, if owner is not the applicant:

Signature John P. Listro, Suzanne Listro date Dec 23, 2010

Applicant's interest in the land: (if other than owner) _____

Part C - Project Description (attach extra pages, if necessary)

1) Describe in detail the proposed activity here or on an attached page. (See guidelines at end of application – page 6.)

Please include a description of all activity or construction or disturbance:

a) in the wetland/watercourse

b) in the area **adjacent** to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is **off** your property

Proposed re-subdivision to create one additional lot from two existing parcels. The project does NOT propose any work or disturbance in the wetlands, but does propose a driveway between a wetland pocket and a wetland area. This project proposes to disturb the upland review area with the installation and construction of the proposed driveway, driveway culverts, and associated underground utility services

2) Describe the amount or area of disturbance (in square feet or cubic yards or acres):

a) in the wetland/watercourse

b) in the area **adjacent** to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is **off** your property

The application is NOT proposing any work in the wetlands, but is proposing about 25,000 sq. ft. of disturbance in the upland review area.

3) Describe the type of materials you are using for the project: The current proposal will utilize bank run gravel and processed aggregate to build

the driveway, along with plastic open bottom culvert to convey stormwater

a) include **type** of material used as fill or to be excavated Filling gravel & proc. agg

b) include **volume** of material to be filled or excavated approximately 200 cu.yds. bank run gravel & processed aggregate

4) Describe measures to be taken to minimize or avoid any adverse impacts on the wetlands and regulated areas (silt fence, staked hay bales or other Erosion and Sedimentation control measures).

Proposing E&S controls be installed prior to any land disturbance, proposing that no earthwork shall be performed during rain events and to maintain animal passage

Part D - Site Description

Describe the general character of the land. (Hilly? Flat? Wooded? Well drained? etc.)

the land is a mix of hilly, with flat wooded valleys. The hill tops have moderate depressions mixed with flat plateaus

Part E - Alternatives

Have you considered any alternatives to your proposal that would meet your needs and might have less impact on the wetland/watercourse? Please list these alternatives.

The applicant considered sharing a drive with #260 Stearns Road,
but due to grading requirements along the east side of the the
existing house, and septic system this option was not pursued

Part F - Map/Site Plan (all applications)

1) Attach to the application a map or site plan showing existing conditions and the proposed project in relation to wetland/ watercourses. Scale of map or site plan should be 1" = 40'; if this is not possible, please indicate the scale that you are using. A sketch map may be sufficient for small, minor projects. (See guidelines at end of application – page 6.)

2) Applicant's map date and date of last revision 11/4/2010

3) Zone Classification RAR-90

4) Is your property in a flood zone? Yes X No Don't Know

Part G - Major Applications Requiring Full Review and a Public Hearing

See Section 6 of the Mansfield Regulations for additional requirements.

Part H - Notice to Abutting Property Owners

1) List the names and addresses of abutting property owners

Name	Address
Willard J. Stearns & Sons,	40 Stearns Road, Mansfield, CT 06268
Bing & Wei Wei Wang,	11 Candide Lane, Mansfield, CT 06268
James V. Leta,	256 Stearns Road, Mansfield, CT 06268
Daniel Helt & Mary Shea,	286 Stearns Road, Mansfield, CT 06268
Joseph & Teressa Trehy,	56 Candide Lane, Mansfield, CT 06268

2) **Written Notice to Abutters** . You must notify abutting property owners by certified mail, return receipt requested, stating that a wetland application is in progress, and that abutters may contact the Mansfield Inland Wetlands Agent for more information. Include a brief description of your project. **Postal receipts of your notice to abutters must accompany your application.** (This is not needed for exemptions).

Part I - Additional Notices, if necessary

1) Notice to Windham Water Works is attached. If this application is in the public watershed for the Windham Water Works (WWW), you must notify the WWW of your project within 7 days of sending the application to Mansfield--sending it by certified mail, return receipt requested. Contact the Mansfield Inland Wetlands Agent to find out if you are in this watershed.

2) Notice to Adjoining Town. If your property is within 500 feet of an adjoining town, you must also send a copy of the application, on the same day you sent one to Mansfield, to

the Inland Wetlands Agency of the adjoining town, by certified mail, return receipt requested.

- 3) The Statewide Reporting Form (attached) shall be part of the application and specified parts must be completed and returned with this application.

Part J - Other Impacts To Adjoining Towns, if applicable

- 1) Will a significant portion of the traffic to the completed project on the site use streets within the adjoining municipality to enter or exit the site? ___ Yes X No ___ Don't Know
- 2) Will sewer or water drainage from the project site flow through and impact the sewage or drainage system within the adjoining municipality? ___ Yes X No ___ Don't Know
- 3) Will water run-off from the improved site impact streets or other municipal or private property within the adjoining municipality? ___ Yes X No ___ Don't Know

Part K - Additional Information from the Applicant

Set forth (or attach) any other information which would assist the Agency in evaluating your application. (Please provide extra copies of any lengthy documents or reports, and extra copies of maps larger than 8.5" x 11", which are not easily copied.)

Part L - Filing Fee

Submit the appropriate filing fee. (Consult Wetlands Agent for the fee schedule available in the Mansfield Inland Wetlands and Watercourses Regulations.)

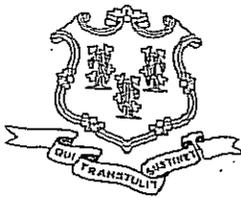
___ \$365. ___ \$110. ___ \$60. ___ \$25. X \$310 (\$250+\$60)

Note: The Agency may require you to provide additional information about the regulated area which is the subject of the application, or about wetlands or watercourses affected by the regulated activity. If the Agency, upon review of your application, finds the activity proposed may involve a "significant activity" as defined in the Regulations, additional information and/or a public hearing may be required.

The undersigned applicant hereby consents to necessary and proper inspections of the above mentioned property by members and agents of the Inland Wetlands Agency, at reasonable times, both before and after the permit in question has been granted by the Agency.

John P. Lister
Applicant's Signature

Dec 23, 2010
Date



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION



To: Connecticut's Municipal Inland Wetlands Agencies

From: Betsey Wingfield, Bureau Chief *BW*
Bureau of Water Protection and Land Reuse

Dated: November 17, 2010

Re: 2010 Legislation and Regulations Advisory

W1469

The 2010 Legislature amended section 47-42d of the General Statutes of Connecticut with the passage of Public Act No. 10-85. Section 1 of such Public Act affects municipal inland wetlands agencies when acting on certain permit applications relating to property subject to conservation or preservation restrictions. Specifically, the new language clarifies that when a regulated activity takes place on a portion of property that is *not* restricted under the terms of a conservation or a preservation restriction, the filing of a permit application for such regulated activity may not be prohibited, and the applicant does not need to provide written notice to the holder of the conservation or preservation restriction. In addition, the new language describes the process an inland wetlands agency is to undertake if a regulated activity will occur on property for which a conservation or preservation restriction is held by a state agency.

A complete copy of Public Act No. 10-85 is attached for your use with the amended language underlined in Section 1 of such Public Act. You should plan to revise your inland wetlands agency regulations to reflect the amendments. Please note that only the revised language in section 1 of Public Act No. 10-85 is relevant to inland wetlands agencies. The provisions of section 47-42d of the General Statutes of Connecticut as amended by Public Act No. 10-85 govern until such time that your municipal regulations are amended. Section 1 of Public Act No. 10-85 goes into effect October 1, 2010.

In order to conform to Public Act No. 10-85, the following changes to the Inland Wetlands and Watercourses Model Municipal Regulations (IWWMR) Fourth Edition dated May 1, 2006, as amended by the 2008 Legislation and Regulations Advisory dated October 14, 2008, are made:

Section 7: Application Requirements

The underlined language noted below is new and should be added to your regulations.
The bracketed ([]) language is deleted and should be removed from your regulations.

- 7.11 For any permit application involving property subject to a conservation restriction or preservation restriction, the following shall apply:
- a. for purposes of this section, "conservation restriction" means a limitation, whether or not stated in the form of a restriction, easement, covenant or condition, in any deed, will or other instrument executed by or on behalf of the owner of the land described therein, including, but not limited to, the state or any political subdivision of the state, or in any order of taking such land whose purpose is to retain land or water areas predominantly in their natural, scenic or open condition or in agricultural, farming, forest or open space use.

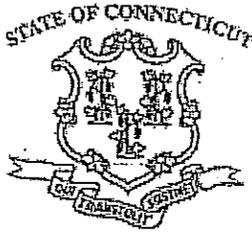
- b. for purposes of this section, "preservation restriction" means a limitation, whether or not stated in the form of a restriction, easement, covenant or condition, in any deed, will or other instrument executed by or on behalf of the owner of land, including, but not limited to, the state or any political subdivision of the state, or in any order of taking of such land whose purpose is to preserve historically significant structures or sites.
- c. no person shall file a permit application, other than for interior work in an existing building or for exterior work on an existing building that does not expand or alter the footprint of [an] such existing building, relating to property that is subject to a conservation restriction or a preservation restriction unless the applicant provides proof that the applicant has provided written notice of such application, by certified mail, return receipt requested, to the party holding such restriction, including, but not limited to, any state agency that holds such restriction, not later than sixty days prior to the filling of the permit application.
- d. in lieu of such notice pursuant to subsection 7.11c, the applicant may submit a letter from the holder of such restriction or from the holder's authorized agent, verifying that the application is in compliance with the terms of the restriction.

Section 10: Considerations for Decisions

The underlined language noted below is new and should be added to your regulations.
The bracketed ([]) language is deleted and should be removed from your regulations.

- 10.8 In the case of an application where the applicant has provided written notice pursuant to subsection 7.11c of these regulations, the holder of the restriction may provide proof to the inland wetlands agency that granting of the permit application will violate the terms of the restriction. Upon a finding that the requested land use violates the terms of such restriction, the inland wetlands agency shall not grant the permit approval.
- 10.9 In the case of an application where the applicant fails to comply with the provisions of subsections 7.11c or 7.11d of these regulations, (1) the party holding the conservation or preservation restriction, other than a state agency that holds such restriction, may, not later than fifteen days after receipt of actual notice of permit approval, file an appeal with the inland wetlands agency, subject to the rules and regulations of such agency relating to appeals. The inland wetlands agency shall reverse the permit approval upon a finding that the requested land use violates the terms of such restriction[.]; or (2) the state agency that holds such restriction may, not later than thirty days after receipt of actual notice of permit approval, file an appeal with the inland wetlands agency, subject to the rules and regulations of such agency relating to appeals. The inland wetlands agency shall immediately reverse such permit approval if the commissioner of the state agency that holds such restriction certifies that the land use authorized in such permit violates the terms of such conservation or preservation restriction.
- 10.10 Nothing in subsections 7.11c or 7.11d of these regulations shall be construed to prohibit the filing of a permit application or to require such written notice when the activity that is the subject of such permit application will occur on a portion of property that is not restricted under the terms of such conservation or preservation restriction.

Should you have any further questions regarding the above changes, please feel free to contact Darcy Winther of the Wetlands Management Section at (860) 424-3019.



Substitute House Bill No. 5117

Public Act No. 10-85

**AN ACT CONCERNING CONSERVATION AND PRESERVATION RESTRICTIONS
HELD BY THE STATE.**

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 1. Section 47-42d of the general statutes is repealed and the following is substituted in lieu thereof (*Effective October 1, 2010*):

(a) For purposes of this section, "state or local land use agency" includes, but is not limited to, a municipal planning commission, municipal zoning commission, combined municipal planning and zoning commission, a municipal zoning board of appeals, municipal inland wetlands and watercourses agency, a municipal historic district commission and any state agency that issues permits for the construction or improvement of real property.

(b) No person shall file a permit application with a state or local land use agency or a local building official or director of health, other than for interior work in an existing building or for exterior work on an existing building that does not expand or alter the footprint of [an] such existing building, relating to property that is subject to a conservation restriction or a preservation restriction unless the applicant provides proof that the applicant has provided written notice of such application, by certified mail, return receipt requested, to the party holding such restriction, including, but not limited to, any state agency that holds such restriction, not later than sixty days prior to the filing of the permit application. In lieu of such notice, the applicant may submit a letter from the holder of such restriction or from the holder's authorized agent, verifying that the application is in compliance with the terms of the restriction. If the applicant has provided written notice pursuant to this subsection, the holder of the restriction may provide proof to the state or local land use agency or local building official or director of health that granting of the permit application will violate the terms of the restriction and such agency, official or director shall not grant the permit. Nothing in this section shall be construed to prohibit the filing of a permit

application or to require such written notice when the activity that is the subject of such permit application will occur on a portion of property that is not restricted under the terms of such conservation or preservation restriction.

(c) If the applicant fails to comply with the provisions of subsection (b) of this section, (1) the party holding the conservation or preservation restriction, other than a state agency that holds such restriction, may, not later than fifteen days after receipt of actual notice of permit approval, file an appeal with the state or local land use agency or local building official or director of health, subject to any rules of such agency, official or director relating to appeals. The agency, official or director shall reverse the permit approval upon a finding that the requested land use violates the terms of such restriction; or (2) the state agency that holds such restriction may, not later than thirty days after receipt of actual notice of permit approval, file an appeal with the state or local land use agency or local building official or director of health, subject to any rules of such state or local land use agency, official or director relating to appeals. Such state or local land use agency, official or director shall immediately reverse such permit approval if the commissioner of the state agency that holds such restriction certifies that the land use authorized in such permit violates the terms of such conservation or preservation restriction. The commissioner of the state agency that holds such restriction may impose a civil penalty of not more than:
(A) Five thousand dollars for a violation of subsection (b) of this section; and (B) one thousand dollars for each day that such violation continues after the applicant receives an order from such commissioner assessing a civil penalty pursuant to subparagraph (A) of this subsection.

Sec. 2. (NEW) (*Effective from passage*) (a) For purposes of this section:

- (1) "Conservation restriction" has the same meaning as provided in section 47-42a of the general statutes;
 - (2) "Preservation restriction" has the same meaning as provided in section 47-42a of the general statutes; and
 - (3) "Open space land" has the same meaning as provided in section 12-107b of the general statutes.
- b) Whenever a municipality acquires any real property with the intent to place a conservation restriction, preservation restriction or other restriction on the use of such property, including acquiring property with funds specifically allocated for a conservation or preservation purpose, such municipality shall record in the land records a description of any such restriction and any applicable source of such restriction, including, but not limited to, the date of the referendum or local legislative body action that authorized such

acquisition contingent upon certain use restrictions and the source of the funding for the acquisition of such property if such funding restricted the use of such property.

(c) Whenever a municipality intends to permanently protect any municipal property by dedicating such property as a park or open space land, such municipality shall record in the land records a description of such property, the date of such dedication and the local legislative body action that authorized such dedication.

(d) The failure of a municipality to comply with the provisions of subsection (b) or (c) of this section shall not be evidence of the lack of any such conservation restriction, preservation restriction or open space land dedication.

(e) Nothing in this section shall be construed to amend or alter any other legal right or obligation of a municipality concerning open space land or park land.

(f) If a municipality fails to comply with a dedication of land as open space land or park land or the terms of a conservation or preservation restriction, the Attorney General may bring an action in the superior court to enforce the public interest in such dedication or conservation or preservation restriction.

Approved May 26, 2010

PAGE
BREAK

TOWN OF MANSFIELD
OFFICE OF PLANNING AND DEVELOPMENT

GREGORY J. PADICK, DIRECTOR OF PLANNING

Memo to: Mansfield Planning and Zoning Commission, Town Council, Conservation Commission
From: Gregory Padick, Director of Planning 
Date: January 13, 2011
Re: Zoning Permit Review: Storrs Center Project Phases 1A and 1B

In 2007, the Planning and Zoning Commission (PZC) unanimously approved the Storrs Center Special Design District (SC-SDD) zone and associated Zoning Regulations establishing a specific review and approval process for all development in the SC-SDD. The reasons for creating the new zone and the associated regulations are documented in the PZC's approval motion (attached). The approved zoning permit review and approval process is designed to ensure compliance with all applicable zoning approval criteria including a determination by the Director of Planning that the proposed development is "reasonably consistent" with the PZC approved preliminary master plan mapping, the Storrs Center Design Guidelines, the master parking study, the master traffic study and the master drainage study. The Zoning Regulations define "reasonably consistent" as "some variation or deviation from specific provisions is acceptable, provided that the overall intent of the provision is achieved with respect to health, safety, environmental and other land use considerations" (portions of Article X, Section S regarding the Zoning Permit process for the SC-SDD are attached).

Although the SC-SDD Zoning Permit review process is administrative, provisions are included for public participation. A public hearing conducted by the Mansfield Downtown Partnership Inc, Mansfield's officially designated Municipal Development Authority for the Storrs Center project, is required, and all public comments will be considered before a decision is made on a zoning permit application. Furthermore, all zoning permits in the SC-SDD will be thoroughly reviewed by Mansfield staff members and it will be confirmed that submitted plans remain acceptable to the State and Federal review agencies, including the State Department of Environmental Protection, the State Traffic Commission and the Army Corp of Engineers.

Pursuant to SC-SDD regulations, over the past three (3) months, Mansfield staff members and members of the Mansfield Downtown Partnership Planning and Design Committee have met with representatives of the Storrs Center Alliance and Education Realty Trust, the developers of proposed phases 1A and 1B of the Storrs Center Project. These meetings were held for the purpose of reviewing and commenting on preliminary plans and helping to ensure that Zoning Permit applications were complete and appropriately addressed applicable approval criteria. Based on these pre-application meetings, plans have been refined and a Zoning Permit application for Phases 1A and 1B is expected to be submitted on Friday January 14th. The initial phases include buildings DL-1/DL-2 and TS-1 located north of Dog Lane and building TS-2 located south of Dog Lane and east of the planned Town Square. These phases, which cumulatively propose about 70,000 square feet of commercial space and 290 residential apartments, also include alterations to Storrs Road and Dog Lane. Plans for a garage/intermodal center and a new village street connecting Dog Lane and the Post Office Road are under design and will be subject to a subsequent Zoning Permit Application. Zoning Permit approval also will be required for Town Square improvements.

The Downtown Partnership has scheduled a public hearing on the Zoning Permit application for Phases 1A and 1B for 7pm on February 1, 2011. The hearing will be held in Room 7 of the Bishop Center

located east of Storrs Road and north of Dog Lane on the University of Connecticut campus. Following the completion of the public hearing process, the Downtown Partnership Inc. will forward comments and a recommendation for consideration by the Director of Planning.

Although the formal Zoning Permit review process has just begun, staff members have been reviewing preliminary plans and are familiar with the primary elements of Phases 1A and 1B. Based on our review to date, the following information is noteworthy:

- The depicted streets (Storrs Road, Dog Lane and Village Street) are in the same location and have the same basic configuration as the preliminary master plan approved by the PZC.
- The proposed Phase 1A and 1B buildings remain in the same overall locations as PZC approved plans but they have been refined to accommodate the proposed mix of residential and commercial uses. The building heights and façade designs appear to address design guideline provisions. It is noted that a private drive between the TS-1 building and planned garage/intermodal center is no longer planned and the DL-1 and DL-2 buildings have been merged into one building.
- The size and location of the Town Square have not been changed from the preliminary master plan approved by the PZC. Final plans for the Town Square will be subject to subsequent Zoning Permit approval. The Town Square cannot be built until Storrs Automotive is relocated. A temporary roadway through the future Town Square area will link Dog Lane and Storrs Road.
- The depicted location and overall size of the Town garage/intermodal center have not been changed from the preliminary master plan approved by the PZC. Final plans for the garage/intermodal center and related street and infrastructure improvements are under design and will be subject to subsequent Zoning Permit approval (most likely this spring).
- The submitted plans for Phases 1A and 1B include service connections to UConn sewer and water systems and all utilities are planned to be installed underground.
- All PZC approval requirements, including the dedication of the depicted conservation area (to be deeded to the Town), a roadway connection to the Storrs Post Office Road and construction traffic controls, will be addressed in association with the PZC approved Zoning Permit process. It is anticipated that conditions will be added to ensure appropriate coordination and completion of roadway, parking, intermodal, landscaping and other public improvements. It is noteworthy that the garage/intermodal center, Village Street and associated improvements are now Town responsibilities.
- It is noted that specific tenants have not been identified for all planned commercial spaces. Accordingly, it is anticipated that a Zoning Permit condition will be added to ensure compliance with permitted use provisions and compliance with design standards for storefront improvements such as signage, awnings and any outdoor seating, etc.
- The floor plans for the proposed apartments depict efficiency units and one (1), two (2) and three (3) bedroom apartments. A majority of the apartments are one (1) and two (2) bedrooms. There is no indication that the units are designed as dormitories or other forms of student housing.
- No Zoning Permit will be issued until it is confirmed that all State and Federal permit requirements have been met and until required modification approvals have been obtained from the Inland Wetlands Agency and Planning and Zoning Commission. Subsequently, the plans will need to be approved by the Mansfield Building and Fire Marshal's Departments.
- Any review comments from members of the Planning and Zoning Commission, Town Council and other Town Commissions and Committees should be submitted in association with the Storrs Center Special Design District Public Hearing process.

Summary

The initial Zoning Permit application for development in the Storrs Center Downtown Project will soon be received and reviewed pursuant to Storrs Center Special Design District requirements. These requirements will ensure compliance with all applicable Zoning Regulations including provisions designed to ensure consistency with PZC approved plans and associated studies and design guidelines. Over the past few months, preliminary plans for Phases 1A and 1B have been under review by Town staff members and the Downtown Partnership Planning and Design Committee. Based on initial review comments, the submitted plans have been refined and will now be subject to final reviews. A public hearing has been scheduled for February 1, 2011 at 7pm in the Bishop Center on UConn's campus. All public hearing comments, final reviews by Town staff and a recommendation from the Mansfield Downtown Partnership, Mansfield's Municipal Development Authority for this project, will be considered in association with the Zoning Permit process. The Director of Planning is authorized to make the final determination that all applicable zoning requirements have been met.

PAGE
BREAK

Memorandum:

January 13, 2011

To: Inland Wetland Agency
From: Grant Meitzler, Inland Wetlands Agent
Re: W1468 - Storrs Center Alliance LLC - modifications
W1378 - Storrs Center Alliance LLC - total project

plan references:

map: dated 12.29.2010 ... "Storrs Center, Inland Wetlands Approval Modification Plan, for Phase 1A & 1B Development"
map: dated 12.21.2010 ... "Modification to the Special Permit Application" Phase 1A, Building DL-1
drainage report dated 12.21.2010 ...
"Stormwater Management Report, Special Permit Application"
drainage report dated 12.29.2010 ...
"Master Stormwater Management Plan for Storrs Center - Phase 1A/1B Update"

W1378 - This application approved the total project with my understanding that actual phasing and some later modifications would result strictly due to the scale of this project. The result of approval is that the total project has approval, with minor modifications expected.

W1468 - Storrs Center Alliance LLC is applying for modifications of a portion of the total previous approval that defines microphasing for Phase 1A & Phase 1B.

Phase 1A - building DL-1 is to be attached to building DL-2 with the former exterior walkway from Dog Lane between the two buildings being replaced by an interior walkway access. This is not within wetlands regulated areas.

Phase 1A - Building DL-1 previously had a proposed new parking area directly adjacent to the east side of that building. This has been moved farther east placing equivalent parking between the present south end of the Bishop Center easterly parking area and Dog Lane. This is being done with a revision of the present southeasterly Bishop Center parking area.

Drainage from this new parking has been directed to an area of parking spaces surfaced with pavers underlain by 2 feet of stone to provide the DEP recommended water quality storage volume ("first flush" flow). This area is combined with a "biofilter area" for further treatment and reduction in impacts. This new parking starts near Dog Lane with permeable surface extending through twelve spaces running straight back from Dog Lane. A tapering addition of new parking in the Bishop Center parking lot runs to the north and at its closest shows work about 25' from a mapped wetland area in the wooded land east of the parking. This location is near the end of the tapering new parking lot work and is only about 2 feet wide here. A low berm has been shown along the edge of parking at this location to keep parking lot flow from running to the wetland area. The new parking is amply protected and is about 100 feet away from this same small wetlands area.

Phase 1A - separation between the new parking area work has been kept between 90 and 100 feet away from the property line of the adjacent residential property on Dog lane, with the wooded area in between being preserved.

Phase 1A includes the Garage (GR-1 by others). The plans for Phase 1A before this modification included the "hand dug retention" area to the east of this garage. I recommend clarification that this wetland protective measure remain in the phase including this garage. This project is a large one, with a relatively complex array of entities. This recommendation is intended to keep ties between the very specific installations for wetlands protection tied to the various phases of buildings within the project where they were previously approved by the wetlands agency.

Phase 1A & 1B - Phase 1B is to be preceded by a temporary sediment basin in the area of the southeast corner of garage GR-1. This basin has been placed in the wetland area south of the Phil's Warzocha site and partly under the GR-1 garage. This basin will control sediments and flow from phase 1A construction, and will be eliminated when construction passes from Phase 1A to Phase 1B. There is no change intended in the design of the final drainage system at this location. The temporary change is to allow construction to proceed through Phase 1A (April 2011) to Phase 1B (June 2012). The sizing of this sediment basin has been determined based on the DEP stormwater guidelines and a storage capacity of 3 times the recommended size has been provided.

Both of these changes - the revised parking and the temporary sediment basin - have been conservatively addressed, and I believe they are consistent with the earlier approval for the overall wetlands design previously approved.

TOWN OF MANSFIELD
PLANNING AND ZONING COMMISSION

FILE

AUDREY P. BECK BUILDING
FOUR SOUTH EAGLEVILL ROAD
STORRS, CT 06268
(860) 429-3330

June 20, 2007

Mansfield Downtown Partnership, Inc.
C/o Cynthia van Zelm, Executive Director
1244 Storrs Road
P.O. Box 513
Storrs, CT 06268

Re: Mansfield's PZC approved revisions to Mansfield's Zoning Regulations
PZC file #1256

Dear Ms. van Zelm,

At a meeting held on 6/18/07, the Mansfield Planning and Zoning Commission adopted the following motion:

"to approve, subject to revisions noted below, the February 15, 2007 application of the Mansfield Downtown Partnership Inc., and Storrs Center Alliance LLC., to amend various sections of the Mansfield Zoning Regulations as submitted to the Commission and heard at Public Hearings on March 28, April 5, April 26 and May 21, 2007. The subject regulation amendments shall become effective as of July 15, 2007 or upon subsequent filing on the Mansfield Land Records.

The Planning and Zoning Commission has reviewed and considered all Public Hearing testimony and communications. The regulation amendments referenced above are adopted pursuant to the provisions and authority contained in Chapter 124 of the Connecticut General Statutes, including Section 8-2, which provides the Commission with:

- The authority to regulate the density of population and the location and use of buildings, structures and land for trade, industry, residence or other purposes;
- The authority to divide the municipality into districts of such number, shape and area as may be best suited to carry out the purposes of Chapter 124 of the Connecticut General Statutes; and, within such districts, the authority to regulate the erection, construction, reconstruction, alteration or use of buildings or structures and the use of land;
- The mandate to consider the Plan of Conservation and Development prepared under Section 8-23;
- The mandate to secure safety from fire, panic, flood and other dangers; to promote health and the general welfare; to provide adequate light and air; to prevent the overcrowding of land; and to facilitate the adequate provision for transportation, water, sewerage, schools, parks and other public requirements;
- The mandate to give reasonable consideration as to the character of the district and its peculiar suitability for particular uses and with a view to conserving the value of buildings and encouraging the most appropriate use of land throughout such municipality;
- The authority that reasonable consideration be given for the protection of existing and potential public surface and ground drinking water supplies;
- The authority to encourage energy-efficient patterns of development.

continued

The subject regulation revisions have been adopted because they promote these statutory goals and other zoning purposes cited in Article One of Mansfield's Zoning Regulations. Furthermore, the Commission has adopted the subject regulation revisions for the following reasons:

1. The subject Storrs Center Special Design District Regulations promote goals, objectives, and recommendations contained in Mansfield's 2006 Plan of Conservation and Development. The revisions also are consistent with goals and recommendations contained in the 2002 Windham Region Land Use Plan, and the 2005-2010 Conservation and Development Policies Plan for Connecticut.
2. The approved revisions are acceptably worded and appropriately coordinated with other provisions of Mansfield's Zoning Regulations. The revisions have been determined to be legally acceptable by the Town Attorney.
3. The approved revisions are consistent with the approved Municipal Development Plan for the Storrs Center Project.
4. The approved revisions include new and detailed application requirements and approval processes for creating new Storrs Center Special Design Districts and for authorizing new development within an approved district. The approved regulations are considered adequate and appropriate for regulating future development in the subject project area.

The applicant's February 15, 2007 "Proposed Revisions to Mansfield's Zoning Regulations" shall be revised to incorporate revisions listed below. These revisions address issues raised in the Public Hearing process and are necessary to appropriately regulate the subject Storrs Center project.

1. Items 1 through 9 listed in Exhibit 1 of the applicant's May 15, 2007 letter as "Conditions of Approval acceptable to the Co-Applicants", shall be incorporated into the final text;
2. Proposed Article X, Section T.4.a. (iii) shall be revised to delete, "including private residence clubs";
3. Proposed Article X, Section T.4.a. (xxvi) shall be revised to read as follows: Private clubs, such as university faculty clubs, university graduate clubs and clubs for civic or religious organizations, with or without residential units, but excluding clubs or housing for student fraternities, sororities and other student groups."

If you have any questions regarding this action, please call the Planning Office at 429-3330.

Very truly yours,



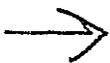
Katherine K. Holt, Secretary
Mansfield Planning & Zoning Commission

Cc: Mansfield Town Council
Storrs Center Alliance LLC.
Attorney Thomas Cody
Attorney Lee Cole-Chu

- (xix) Public and private parking garages
- (xx) Public and private parking lots
- (xxi) Self-service laundromats, and laundry and dry-cleaning drop-off and pick-up, provided no dry cleaning is conducted on the premises
- (xxii) Public or private schools
- (xxiii) State licensed or registered day-care centers
- (xxiv) Recreation facilities, whether public or private and whether indoors or outdoors, such as health clubs, physical fitness centers, gyms, playgrounds, and billiard halls
- (xxv) Private clubs, such as university faculty clubs, university graduate clubs and clubs for civic or religious organizations, with or without residential units, but excluding clubs or housing for student fraternities, sororities and other student groups.
- (xxvi) Sale of alcoholic liquor, subject to the provisions of all town ordinances.

5. General Requirements

- a. All buildings, structures and site improvements in SC-SDD zones shall address all applicable dimensional provisions contained in the Preliminary Master Plan, Master Parking Study and Design Guidelines approved in conjunction with the establishment of the SC-SDD zone classification for the property.
- b. All development in SC-SDD zones shall be served by public water and sanitary sewer facilities.
- c. All new utilities shall be installed underground, unless waived by the Director of Planning due to physical constraints or other special circumstances. Utilities that are not customarily installed underground, such as transformer boxes, are not required to be installed underground.
- d. Underground tanks for the storage of petroleum products or hazardous materials are prohibited in SC-SDD zones.



6. Zoning Permit Application Review

Following approval of a map amendment rezoning land to an SC-SDD designation, all applications for zoning permit review shall be submitted to the Mansfield Director of Planning pursuant to the following process:

a. Informal Review

All prospective zoning permit applicants are encouraged to review zoning permit applications with the Director of Planning and the Zoning Agent on an informal and pre-application basis.

b. Application Process

- (i) Applications for zoning permit review in an SC-SDD district are submitted to the Director of Planning. A minimum of eight complete sets of all application materials shall be submitted and the Director of Planning shall have the right to require additional sets to satisfy referral requirements. The applicant shall also submit at least one set of plans at one-half or one-quarter size to facilitate referrals and public review.
- (ii) The Director of Planning shall promptly refer the application to the Mansfield Downtown Partnership for the purpose of holding a public hearing on the application and rendering an advisory opinion regarding the application to the Director of Planning. The Partnership public hearing shall be advertised in a manner consistent with the statutory requirements for public hearings on special permit applications. The Partnership shall conclude its public hearing on the application within 35 days of the date that the Director of Planning refers the application. The applicant may consent to an extension of time to open or conclude the public hearing of up to a total of 35 days. If the Partnership does not deliver its written report to the Director of Planning within 10 days of the close of its public hearing, the Director of Planning shall presume that the Partnership's advisory opinion is favorable to the application.
- (iii) The Director of Planning shall complete his review of the application no later than 20 days following the due date for the report from the Mansfield Downtown Partnership provided that, if any of the activities proposed in the application are regulated by the Mansfield Inland Wetlands and Watercourses Agency (IWA), the Director of Planning shall not render a decision on the application until the IWA has rendered a decision on such regulated activities. Upon completion of a favorable review by the Director of Planning, the Zoning Agent is authorized to issue the zoning permit.

c. Application Requirements

All applicants for zoning permit review shall provide the application materials required by Article XI, subsection C.2. The following additional information shall also be submitted:

- (i) Summary table of land uses, including number of dwelling units in each building, amount of square footage of each non-residential land use type in each building, dimensional requirements and statement of consistency of the application with the above requirements
- (ii) Statement of intent regarding common interest ownership within the project, if applicable
- (iii) Plan sheets including all applicable information required by Article V, Sections A.3.d, A.3.e and A.3.f of these Regulations, as well as the following information, if applicable:

- (1) Location or key map, depicting the location of the site plan within the area that is zoned SC-SDD, if the application pertains to an area that is less than the entire area zoned SC-SDD
 - (2) Roadway and right-of-way widths, sidewalk widths, roadway cross-sections and paving materials
 - (3) Identification of all land and improvements intended to be dedicated to the Town of Mansfield
 - (4) Parking plan, including on-street parking areas
 - (5) Exterior building elevations of all sides of each building, including building height and exterior building materials
 - (6) Interior floor plans of each floor of each building, provided that the location of interior walls and partitions shall be considered preliminary and subject to change.
- (iv) Statement regarding construction traffic and steps to be taken to address traffic safety issues and potential neighborhood impacts from construction
 - (v) Documentation that all development within an SC-SDD classification shall be served by public water and sewer facilities
 - (vi) Statement of Consistency with Plans, Studies and Guidelines

A statement, prepared by a professional with expertise in the relevant subject area, shall be provided demonstrating reasonable consistency with the following documents that were approved as part of the map amendment to SC-SDD:

- (1) Preliminary Master Plan
 - (2) Master Parking Study
 - (3) Master Traffic Study
 - (4) Master Stormwater Drainage Study
 - (5) Design Guidelines
- (vii) The Director of Planning is authorized to require a current shared parking analysis at the time of zoning permit application submittal.

d. Approval Considerations

In reviewing any zoning permit application, the Director of Planning shall determine the following:

- (i) That the criteria contained in Article V, Section A.5 (but not including review by the Planning and Zoning Commission) and Article XI, subsection C.3 have been addressed.

- (ii) That the application is reasonably consistent with the Preliminary Master Plan, Master Parking Study, Master Traffic Study, Master Stormwater Drainage Study and Design Guidelines. In these regulations “reasonable consistency” means that some variation or deviation from specific provisions is acceptable, provided that the overall intent of the provision is achieved with respect to health, safety, environmental and other land use considerations.
- (iii) That all other applicable provisions of the Mansfield Zoning Regulations have been addressed including, but not limited to, pertinent portions of Article X, Section C (Signage); and Article X, Section H (Filling, Grading, Excavation). Specific building locations that are depicted on zoning permit applications may differ from building locations depicted on the approved Preliminary Master Plan, so long as all other requirements are satisfied.

e. Approval Conditions

The provisions of Article XI, subsections C.3 and C.4, shall apply to all zoning permit applications approved pursuant to this Section, except that the Director of Planning may add additional conditions consistent with the provisions of the Zoning Regulations deemed necessary to ensure compliance with all applicable regulatory requirements.

f. Bonding

The Director of Planning may require a cash site development bond to address potential erosion and sedimentation control problems or other site construction issues. The Director of Planning may require a site performance bond to ensure completion of public improvements. Letters of credit may be approved subject to compliance with the provisions contained in Article VI, Section C.2.

g. Modification of Approved Plans

- (i) Since all zoning permit approvals are based on the submitted plans and specifications, all proposed revisions to zoning permit approvals within property zoned with an SC-SDD classification are required to receive prior approval pursuant to the following provisions.
- (ii) Changes to approved zoning permits within an SC-SDD area which the Director of Planning deems to be significant shall be referred to the Mansfield Downtown Partnership for a public hearing and decided in accordance with the provisions of section 6.a of this regulation
- (iii) Any other changes to approved zoning permits within an SC-SDD area shall be decided by the Director of Planning within 30 days of receipt and do not require referral to the Mansfield Downtown Partnership. A copy of each modification application and decision shall be provided to the Partnership.

- (iv) The Director of Planning, in the reasonable exercise of his or her discretion, shall have the right to approve modifications to approved zoning permits without the submission of a new zoning permit application. In those instances where the Director of Planning determines the proposed modification to be significant, the Director of Planning shall have the right to require the submission and processing of a full zoning permit application pursuant to this section.

7. Required Parking and Loading in the Storrs Center Special Design District

a. Applicability

Accessory parking and loading spaces, open or enclosed, on-street or off-street, shall be provided for all uses within the Storrs Center Special Design District for the purpose of providing safe and convenient access to buildings and land uses within and adjacent to Storrs Center.

b. Area Counted as Parking Space

A parking space may be any open or enclosed area, including any public or private garage or parking facility, carport, driveway, public or private street or other area available for parking.

c. Location of Required Accessory Parking Facilities

Required accessory parking facilities within the Storrs Center Special Design District, open or enclosed, shall be provided anywhere within the district or at any other locations that are consistent with the Master Parking Study.

d. Dimensional Requirements for all Parking Spaces and Access Aisles

All parking spaces and associated access aisles shall be sized and designed to ensure safe and convenient use. Except for required accessible parking spaces (see Article X, section T.7h), all parking spaces shall conform to the pertinent dimensions referenced in the Master Parking Study.

e. Required parking spaces within the Storrs Center Special Design District

The amount of parking required to be provided within the Storrs Center Special Design District shall be based upon the analysis of parking demand contained in the Master Parking Study.

f. Access Drive Width

Safe and convenient access to and from a street shall be provided subject to approval of the local and/or state highway department. The width of access driveways shall be consistent with the Master Parking Study and the Preliminary Master Plan. Depending on the nature and location of the proposed land use, the Director of Planning may authorize access driveway widths that are less than that provided in the Master Parking Study or Preliminary Master Plan provided no traffic safety problems are anticipated and provided the reduced width will enhance the overall design, layout and physical impact of the proposed land use.

g. Drainage and Surfacing

All open parking areas shall be properly drained and all such areas shall be provided with a dustless surface.

h. Accessible Parking Spaces

All proposed commercial, governmental and multi-family residential land uses shall provide accessible parking spaces for handicapped individuals. Said spaces shall conform with section 14-253a(h) of the Connecticut General Statutes. At a minimum, accessible parking spaces shall be provided in the number required by the State Building Code. Wherever feasible, the parking spaces located closest to a primary entrance shall be designated as accessible parking spaces. Appropriate access ways to and from the adjacent primary entrance shall be provided in association with all accessible parking spaces. All accessible parking spaces shall be clearly designated with signs situated approximately five (5) feet above grade and, where ever possible, with pavement markings. The required cross hatch area shall be located on the right hand side of each accessible space.

i. Fire lanes

All parking areas shall conform with the applicable written requirements of the Mansfield Fire Marshal regarding adequate fire lanes and emergency vehicle access.

j. Lighting

All parking and loading areas shall be adequately illuminated in order to prevent vehicular and pedestrian safety problems. All lighting fixtures shall be arranged (and, where appropriate, shielded) to prevent glare and to direct light away from any neighboring residential properties. Standards for lighting fixtures shall be addressed in the Design Guidelines required by Article X, section T.3.c(vi).

k. Snow Removal

All parking and loading areas shall be designed, constructed and maintained to address snow plowing and snow removal needs for the site. All loading areas and the minimum number of parking spaces required by these regulations shall be available for year round use.

l. Loading Areas

All loading areas shall be adequately sized and located to serve the applicable land uses. Loading areas may be located on street or off street and shall have appropriate signage.

8. Signage Regulations Applicable in all Storrs Center Special Design Districts (SC-SDD)

a. **Definitions.** The following definitions apply to signage in the SC-SDD, in addition to those definitions set forth in Article X, Section C.2:

(i) Building Frontage. The length of a particular building wall.

(ii) Primary Occupancy Frontage. The length of that portion of an exterior building wall occupied by a particular occupant and where the primary entrance to the occupant's premises is located, including both sides of a corner.

(iii) Secondary Occupancy Frontage. The length of that portion of an exterior building wall occupied by a particular occupant and where the secondary entrance to the occupant's premises, if any, is located.

- (iv) Sign, Awning. A sign attached to, affixed to, or painted on an awning or canopy.
- (v) Sign, Blade. A sign (sometimes referred to as projecting bracket mounted sign) that is attached to, in whole or in part, a building face or wall, and that projects in a perpendicular direction from such face or wall (or, in the case of a building corner, that projects in a direction that is approximately midway along the outside corner) and that contains two potential sign sides.
- (vi) Sign, Canopy. A sign that is attached to, in whole or in part, a building face or wall and that projects in a perpendicular direction from such face or wall more than 18 inches and that includes three potential sign sides (for example, a sign commonly described as a movie or theater marquee sign).
- (vii) Sign, Menu Board. A freestanding or wall-mounted sign identifying items offered for sale within a restaurant.
- (viii) Sign, Sandwich or A-Frame. A portable sign which is movable and not attached to a building, structure or the ground. These signs shall not count in the calculation of Identity Signage attached to buildings.
- (ix) Sign, Site. A sign that does not identify a particular building or establishment, but which identifies a neighborhood or other group of buildings or establishments.
- (x) Sign, Suspended. A sign that is suspended from the underside of a horizontal plane and is supported by such surface.
- (xi) Sign, Table Umbrella. A sign attached to, affixed to, or painted on an umbrella or parasol connected to an outdoor restaurant table.
- (xii) Sign, Window. An identity sign that is etched onto, or otherwise attached to, the surface of a window such that visibility is maintained through the window.

b. Types of Signs Allowed and Prohibited in the SC-SDD Zone District

- (i) **Prohibited Signs**. All of those signs listed in Article X, Section C.3, except for Sandwich or A-Frame Signs that meet the requirements set forth below and Advertising Signs that meet the requirements of Table Umbrella Signs.
- (ii) **Signs authorized without Zoning Permit approval**. Unless prohibited by Article X, Section C.3, all of the signs listed in Article X, Section C.4 are allowed without Zoning Permit approval, provided they comply with all other applicable provisions of these regulations.
- (iii) **Signs authorized with Zoning Permit approval**. The following types of signs are allowed with Zoning Permit approval, provided they comply

with all other applicable provisions of these regulations and are consistent with the provisions of the Design Guidelines:

- (1) Awning Signs
- (2) Blade Signs
- (3) Directional Signs, both on-site and off-site
- (4) Grand Opening Event Signs
- (5) Identity Signs
- (6) Menu Board Sign
- (7) Projecting Wall Signs
- (8) Sandwich or A-Frame Signs
- (9) Site Signs
- (10) Suspended Signs
- (11) Table Umbrella Sign

c. Standards for all Signs in SC-SDD

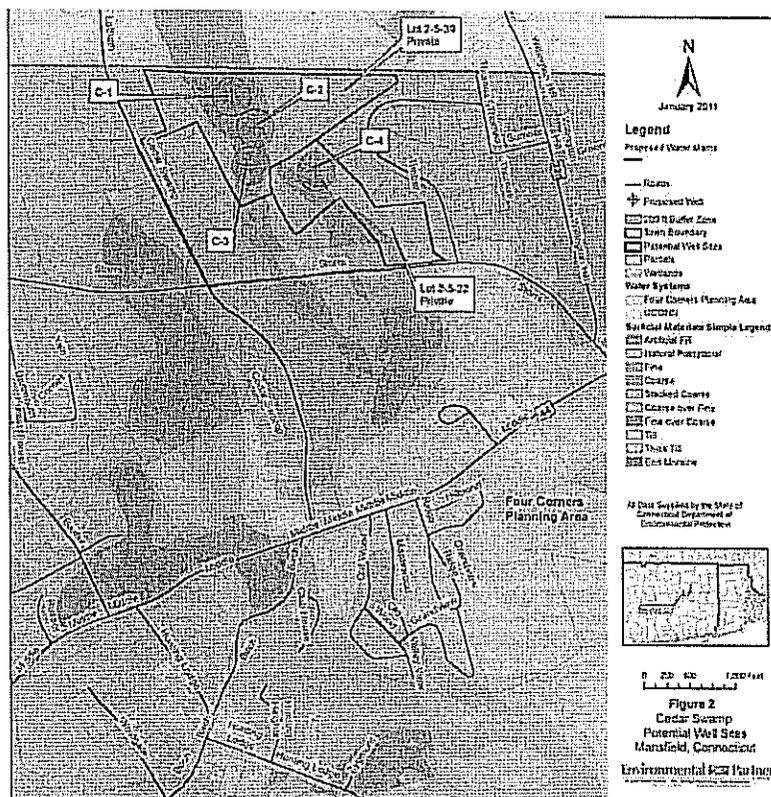
The location, dimensions, height, area, and other physical characteristics of all signs within the SC-SDD zone districts shall be consistent with the provisions of the Design Guidelines.

Town of Mansfield, CT

Draft Report

Water Source Study for the Four Corners Area

January 6, 2011



Environmental Partners
GROUP

A partnership for engineering solutions.

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Quincy, Massachusetts 02169

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TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES.....	3
LIST OF FIGURES.....	3
1.0 INTRODUCTION	4
1.1 PURPOSE	4
1.2 SCOPE OF WORK.....	4
2.0 PROPOSED WATER SYSTEM DEMANDS	6
3.0 WATER SUPPLY ALTERNATIVES AND EVALUATION FACTORS	7
3.1 WATER SUPPLY ALTERNATIVES.....	7
3.2 EVALUATION FACTORS	8
3.2.1 WATER QUANTITY	8
3.2.2 WATER QUALITY	8
3.2.3 DEP DIVERSION PERMITTING	8
3.3.4 DPH REQUIREMENTS FOR NEW WELL	9
3.3.5 DPH REQUIREMENTS FOR SYSTEM CAPACITY AND REDUNDANCY	9
3.3.6 DPH INTERCONNECTION REQUIREMENTS	9
3.3.7 WATER STORAGE AND FIRE FLOW	10
3.3.8 CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	10
3.3.9 PROPERTY PURCHASES.....	11
3.3.10 OTHER ENTITIES.....	11
3.3.11 COSTS	11
4.0 GROUNDWATER ALTERNATIVES.....	12
4.1 INTRODUCTION.....	12
4.2 INVESTIGATION APPROACH.....	12
4.3 CEDAR SWAMP.....	13
4.3.1 WATER SUPPLY POTENTIAL	13
4.3.2 POTENTIAL WELL SITES	13
4.3.3 INFRASTRUCTURE.....	14
4.3.4 OPERATIONS.....	15
4.3.5 ADVANTAGES AND DISADVANTAGES.....	15
4.4 WILLIMANTIC SITES NEAR MANSFIELD DEPOT	15
4.4.1 WATER SUPPLY POTENTIAL	15
4.4.2 POTENTIAL WELL SITES	16
4.4.3 INFRASTRUCTURE.....	17
4.4.4 OPERATIONS.....	18

4.4.5 ADVANTAGES AND DISADVANTAGES.....	18
4.5 WILLIMANTIC SITES NEAR EAGLEVILLE LAKE	18
4.5.1 WATER SUPPLY POTENTIAL	18
4.5.2 POTENTIAL WELL SITES	18
4.5.3 INFRASTRUCTURE.....	19
4.5.4 OPERATIONS.....	21
4.5.5 ADVANTAGES AND DISADVANTAGES	21
4.6 MANSFIELD HOLLOW.....	21
4.6.1 WATER SUPPLY POTENTIAL	21
4.6.2 POTENTIAL WELL SITES	22
4.6.3 INFRASTRUCTURE.....	23
4.6.4 OPERATIONS.....	23
4.6.5 ADVANTAGES AND DISADVANTAGES.....	24
4.7 OTHER TOWN-OWNED PROPERTIES	24
4.8 DIVERSION PERMITTING.....	25
5.0 INTERCONNECTION ALTERNATIVES	27
5.1 INTERCONNECTION WITH CONNECTICUT WATER COMPANY.....	27
5.1.1 DESCRIPTION.....	27
5.1.2 ADVANTAGES AND DISADVANTAGES.....	28
5.2 INTERCONNECTION WITH WINDHAM WATER WORKS	29
5.2.1 DESCRIPTION.....	29
5.2.2 ADVANTAGES AND DISADVANTAGES.....	30
6.0 COSTS.....	31
7.0 CONCLUSIONS AND RECOMMENDATIONS.....	32
REFERENCES.....	35

LIST OF TABLES

TABLE 1EVALUATION OF CEDAR SWAMP AREA FOR GROUNDWATER SUPPLY
TABLE 2 EVALUATION OF WILLIMANTIC RIVER - MANSFIELD DEPOT AREA FOR GROUNDWATER SUPPLY
TABLE 3EVALUATION OF WILLIMANTIC RIVER-EAGLEVILLE LAKE AREA FOR GROUNDWATER SUPPLY
TABLE 4 EVALUATION OF MANSFIELD HOLLOW AREA FOR GROUNDWATER SUPPLY
TABLE 5 EVALUATION OF CONNECTICUT WATER COMPANY INTERCONNECTION
TABLE 6 EVALUATION OF WINDHAM WATER WORKS INTERCONNECTION
TABLE 7 OPINION OF PROBABLE COST FOR WATER SUPPLY ALTERNATIVES

LIST OF FIGURES

FIGURE 1WATER SUPPLY ALTERNATIVES
FIGURE 2 CEDAR SWAMP POTENTIAL WELL SITES
FIGURE 3MANSFIELD DEPOT POTENTIAL WELL SITES
FIGURE 4 EAGLEVILLE LAKE POTENTIAL WELL SITES
FIGURE 5A MANSFIELD HOLLOW POTENTIAL WELL SITES
FIGURE 5B MANSFIELD HOLLOW POTENTIAL WELL SITES
FIGURE 6 PROPOSED CONNECTICUT WATER INTERCONNECTION
FIGURE 7 WINDHAM WATER WORKS PROPOSED INTERCONNECTION

1.0 INTRODUCTION

1.1 PURPOSE

The Town of Mansfield is seeking to develop a water source/system for its 500 acre Four Corners commercial and residential area in Northern Mansfield. The Town is considering the following sources of supply for the proposed new water system:

- Groundwater in the Cedar Swamp area adjacent the Four Corners area
- Groundwater along the Willimantic River downstream of the current UConn wellfield
- Groundwater in the area of Mansfield Hollow
- An interconnection with Connecticut Water Company (CT Water)
- An interconnection with Windham Water Works (WWW)

The purpose of this initial phase of the project is to identify the most advantageous alternative for supplying the Four Corners area. This involved performing a comprehensive evaluation of the water supply alternatives considering a variety of factors, including:

- Department of Environmental Protection permits
- Department of Public Health requirements, permits, and approvals
- Department of Public Utility Control approvals
- Local permitting agency approvals
- Water quantity
- Reliability and redundancy
- Capital Cost
- Operating Cost

1.2 SCOPE OF WORK

The scope of work for this phase of the project is based on Environmental Partners' agreement with the Town of Mansfield dated November 10, 2010. A summary of the scope of work is outlined below:

- a. Confirm/refine domestic and fire flow system demand estimates.

- b. Perform an evaluation of the groundwater alternatives, considering parcel mapping, land ownership, groundwater classifications, surficial geology, wetlands, flood plain, pollution sources, endangered and threatened species, and estimated yield of new well. The evaluation will include a desktop evaluation and site reconnaissance.
- c. Correspond with officials from CT Water, Windham Water Works, and UConn to discuss the interconnection alternatives.
- d. Correspond with DEP, DPH, and local regulatory agencies to introduce the project and the water supply alternatives, as well as seek their initial feedback on the alternatives and their information needs.
- e. Evaluate each option, and summarize the evaluation of the alternatives, most likely in a matrix format. Circulate this study/report as a draft.
- f. Meet with the project review team to review/revise the preliminary evaluation phase report - assist in selecting a preferred water supply alternative for further study, analysis and permitting.

2.0 PROPOSED WATER SYSTEM DEMANDS

The Four Corners planning area covers an area spanning 500 acres near the intersection of Routes 44 and 195. There are 60 properties in the planning area, with a mix of residential, commercial, and mixed-residential use. Prior estimates of water demand for these 60 properties indicates that the initial water demand will be approximately 59,000 gallons per day (gpd), increasing to 170,000 gpd over a 20-year planning horizon. As part of the final version of this report, we will confirm these demand estimates.

Along with the water demands in the Four Corners planning area, the Town has given consideration to the demand for water from other potential real estate developments in Town. It is prudent to identify these potential developments and their water demand so that the selection and development of a new source of water supply is adequate to cover the projected demands of these potential developments. As part of the aforementioned effort to confirm the Four Corners area water demands, we will work with the Town to estimate the water demand of these potential developments.

3.0 WATER SUPPLY ALTERNATIVES AND EVALUATION FACTORS

3.1 WATER SUPPLY ALTERNATIVES

Five alternatives for water supply were evaluated for the Four Corners Area. Each of these alternatives is shown in **Figure 1**, and described below.

- Groundwater Supply in Cedar Swamp Area – Located adjacent to the proposed Four Corners service area is the Cedar Swamp and Cedar Swamp Brook. A brief analysis performed by Charter Oak Consulting dated March 9, 2009 suggests that the Cedar Swamp area might be a suitable site for a new groundwater supply.
- Groundwater Supply near the Willimantic River - There are known to be significant depths of good aquifer material adjacent to the Willimantic River. One of UConn's two wellfields is located along the river. This report considers potential well sites downstream of the UConn wellfield.
- Groundwater Supply near Mansfield Hollow Reservoir – Mansfield Hollow Reservoir and the downstream Willimantic Reservoir (located in the southeastern corner of Mansfield) are an abundant source of water. Both DEP and DPH have suggested that the Town investigate this area of Town for a new water supply.
- Connecticut Water Interconnection – For many years, CT Water has proposed to install a water main to extend their water system to UConn to supplement UConn's water supply. The Town of Mansfield could then connect to the CT Water pipeline to provide water to the Four Corners Area.
- An interconnection with Windham Water Works (WWW) – WWW owns and operates a water treatment plant on the southern edge of the Willimantic Reservoir in the southeastern corner of Mansfield. The facility provides water to Windham and a small portion of southern Mansfield. The proposed alternative would include a pipeline

extension from WWW's water treatment plant to the UConn system, where water would then be "wheeled" to the Four Corners Area.

3.2 EVALUATION FACTORS

Each of the water supply alternatives was evaluated based on the following factors:

3.2.1 Water Quantity

Each alternative was assessed for its ability to provide the estimated amount of water required in the Four Corners Area.

3.2.2 Water Quality

The alternatives were assessed in terms of the expected water quality. For the interconnection options, available information to make this assessment consisted of Consumer Confidence Reports. For groundwater options, field testing will be needed.

3.2.3 DEP Diversion Permitting

A diversion permit is required for the withdrawal of groundwater from one or more wells joined in one system whose combined maximum withdrawal exceeds 50,000 gallons per day (gpd). A diversion permit is also required to transfer water from one water supply distribution system to another where the combined maximum withdrawal from any source supplying the system or interconnected systems exceeds 50,000 gpd.

For groundwater withdrawals, the ability to obtain a diversion permit is highly dependent on the comparison of the desired withdrawal rate and the 7Q10 flow (smallest values of mean discharge computed over any 7-consecutive days during the annual period) of impacted streams or rivers. The ability to obtain a diversion permit for a groundwater withdrawal is also dependent on the environmental impacts within the proposed well(s) zone of influence. In particular, the impact on wetland soils within the proposed well(s) zone of influence. In addition to the impact on wetland soils, other environmental issues of interest to DEP include endangered or threatened

species, impact on floodplains (along with a mitigation plan if the proposed project includes fill or structures in the floodplain), and stream channel encroachment issues.

3.3.4 DPH Requirements for New Well

The Connecticut Department of Public Health (DPH) requirements for a new well include:

- The ground immediately surrounding the well must be located above the 100 year flood level.
- The well must be located at least 50 feet from the annual high water mark.
- For well's with yields greater than 50 gpm, the well must be located at least 200 feet from any sewage disposal system or other source of pollution, with the Town maintaining sanitary conditions by ownership or easement.

3.3.5 DPH Requirements for System Capacity and Redundancy

The DPH will require estimates of the projected water demands, and will require that the production/purchase capacity provide at least a 15% Margin-of-Safety (i.e. 15% more supply than demand) over the average day, maximum month, and maximum day demands.

The DPH requires that water systems maintain the 15% Margin of Safety with the largest source of supply off-line; as such, for a groundwater supply, the DPH will require that the Town provide a fully equipped backup well or a backup interconnection.

3.3.6 DPH Interconnection Requirements

For an interconnection with another water system, the Town will need to seek a Sale of Excess Water Permit from the DPH. This permit allows a public water system to sell water reserves in excess of those required to maintain an abundant supply of water (i.e. adequate Margin of Safety) to customers in its service area. The applicant must provide the department with sufficient information to verify that the water proposed for sale is in excess of that required to meet their system needs.

3.3.7 Water Storage and Fire Flow

The Connecticut Department of Public Utility Control (DPUC) regulations indicate that small systems shall provide atmospheric storage tank capacity of at least 200 gallons per residential customer or equal to the average daily demand of the system, whichever is the greater number. If commercial or industrial customers are included, additional storage shall be provided based on reasonable average day estimated water usage.

For the options that include an interconnection to a neighboring water system, it is likely that the storage capacity of the neighboring system can satisfy this requirement. Water supply options that do not include an interconnection with a neighboring system would require the construction of a storage tank – either elevated storage (i.e. a standpipe or elevated tank) or ground storage with a booster pump station.

Fire flow requirements are typically based on the ISO's guidance. Assuming a minimum fire flow need of 1,000 gpm for 2 hours, the Town will have to provide 120,000 gallons of storage for fire flows. This storage should be in addition to the DPUC storage requirement discussed above. This fire flow storage can be provided in several ways. If a water supply alternative is selected that includes an interconnection with a neighboring water system (either for regular use or only emergency/fire use), the Town can rely on the storage capacity of the water system that is providing the water.

3.3.8 Certificate of Public Convenience and Necessity

Unless the Four Corners area is considered an extension of another public water system (e.g. UConn's or CT Water's system), the system will be considered a new Community Public Water System. The Town will thus be required to obtain a Certificate of Public Convenience and Necessity (CPCN) from Department of Public Health (DPH) and the Department of Public Utility Control (DPUC). As part of this process the DPH and DPUC will determine if the proposed water system will have adequate Technical, Managerial, and Financial capacity to maintain compliance with regulations after the system is put into operation. The application process requires the applicant to provide information showing that there is no feasible interconnection alternative. DPH senior staff have expressed the desire, whenever feasible, for

proposed new and existing small systems to become part of larger established water systems to minimize the number of small water systems in the state.

3.3.9 Property Purchases

Some of the groundwater alternatives will require purchase or lease of land from a private party. This will impact the cost and schedule for these alternatives.

3.3.10 Other Entities

Some of the alternatives involve other entities, such as UConn, CT Water, Windham Water Works, and the Town of Tolland. Each entity has its own goals, needs, agenda, and schedule, which may or may not coincide with Mansfield's goals, needs, agenda, and schedule. In addition, the entities must agree upon cost sharing arrangements for both capital and operating costs. The more entities involved in an alternative, the more complex the alternative.

3.3.11 Costs

Capital, operating, and maintenance cost should all be considered when evaluating supply alternatives. All capital costs should be considered, including the cost for any upgrades to enable other systems to supply water to the Four Corners area. All operating costs should be considering, including the cost for a contract operator to operate and maintain the system and the cost to purchase water from one of the neighboring systems.

4.0 GROUNDWATER ALTERNATIVES

4.1 Introduction

A preliminary investigation of potential public water supply well sites was conducted in the Town of Mansfield in order to identify potential water sources for the Four Corners Area. The investigation relied on available data and reports including studies conducted by the UConn, studies previously conducted for the Town of Mansfield, USGS maps and reports and data from the University of Connecticut's Map and Geographic Information Center (MAGIC). A list of references is included at the end of this report.

4.2 Investigation Approach

The investigation into potential water supply well sites in Mansfield focused on four areas (refer to **Figure 1**):

- Cedar Swamp
- Willimantic River near Mansfield Depot
- Willimantic River near Eagleville Lake
- Mansfield Hollow

The first step in the evaluation was to use available geologic mapping to identify areas of potential sand and gravel aquifers. These areas were then overlaid with parcel maps for the Town of Mansfield. Parcels that were large enough to site a well with the required 200-foot radius within areas of sand and gravel were identified.

Each potential site that met the criteria was then examined for potential disqualifying attributes including presence of water quality hazards, lack of access, steep slopes, serious wetland concerns and incompatible land uses.

Once the sites were identified on the basis of mapping, field checks were conducted at each site to confirm the mapping and take note of any special conditions that were not apparent from the mapping.

Below is a discussion of the potential sites identified in each of the four primary areas of investigation. The potential of these sites is based solely on geologic mapping, field visits, and existing published data. Test well drilling would need to be conducted to establish the quantity and quality of available water resources.

4.3 Cedar Swamp

4.3.1 Water Supply Potential

There is a relatively small aquifer adjacent to and beneath Cedar Swamp, near the northern border of Mansfield (see **Figure 2**). Most of the aquifer and swamp extends into Willington. The area of aquifer materials (sand and gravel) is shown in **Figure 2**. As far as we have been able to determine, there has been no subsurface drilling conducted anywhere in the aquifer so there is no data on aquifer thickness or the types of materials that might be present at depth.

We have concluded that the amount of water available in the Cedar Swamp area is significantly less than was previously estimated by Charter Oaks in their memorandum of March 9, 2010, and the potential for ecological impacts are significantly greater. Charter Oaks based their preliminary conclusions on a very rough water balance for the aquifer that does not take into account the limited capture zone of a potential well at this location or seasonal fluctuations in available water. Potential local wetland impacts would have to be evaluated closely in the course of the permitting process.

The flow of Cedar Swamp Brook would be decreased essentially by the amount of water pumped from the well. Based on information from USDA, the estimated low stream flow for Cedar Swamp Brook is 250 gpm. If a well were to be developed to meet the 20 year demand of 170,000 gallons per day (or 118 gpm), the well production would equate to approximately 47% of the low stream flow. Since this is a relatively high percentage of the low stream flow, it is likely that the Diversion Permitting process would be complex.

4.3.2 Potential Well Sites

There are only two lots within this potential aquifer area that are large enough to site a public water supply well - a minimum 200-foot radius is required for protective purposes. Those lots

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and four potential well sites within them are shown in **Figure 2** along with the 200-foot radius for each potential site.

Three of the potential well sites are located on lot 2-5-39 (C-1, C-2 and C-3); the owner is identified in Town Assessor records as Diane Becker. There is access to the lot from Cedar Swamp Road; however, it will be necessary to cross an area mapped as wetland area to get to the sites. Three potential test well exploration sites have been identified. These sites are not within currently mapped wetland areas, but this assumption would need to be confirmed with more detailed mapping.

A fourth site (C-4) is located on lot 2-5-22. The owner is identified as the Taylor Family Trust. Access to the lot is from Storrs Road. One potential test well exploration site has been identified. This site is not within a currently mapped wetland area, but this would need to be confirmed with more detailed on-site mapping.

There is some potential for a water supply well in the portion of Cedar Swamp located south of Route 195. However, none of the properties in this area are sufficient to provide a 200-foot radius. A suitable wellhead protection area would be possible if two or more of the properties were combined. In addition, because of the smaller quantity of sand and gravel deposits in this area, the potential yield of a well here would be lower than at the sites described above.

4.3.3 Infrastructure

If the Town were to proceed with developing a groundwater supply at Cedar Swamp, there are two key infrastructure issues to consider. First, the Town will need to provide a backup source of supply pursuant to Department of Public Health standards. This could be an interconnection with UConn or a fully equipped backup well. Second, the Town will need to provide water storage. If the Four Corners distribution system is interconnected with the UConn system, the UConn water storage tanks could serve as the water storage for the Four Corners Area. If there is no interconnection with the UConn system, the Town will have to provide elevated storage or ground level storage with a booster pump station.

It should be noted that the two potential well sites are located within the 100-year flood plain. The wellhead, land around the wellhead, and the wellhouse all have to be located above the 100-year flood level in accordance with DPH requirements.

4.3.4 Operations

With this alternative, the Town would be creating a new community water supply system. Thus, the Town would need to obtain a Certificate of Public Convenience and Necessity (CPCN) from the Department of Public Health (DPH) and the Department of Public Utility Control (DPUC). The Town plans to retain a contract operator to operate and maintain the system to ensure compliance with DPH, DEP, and DPUC standards and regulations.

4.3.5 Advantages and Disadvantages

The primary advantage of a groundwater supply at Cedar Swamp is its close proximity to the proposed Four Corners area, which will limit the amount of required pipeline and associated cost. Another critical advantage is that this alternative would involve only one other entity, UConn, if the Town opts to interconnect with the UConn system. This means that the Town has significant control over the project schedule.

The primary disadvantage of a groundwater supply at Cedar Swamp is the limited drainage area and yield, and the resulting potential environmental impacts of withdrawing water from this aquifer. These factors will make it difficult to obtain a diversion permit from DEP.

Additional advantages and disadvantages of this alternative are summarized in **Table 1**.

4.4 Willimantic Sites Near Mansfield Depot

4.4.1 Water Supply Potential

There are known to be significant depths of good aquifer material adjacent to the Willimantic River; however, the extent of these deposits perpendicular to the river varies.

4.4.2 Potential Well Sites

In the Mansfield Depot Area, we have identified three lots within the potential aquifer area that are large enough to site a public water supply well with the minimum 200-foot radius and that have compatible land uses. Those lots and two potential well sites are shown in **Figure 3** along with the 200-foot radius for each well site.

One potential well site (MD-1) is located on lot 13-16-1. A test well was drilled on this site in 1963 (Milone & MacBroom, 2002). Good sandy material was reported to a depth of approximately 34 feet below ground. The water table was approximately five feet below ground. If the aquifer material is highly transmissive, this could provide sufficient water for a public water supply well. The owner of this lot is identified in Town records as Chester and Leon Heckler. There is access to the lot from Route 44. The proposed site is within mapped a wetland areas but it is also farmland. It is unlikely that this property would be considered a wetland from a regulatory standpoint. However, it will be necessary to resolve that issue. The use of agricultural chemicals and fertilizers on the property would need to be investigated and might impact water quality.

The second potential well site in this area (MD-2) is located on lot 13-16-11. The owner is identified as Timothy Quinn. Access to the lot would be from Depot Road. The property consists of a highland above the Willimantic River, a steep slope down to the river and then wetlands adjacent to the river. The highland areas are likely to have high depths to groundwater (as much as 40 feet); so site MD-2 was selected because it is near the toe of the slope but outside of the wetlands.

The third potential well site in this area (MD-3) is located on lot 13-16-12. One significant advantage of this parcel is that it is town-owned. A disadvantage of this parcel is that it is the site of a former wastewater discharge area. The site is currently a park (River Park). The lot appears to have favorable sand and gravel deposits, but there is some question about the water quality and other potential restrictions associated with the former use for wastewater discharge. It may be possible to find a location that would not be impacted by the former wastewater facility.

Note that there is also an abandoned landfill between UConn's Willimantic River wells and Mansfield Depot. The potential impact of this dump is presently unknown, but should be investigated if one of the Mansfield Depot potential well sites is pursued, particularly site MD-1.

4.4.3 Infrastructure

If the Town were to proceed with developing a groundwater supply in the Mansfield Depot Area, the critical infrastructure issue would be an agreement with UConn to interconnect with the UConn water system, and "wheel" water through the UConn water system to the Four Corners Area. The infrastructure required would include:

- a well
- a wellhouse to house chemical feed and storage systems, electrical equipment, and instrumentation and controls
- a transmission main to connect the well to the UConn system (see Figure 3)
- a transmission main to connect the UConn system to the proposed Four Corners water system (i.e. a transmission main on Hunting Lodge Road from UConn's 16-inch main to Route 44, and on Route 44 from Hunting Lodge Road to the proposed terminus of the Four Corners water system).

Note that the water from the proposed well would be pumped directly into UConn's 5.4 million gallon storage tank via the proposed new water main and then UConn's existing 16-inch water main that connects their Willimantic Wellfield to the UConn water system.

Under this arrangement with UConn, the proposed Four Corners water system would be considered an extension of the UConn system. The DPH and DPUC requirements for reliability, redundancy, and storage would be satisfied by the fact that the UConn system has multiple water supply sources and adequate water storage.

It should be noted that the potential well sites are located within the 100-year flood plain. The wellhead, land around the wellhead, and the wellhouse all have to be located above the 100-year flood level in accordance with DPH requirements.

4.4.4 Operations

With this alternative, the Town would own and operate the new well. The Town could retain a contract operations firm to operate the well, similar to what UConn has done by hiring the CT Water subsidiary to operate and maintain their wellfields. The Town could also choose to retain the same contract operations firm to operate and maintain the Four Corners distribution system, including flushing the system and repairing main breaks.

One issue to be discussed with UConn is the cost, if any, associated with “wheeling” water through the UConn system to the Four Corners area.

4.4.5 Advantages and Disadvantages

A primary advantage of a groundwater supply in the Mansfield Depot area is that the area has a significant depth of good aquifer material, and thus a good potential yield. The area is also relatively close to the UConn distribution system, which means that a relatively short length of pipeline would need to be installed to connect a new well to the UConn system.

A primary disadvantage of this alternative is that diversion permitting could be complex because of concerns that additional groundwater withdrawals near the Willimantic River, near the existing UConn wellfield, could impact streamflow and thus fisheries.

Additional advantages and disadvantages of this alternative are summarized in **Table 2**.

4.5 Willimantic Sites Near Eagleville Lake

4.5.1 Water Supply Potential

There are known to be significant depths of good aquifer material adjacent to the Willimantic River; however, the extent of these deposits perpendicular to the river varies.

4.5.2 Potential Well Sites

There are several potential well sites along the Willimantic River near Eagleville Lake (see **Figure 4**). One primary advantage of locating a well along this stretch of the Willimantic River

is that the greater width of the river in this region reduces the potential impacts of groundwater withdrawals on fish habitat.

There are four lots within this potential aquifer area that are large enough to site a public water supply well with the minimum 200-foot radius. Those lots and five potential well sites are shown in **Figure 4** along with the 200-foot radius for each well site.

Two of the potential well sites are located on lot 14-26-7 (EP-1 and EP-2). The owner is identified in Town records as Karen Green. There is access to the lot from Stafford Road. The proposed site is currently farmed. The use of agricultural chemicals and fertilizers on the property would need to be investigated and might impact water quality. Of the two potential sites, EP-1 has the greatest potential because it is further from the till boundary and closer to the river. Potential impacts from the former wastewater disposal on the adjacent town-owned property would need to be investigated. The 200-foot radius for EP-2 is very close to the property boundary. It may be necessary to survey the site in order to ensure that the 200-foot radius is available.

A third site (EP-3) is located south of Eagleville Lake on lot 20-66-1. The owner is identified as Ethan Stearns. Access to the lot is from Stafford Road. It is adjacent to a gravel mining operation which is a potential source of contamination.

The fourth site in this area (EP-4) is also located south of Eagleville Lake on lot 29-54-18. This is property owned by the State of Connecticut, and is part of the Eagleville Preserve Trail. Access to the lot is from Stonehouse Road. Much of the property is mapped as wetlands.

The fifth site in this area (EP-5) is also located south of Eagleville Lake on lot 29-54-20. The primary advantage of this site is that it is town-owned open space. Access to the lot is from Stafford Road. This property also has a significant amount of mapped wetlands, but there is an upland area that is out of the wetlands.

4.5.3 Infrastructure

If the Town were to proceed with developing a groundwater supply in the Eagleville Lake Area, the critical infrastructure issue would be an agreement with UConn to interconnect with the

UConn water system, and “wheel” water through the UConn water system to the Four Corners Area. The infrastructure required would include:

- a well
- a wellhouse to house chemical feed and storage systems, electrical equipment, and instrumentation and controls
- a transmission main to connect the well to the UConn system (see **Figure 4**). Note that Figure 4 shows a pipeline route on Route 32. The alternative is to install the water main on South Eagleville Road. UConn currently has water main on South Eagleville Road, extending about 5,000 feet west from the intersection with Route 195. However, this main is 6 inch diameter, and will not have adequate hydraulic capacity for the intended well production. Thus, if the South Eagleville Road route is selected, the interconnection point with the UConn system would have to be at the intersection of South Eagleville Road and Route 195. A pipeline along this route would be of similar length and cost to the proposed pipeline on Route 32.
- a transmission main to connect the UConn system to the proposed Four Corners water system (i.e. a transmission main on Hunting Lodge Road from UConn’s 16-inch main to Route 44, and on Route 44 from Hunting Lodge Road to the proposed terminus of the Four Corners water system).

Note that the water from the proposed well would be pumped directly into UConn’s 5.4 million gallon storage tank via the proposed new water main and then UConn’s existing 16-inch water main that connects their Willimantic Wellfield to the UConn water system.

Under this arrangement with UConn, the proposed Four Corners water system would be considered an extension of the UConn system. The DPH and DPUC requirements for reliability, redundancy, and storage would be satisfied by the fact that the UConn system has multiple water supply sources and adequate water storage.

It should be noted that the two potential well sites are located within the 100-year flood plain. The wellhead, land around the wellhead, and the wellhouse all have to be located above the 100-year flood level in accordance with DPH requirements.

4.5.4 Operations

With this alternative, the Town would own and operate the new well. The Town could retain a contract operations firm to operate the well, similar to what UConn has done by hiring the CT Water subsidiary to operate and maintain their wellfields. The Town could also choose to retain the same contract operations firm to operate and maintain the Four Corners distribution system, including flushing the system and repairing main breaks.

One issue to be discussed with UConn is the cost, if any, associated with “wheeling” water through the UConn system to the Four Corners area.

4.5.5 Advantages and Disadvantages

A primary advantage of a groundwater supply in the Eagleville Lake area is that the greater width of the Willimantic River in this area reduces the potential impacts of groundwater withdrawals on fish habitat. This could result in an easier diversion permitting process than if a well is sited further upstream near the existing UConn wellfield.

A primary disadvantage of this alternative compared to the Mansfield Depot alternative is the length of pipeline and associated cost to connect a new well to the UConn system.

Additional advantages and disadvantages of this alternative are summarized in **Table 3**.

4.6 Mansfield Hollow

4.6.1 Water Supply Potential

The fourth area to be investigated for a new groundwater supply was the Mansfield Hollow area in the southeastern corner of Mansfield. Two large water bodies, Mansfield Hollow Reservoir and Willimantic Reservoir, are located in this area of Town. In addition, this region of Town has significant deposits of sand and gravel.

Both DEP and DPH have suggested that this area of Town is the best place to site a new water supply because of the abundance of water.

4.6.2 Potential Well Sites

In the Mansfield Hollow Area, we have identified three town-owned sites with good water supply potential that are sufficiently large to site a well (see **Figures 5A and 5B**).

One of the potential well sites (MH-1) is located on lot 34-110-2. This is town-owned open space land that is located adjacent to the Town of Windham Water Department. Access to the lot is from Storrs Road. The lot is relatively small, but it may be possible to locate a well on the property with the necessary 200-foot protective radius. Much of the site is open and flat. There are some unmapped wetlands on the property which will need to be taken into account.

The second site (MH-2) is located on Bassetts Bridge Road, a little over a mile north of the previous site, on lots 29-113-17 and 29-113-17 2. The property is town-owned open space. Prior to the purchase of the property by the Town, this property was considered for a potential development in the late 1980s (Legette, Brashears & Graham, 1989). At that time, issues were raised about the potential impacts from an abandoned landfill located just northeast of the property. Although there was no evidence of groundwater contamination based on the testing of private bedrock wells in the area, there was almost no data available on the quality of shallow groundwater. The developer did not conduct a thorough impact analysis. No groundwater quality data from the landfill area is available. Significant additional testing and analysis would be necessary to address this issue before developing a public water supply well on the property.

A third site (MH-3) is located on the property of the Southeast School on Warrenville Road. This property is located adjacent to Mansfield Hollow Reservoir. Most of the property is occupied by the school building and ball fields. However, there is a wooded portion of the property that is large enough to provide the 200-foot protective radius. Note that the recently closed town landfill lies north of this proposed well site, on the opposite side of the Fenton River. It is our understanding that a recent study of the landfill showed that the area of influence of the landfill on the groundwater extended only to the Fenton River; as such, we would not expect the landfill to be a risk to water quality at the proposed MH-3 site.

4.6.3 Infrastructure

If the Town were to proceed with developing a groundwater supply in the Mansfield Hollow Area, the critical infrastructure issue would be an agreement with UConn to interconnect with the UConn water system, and “wheel” water through the UConn water system to the Four Corners Area. The infrastructure required would include:

- a well
- a wellhouse to house chemical feed and storage systems, electrical equipment, and instrumentation and controls
- a transmission main to connect the well to the UConn system (see **Figure 5B**)
- a transmission main to connect the UConn system to the proposed Four Corners water system (i.e. a transmission main on Hunting Lodge Road from UConn’s 16-inch main to Route 44, and on Route 44 from Hunting Lodge Road to the proposed terminus of the Four Corners water system).

Note that water from the proposed well would be pumped to the chlorination basin at UConn’s Fenton River wellfield, where it would then be pumped using the existing UConn booster pumps, into the UConn distribution system.

Under this arrangement with UConn, the proposed Four Corners water system would be considered an extension of the UConn system. The DPH and DPUC requirements for reliability, redundancy, and storage would be satisfied by the fact that the UConn system has multiple water supply sources and adequate water storage.

4.6.4 Operations

With this alternative, the Town would own and operate the new well. The Town could retain a contract operations firm to operate the well, similar to what UConn has done by hiring the CT Water subsidiary to operate and maintain their wellfields. The Town could also choose to retain the same contract operations firm to operate and maintain the Four Corners distribution system, including flushing the system and repairing main breaks.

One issue to be discussed with UConn is the cost associated with “wheeling” water through the UConn system to the Four Corners area; in particular, the cost to pump the water into the UConn distribution system.

4.6.5 Advantages and Disadvantages

A primary advantage of a groundwater supply in the Mansfield Hollow area is the abundant water supply in the area, and the fact that both DPH and DEP support the idea of developing a source of supply in this area of Town.

Another significant advantage of this alternative is that the three potential well sites are all owned by the Town of Mansfield. This means the Town will not have to spend the money and time to purchase a property for a well.

The primary disadvantage of this alternative is the length of water main required to connect the potential well sites to the UConn system.

Additional advantages and disadvantages of this alternative are summarized in **Table 4**.

4.7 Other Town-Owned Properties

In addition to the sites identified above, a review was conducted of all town-owned properties underlain by mapped aquifers in the Town of Mansfield. Most of the productive aquifers in the Town of Mansfield are associated with glacial deposits along the major river valleys - the Willimantic, Fenton, Mount Hope and Natchaug Rivers. The primary exception to this is the Cedar Swamp Aquifer. The potential of these aquifers with respect to Town-owned properties is as follows:

- There are no town-owned properties in the Cedar Swamp aquifer.
- The potentially viable town-owned properties along the Willimantic and Natchaug Rivers (Mansfield Hollow) have been identified in this report.
- Developing a public water supply site within the Fenton River would be difficult considering the existing impacts of UConn’s wells on the low flows of that river.

Nevertheless, town-owned properties within that river basin include lots 24-68-17 (Mansfield Lions Memorial Park) and 10-43-35 1 on Gurleyville Road.

- In the Mount Hope River Basin, the only town-owned property that is underlain by a potentially viable aquifer is lot 19-73-33 on Warrenville Road.

4.8 Diversion Permitting

Each of the potential well sites that we have identified has potential advantages and disadvantages with respect to the permitting process, particularly the Diversion Permit. One of the primary concerns of DEP is the potential impact of proposed water supply wells on stream flows. This has been an on-going concern for the UConn wells located on the Willimantic and Fenton Rivers. With respect to the potential well sites considered in this report, the most advantageous from a Diversion Permitting standpoint are the sites located near Eagleville Lake and Mansfield Hollow.

As mentioned earlier, the stretch of the Willimantic River dominated by Eagleville Lake will be less prone to potential well impacts than other stretches of the river for several reasons including that the lake provides a substantial amount of water in storage, it is not an ideal habitat for the more ecological sensitive fluvial fish, and the dam provides some control on water levels.

The Mansfield Hollow sites are advantageous for similar reasons; in particular, the Mansfield Hollow Reservoir stores an enormous amount of water. The nearby Willimantic Reservoir is utilized by the Town of Windham as a water supply and that reservoir is reported to have more in available safe yield than the Town currently uses. In our discussions with DEP, they indicated a distinct preference for obtaining water where there is known to be a surplus, and the Willimantic Reservoir was specifically mentioned as a preferred source for the Town of Mansfield.

Every potential site has to be thoroughly evaluated in order to determine potential yields and environmental impact. Nevertheless, it appears that DEP has concerns about potential impacts to the Willimantic River, and any potential well near the Willimantic River will be carefully scrutinized through the Diversion Permitting process. The Cedar Swamp sites will also be reviewed carefully by DEP because the required yield of the wells will be relatively large with respect to the low flows of Cedar Swamp Brook. The Mansfield Hollow sites, on the other

hand, are located within a basin with relatively lower sensitivity to impacts on stream flows. Therefore, it is likely that the Diversion Permit process for these sites will be less complicated.

5.0 INTERCONNECTION ALTERNATIVES

5.1 Interconnection with Connecticut Water Company

5.1.1 Description

Connecticut Water Company (CT Water) and UConn are considering an interconnection from CT Water's Northern Region-Western System to the UConn campus. The pipeline route is shown in **Figure 6**, and would include nearly 5 miles of water main. CT Water has indicated that their most recent proposed contract with UConn stipulates that CT Water would pay all of the capital costs for the interconnection, in return for guaranteed revenue from UConn.

As shown in **Figure 6**, the proposed interconnection would extend to Jensen's Mobile Home Park on Route 44. Thus, a limited amount of additional piping would be needed to extend the CT Water system into the Four Corners Area. CT Water is interested in supplying water to the Four Corners Area. Under CT Water's standard water main extension contract, the Town would pay CT Water to furnish and install the water mains in the proposed Four Corners Area. The Four Corners Area would become an extension of CT Water's system; as such, CT Water would operate and maintain this system, and all customers in the Four Corners Area would be customers of CT Water.

Typically, the water mains in the Four Corners Area would be owned by CT Water immediately upon installation; however, if the Town sells bonds to fund the cost of the water mains, CT Water has indicated that they can adjust their standard extension contract so that the water main is owned by the Town until the bonds mature, at which time CT Water would then become the owner of the water mains.

Note that the proposed CT Water Interconnection passes through Tolland, and CT Water's current plan is to wheel water through the Tolland Water System. It is our understanding that the wheeling agreement is still under consideration by the Town of Tolland.

CT Water has indicated that the interconnection will have a capacity of 1 million gallons per day (MGD), with 0.5 MGD guaranteed to UConn and the remaining 0.5 MGD available to serve the needs of other users in Mansfield. CT Water would need to apply for a Sale of Excess Water

Permit from the Department of Public Health (DPH) in order to transfer this water to UConn and Mansfield. As part of this effort, CT Water would need to show the DPH that they had adequate excess water supply.

5.1.2 Advantages and Disadvantages

The primary advantage of an interconnection with CT Water is that CT Water is willing to pay the cost of extending the water main to the UConn campus. This means that the Town's capital cost would be limited to paying for the water mains in the proposed Four Corners distribution system.

Another advantage of this alternative is that the CT Water and UConn systems would provide the source redundancy, water storage, and fire protection needs of the Four Corners Area. In other words, the Town would benefit from the multiple sources and water storage that exists in these two systems.

A primary disadvantage of this alternative is the number of parties involved in the project. CT Water and UConn need to agree to a contract, which would then have to be approved by the Department of Public Utility Control. CT Water and Tolland would have to agree to a contract to wheel water through the Tolland water system. Each party has its own goals, needs, agenda, and schedule. The result can be long periods of negotiation, which could delay the project.

Two other critical disadvantages are (1) that the interconnection would involve an interbasin transfer, which could complicate the diversion permitting process, and (2) that the extension of a water main along Route 195 could spur secondary real estate development.

Additional advantages and disadvantages of the CT Water Interconnection alternative are summarized in **Table 5**.

5.2 Interconnection with Windham Water Works

5.2.1 Description

Windham Water Works (WWW) supplies water to the Town of Willimantic and a small area of southeastern Mansfield. Their source of supply is water treatment plant that treats water from the Willimantic Reservoir in southeastern Mansfield (see Figure 7).

With this alternative, the Town of Mansfield would purchase water from WWW. The water would be delivered to the Four Corners Area via a new pipeline on Route 195 from WWW to the UConn system, where the water would then be “wheeled” through the UConn system and delivered to the Four Corners Area via an interconnection between UConn and the Four Corners Area (i.e. a pipeline on Hunting Lodge Road from UConn’s 16-inch main to Route 44, and on Route 44 from Hunting Lodge Road to the proposed terminus of the Four Corners water system).

A pump station would be required at WWW to pump the water to the UConn campus. Note that there is a large elevation difference between the WWW site and the UConn tanks. If the Town were to build a single pump station at WWW, the water pressure at that station would be at least 230 pounds per square inch (psi). Typically, water system pressures do not exceed 125 psi; however, there are pump stations that operate with pressures of 230 psi and above. The other alternative is to build two pump stations – a “series” arrangement with one pump station at WWW water treatment plant and the other located between WWW and UConn. The goal would be to locate the second pump station such that neither pump station experience pressures higher than say 150 psi. Note that one disadvantage of the single pump station approach is that a portion of the pipeline from WWW water treatment plant to UConn would have too high a pressure for customers to connect safely, even with a pressure relief valve located on their property.

The WWW has an abundant supply of water in its reservoir; in particular, the safe yield of the reservoir is 7.9 MGD compared to the maximum day demand of 3.9 MGD in 2006. However, the capacity of the WWW water treatment plant and the diversion permit limit are 4.1 MGD. Thus, the treatment capacity and permit limit are only 5% greater than the maximum day demand (i.e. a 5% Margin of Safety). Since the DPH standard is a 15% Margin of Safety, to provide

water to the Town of Mansfield, the WWW treatment plant would need to be expanded and the diversion permit limit would need to be increased.

The Town of Windham Water Commission Chairperson, Mike Callahan, has indicated that the Commission is open to discussions about the planning and development of this alternative. Mr. Callahan noted that at this time, the Town is not in the position to undertake a major program of this nature, and the money to fund this alternative would have to come from the Town of Mansfield or UConn.

5.2.2 Advantages and Disadvantages

The primary advantage of an interconnection with WWW is that there is an abundant supply of water in WWW's reservoir. This means that diversion permitting will be relatively straightforward compared to other alternatives (i.e. wells along the Willimantic River or in the Cedar Swamp area).

The primary disadvantage of this alternative is that it will require increasing the capacity of WWW's water treatment plant. It is our understanding that it has been estimated that this upgrade would cost \$8 million to \$10 million; this estimate can be refined with a further evaluation of the water treatment plant and discussions with WWW. In addition to the cost associated with this upgrade, there are other issues that need to be considered including the concept of the Town of Mansfield paying for additional infrastructure at the water treatment plant that would be owned, operated, and maintained by the WWW. The legal and financial aspects of this approach would be complex, and would have to be defined in an inter-municipal agreement.

Another disadvantage of this alternative is the cost of the water main to connect WWW to the UConn system.

Additional advantages and disadvantages of the CT Water Interconnection alternative are summarized in **Table 6**.

6.0 COSTS

Opinions of Probable Cost for the water supply alternatives are shown in **Table 7**.

The least expensive alternative for the Town in terms of capital cost would be an interconnection with CT Water because CT Water is proposing to pay for the interconnection piping as part of their proposed agreement with UConn.

The cost of the wellfield alternatives is differentiated by two factors: the length of pipeline needed to connect the potential well site to the Four Corners Area, and whether a land purchase or lease is needed. Without giving consideration to the cost of purchasing or leasing land, the Cedar Swamp alternatives are the least expensive groundwater alternatives, followed by the Mansfield Depot alternatives. Considering all costs, including the purchase or lease of land, the least expensive groundwater alternative is likely to be a well located in Mansfield Depot on the Town property where the former wastewater facility was located. This alternative would not require the purchase of land, and requires less transmission main than other groundwater alternatives.

The most expensive alternatives are those located in the Mansfield Hollow area of Town because of the more than 5 miles of water main that will have to be installed to connect these sources to the UConn system.

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7.0 CONCLUSIONS AND RECOMMENDATIONS

This report summarizes an evaluation of various water supply alternatives for the Four Corners Area of Mansfield, CT. The general summary for each alternative is as follows:

- Groundwater in the Cedar Swamp Area – This alternative is estimated to be the least costly groundwater alternative, not considering the cost of purchasing or leasing land. However, Cedar Swamp aquifer has a limited drainage area, and thus will likely yield a limited water supply. In addition, the limited yield and potential environmental impacts will likely result in a complex diversion permitting process.
- Groundwater along the Willimantic River downstream of the current UConn wellfield – Two areas downstream of the existing UConn wellfield were considered: Mansfield Depot area and Eagleville Lake area. Potential well sites in the Mansfield Depot area have the advantage of being relatively close to the proposed interconnection location with UConn, which means less piping and associated cost compared to other alternatives. Furthermore, one of the potential well sites in the Mansfield Depot area is owned by the Town, which means the Town could avoid the cost of a land purchase or lease. This particular site was once used for treatment and disposal of wastewater, so further investigation will be needed to determine if this site could be used for a groundwater supply. Potential wells sites in the Eagleville Lake area have the advantage of being located close to the Lake, which will act as a buffer for the impact of groundwater withdrawals. This factor will be a benefit for the diversion permitting process. One of the potential well sites in the Eagleville Lake area is located on Town property, which means the Town could avoid the cost of a land purchase or lease. The primary disadvantage of the Eagleville Lake alternatives is the relatively long pipelines that would be needed to connect these potential well sites to the proposed interconnection with UConn.
- Groundwater in the area of Mansfield Hollow – The primary advantage of potential well sites in the Mansfield Hollow area is the abundance of water in this area of Town; in particular, in the Mansfield Hollow Reservoir and Willimantic Reservoir. The DEP and

DPH have encouraged the search for a new water supply in this area of Town, and their support would facilitate the permitting process. Another advantage of the potential well sites in the Mansfield Hollow area is that the potential well sites are all owned by the Town, which means that Town can avoid the cost of purchasing or leasing land. The primary disadvantage of this alternative is the relatively long lengths of water main that would be required to connect the potential well sites to the UConn system.

- An interconnection with Connecticut Water Company (CT Water) – The primary advantage of this alternative is that CT Water is proposing to pay the full cost to install the more than 5 miles of water main required for the interconnection. One disadvantage of this alternative is the number of entities that need to “buy-in” to the alternative, including UConn, CT Water, and the Town of Tolland; this could delay the implementation of this alternative.
- An interconnection with Windham Water Works (WWW) – The primary advantage of an interconnection with WWW is that they have an abundance of water in their Willimantic Reservoir. The DEP and DPH have encouraged the search for a new water supply in this area of Town, and their support would facilitate the permitting process. The primary disadvantage of this option is the cost, including the cost to increase the capacity of the WWW water treatment plant and to install more than 5 miles of water main to connect to the UConn system.

Based on our evaluation, we believe the best course of action is to pursue groundwater alternatives in the Mansfield Depot area and Eagleville Lake area. In particular, we believe the Town-owned properties in these two areas should be investigated further.

These two potential well sites have the advantage of being Town-owned properties; thus avoiding the cost and potential delays associated with purchasing or leasing property. These alternatives have the advantage of being less complex than the interconnection options because there are less entities involved (e.g. CT Water, Windham Water Works). The Mansfield Depot property has the advantage of being relatively close to the proposed interconnection with UConn, which will reduce the cost of interconnection piping. The Eagleville Lake property has the

advantage of being located near the Eagleville Lake, which will mitigate potential impacts of a groundwater withdrawal on the river, thus possibly reducing the complexity of diversion permitting.

These two alternatives involve withdrawing groundwater adjacent to the Willimantic River, and thus will be closely evaluated for potential impacts on the river. However, it should be noted that development of a high producing well on one of these two Town-owned sites could allow UConn to reduce their withdrawals at their existing Willimantic Wellfield. This would be a benefit because UConn's Willimantic Wellfield is located along a stretch of the river with lower flows than the downstream areas near Mansfield Depot and Eagleville Lake.

The next step would be an environmental assessment of each of these Town-owned properties to identify environmental risks; in particular, risks related to the Mansfield Depot site that was formerly used for wastewater discharge. We also recommend meeting with both DEP and DPH to discuss permitting for both of the Town-owned sites. Based on the results of this work, we would recommend test borings and observations wells to evaluate water quality and potential yield at one or both of these Town-owned sites.

REFERENCES

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TABLE I
EVALUATION OF CEDAR SWAMP AREA FOR GROUNDWATER SUPPLY

Factor	Advantages	Disadvantages
Water Quantity		<ul style="list-style-type: none"> • Limited drainage area/yield. • Potential adverse impact on Cedar Swamp Brook. • Potential adverse impact on wetlands.
Water Quality		<ul style="list-style-type: none"> • Uncertain – wells near wetlands tend to have water quality concerns such as high iron and manganese. • Diversion permitting could be complex because of potential impact on wetlands, brook, and endangered species.
DEP Diversion Permitting		<ul style="list-style-type: none"> • Will need a backup supply (either a 2nd well or interconnection). • Will likely be considered a new water system, so will need to obtain a Certificate of Public Convenience and Necessity. • Potential well sites are located within the 100-year flood zone.
DPH Requirements/Permits/Approvals		<ul style="list-style-type: none"> • Will need a backup supply (e.g. 2nd well or interconnection).
Reliability / Redundancy		<ul style="list-style-type: none"> • Will need either a new, local storage tank (i.e. an elevated tank or a ground level tank with booster pumps and a fire pump), or use of UConn's tanks via an interconnection.
Water Storage and Fire Flow		<ul style="list-style-type: none"> • Potential wetlands crossing for several of the potential well sites. • Willington regulatory commissions may have jurisdiction. • Will require purchase of property for the well.
Local Permitting		
Property Purchases		
Other Parties	<ul style="list-style-type: none"> • UConn, if an interconnection is selected. 	

TABLE 2
EVALUATION OF WILLIMANTIC RIVER – MANSFIELD DEPOT AREA FOR GROUNDWATER SUPPLY

Factor	Advantages	Disadvantages
Water Quantity	<ul style="list-style-type: none"> • Significant depth of good aquifer material; thus good potential yield. 	<ul style="list-style-type: none"> • Ongoing concerns about the impact of UConn's existing wells along the Willimantic River could impact the allowable withdrawal.
Water Quality		<ul style="list-style-type: none"> • For Site MD-1, the nearby abandoned landfill, as well as the use of agricultural chemicals could impact water quality. Site MD-2 is further from these potential sources of contamination, and thus less at less risk of water quality impacts. • MD-3 is located on a town property that was formerly used for wastewater disposal; this requires further evaluation to determine possible impact on the site's use for a groundwater supply.
DEP Diversion Permitting		<ul style="list-style-type: none"> • Diversion permitting could be complex because of concerns that additional groundwater withdrawals near the Willimantic River could impact streamflow and thus fisheries.
DPH Requirements/Permits/Approvals	<ul style="list-style-type: none"> • The Four Corners distribution system would be an extension of the UConn system; a Certificate of Public Convenience and Necessity is not needed. 	<ul style="list-style-type: none"> • The potential well sites are located within the 100-year flood zone.
Reliability / Redundancy	<ul style="list-style-type: none"> • The Four Corners water system would be an extension of the UConn system, and would thus benefit from the reliability/redundancy (in terms of supply and storage) in the UConn system. 	
Water Storage and Fire Protection	<ul style="list-style-type: none"> • The Four Corners water system would be an extension of the UConn system, and would thus benefit from the storage in the UConn system. 	
Local Permitting Infrastructure	<ul style="list-style-type: none"> • Relatively close to the UConn distribution system, so less pipeline needed compared to other alternatives. 	
Property Purchases		<ul style="list-style-type: none"> • Both potential well sites are located on private land, so this alternative would require purchase of property for the well.
Other Parties	<ul style="list-style-type: none"> • UConn, for a "wheeling" agreement and interconnection. 	

**TABLE 3
EVALUATION OF WILLIMANTIC RIVER – EAGLEVILLE LAKE AREA FOR GROUNDWATER SUPPLY**

Factor	Advantages	Disadvantages
Water Quantity		<ul style="list-style-type: none"> Ongoing concerns about the impact of UConn's existing wells along the Willimantic River could impact the allowable withdrawal from a well; however, Eagleville Pond reduces the potential impacts on fish habitat.
Water Quality		<ul style="list-style-type: none"> For Site EP-1 and EP-2, there is a need to investigate the possible impact on water quality of the use of agricultural chemicals and the former wastewater disposal on the adjacent property. For Site EP-3, there is a need to investigate the possible impact on water quality of gravel pit on the adjacent property.
DEP Diversion Permitting		<ul style="list-style-type: none"> Diversion permitting could be complex because of concerns that additional groundwater withdrawals would impact streamflow and thus fisheries; although a well near Eagleville Pond is expected to require less permitting effort than a new well upstream.
DPH Requirements/Permits/Approvals	<ul style="list-style-type: none"> The Four Corners distribution system would be an extension of the UConn system; a Certificate of Public Convenience and Necessity is not needed. 	<ul style="list-style-type: none"> Potential well sites are located within the 100-year flood zone.
Reliability / Redundancy	<ul style="list-style-type: none"> The Four Corners water system would be an extension of the UConn system, and would thus benefit from the reliability/redundancy (in terms of supply and storage) in the UConn system. 	
Water Storage and Fire Protection	<ul style="list-style-type: none"> The Four Corners water system would be an extension of the UConn system, and would thus benefit from the storage in the UConn system. 	
Local Permitting		<ul style="list-style-type: none"> Much of the property for EP-4 is mapped as wetlands.
Infrastructure		<ul style="list-style-type: none"> Relatively long pipeline extensions would be needed for several of the Eagleville Pond Area alternatives.
Property Purchases	<ul style="list-style-type: none"> Potential well site EP-5 is on a Town-owned parcel. Potential well site EP-4 is on a State-owned parcel. 	<ul style="list-style-type: none"> Potential well sites for EP-1, EP-2, and EP-3 are on private property, and would thus require purchase of property.
Other Parties	<ul style="list-style-type: none"> UConn, for a "wheeling" agreement and interconnection. 	

TABLE 4
EVALUATION OF MANSFIELD HOLLOW AREA FOR GROUNDWATER SUPPLY

Factor	Advantages	Disadvantages
Water Quantity	<ul style="list-style-type: none"> Area has significant deposits of sand and gravel. 	
Water Quality		<ul style="list-style-type: none"> For potential well site MH-2, there is a water quality risk associated with the nearby abandoned landfill. Significant additional water quality testing would be needed.
DEP Diversion Permit	<ul style="list-style-type: none"> DEP prefers the Mansfield Hollow Area over the Willimantic River Area for a new water supply because of the available water in Mansfield Hollow. 	
DPH Requirement/Permits/Approvals	<ul style="list-style-type: none"> Potential well sites are not located within the 100-year flood plain. The Four Corners distribution system would be an extension of the UConn system; a Certificate of Public Convenience and Necessity is not needed. 	
Reliability / Redundancy	<ul style="list-style-type: none"> The Four Corners distribution system would be an extension of the UConn system, and would thus benefit from the reliability/redundancy (in terms of supply and storage) in the UConn system. 	<ul style="list-style-type: none">
Water Storage and Fire Protection	<ul style="list-style-type: none"> The Four Corners distribution system would be an extension of the UConn system, and would thus benefit from the storage in the UConn system. 	
Local Permitting		<ul style="list-style-type: none"> The site for MH-1 has unmapped wetlands that will have to be investigated.
Infrastructure		<ul style="list-style-type: none"> Long pipeline extensions would be needed compared to other alternatives.
Property Purchases	<ul style="list-style-type: none"> Three Town-owned sites with good water supply potential have been identified. 	
Other Parties	<ul style="list-style-type: none"> UConn, for a "wheeling" agreement and interconnection. 	

**TABLE 5
EVALUATION OF CONNECTICUT WATER COMPANY INTERCONNECTION**

Factor	Advantages	Disadvantages
Quantity of Water	<ul style="list-style-type: none"> CT Water has indicated that they have available water to provide to UConn (0.5 MGD) and the Town (0.5 MGD). 	
Quality of Water	<ul style="list-style-type: none"> CT Water's 2009 Water Quality Report for its Northern Region-Western System indicated that the system met all MCLs in 2009. 	
DEP Diversion Permit		<ul style="list-style-type: none"> CT Water interconnection would involve an interbasin transfer, which could complicate the Diversion permitting process. To obtain a Sale of Excess Water Permit, CT Water needs to provide DPH with information showing that they have adequate water supply.
DPH Regulations/Permits/Approvals	<ul style="list-style-type: none"> The Four Corners distribution system would be an extension of the CT Water system; a Certificate of Public Convenience and Necessity is not needed. 	
Reliability / Redundancy	<ul style="list-style-type: none"> The Four Corners distribution system would be an extension of the CT Water system, and would be interconnected with the UConn system, and would thus benefit from the reliability/redundancy in the CT Water and UConn systems. 	
Water Storage and Fire Protection	<ul style="list-style-type: none"> The Four Corners distribution system would be an extension of the CT Water system, and interconnected with the UConn system, and would thus benefit from the storage in both of those systems. 	
Local Permitting		<ul style="list-style-type: none"> There is public concern that a CT Water pipeline extension along Rt 195 will spur unwanted development.
Infrastructure	<ul style="list-style-type: none"> Although the alternative would include more than 5 miles of pipeline, CT Water has proposed to UConn that they pay for this pipeline. 	
Property Purchases	<ul style="list-style-type: none"> No property purchases required. 	
Other Parties		<ul style="list-style-type: none"> Numerous entities are involved: CT Water, UConn, and Tolland.

TABLE 6
EVALUATION OF WINDHAM WATER WORKS INTERCONNECTION

Factor	Advantages	Disadvantages
Quantity of Water	<ul style="list-style-type: none"> There is substantial additional safe yield available in the WWW's Willimantic Reservoir; specifically, the safe yield is 7.9 MGD compared to the 2006 Maximum Day Demand of 3.91 MGD. 	<ul style="list-style-type: none"> WWW's water treatment plant (WTP) capacity and diversion permit limit are 4.1 MGD, which is only 5% greater than the 2006 Maximum Day Demand of 3.91 MGD; as such, the WTP would have to be expanded, and the diversion permit limit raised.
Quality of Water		
DEP Diversion Permit	<ul style="list-style-type: none"> DEP prefers the Mansfield Hollow Area over other potential sources of supply in the Mansfield Area because there is abundant safe yield, and no interbasin transfer; as such, permitting might be relatively straightforward. 	
DPH Regulations/Permits/Approvals	<ul style="list-style-type: none"> The Four Corners distribution system would be an extension of the UConn system; a Certificate of Public Convenience and Necessity is not needed. 	<ul style="list-style-type: none"> DPH would need to approve a Sale of Excess Water Permit, which would require WWW to develop additional capacity (in terms of WTP capacity and diversion permit limit).
Reliability / Redundancy	<ul style="list-style-type: none"> The Four Corners distribution system would be an extension of the UConn system, and would thus benefit from the reliability/redundancy (in terms of supply and storage) in the UConn system. 	<ul style="list-style-type: none">
Water Storage and Fire Protection	<ul style="list-style-type: none"> The Four Corners distribution system would be an extension of the UConn system, and would thus benefit from the storage in the UConn system. 	
Local Permitting Infrastructure		<ul style="list-style-type: none"> Long pipeline extensions would be needed compared to other alternatives. One or two pump stations would be needed to pump the water to the elevation of the UConn water tanks.
Property Purchases	<ul style="list-style-type: none"> No property purchases required. 	<ul style="list-style-type: none"> A relatively complex inter-municipal agreement would be needed between Windham and Mansfield.
Other Parties	<ul style="list-style-type: none"> WWW is willing to participate. UConn, for a "wheeling" agreement and interconnection. 	

TABLE 7
OPINION OF PROBABLE COST FOR WATER SUPPLY ALTERNATIVES
FOUR CORNERS AREA, MANSFIELD, CT

Alternative	Well No.	Transmission Piping (ft)	Opinion of Probable Cost (a)					Total
			Transmission Piping (b)	Well & Wellhouse (c)	Property Purchase	Engineering, Hydrogeologic, and Permitting Services	Total	
CT Water Interconnection	NA	-	\$0	NA	\$0	\$0	\$0	
Windham Water Works Interconnection	NA	27,500	\$5,500,000	(d)	\$0	(d)	(d)	
Mansfield Depot Wellsites	MD-1	9,900	\$1,900,000	\$900,000	(e)	\$700,000	\$3,500,000	
	MD-2	11,200	\$2,100,000	\$900,000	(e)	\$800,000	\$3,800,000	
	MD-3	11,400	\$2,100,000	\$900,000	\$0	\$800,000	\$3,800,000	
Eagleville Lake Wellsites	EP-1	9,400	\$1,800,000	\$900,000	(e)	\$700,000	\$3,400,000	
	EP-2	11,650	\$2,300,000	\$900,000	(e)	\$800,000	\$4,000,000	
	EP-3	16,550	\$3,200,000	\$900,000	(e)	\$1,000,000	\$5,100,000	
	EP-4	18,400	\$3,500,000	\$900,000	(e)	\$1,100,000	\$5,500,000	
	EP-5	19,200	\$3,600,000	\$900,000	\$0	\$1,100,000	\$5,600,000	
Cedar Swamp Wellsites	C-1	9,300	\$1,600,000	\$900,000	(e)	\$600,000	\$3,100,000	
	C-2	9,300	\$1,600,000	\$900,000	(e)	\$600,000	\$3,100,000	
	C-3	9,800	\$1,700,000	\$900,000	(e)	\$700,000	\$3,300,000	
	C-4	6,200	\$1,100,000	\$900,000	(e)	\$500,000	\$2,500,000	
Manfield Hollow Wellsites	MH-1	39,600	\$6,400,000	\$900,000	\$0	\$1,800,000	\$9,100,000	
	MH-2	33,900	\$5,100,000	\$900,000	\$0	\$1,500,000	\$7,500,000	
	MH-3	34,700	\$5,300,000	\$900,000	\$0	\$1,600,000	\$7,800,000	

- (a) The Opinions of Probable Cost are considered "Order of Magnitude" estimates, and have an expected accuracy range of -30% to +50%.
- (b) "Transmission Piping" does include 5,000 feet of interconnection piping with UConn on Hunting Lodge Road and Route 44, but does not include the approximately 11,000 feet of distribution system piping in the Four Corners Area.
- (c) It is assumed that the treatment will include chemical addition only for disinfection, pH control, and corrosion control.
- (d) The Windham Water Works Interconnection option will require an increase in the WWW water treatment plant capacity; the cost of which can be estimated upon further evaluation of the WWW water treatment plant and discussions with WWW. The interconnection will also require one or two pump stations (see text for details) at a cost of approximately \$800,000 each.
- (e) This well site alternative will require the purchase or lease of private property.

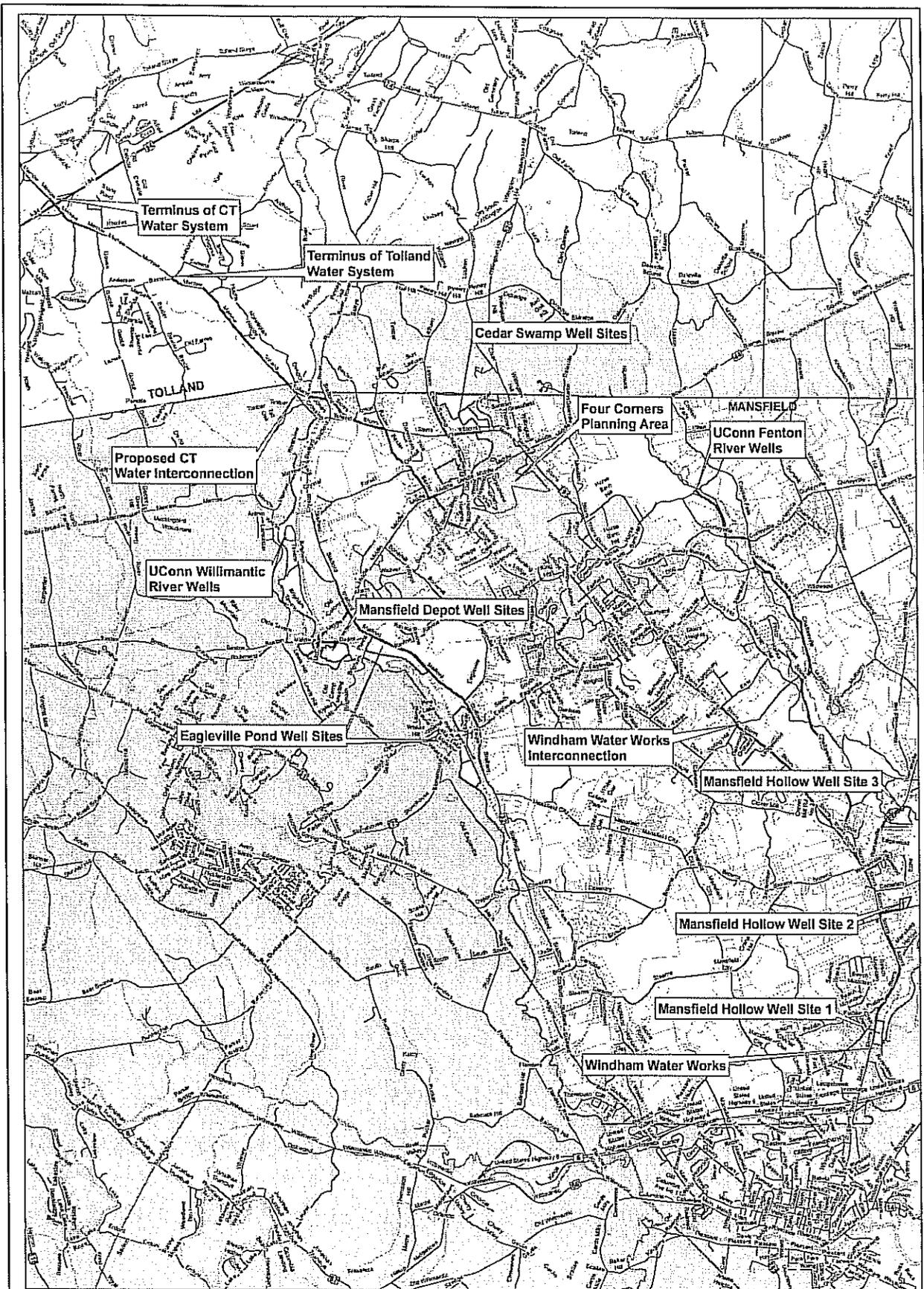
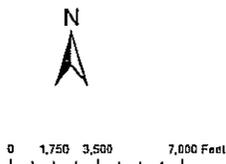


Figure 1
 Water Supply Alternatives
 Mansfield, Connecticut

January 2011



- Legend**
- Proposed Water Mains
 - Four Corners Planning Area
 - UCONN Water System
 - Town Boundary
 - Potential Well Sites



January 2011

Legend

Proposed Water Mains

- Roads
- ⊕ Proposed Well
- ▭ 200 ft Buffer Zone
- ▭ Town Boundary
- ▭ Potential Well Sites
- ▭ Parcels
- ▭ Wetlands
- Water Systems
- ▭ Four Corners Planning Area
- ▭ UCDNN
- Surficial Materials Simple Legend
- ▭ Artificial Fill
- ▭ Natural Postglacial
- ▭ Fine
- ▭ Coarse
- ▭ Stacked Coarse
- ▭ Coarse over Fine
- ▭ Fine over Coarse
- ▭ Till
- ▭ Thick Till
- ▭ End Moraine

All Data Supplied by the State of Connecticut Department of Environmental Protection

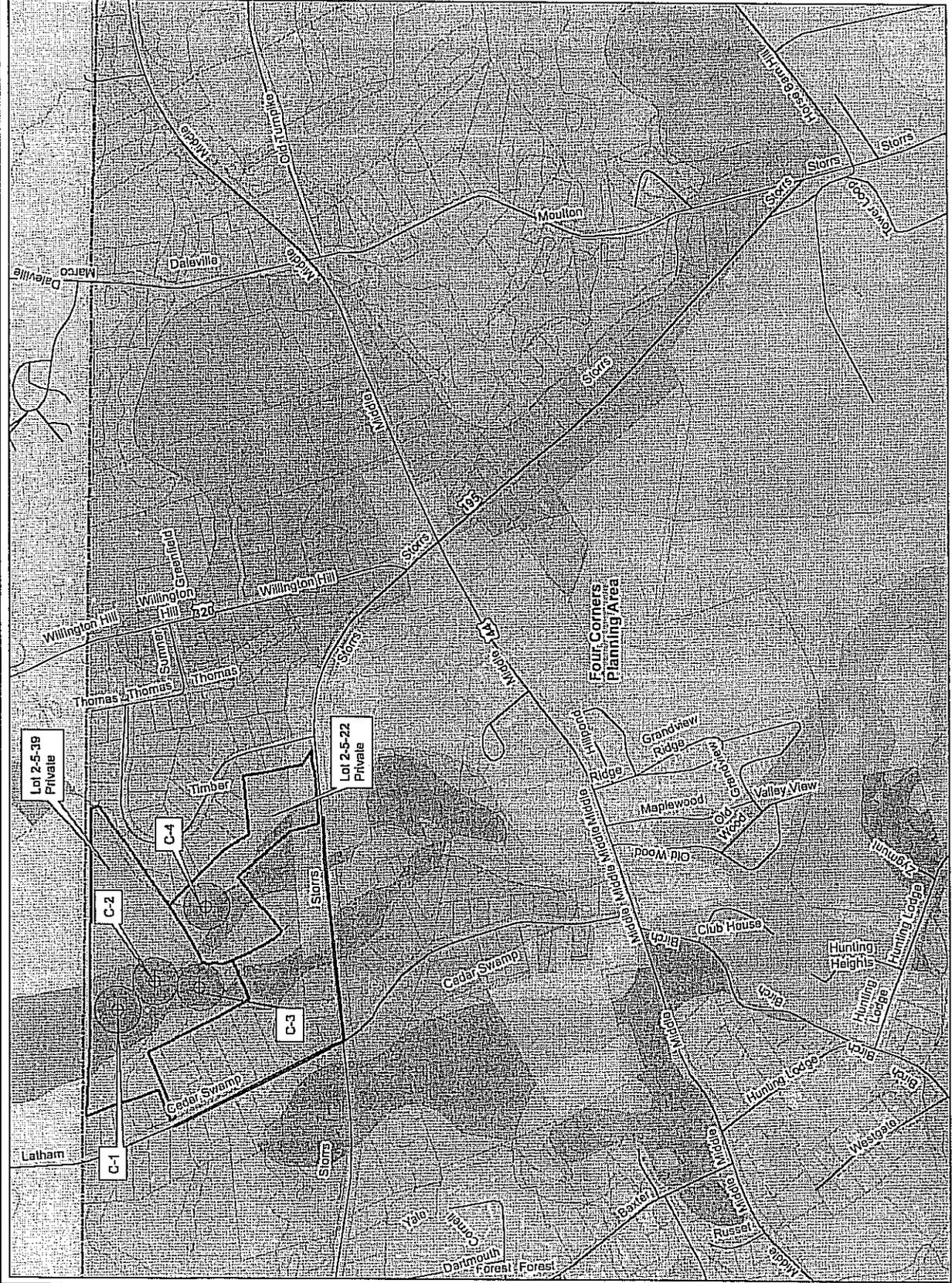


0 250 500 1,000 Feet

Figure 2

Cedar Swamp
Potential Well Sites
Mansfield, Connecticut

Environmental Partners



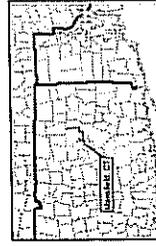


January 2011

Legend

- Proposed Water Mains
- Roads
- ⊕ Proposed Well
- ▭ 200 ft Buffer Zone
- ▭ Town Boundary
- ▭ Potential Well Sites
- ▭ Wetlands
- ▭ Water Systems
- ▭ Four Corners Planning Area
- ▭ UCONN
- Surficial Materials Simple Legend**
- ▭ Artificial Fill
- ▭ Natural Postglacial
- ▭ Fine
- ▭ Coarse
- ▭ Stacked Coarse
- ▭ Coarse over Fine
- ▭ Fine over Coarse
- ▭ Till
- ▭ Thick Till
- ▭ End Moraine

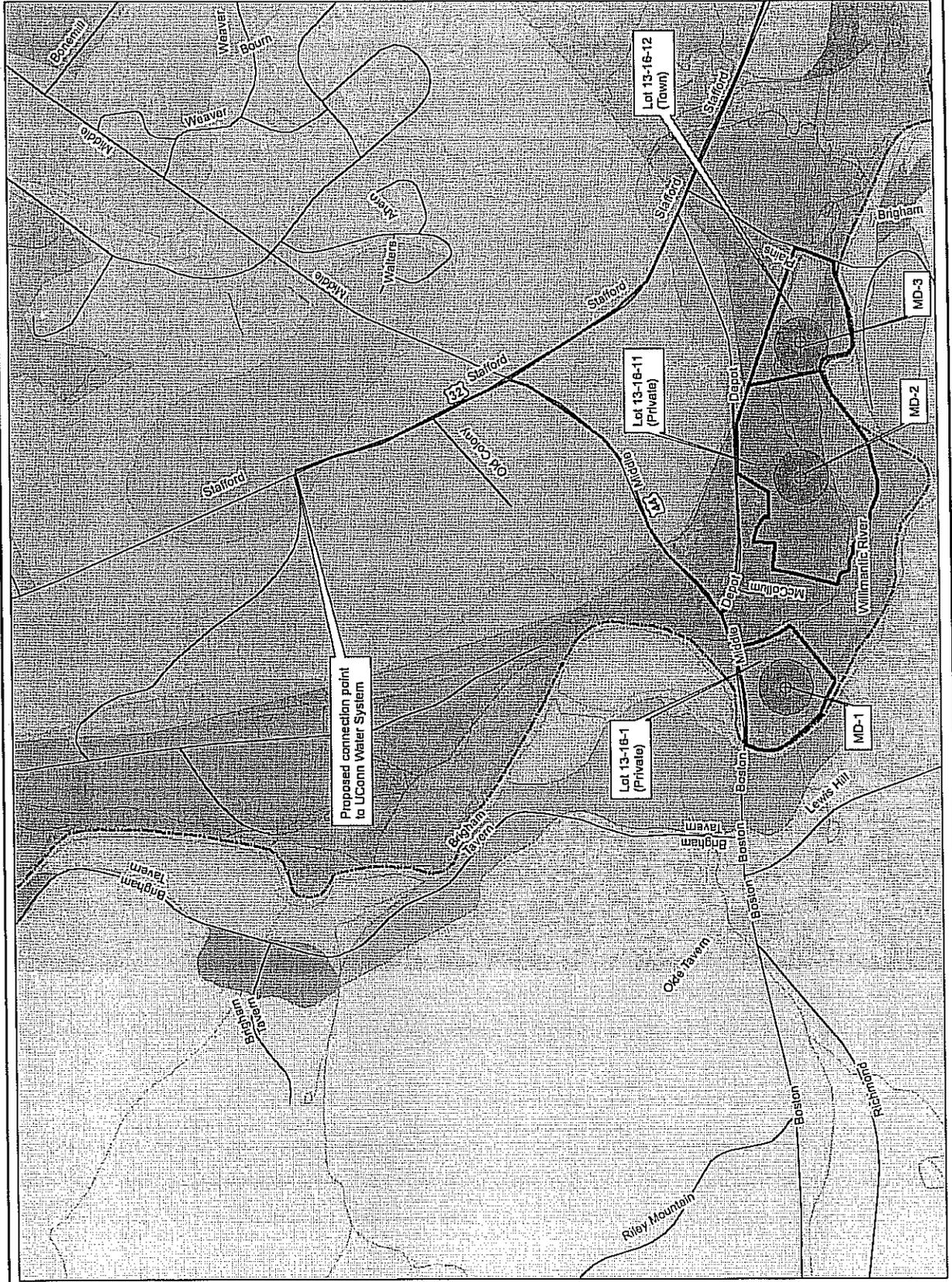
All Data Supplied by the State of Connecticut Division of Environmental Protection



0 250 500 1,000 Feet

Figure 3

Mansfield Depot
 Potential Well Sites
 Mansfield, Connecticut
 Environmental Partners



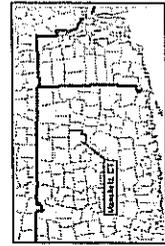


January 2011

Legend

- Proposed Water Mains
- Roads
- Proposed Well
- 200 ft Buffer Zone
- Town Boundary
- Potential Well Sites
- Wetlands
- Water Systems
- Four Corners Planning Area
- UCONN
- Surficial Materials Simple Legend
- Artificial Fill
- Natural Postglacial
- Fine
- Coarse
- Stacked Coarse
- Coarse over Fine
- Fine over Coarse
- Till
- Thick Till
- End Moraine

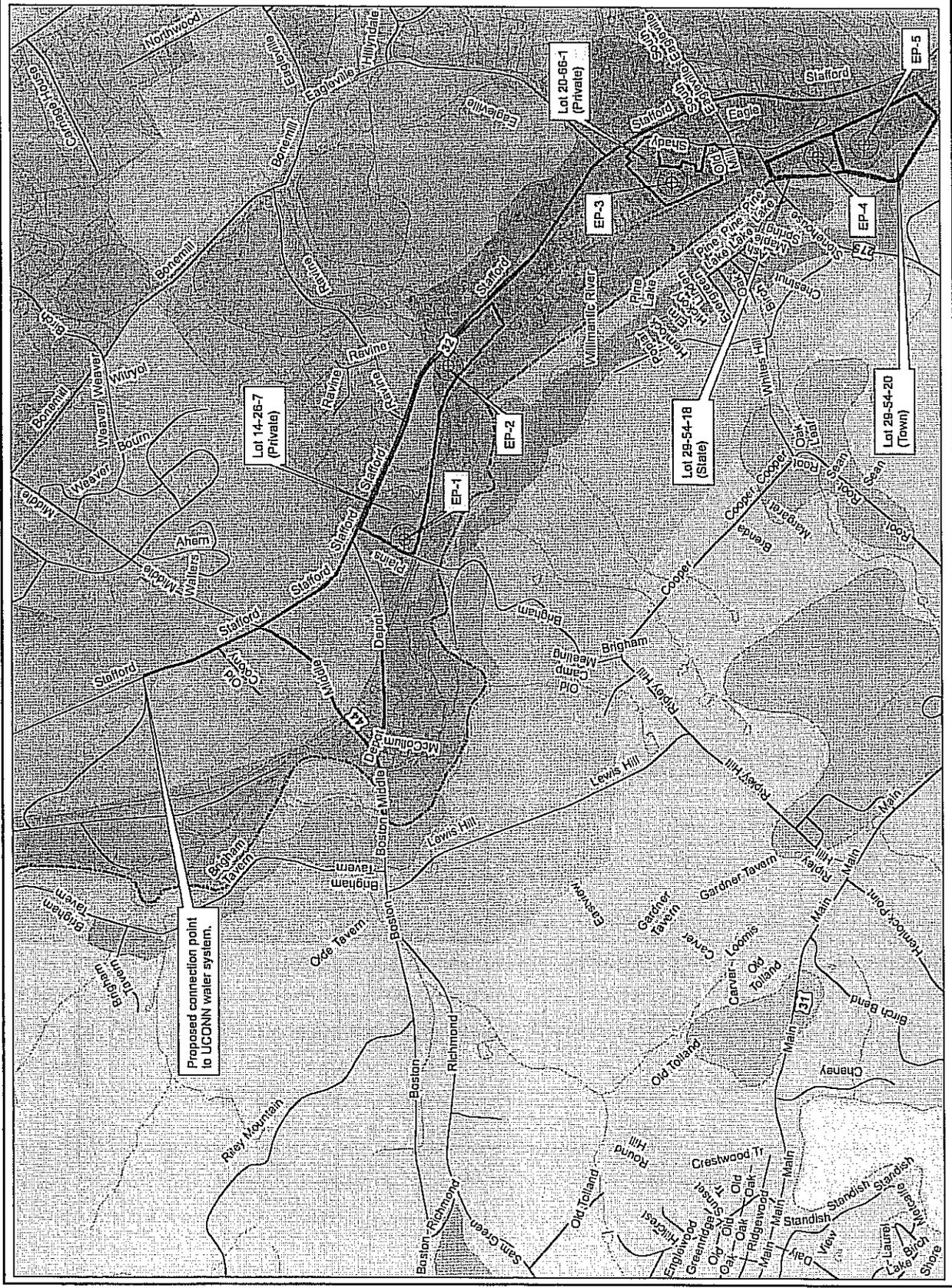
All Data Supplied by the State of Connecticut Department of Environmental Protection



0 370 740 1,480 Feet

Figure 4

Eagleville Lake
Potential Well Sites
Mansfield, Connecticut
Environmental Partners



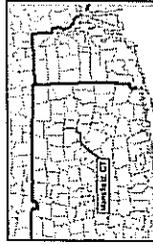


January 2011

Legend

- Proposed Water Mains
- Roads
- ⊕ Proposed Well
- Water Systems
- ▨ Four Corners Planning Area
- ▨ UConn

All Data Supplied by the State of Connecticut and the Dept. of Environmental Protection

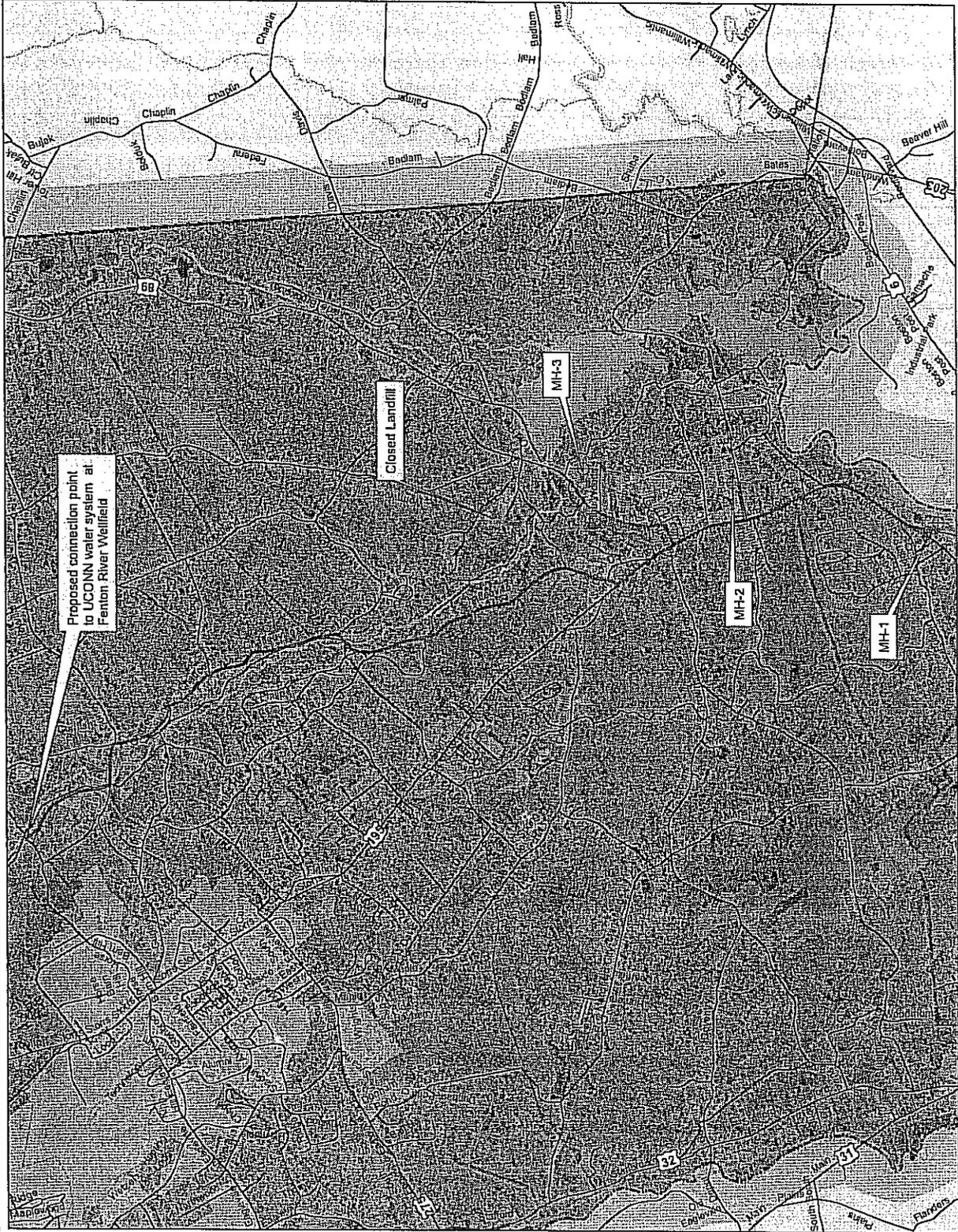


0 875 1,750 3,500 Feet

Figure 5B

**Manfield Hollow
Potential Well Sites
Mansfield, Connecticut**

Environmental Partners



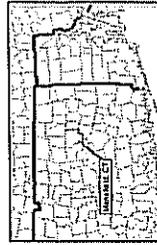


January 2011

Legend

- UConn Interconnection
- Roads
- Town Boundary
- ▭ Parcels
- ▨ Welllands
- ▧ Water Systems
- ▩ Four Corners Planning Area
- UCONN

All Data Supplied by the State of Connecticut Department of Environmental Protection

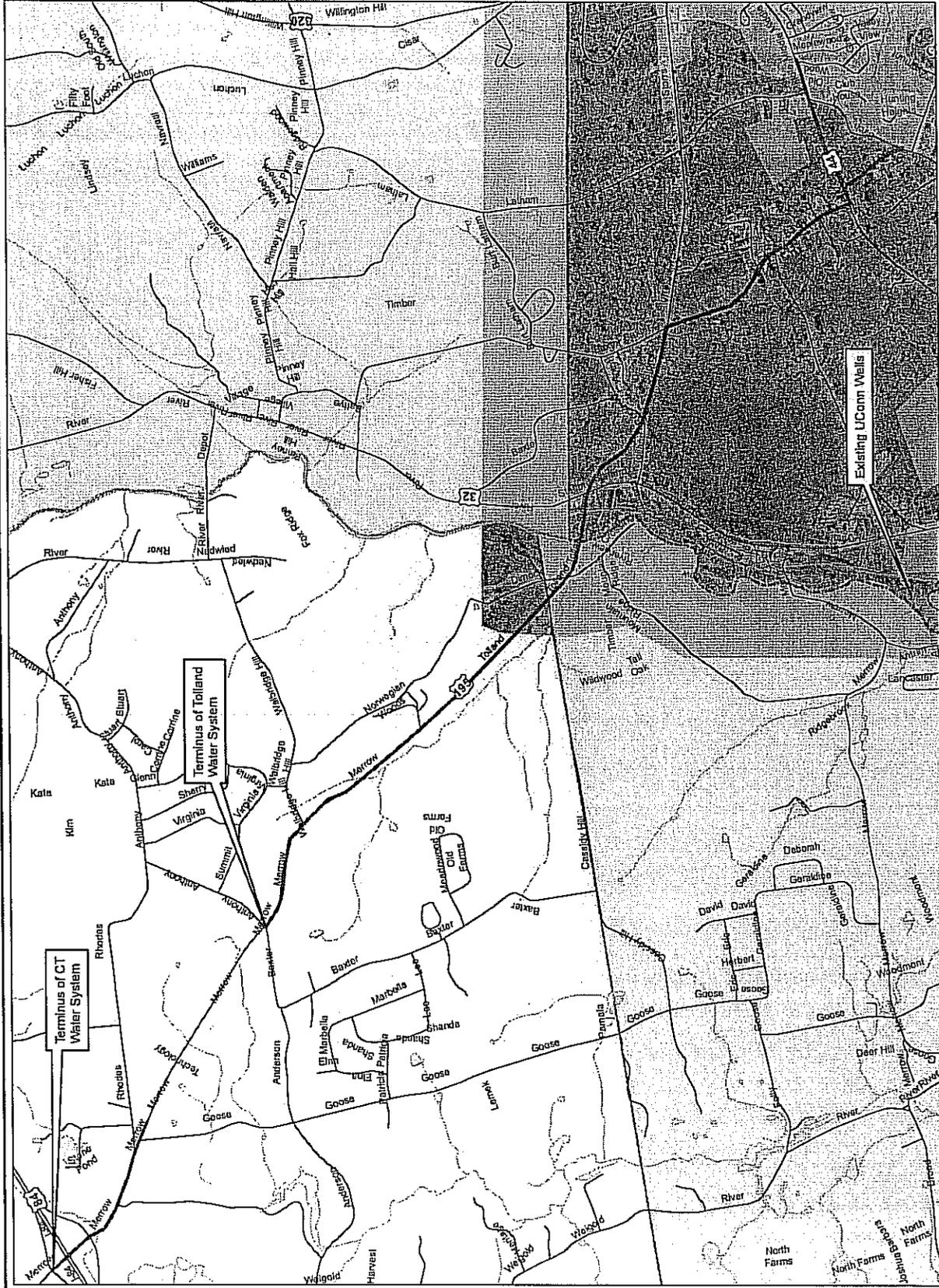


0 625 1,250 2,500 Feet

Figure 6

Proposed UConn Interconnection Mansfield, Connecticut

Environmental Partners





January 2011

Legend

- Proposed Pipeline
- Roads
- UConn Water System
- Town Boundary

All Data Supplied by the State of
Connecticut Department of
Environmental Protection

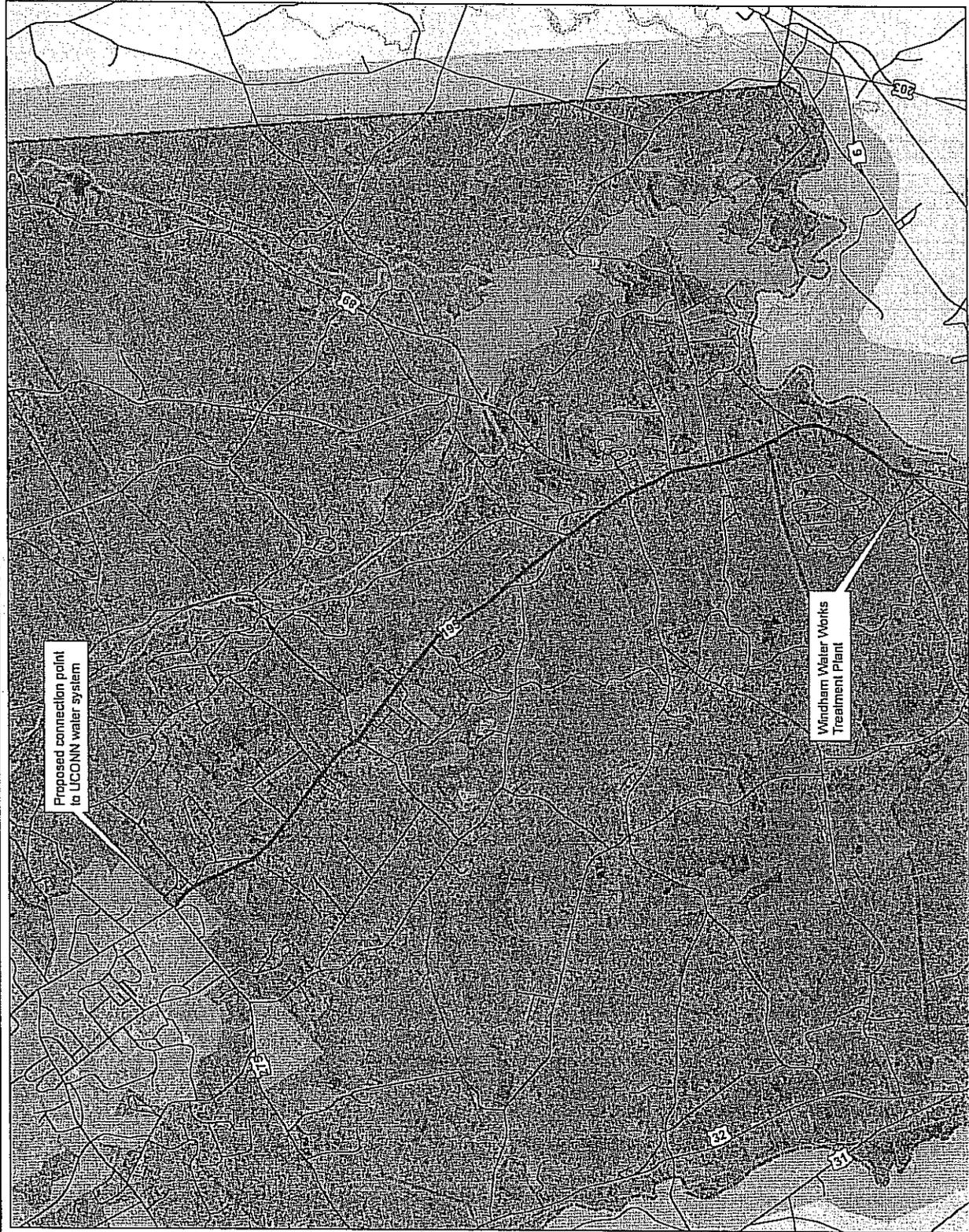


0 750 1,500 3,000 Feet

Figure 7

Windham Water Works
Proposed Interconnection
Mansfield, Connecticut

Environmental Partners
AN AFFILIATE OF THE STATE OF CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION



Environmental  Partners
A partnership for engineering solutions. **GROUP**

**TOWN OF MANSFIELD
OFFICE OF PLANNING AND DEVELOPMENT**

GREGORY J. PADICK, DIRECTOR OF PLANNING

Memo to: Town Council, Zoning Board of Appeals, Conservation Commission,
Open Space Preservation Committee, Eastern Highlands Health District,
Assistant Town Engineer, Fire Marshal, Zoning Agent
From: Gregory Padick, Director of Planning *GJP*
Date: Monday, December 13, 2010
Re: Proposed Revisions to the Mansfield Subdivision Regulations-
~~January 18, 2011 Public Hearing~~

Feb 7,

MON. Feb 7,

8:00 The Planning and Zoning Commission has scheduled a Public Hearing for ~~Tuesday, January 18, 2011~~ at ~~7:45~~ *8:00* p.m. to hear comments on the attached Commission proposed 12/1/10 draft revisions to Mansfield's Subdivision Regulations. For inclusion in the Commission's pre-meeting packet, comments must be received in the Planning Office by Wednesday, ~~January 12, 2011~~ *Feb 2nd*. Except for technical information from staff, no comments can be received after the close of the public hearing.

It is noted that explanatory notes are provided within the draft to help explain the proposed revisions. The attached legal notice highlights the most important draft revisions.

For more information, please contact the Planning Office at 860-429-3329.

LEGAL NOTICE

The Mansfield PZC will hold a Public Hearing on ^{Monday Feb 7} Tuesday, January 18, 2011 at 7:45 p.m. in the Council Chambers, A.P. Beck Bldg., 4 S. Eagleville Rd, to hear comments on PZC-proposed 12/1/10 draft revisions to numerous sections of the Mansfield Subdivision Regulations.

Proposed Subdivision Regulation revisions include:

1. Revisions to Sec. 3 (Definitions) including new definitions for conceptual layout plan, significant trees, view and vista;
2. Revisions to Sec. 4 (General Provisions) including new referral requirements;
3. Replacement of existing Sec. 5 (Preliminary Plan) with new provisions (Subdivision Design Objectives/Design Process). The proposed design objectives revise and supplement provisions currently in Sec. 7. The proposed design process includes three (3) specific pre-application steps that are recommended for all subdivisions but specifically required for subdivisions with new streets or four (4) or more lots. The draft details submission requirements and review processes;
4. Revisions to Sec. 6 (Final Plans) including revised provisions regarding map submissions, depiction of significant trees, submittal of digital data for approved subdivisions and requirements for sidewalks, bikeways, trails and/or other improvements designed to encourage and enhance bicycle and pedestrian use;
5. Revisions to Sec. 7 (Additional Subdivision Criteria) including new provisions to enhance the preservation of stonewalls and historic features and revised common driveway provisions that add new construction and signage requirements and authorize approval of common drives serving up to five (5) residential lots;
6. Revisions to Sec. 8.7 that provide more flexibility for requiring potential improvements along existing streets;
7. Revisions to Sec. 9 (Sidewalks/Bikeways/Trails) including new provisions that require in certain locations specific pedestrian improvements unless waived by a three quarters (3/4) vote of the Commission;
8. Revisions to Sec. 13.8 to clarify the Commission's right to require specific park and trail improvements in association with subdivision open space dedication requirements;
9. Revisions to Sec. 14 (Completion of Improvements/Bonding/As-Built Plans) including new and revised completion requirements for subdivision improvements and provisions that link Zoning Permits and Certificates of Compliance with the completion of subdivision improvements.

At this Hearing, interested persons may be heard and written communications received. No information from the public shall be received after the close of the Public Hearing. Additional information, including the exact wording of the proposed Subdivision Regulations is available in the Mansfield Planning and Town Clerks Offices and at www.mansfieldct.org.

R. Favretti, Chair
K. Holt. Secretary

TO BE PUBLISHED Wednesday, January 5 and Thursday, January 13, 2011

****PLEASE CHARGE TO THE MANSFIELD PZC/IWA ACCOUNT**

December 1, 2010 DRAFT

Proposed Revisions to the Subdivision Regulations

(New provisions are underlined or otherwise indicated)

(Deletions are bracketed or otherwise indicated)

(Explanatory Notes are provided to assist with an understanding of the proposed revisions. These notes are not part of the proposed zoning revisions.)

1) In Section 3, Definitions, incorporate the following revisions:

a. **3.9 Natural and Manmade Features**

Significant trees, [specimens or groupings;] standing singly or in groves; agricultural lands including open fields and pastures; water, including ponds, lakes, brooks, streams, rivers, and cascades; ledges, and large rock outcroppings or formations, large hills or ridges, or expanses of valley floors; visible historic sites or features, such as stone walls, individual buildings or groupings of buildings, cemeteries, cellar holes, foundations, or similar features.

b. **3.10 Plan, [Preliminary] Conceptual Layout**

[The preliminary drawing(s) and any supporting data indicating the proposed manner and layout of the subdivision (see Section 5.0 for requirements)]

A plan prepared after analyzing off-site influences and site and neighborhood features and indicating potential streets, lots, open space areas and other site alterations. Conceptual plans, which are required for subdivisions with potential streets and/or four (4) or more lots, are reviewed by the planning staff pursuant to Section 5.

c. **3.18 [Trees (specimen and groups of trees)**

Specimen: a fully developed tree, standing singly or in a group, exceeding 9" (nine inches) d.b.h. (diameter breast height) on a proposed lot or 6" (six inches) d.b.h. within an existing or proposed street right-of-way. Groups of trees, ranging from 6" to 12" (six to twelve inches) d.b.h., of hardwoods or evergreens, especially as they stand along roadsides or boundaries or properties or lots, so as to serve as privacy screens or buffers, or to enhance a public road or way. Groups or masses of trees may be indicated on a plan as a mass, and each tree need not be delineated.]

Trees, Significant

A healthy, well formed, individual tree nine (9) inches or greater d.b.h. (diameter breast height) on a proposed lot or within an existing or proposed street right-of-way, and/or a grove of trees of any size, especially as they stand along streets or boundaries of existing or proposed lots, that add scenic character or serve as privacy screens or buffers.

d. **3.20 View**

[A sight or prospect of some landscape or extended scene; an extent or area covered by the eye from one vantage point, whether on or off a subdivision site.]

Scenery that exceeds one-hundred and eighty (180) degrees in width as observed from a vantage point.

e. **3.21 Vista**

[A view seen through a long or restricted passage, such as between rows or groups of trees or buildings.]

Scenery that is less than one-hundred and eighty (180) degrees in width as observed from a vantage point and is framed by trees, landforms, buildings or other vertical features.

f. **3.23 Yield Plan**

A map or maps containing a lot and site improvement layout and additional information, as required by these regulations (see Section 6.10.a.6), that demonstrates: compliance with the zoning Schedule of Dimensional Requirements provisions for standard lot size, lot frontage and building setbacks; compliance with all other zoning requirements, including minimum lot area requirements for new lots; and compliance with all subdivision requirements, including the Design Objectives of Section 5.1, the [Design Criteria of Section 7] lot size and configuration provisions of Section 7.4 and the Open Space requirements of Section 13.

A yield plan must be submitted whenever a subdivider seeks a reduction or waiver of minimum lot frontage (see Section 7.6) or in the R-90 and RAR-90 zones, a lot size of less than 90,000 square feet.

Explanatory Note: The revised definitions are associated with new design process provisions in Section 5 and revised provisions in Sections 6.5 and 7.8 regarding the identification and preservation of significant trees, views and vistas.

2) In Section 4, General Provisions, incorporate the following revisions and renumber Sections 4.7 through 4.9 to 4.5 through 4.7.

a. **4.2 Zoning Regulations**

No subdivision plan shall be approved unless it conforms to the Zoning Regulations of the Town, as adopted, as may be amended hereafter (copy on file in the Office of the Commission). [Pursuant to Article III, Section A of the Zoning Regulations, Mansfield has adopted a Temporary and Limited Moratorium on receiving and acting upon certain subdivision and resubdivision applications. See Article III, Section A of Mansfield's Zoning Regulations for specific details.]

b. Relocate, without revision, Section 4.5 (Subdivisions in Flood Hazard Areas) to a new Section 7.1.

c. Relocate, without revisions, Section 4.6 (Solar Access-Energy Efficient Design) to a new Section 7.2.

- d. Relocate, without revision, Section 6.17 (Submission to Regional Planning Commission) and Section 6.18 (Notification to Adjoining Towns) to new Sections 4.8 and 4.9.
- e. Relocate, with the following revisions, existing Section 6.19 to a new Section 4.10

4.10 **[6.19] Windham Water Works/Connecticut Department of Public Health Notification**

When an applicant files with the Planning and Zoning Commission an application concerning a subdivision that is within an aquifer protection area delineated pursuant to Section 22a-354c of the State Statutes or which is within the watershed of the Willimantic Water Works or other water company as defined in Section 25-32a of the General Statutes, the applicant shall provide written notice of the application to the water company and the Commissioner of Public Health in a format prescribed by the Commissioner (provided such water company or said Commissioner has filed a map showing the boundaries of the watershed on the Mansfield Land Records and with the Mansfield Planning and Zoning Commission or the aquifer protection area has been delineated in accordance with Section 22a-354c, as the case may be). Such notice shall be made by Certified Mail, Return Receipt Requested, and shall be mailed within seven days [of] after the date of the application. The Willimantic Water Works or other such water company and the Commissioner of Health may, through a representative, appear and be heard at any hearing on any such application.

- f. Relocate, with the following revisions, existing Section 6.20 to a new Section 4.11

4.11 **[6.20] Notification of Abutting Property Owners**

The applicant shall be responsible for notifying all property owners abutting the site of a proposed subdivision, including property owners across the street from a subject subdivision (as measured at right angles to straight street lines and radial to curved street lines). Said notification, which shall be sent by Certified Mail, [Return Receipt Requested,] within seven (7) days of the Commission's receipt of the application, shall include mapping that depicts the proposed subdivision. The notice also shall reference the fact that the complete application is available for review in the Mansfield Planning Office. Notification forms (available in the Mansfield Planning Office) shall be utilized for notifying abutting property owners.

- g. Add a new section 4.12 to read as follows:

Referrals to Staff/Mansfield Boards and Committees

All subdivision applications and related mapping shall be referred to the Director of Planning, the Town Engineer or designee, the Fire Marshal, Eastern Highlands Health District, the Conservation Commission, the Open Space Preservation Committee and any other agency or organization the Commission deems appropriate including but not limited to: the Design Review Panel, the Agriculture Committee, the Parks Advisory Committee, the Recreation Advisory Committee and the Town Council.

Explanatory Note: The revisions to Section 4 eliminate an expired moratorium reference and incorporate statutory requirements regarding notification to the CT.

Department of Public Health and to abutting property owners. A number of existing sections involving referrals have been relocated to this section and a new subsection has been added to address referrals to staff and Town Boards and Committees.

3) Delete Existing Section 5 in its entirety and add new Sections 5* as follows:

*(Section 5.1 modifies existing provisions currently contained in Section 7.1 and proposed revisions have been indicated. Section 5.2 is all new but to enhance clarity new provisions have not been underlined)

Section 5.0 Subdivision Design Objectives/Design Process

5.1 Design Objectives

Subdivisions shall be designed in a manner that protects the public's health and safety, promotes goals, policies and [objectives] recommendations contained in Mansfield's Plan of Conservation and Development, addresses the provisions of Section 1 of these Regulations (Purpose and Authority) and complies with all specific requirements contained or referenced in these regulations. To address these objectives, [accordingly] primary considerations in designing streets, walkways/bikeways and other public improvements, lot layouts, proposed locations for houses, driveways, sanitary systems and other site work and identifying appropriate open space preservation areas shall be:

- a. The protection and enhancement of vehicular [bicycle] and pedestrian safety through the appropriate siting of streets, driveways, walkways, bikeways and trails;
- b. The protection and enhancement of existing and potential public water supply wells and ground water and surface water quality through appropriate design and installation of sanitary systems, roadways, drainage facilities, house sites and other site improvements;
- c. The protection and enhancement of natural and manmade features, including wetlands, watercourses, aquifer areas, agricultural lands, hilltops or ridges, historic sites and features, expanses of valley floors, [and features along existing roadways] interior forests, significant trees and scenic views and vistas on and adjacent to the subdivision site. Wherever appropriate, site features shall be protected through a clustering of streets and house sites and the identification and preservation of significant open space areas including agricultural lands, interior forests and other land without physical limitations.
- d. The [use]utilization of a site's natural terrain, avoiding unnecessary re-grading, filling and removal activities.
- e. The promotion of energy efficient patterns of development and land use, energy conservation and the use of solar and renewable forms of energy through the appropriate siting of streets, driveways and house sites and, whenever appropriate, bikeway and walkway/trail connections to neighboring streets and neighborhoods; existing and planned commercial areas; schools parks, and other public facilities and town designated walkway or bicycle routes.

5.2 Design Process

All prospective subdividers are encouraged to meet with the Director of Planning or other Planning Office Staff to review zoning and subdivision approval criteria and application submission requirements.

To help achieve the design objectives of Section 5.1, to expedite application reviews, to help reduce application submission costs and to help ensure compliance with all applicable provisions of Mansfield's Zoning and Subdivision Regulations, Mansfield has established a comprehensive pre-application design process. This design process, which is recommended for all subdivisions, includes mandatory pre-application submissions for all subdivisions with new streets or four (4) or more lots. The process has the following steps:

- Step 1 Preparation of an Off-Site and Neighborhood Influences Inventory Plan and preparation of a Site Analysis Plan (see Section 5.2.a)
- Step 2 Preparation of a Conceptual Yield Plan and a Conceptual Layout Plan (see Section 5.2.b)
- Step 3 Testing and Preparation of Final Subdivision Plans (See Section 5.2.c and Section 6)

It is important to note that any pre-application comments and/or recommendations provided to a prospective subdivider by Mansfield's Director of Planning, other staff member or Mansfield Commission or Committee member, shall not be binding on the applicant, the Planning and Zoning Commission or any other authority, agency or official having jurisdiction to review and act upon the subject subdivision.

a. Off-Site and Neighborhood Influences Inventory Plan and Site Analysis Plan

1. Off Site and Neighborhood Influences Inventory Plan

Regional, town-wide and neighborhood characteristics and influences shall be inventoried and considered with respect to the subject subdivision site and the Design Objectives of Section 5.1. State and regional land use plans, Mansfield's Plan of Conservation and Development, local knowledge and other sources of information should be considered in conducting this inventory of off-site influences.

While all prospective applicants are encouraged to submit and review with the Planning Staff an inventory of off-site and neighborhood influences, whenever a subdivision proposal includes new streets or four (4) or more lots, this inventory is mandatory and shall be submitted by a Connecticut Licensed Landscape Architect in association with the Site Analysis Plan requirements of Section 5.2.b. Where required, this inventory shall be presented in the form of a plan showing the location of the project site, area factors such as roads and transportation networks, noteworthy topographical and natural resource features, proximate commercial, recreational, educational and cultural land uses and any other external site features that could influence development on the project site. This plan may be displayed as a cover sheet for the set of final subdivision plans.

2. Site Analysis Plan

Natural and man-made features on or adjacent to a potential subdivision site shall be inventoried and considered in association with the design objectives of Section 5.1 and other provisions of these regulations. While all prospective applicants are encouraged to submit and review with Planning Staff a Site Analysis Plan (as described below), whenever a subdivision proposal includes new streets or four (4) or more lots, the submittal of a Site Analysis Plan is mandatory. Where required, a Connecticut Licensed Landscape Architect shall prepare and submit to the Director of Planning five (5) copies of a Site Analysis Plan containing the information listed below as applicable to the subject site. This plan shall be submitted in association with an Off-Site and Neighborhood Influences Inventory Plan as per Section 5.2.a.1.

The submitted Off-Site and Neighborhood Influences Inventory Plan and the Site Analysis Plan shall be reviewed by Mansfield staff members and shall be referred to the Conservation Commission and the Open Space Preservation Committee. As deemed appropriate by the Director of Planning, the above referenced plans also may be referred to other advisory committees for review and comment. Additionally, the Planning and Zoning Commission shall be informed in writing and provided with an opportunity to receive the submitted information for review and comment. The Director of Planning shall within forty-five (45) days of receipt provide review comments on the submitted plans to both the applicant and the Planning and Zoning Commission and any reviewer who provided comments to the Director. No final subdivision plan involving new streets or four (4) or more lots shall be considered complete and approvable by the Commission unless the Off-Site and Neighborhood Influences Inventory Plan and the Site Analysis Plan requirements have been met.

The following information shall be included, as applicable to the subject site, on all required Site Analysis Plans:

1. North arrow, date and scale. All plans shall be drawn at a scale of one (1) inch equals forty (40) feet (1" = 40') or less. The Director of Planning shall have the right to permit different scales for larger parcels provided the scale used shall also be used for the final subdivision plan. Use of the same scale will facilitate a transfer of information.
2. Name of subdivider and subdivision and the name and seal of the Landscape Architect who prepared the plan.
3. Boundaries of tract to be subdivided.
4. Existing contours at two (2) foot intervals. All slopes over 20 percent and watershed divides should be indicated.
5. Existing streets, easements, fences, walkways, bikeways, trails, structures both onsite and immediately adjacent to the site.
6. Wetlands and watercourses including intermittent streams both onsite and immediately adjacent to the site.
7. One Hundred (100) year flood plains, including base flood information on any portion of the land being subdivided which is within flood hazard areas as shown on the Zoning Map and in greater detail in the flood insurance study dated July 1980, and the most current Federal Emergency Management "Floodway" and Flood Insurance Rate Maps.
8. Aquifer areas and public drinking water wells on or within 500 feet of a site.

9. Soil type classifications as per the current U.S.D.A. Natural Resource Conservation Service Soil Survey for Tolland County, CT.
10. On-site and adjacent historic features including: all structures, wells and other utility features, walls and fences regardless of their condition, existing or former walks, paths, drives, trails, etc., curbs and pavement, man-made elements inserted into the ground such as hitching posts, garden or enclosed areas, significant vegetation, remains of old foundations, rip-rapping, arbors, trellises, etc., and any other historic features observed.
11. On-site and adjacent agricultural land with existing uses identified.
12. Areas with potential State and Federally-listed endangered, threatened or special concern species as per the current State and Federal Listed Species and Natural Communities Map published by the Connecticut Geological and Natural History Survey of the Connecticut Department of Environmental Protection; and significant natural flora and fauna communities as per Mansfield's Plan of Conservation and Development mapping.
13. Other natural and man-made features, including rock ledges and rock outcropping, significant trees, tree or shrub groves or masses of groundcover and obvious wildlife habitats.
14. Desirable scenic and/or historic views and vistas into or out of the site, desirable internal vistas and views and any undesirable views and vistas both off and on-site.
15. On-site and adjacent open space and recreational land with existing uses identified.
16. Off-site nuisances to be screened.
17. Negative site conditions such as dangerous and dilapidated buildings, dead and falling trees, diseased plants, infestation of invasive species, areas of stripped top soil, deposits or junk and refuse.
18. Objectionable noises or odors and their sources both on and off site.
19. Particular micro-climatic conditions that may affect development.
20. Directions of prevailing winter winds and summer breezes.
21. Horizontal angles of the sun (azimuth) on December 21 and June 21.
22. Primary directions of off-site traffic flow and relative volumes; points of connection of site with sidewalks, bikeways and trails, if any.
23. Logical points of ingress and egress to the site; sight lines of possible driveway to road; locations of all trees over 9 inches in diameter (d.b.h.) within sight lines.
24. Tentative notations of possible preservation and conservation areas (areas where development should be discouraged).
25. Tentative identification of areas that are better suited for development.

An example of a site analysis plan is contained in Appendix A of these regulations.

In situations where the Director of Planning becomes aware of a planned subdivision but the mandatory submittal of an Off-Site and Neighborhood Influences Inventory Plan and a Site Analysis Plan are not required, the Director is encouraged (subject to privacy considerations or other factors) to notify other staff members, the Conservation Commission, the Open Space Preservation Committee and, as appropriate, other advisory committees that a subdivision is being considered for the subject property. This notification provision is

designed to facilitate the communication of useful information to a potential applicant at an early stage of the subdivision design process.

In situations where an Off-Site and Neighborhood Influences Inventory Plan and Site Analysis Plan have not been submitted but the Director of Planning has notified staff and advisory Committees of a potential subdivision application, the Planning and Zoning Commission shall be informed in writing and provided an opportunity to comment. Any pre-application review comments from staff members, commission or committee members shall be incorporated into a report from the Director of Planning, which shall be submitted to the applicant, the Planning and Zoning Commission and any reviewer who provided comments to the Director. Any comments from the Commission shall not be binding on the applicant, the Commission or any other authority, agency or official having jurisdiction to review and act upon the subject subdivision.

b. Conceptual Yield Plan and Conceptual Layout Plan

Following the analysis and review of off-site and neighborhood influences and site features, the next step in designing a Mansfield Subdivision shall be the preparation of a Conceptual Yield Plan and a Conceptual Layout Plan. These plans shall take into account all comments received in association with the initial step as described in Section 5.2.a.

All applicants are encouraged to submit to the Planning Office a Conceptual Yield Plan and Conceptual Layout Plan for review prior to the submittal of final plans. However, whenever a subdivision proposal includes new streets or four (4) or more lots, a Connecticut Licensed Landscape Architect shall prepare and submit to the Director of Planning five (5) copies of a Conceptual Yield Plan and a Conceptual Layout Plan. Several concept plans may be submitted concurrently. The submitted plans shall be reviewed by Mansfield staff members and, shall be referred to the Conservation Commission, the Open Space Preservation Committee and the Design Review Panel. As deemed appropriate by the Director of Planning, the plans also may be referred to other advisory committees for review and comment. Additionally, the Planning and Zoning Commission shall be informed in writing and provided with an opportunity to receive the submitted plans for review and comment. The Director of Planning shall within forty-five (45) days of receipt provide review comments on the submitted plans to both the applicant and the Planning and Zoning Commission and any reviewer who provided comments to the Director. No final subdivision plan involving new streets or four (4) or more lots shall be considered complete and approvable by the Planning and Zoning Commission unless these conceptual plan requirements have been met. All review comments on conceptual plans shall not be considered as a commitment to approve final plans which are subject to independent review and approval pursuant to Section 6 and compliance with all applicable approval criteria contained in these regulations.

The Conceptual Yield Plan, which shall be drawn to a scale best suited to the site and allows appropriate review, shall identify potential streets (where applicable), potential lots and potential open space areas that could be developed with standard frontages and lot sizes pursuant to all applicable zoning and subdivision approval criteria. Mansfield's Subdivision Regulations require a yield plan to determine the maximum number of lots that could be developed on a subject site (see Section 6.10.a.6 for yield plan provisions).

The Conceptual Layout Plan, which shall be drawn to a scale best suited to the site and allows appropriate review, shall identify potential streets (where applicable), potential lots and potential open space areas that could be developed pursuant to all applicable zoning and subdivision approval criteria, including Mansfield's "Cluster Development" provisions. Section 7.4 of the Subdivision Regulations authorizes the Commission to require new subdivisions to be clustered with reduced lot sizes and larger areas of preserved open space. Section 7.6 includes provisions to reduce or waive lot frontage and setback requirements. A submitted Conceptual Layout Plan should reflect an applicant's intended final plan submission subject to soil testing and obtaining more specific site information.

c. Testing/Preparation of Final Subdivision Plans

Following the receipt of review comments on all submitted conceptual plans, applicants shall conduct all required testing pursuant to State Health Code requirements and permits issued by Eastern Highlands Health District. Following on-site testing and further analysis, applicants can elect to resubmit conceptual plans pursuant to Section 5.2.b. or prepare final plans pursuant to Section 6. The final plan shall take into account all information obtained through Mansfield's design process.

Final Subdivision plans shall depict proposed streets, lot lines, building and development area envelopes, house locations, well and septic system locations, open space areas, natural and manmade resources and other details required by Section 6 and other provisions of these Regulations. The final subdivision plan shall address the minimum lot size provisions of the Zoning Regulations, and the number of proposed lots shall be no greater than the number depicted on a finalized yield plan prepared pursuant to Section 6.10.a.6.

Explanatory Note: The revisions to Section 5 include the relocation and expansion of subdivision design objectives and the establishment of a new pre-application process designed to promote compliance with the design objectives and all applicable subdivision submission and approval standards. For subdivisions involving four (4) or more lots or new streets, the proposed regulations require applicants to submit to the Director of Planning, and as deemed appropriate, other staff members and advisory committees, an inventory of regional, town-wide and neighborhood characteristics and influences and a site analysis plan before preceding to the preparation of conceptual yield and layout plans which also must be submitted for review and comments. Any subdivision application submitted to the Planning and Zoning Commission pursuant to Section 6, that involves four (4) or more lots or new streets, would be incomplete if the new pre-application requirements have not been met. The new pre-application process is expected to expedite Planning and Zoning Application reviews and help reduce application revisions and associated processing costs.

4) In Section 6, Final Plans, incorporate the following revisions:

a. Revise Section 6.1 to read as follows:

Plan Required

[Except as provided for in Section 4.9,] In order for land to be subdivided, all procedures and requirements of this Section (6.0) and other applicable sections of these regulations, including the subdivision design process of Section 5 [design criteria of Section 7,] must be complied with. Only final plans approved by the Commission may be filed in the office of the Town Clerk.

- b. Revise section 6.2 to read as follows:

Complete Application

The subdivision application shall be considered complete by the Commission when it determines the subdivider has complied with the design process provisions of Section 5 and all submission provisions of Section 6 [all the plan requirements]. If an application involves activities within regulated areas as defined by the Mansfield Inland Wetland Agency (IWA), the application shall not be received unless a license application for said activities has been received by the IWA and is currently under IWA review; or unless a license for said activities has been approved by the IWA; or unless the proposed activities have been ruled by the IWA to be exempt from licensing requirements. The date of the meeting at which the Commission determines the application is complete shall be designated the official date of submission.

- c. Revise section 6.3 to read as follows:

Final Plan Requirements

- a. The final plans shall consist of the subdivision map, construction and public improvement plan (if needed), pursuant to Section 6.7 and supportive documentation (Section 6.10 and 6.11) either required herein or as may be required by the Commission.
- b. All required plans shall be prepared by and shall bear the name, signature and seal of a land surveyor and professional engineer licensed by the State of Connecticut.
- c. Final plans shall include the name, signature and seal of a landscape architect licensed by the State of Connecticut whenever a subdivision proposal includes new streets or four or more lots, or the Commission determines that a landscape architect is needed to address application requirements and approval criteria including potential impacts on natural and manmade features and scenic views and vistas.
- d. Final plans shall include the name and signature of a certified soil scientist whenever wetlands or watercourses exist within one hundred fifty feet of proposed building envelopes or the Commission determines that a soil scientist is needed to address application requirements and approval criteria.
- e. All full sized plans shall be drawn at a scale of one (1) inch equals forty (40) feet (1"=40') or less. The Commission may permit different scales for large parcels.
- f. All plans shall be submitted on sheets at least 24 inches wide and 36 inches long (24" x 36"). The subdivider shall submit at least 6 copies of all full size maps. [, two of which shall be on Mylar or similar reproducible medium.] The Commission may require additional copies. In addition, the subdivider shall submit fifteen (15) copies of the final plans reduced, wherever possible, to fit paper eleven (11) inches wide and seventeen (17) inches long. The reduced sized maps shall be at a measurable scale, which shall be noted on the reduced size map. [Upon approval by the Commission, final plans also shall be submitted in digital form AutoCAD R-14 or compatible form acceptable to the Town (unless specifically waived by the Commission for smaller subdivisions where a digital form is not available).]

- d. **Revise Section 6.5.j.3 to read as follows;**

3. Open fields and meadows, woodlands, tree lines, significant trees. The subdivision map shall identify all significant trees (see definition) that are within a proposed development area envelope or an existing or proposed street right of way. In addition, all [over six (6) inches d.b.h. (diameter breast height) within an existing or proposed street right-of-way or nine (9) inches d.b.h. on a proposed lot that are to be removed in association with road, drainage, driveway, house, septic or underground utility construction. All] trees over fifteen (15) inches d.b.h. (diameter breast height) situated on the subdivision site shall be identified,

either individually or as part of a [group of trees] grove. [Specimen] Significant trees [and groups or masses of trees (see definition)] that are to be preserved shall be specifically [shown and] labeled on final plans.

e. **Revise Section 6.5 to read as follows:**

n. Proposed street layout (where applicable) with pavement type and typical street cross-section, right-of-way widths, street names, location of existing and proposed street signs and street lights, with design details and street trees, with standard plant specifications;[signs and sidewalks, if any;]

f. Add a new Section 6.5.o to read as follows and re-letter existing Section o through t to p though v.

o. Sidewalks, bikeways, trails and/or other improvements designed to encourage and enhance safe bicycle and pedestrian use (see Section 9). Where required, cross-sections and related construction details shall be provided.

g. In Section 6.10, Required Documentation, incorporate the following revisions: 6.10.a.5, change Section 4.6 to Section 7.2; 6.10.a.6, delete “design” in line 6; 6.10.b.1, delete “Sewer Authority” in line 1

h. In sections 6.13 a and b, replace “Town Planner” with “Director of Planning” (3 locations)

i. **Revise Section 6.14 to read as follows:**

Submittal of Approved Plans/ Endorsement

Upon approval, the subdivider shall submit, in accordance with the schedule contained in Section 6.15, two (2) sets of reproducible subdivision plans acceptable to the Town Clerk based on the provisions of Section 7-31 of the State Statutes; [and] three (3) sets of full sized paper prints of the approved plans[shall be submitted to] and three (3) sets of reduced size maps as per the submission provisions of Section 6.3.f In addition, the subdivider shall submit the final plans in digital form AutoCAD R-14 or a compatible form acceptable to the Town. Alternatively, Town staff may accept other forms of digital data (property lines, wetland boundaries and other data contained on a final subdivision plan) provided the data can be readily incorporated into the Town’s current digital mapping system. This digital data is needed to appropriately update Town records.

The Chairman of the Commission who, after determining that [they] the submittals comply with the Commission's action and that all other regulatory requirements have been met, shall sign the plans. When the Chairman is absent, or otherwise unable to act, the Vice-Chairman or Secretary of the Commission shall sign said maps. No plan shall be recorded with the Town Clerk until approval has been endorsed thereon and recording of the plan without such endorsement shall make said plan void. A plan revised without a proper endorsement shall also be void. The endorsement of approval shall state the date on which the subdivision approval period expires (see Section 6.16). [The applicant also shall file with the Town the final plans in digital form (see Section 6.3.g).]

- j. Renumber Section 6.21 to 6.17 (existing Sections 6.17 through 6.20 are being relocated to Section 4).

Explanatory Note: *The revisions to Section 6, clarify and update final subdivision plan application submission and post approval requirements. The revisions reference the new pre-application provisions of Section 5, clarify significant tree inventory provisions and provide alternatives for submitting final plans digitally.*

5) In Section 7 to be relabeled “Additional Subdivision Criteria” incorporate the following revisions.

- a. Delete existing Sections 7.1 and 7.2 and replace them with existing provisions contained in Sections 4.5 and 4.6.

b. **7.7 Stone Walls/Historic Features**

[Subdivisions shall be designed to preserve, where] To the extent possible (subject to any safety issues) [after consideration of other regulatory provisions,] all existing stone walls, remains of old foundations and any other historic features on the subject site shall, regardless of condition, be preserved and maintained. Furthermore, wherever possible, existing stonewalls shall be used to delineate property lines. The Commission may require stone walls and other historic features to be included within conservation easements to help ensure long term protection.

All existing stone walls that need to be removed due to street, driveway, house, septic system or other site construction shall be [rebuilt elsewhere on the property, or the stones shall be] used to enhance adjacent segments of walls or other existing walls on the property, particularly along new property lines. [Information] Specific plans regarding any stone wall removal and proposed stone wall rebuilding or improvements shall be included on the subdivision plans and the Commission shall have the right to require stone wall work to be the responsibility of the subdivider.

c. **7.8 Trees**

- a. Unless specifically authorized by the Commission, no roadside tree over [six (6)] nine (9) inches d.b.h. (diameter breast height) shall be removed unless the removal is necessary to provide suitable sightlines, to establish suitable driveway or roadside drainage, or to provide suitable underground utility service (see underground utility provisions of section 11.1);
- b. Subdivisions shall be designed to preserve, where possible after consideration of other regulatory provisions, [specimen] significant trees [and groups of trees] that contribute to Mansfield’s scenery and/or help enhance significant man-made and natural features (see definitions of scenery, significant trees and natural and man-made features).

d. **7.10 Common Driveways**

- a. The use of a common driveway may be authorized or required by the Commission where:
 - 1. Wetlands, steep slopes or other physical constraints would require extensive grading, filling or tree removal for individual driveways;

2. Common driveways will enhance vehicular and/or pedestrian safety;
3. Common driveways will protect and preserve natural and manmade features [and], scenic views and vistas, interior forests and/or existing or potential conservation areas identified in the Plan of Conservation and Development(see map 21) or [where];
4. Common driveways will promote cluster development and other design objectives of these regulations (see Section 5.1). [Any approved common driveway shall serve no more than three (3) residential lots.]

Where common driveways are approved, a driveway easement that establishes maintenance and liability responsibilities shall be depicted on the plans, shall be incorporated onto the deeds of the subject lots and shall be filed on the Land Records.

- b. Except where specifically authorized by the Commission pursuant to this section, any approved common driveway shall serve no more than three (3) residential lots.

By a three-quarters (3/4) vote of the entire Commission (seven (7) votes), the maximum number of residential lots served by a common driveway may be increased to four (4) or five (5) lots, but only if the Commission finds that doing so would significantly:

1. Reduce environmental impacts; or
 2. Enhance vehicular and/or pedestrian safety; or
 3. Protect and preserve natural and man-made features, scenic views and vistas, interior forests and/or other existing or potential conservation areas identified in the Plan of Conservation and Development (see map 21); or
 4. Promote cluster development and other design objectives of these regulations (see Section 5.1).
- c. [b.] All sections of a common driveway that include areas that have a slope of ten (10) percent or greater shall be surfaced with an appropriate thickness of bituminous concrete or an equivalent surface approved by the Commission;
 - d. [c.] Common driveways serving two (2) or three (3) lots shall have a minimum travel width of twelve (12) feet and minimum load-bearing shoulder widths of two (2) feet. Common driveways serving four (4) or five (5) lots shall have a minimum travel width of twenty (20) feet. All curves along a common driveway shall have a minimum inside radius of twenty-five (25) feet.
 - e. All common driveways shall be designed and constructed to safely accommodate fire department apparatus, pursuant to Mansfield's Fire Lane Ordinance (Chapter 125 of the Mansfield Code). Subdivision plans shall include a common driveway cross-section that demonstrates compliance with this requirement.
 - f. At all intersections of a common driveway and a street, common driveways shall have a minimum travel width of twenty (20) feet for a minimum length of forty (40) feet. This width is necessary to safely provide for entering and exiting traffic.
 - g. [d.] Common driveways shall meet the slope, sightlines and drainage standards of Section 7.9 and the driveway length standards of Section 7.11.
 - h. Common driveway improvements shall include the following street number signage:

1. Signage listing the approved street numbers of all dwellings served by a common driveway shall be erected at the intersection of a common driveway and a street. Signage details, including the location and nature of support posts, shall be included on subdivision plans. The subject sign shall not exceed two (2) square feet in size.
 2. Signage listing the approved street number of an individual dwelling shall be erected at the intersection of a common driveway and individual driveway. Signage details, including the location and nature of support posts, shall be included on subdivision plans.
 - i. Common driveways shall not be used for parking, storage or other uses that could act as an access impediment.
 - j. [e.] Common driveways and all associated improvements, including signage, shall be considered the responsibility of a subdivider and shall be completed or bonded pursuant to Mansfield's regulatory requirements, prior to the filing of a subdivision on the Land Records.
- e. **7.11 Driveway Length Standards**

To help ensure safe and appropriate access to a house site for all vehicles, including emergency vehicles, the following provisions shall apply for all driveways exceeding a length of three hundred (300) feet:

- a. The driveway shall have a minimum travel width of twelve (12) feet and minimum load-bearing shoulder widths of two (2) feet, except for certain common driveway improvements that require a twenty (20) foot minimum travel width. All driveway curves shall have a minimum inside radius of twenty-five (25) feet;
- b. Pull-off areas adjacent to the driveway shall be provided at average intervals of every three hundred (300) feet or as deemed necessary by the Commission due to slope, sightline or other site characteristics. Pull-offs shall have a minimum load-bearing length of forty (40) feet and minimum width of ten (10) feet;
- c. An adequately-sized, located and surfaced turnaround area that will accommodate a fire truck shall be provided. Unless the following distance requirements are waived by the Commission due to specific site characteristics, the turnaround area shall be no closer than seventy-five (75) feet from a house site and no further than two hundred (200) feet from a house site and the turnaround shall be at least thirty (30) feet in length with two (2) foot wide, load-bearing shoulders.

Explanatory Note: *The revisions to Sections 7.8 and 7.9 expand provisions designed to protect stone walls and any other historic feature on a subdivision site and clarify provisions designed to protect significant trees. The new provisions reference the potential use of conservation easements to protect historic features.*

The revisions to Sections 7.10 and 7.11 would allow, subject to specific criteria and a ¾ vote waiver, common driveways to serve four (4) or five (5) residential lots. This change is proposed to provide more flexibility in situations where environmental impacts will be significantly reduced, where traffic safety will be significantly enhanced and/or where increasing the number of homes served by a common driveway would promote subdivision design objectives as documented in the regulations. The revisions also incorporate additional width provisions, street number signage requirements and other requirements designed to enhance safety and help ensure safe emergency vehicle access.

6) In Section 8.7, incorporate the following revisions:

a. **Existing Street Improvements**

Whenever any subdivision is proposed for land fronting on or accessible only by a street or streets that do not meet the Town's current "Engineering Standards and Specifications" requirements as administered by the Mansfield Department of Public Works, and the Commission determines that approval of the subdivision plan would be contrary to the public safety unless such street or streets were altered or improved along the frontage of the proposed subdivision or beyond the limits of the proposed subdivision, the Commission [may disapprove] shall consider denial of such plan or [may condition] shall consider conditioning its approval upon completion of the improvements or alteration of such street or streets by and at the expense of the subdivider, or [may disapprove] shall consider the denial such plan until the Town Council has authorized expenditures for such improvements.

In [making the above determination] considering alternative actions, the Commission shall take into account the width and degree of improvement of the street and its ability to handle the increased volumes of traffic which will be generated by the proposed subdivision, the ability of school buses and emergency vehicles to travel the street safely, the drainage conditions of the street, pedestrian and bicycle safety and, [generally] the ability of any vehicle or person to use the street safely. Before taking action, the Commission shall consult with the Town Attorney or other qualified legal consultant with respect to statutory authority and case law pertaining to this issue.

Explanatory Note: The revisions to Section 8.7 are designed to provide more flexibility in considering potential off-site improvements and to help ensure compliance with applicable statutory authority, as refined through Connecticut Case Law.

7) In Section 9, incorporate the following revisions:

9.0 Sidewalks/Bikeways/Trails

[Sidewalks may be required by the Commission] Sidewalks, bikeways, trails and/or other improvements designed to encourage and enhance safe pedestrian and bicycle use shall be required, unless specifically waived by a three-quarter (3/4) vote of the entire Commission (7 votes), in all subdivisions within or proximate to Plan of Conservation and Development designated "Planned Development Areas" [commercial areas; in locations] proximate to schools, playgrounds, parks and other public facilities; [and in areas along] or proximate to existing or planned [Town-designated] walkway [or], bicycle or trail [priority] routes. In evaluating any waiver request, [determining the need for sidewalks,] the Commission shall consider the size and [review] the location of the proposed subdivision [and] its relationship to [commercial areas,] existing or planned development, school sites, playground areas and other public areas and the location and nature of existing or planned sidewalk, bikeway or trail improvements.

Explanatory Notes: The revisions to Section 9 are designed to clarify and expand existing provisions regarding requirements for sidewalks, bikeways, trails and other improvements designed to encourage pedestrian and bicycle use. The proposed provisions require pedestrian oriented improvements, unless waived by a ¾ vote of the Planning and Zoning Commission,

when a subdivision is within or proximate to planned development areas, schools, parks or other public facilities or existing or planned walkways, bikeways or trails.

8) Revise Section 13.8, incorporate the following revisions:

13.8 Site Improvements

- a. In addition to the access requirements of Section 13.7, the Commission shall have the right to require a subdivider to include, as part of subdivider responsible improvements, park and/or hiking trail improvements, including, as appropriate, clearing, grading, drainage, base preparation, surfacing and re-stabilization of all disturbed areas. [make site improvements such as clearing, grading, drainage, seeding and parking areas where active park, playground or hiking trail uses are deemed appropriate.] [The] All referral reports shall be considered in determining whether site improvements are appropriate. The degree of site improvement required shall be directly associated with the number of proposed lots within the subject subdivision. For example, a graded and seeded multi-purpose playground field may be a suitable requirement for a larger subdivision of twenty (20) or more lots and/or trail improvements may be required to link a subdivision site to adjacent parks and trail systems or to otherwise enhance access to existing or proposed open space areas. In situations where site improvements are required, the site work shall be depicted and fully documented on final subdivision plans and the site work shall be completed or fully bonded to the Commission's satisfaction before final maps are signed and filed on the Land Records.

In situations where trail improvements are deemed appropriate, the degree and nature of clearing, base preparation, drainage and surface improvements shall be determined taking into account the size and location of the subdivision and site and neighborhood characteristics. Where required, trails shall have a minimum width of five (5) feet and shall have an appropriate base, surface and drainage to allow year round use. Stone dust surfacing may be required and all wetland or watercourse crossings shall utilize cedar or pressure treated wood or other materials acceptable to the Commission. Trail marking and access signage also can be required.

- b. With the exception of site work that may be required by the provisions of Sections 13.7 and 13.8a or agricultural activities approved by the Commission, all land dedicated as open space or park land shall be left in its natural state by the subdivider and shall not be graded, cleared or used as a repository for stumps, rocks, brush, soil, building materials or debris.

Explanatory Note: This proposed revision clarifies and expands existing provisions regarding the Planning and Zoning Commission's authority to require site improvements in association with subdivision open space dedications. In particular, the new provisions focus on trail improvements and associated construction requirements.

9) In Section 14, incorporate the following revisions:

- a. Revise the Title of this Section from "Bonding" to "Completion of Improvements/Bonding/As Built-Plans"

b. **[14.1 Completion**

The Commission may, with the advice of the Department of Public Works, prescribe the extent to which and the manner in which the streets shall be graded and improved and public improvements and utilities and services provided in connection with any subdivision plan, and may require that all or a specified portion of such work and installations be completed prior to the final approval of the plan. As provided in other provisions of these regulations, the Commission also may require driveway, drainage and other site work to be completed by the subdivider or bonded prior to the filing of the subdivision on the Land Records.]

14.1 Completion of Improvements

Pursuant to other provisions of these regulations, subdividers shall be responsible for completing and bonding subdivision improvements, including approved streets, common driveways, sidewalks, trails and parking improvements, drainage and site work improvements. These subdivision improvements shall be completed and/or bonded prior to the filing of the subdivision plans on the Land Records. The Commission, with the advice of the Town's Planning and Engineering staff, may prescribe the extent to which and the manner in which subdivision improvements are completed and associated utilities are provided.

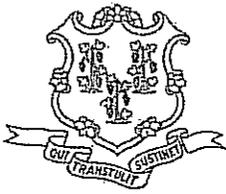
For all subdivision lots that are dependent on new streets for access, the following specific completion provisions shall be met:

No Zoning Permit shall be issued for new dwellings until the roadway binder course and all associated drainage and grading have been completed to the satisfaction of the Town Engineer, or his designated agent, and the Fire Marshal and until the new subdivision road has been fully bonded for completion pursuant to Mansfield's regulatory provisions.

Unless specifically authorized by the Commission, no Zoning Certificate of Compliance shall be issued for new dwellings unless the roadway and all associated drainage, signage, site stabilization and lot monumentation has been completed and accepted by the Town.

Explanatory Note: The proposed revisions to Section 14, clarify existing provisions regarding the completion of subdivision improvements. For subdivision lots dependent on new streets for access, the revisions incorporates new provisions that link Zoning Permits for new houses to the completion of a roadway binder course and associated site work and Certificates of Compliance for completed houses to the completion of roadway drainage, signage, monumentation and site stabilization work.

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STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

December 15, 2010

Mr. P. Anthony Giorgio, Ph.D.
Managing Director
The Keystone Companies, LLC
56 East Main Street, Suite 202
Avon, CT 06001

Re: Ponde Place CPCN Phase IB Application
DPH Project Number 2008-0312
DPUC Docket Number 09-02-10

Dear Dr. Giorgio:

Thank you for meeting with us on December 6, 2010 to discuss the Phase IB application for the proposed Ponde Place development in Mansfield. The meeting was held to discuss various deficiencies that were identified in a joint DPH/DPUC review dated December 2, 2010. Following the meeting the DPH received a letter from you dated December 9, 2010 summarizing your takeaways from the meeting. The following is a summary of the items that were discussed at the meeting:

1. DPH indicated that written documentation confirming that the project scope has been reduced must be submitted as part of the Phase 1B application. In your recent letter you indicate that the scope of the project has been reduced from 648 people to no more than 180 people.
2. A site plan was submitted with your Phase 1B application showing that only one building will be constructed. DPH asked if it was The Keystone Companies' intention to ultimately build the entire project as proposed in the Phase 1A application and if so, to outline a phased plan to provide an adequate supply of drinking water. You indicated that at this time there is no intention to build any additional buildings and that any local applications for Ponde Place would be consistent with the reduced scope of the project.
3. An interim signed ownership agreement with Connecticut Water Company (CWC) was e-mailed to DPH on December 3, 2010. CWC indicated during the meeting that a final signed ownership agreement will be contingent upon satisfactory Phase 1B approval and would be submitted with the Phase 2 application. CWC indicated that this type of interim agreement is a standard agreement that CWC enters into when Phase 1A approval has been granted and Phase 1B approval is pending.

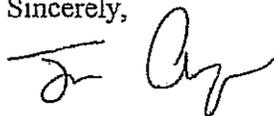


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4. Stabilization was not achieved for Well #3 during the original yield test. As you indicated in the meeting and in your recent letter, a new 72-hour simultaneous yield test will be completed for all four proposed wells.
5. During the original 72-hour yield test, Carriage House Well #2 and University of Connecticut (UCONN) landfill monitoring wells were monitored for interference pursuant to Connecticut General Statutes (CGS) Section 25-33(b), and some interference was noted. Carriage House Well #1 was not monitored due to inaccessibility. Several private wells were also proposed to be monitored for interference, but for various reasons the private well monitoring was not completed with the exception of one well that was monitored for 24 hours. DPH indicated during the meeting that at a minimum, it would like to see all potable and landfill monitoring wells which were monitored during the original yield test plus Carriage House Well #1 to be monitored again during the new yield test and the results provided to DPH for review. You indicated in your letter that you will attempt to gain access to Carriage House Well #1 during the new yield test. You also indicated that you will contact the CT Department of Environmental Protection to discuss any potential interference that the Ponde Place wells may have on the UCONN landfill monitoring wells. The Keystone team was also encouraged to work with the local health department and renew efforts to gain access to nearby private wells for interference monitoring during the new yield test. In your letter you indicate that if private well owners again refuse to allow their wells to be monitored, you will attempt to obtain written documentation of their refusal. In addition, at the meeting and in your letter, you also proposed installing a monitoring well at the property boundary for surrogate interference monitoring should access to the private wells be unsuccessful.
6. Well #2 had a turbidity level in excess of the state standard of 5 NTU during the Phase 1B water quality sampling. DPH indicated during the meeting that although this is not required to be addressed during the Phase 1B review, a final Well Use Approval may not be issued for this well if resampling is not done. You indicated that prior to requesting a Well Use Approval, a resample of the well for turbidity will be done.

If you have any additional questions please feel free to contact us. Please remember to send copies of additional submissions and correspondence regarding this application to the DPUC with your Docket Number referenced.

Sincerely,



Tom Chyra, P.E.
Supervising Sanitary Engineer
Compliance Region - North
Drinking Water Section

Mansfield Open Space Preservation Committee

Minutes of December 21, 2010 meeting

Members present: Jim Morrow (chair), Vicky Wetherell, Ken Feathers, Michael Allison, Jennifer Kaufman (staff)

1. Meeting was called to order at 7:35.
2. Minutes of the November 16, 2010 meeting were approved.
3. Opportunity for Public Comment: none present.

4. **New Business**

- GIS – Jennifer reported that GIS is available on her computer and can be used in our meetings. Print copies of Town topographic and open space maps as well as a copy of the POCD will be kept in the cabinet for reference during meetings.
- Proposed revisions to subdivision regulations – The committee reviewed the December 13, 2010 draft of the proposed regulations. The committee endorsed the current version of the pre-application design process, and reviewed the common driveway regulations in view of information that Greg Padick had provided to some committee members during November. The committee made recommendations for changes in the common driveway and site improvements regulations, which will be forwarded to PZC.

5. **Executive Session**

- The committee voted in go into Executive Session at 8:55.
- The committee voted to come out of Executive session at 9:10.

6. Meeting adjourned at 9:15.

7. Next meeting on January 18, 2011.

Respectfully submitted,
Vicky Wetherell, acting secretary

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DRAFT MINUTES

MANSFIELD PLANNING AND ZONING COMMISSION

Regular Meeting, Monday, January 3, 2011

Council Chamber, Audrey P. Beck Municipal Building

Members present: R. Favretti (Chairman), J. Goodwin, R. Hall, K. Holt, G. Lewis (7:55-10:05 p.m.),
P. Plante, B. Pociask, B. Ryan
Members absent: M. Beal
Alternates present: F. Loxsom, K. Rawn, V. Stearns-Ward
Staff Present: Gregory J. Padick, Director of Planning, Curt Hirsch, Zoning Agent

Chairman Favretti called the meeting to order at 7:55 p.m. and appointed Loxsom to act in Beal's absence.

Minutes:

12-06-10 - Plante MOVED, Ryan seconded, to approve the 12/6/10 minutes as written. MOTION PASSED UNANIMOUSLY. Loxsom noted that he listened to the recording of the meeting.

Public Hearing:

Application to amend the Zoning Regulations, Article VII, Section P, Uses Permitted in the Planned Business-5 Zone (proposed addition of Veterinary Hospitals) W. Ernst, applicant, PZC File # 1294

Chairman Favretti opened the public hearing at 7:57 p.m. Members present were Favretti, Goodwin, Hall, Holt, Lewis, Plante, Pociask, Ryan and alternates Loxsom, Rawn and Stearns-Ward. Loxsom was appointed to act. Padick read the legal notice as it appeared in the Chronicle on 12-21-10 and 12-29-10 and noted the following communications: a 12-27-10 report from the Director of Planning and a 12-28-10 Report from Dennis O'Brien, Town Attorney.

Wendy Ernst, applicant, explained her reasons for the proposal and discussed her intended use.

Holt expressed concern for noise impact and Ernst responded that outdoor boarding is not an intended use.

Plante added that concerns and conditions could be addressed at the time of the applicant submitting a Special Permit request.

Padick suggested continuing the Public Hearing until 1/18/11 to allow the required legal period of time for WINCOG to respond.

Favretti noted no further comments or questions from the Commission or the public. Holt MOVED, Pociask seconded, to continue the Public Hearing until 1/18/11. MOTION PASSED UNANIMOUSLY.

Zoning Agent's Report:

Noted.

Old Business:

1. Discussion/Consideration of Action on Proposed Zoning Regulation Revision, Storrs Center Alliance, LLC/Mansfield Downtown Partnership Inc., applicants, PZC File #1246-5

Attorney Tom Cody, Robinson & Cole; Andy Graves, BL Companies; Geoff Fitzgerald, BL Companies; Macon Toledano, Storrs Center Alliance; and Howard Kaufman, Leyland Alliance, were present representing the applicant.

Padick reviewed the requested and called particular attention to the withdrawal of the request for an increase in building height. He added that it was also part of the original request of the applicant to put a 50% restriction on the number of residential units in the Regulations, but now due to changes in the size and the relocation of businesses, the 50% restriction will not be necessary. The applicant now requests that the 50% restriction be removed from the Regulations.

After considerable discussion, Ryan MOVED, Loxsom seconded, to approve the amended application of Storrs Center Alliance LLC., and Mansfield Downtown Partnership Inc. (File #1246-5) to revise Mansfield Zoning Regulations, Article VII, Section M.2.n., as submitted to the Commission and heard at a

Public Hearing on December 6, 2010. This action acknowledges that the applicants have withdrawn their original request to also revise Article VIII, Section A, regarding maximum building heights in the PB-2 zone.

A copy of the subject regulation as revised by this approval shall be attached to the minutes of this meeting and this amendment shall be effective as of January 15, 2011.

Reasons for approval include:

1. The approved regulation revision deletes (for mixed use projects in the PB-2 zone) a residential square footage limitation that was incorporated into Mansfield's Zoning Regulations in 2006 along with other proposed revisions at the request of Storrs Center Alliance LLC and the Mansfield Downtown Partnership, Inc. Since 2006, the overall plan for relocating existing commercial businesses has changed and it is no longer considered necessary to locate existing commercial businesses to upper floors of the planned mixed use buildings. The applicant's original reason for proposing this zoning provision in 2006 is no longer applicable. It is noteworthy that the subject 50% residential limitation was not cited in the PZC's reasons for approving the applicant's 2006 requested regulation revisions.
2. The Storrs Center Special Design District zone, which was adopted in 2007, and is immediately adjacent to areas zoned PB-2, does not include any residential square footage requirements or limitations for mixed use buildings. Eliminating the existing residential square footage provision will allow greater flexibility for mixed use developments in areas zoned PB-2.
3. The approved revision is acceptably worded and appropriately coordinated with other provisions of Mansfield's Zoning Regulations. The revision has been found legally acceptable by the Town Attorney.
4. Eliminating the existing residential occupancy provision in the PB-2 zone will promote goals, objectives, and recommendations contained in Mansfield's 2006 Plan of Conservation and Development. Mansfield's plan specifically supports mixed use developments in special design districts such as the PB-2 zone and recognizes the need for specialized regulations to implement the Storrs Center Downtown mixed use project. Furthermore, the revision is considered to be consistent with goals and recommendations contained in the 2002 Windham Region Land Use Plan and the 2005-2010 Conservation and Development Policies Plan for Connecticut.

MOTION PASSED with Pociask, Holt, Ryan, Lewis, Loxsom and Favretti in favor and Plante, Goodwin and Hall opposed.

2. **8-24 Referral: Proposed Development Agreement for Storrs Center Project**

Matt Hart, Town Manager, distributed and reviewed a 1/4/11 outline, which summarized each section of the Proposed Development Agreement. Dennis O'Brien, Town Attorney, stated that he feels this agreement is very solid and enforceable.

After extensive discussion, Ryan MOVED, Holt seconded, that the Mansfield Planning and Zoning Commission notify the Town Council that the draft Development Agreement for Phases 1A and 1B of the Storrs Center Project, including provisions for municipal ownership and responsibility for new streets, sidewalks, drainage facilities, a new town square, new garage/intermodal center, open space conservation area and other associated improvements, and for a lease regarding areas within the parking garage and a long term agreement regarding certain uses of the Town Square, is consistent with, and promotes goals, objectives and recommendations contained in, Mansfield's Plan of Conservation and Development. Furthermore, the Commission appreciates that the draft agreement appropriately references developer obligations to obtain all required land use permits. It also is noted that the Commission has not reviewed in detail, and therefore not commented on, financial aspects of the agreement, which is the responsibility of the Town Council. MOTION PASSED with Loxsom, Ryan, Holt, Favretti and Pociask in favor and Lewis, Goodwin, Hall and Plante opposed.

3. 12/1/10 Draft Revisions to the Subdivision Regulations, PZC File #907-34
Tabled pending 1/18/10 Public Hearing.

New Business:

1. New Special Permit Modification Request, Proposed Commercial/Residential Mixed Use on Dog Lane. Storrs Center Alliance, LLC, applicant, PZC File #1246-3

Holt MOVED, Ryan seconded, to receive the Special Permit Modification request application (file # 1246-3) submitted by Storrs Center Alliance, LLC and Mansfield Downtown Partnership Inc. for Commercial/Residential Mixed Use on property located Dog Lane in PB-2 Zone owned by the University of Connecticut as shown and described in application submissions, and to refer said application to the staff for review and comments. MOTION PASSED UNANIMOUSLY.

Attorney Tom Cody, Robinson & Cole; Andy Graves, BL Companies; Geoff Fitzgerald, BL Companies; Macon Toledano, Storrs Center Alliance; and Howard Kaufman, Leyland Alliance, were present to review the modification request. Graves presented renderings and plans that depicted proposed changes to the building design and size. Fitzgerald reviewed the changes in parking, number of spaces and the stormwater plans. Chairman Favretti asked that members review the maps distributed in the packet and be prepared to discuss the modification request at the next meeting.

2. New 3-Lot Re-Subdivision Application (1 New lot), Property on Candide Lane and Stearns Road, J. Listro o/a, File #1296

Holt MOVED, Hall seconded, to receive the resubdivision application (file # 1296) submitted by John Listro for a 3-lot re-subdivision on property located at Stearns Road and Candide Lane owned by the applicant as shown on plans dated 11/4/10, and as described in other application submissions, and to refer said application to the staff for review and comments and to set a Public Hearing for 2/7/11. MOTION PASSED UNANIMOUSLY.

3. New Special Permit Application, proposed Sale of Alcoholic Liquor at Randy's Wooster Street Pizza, 1232 Storrs Rd, PZC File #1295

Holt MOVED, Pociask seconded, to receive the Special Permit application (file #1295) submitted by M & A Pizza Restaurant LLC, for the sale of alcoholic liquor at Randy's Wooster Street Pizza on property located at 1232 Storrs Road (University Plaza) owned by N. and G. Haidous as shown on plans dated 12-20-10 as shown and described in application submissions, and to refer said application to the staff, for review and comments and to set a Public Hearing for 2/7/11. MOTION PASSED UNANIMOUSLY.

4. 2011/2012 Budget

Holt MOVED, Pociask seconded, that the Planning and Zoning Commission authorize the Director of Planning to submit to the Town Manager a 2011/2012 proposed budget of \$7,350 for account #111-52100. MOTION PASSED UNANIMOUSLY.

Reports from Officers and Committees:

Chairman Favretti noted a 1/12/11 Regulatory Review Committee meeting at 1:15 p.m. and a Field Trip on 1/12/11 at 3:15 p.m. Favretti requested the support of the Commission for him to write a letter to the developers of the proposed Ponde Place requesting them to change the name of the project because it conflicts with the historic name of Mansfield Center which is Ponde Place. Hall MOVED, Plante SECONDED, to authorize the Chairman to write to the developers of Ponde Place requesting that they change the name of their project. MOTION CARRIED UNANIMOUSLY.

Adjournment: Chairman Favretti declared the meeting adjourned at 10:28 p.m.

Respectfully submitted,

Katherine Holt, Secretary

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DRAFT MINUTES
MANSFIELD INLAND WETLANDS AGENCY
Regular Meeting
Monday, January 3, 2011
Council Chambers, Audrey P. Beck Municipal Building

Members present: R. Favretti (Chairman), J. Goodwin, R. Hall, K. Holt, G. Lewis, P. Plante,
B. Pociask, B. Ryan
Members absent: M. Beal
Alternates present: F. Loxsom, K. Rawn, V. Stearns-Ward
Staff present: G. Meitzler (Wetlands Agent)

Chairman Favretti called the meeting to order at 7:00 p.m. Alternate Loxsom was appointed to act in Beal's absence.

Minutes:

12-06-10 – Hall MOVED, Ryan seconded, to approve the 12-6-10 minutes as written. MOTION PASSED UNANIMOUSLY. Loxsom noted that he listened to the recording.

12-14-10 Field Trip- Holt MOVED, Ryan seconded, to approve the 12-14-10 field trip minutes as written. MOTION PASSED with Favretti, Rawn, Holt and Ryan in favor and all others disqualified.

Communications:

The 12-29-10 Wetlands Agent's Monthly Business report and the 12-15-10 Conservation Commission Draft minutes were noted.

Old Business:

W1465 - Carlson - Single Family House - Dunham Pond Road

Holt MOVED, Hall seconded, to grant an Inland Wetlands License under the Wetlands and Watercourses Regulations of the Town of Mansfield to Neal Carlson (file no. W1465), for the construction of a single family residence, on property owned by the Eric W. Carlson Revocable Trust, located on Dunham Pond Road, as shown on a map dated 9/17/10, revised through 1/3/11 and as described in other applications submissions.

This action is based on a finding of no anticipated significant impact on the wetlands, and is conditioned upon the following provisions being met:

1. Appropriate erosion and sedimentation controls (as shown on the plans) shall be in place prior to construction and maintained during construction and removed when disturbed areas are completely stabilized;
2. There shall be no construction activity until provisions are made for containing run-off from the driveway. These provisions shall be approved by Wetlands Agent Meitzler and added to the plans before any work begins.

This approval is valid for a period of five years (until January 3, 2016), unless additional time is requested by the applicant and granted by the Inland Wetlands Agency. The applicant shall notify the Wetlands Agent before any work begins, and all work shall be completed within one year. Any extension of the activity period shall come before this Agency for further review and comment. MOTION PASSED UNANIMOUSLY.

W1466 - Peter Rich - Fern Rd

Holt MOVED, Plante seconded, to grant an Inland Wetlands License under the Wetlands and Watercourses Regulations of the Town of Mansfield to Peter Rich (file no. W1466), for the construction of a garage and a lean-to, on property owned by the applicant, located at 42 Fern Road, as shown on a map dated 12/1/10, revised through 12/21/10 and as described in other applications submissions.

This action is based on a finding of no anticipated significant impact on the wetlands, and is conditioned upon the following provisions being met:

1. Erosion and sedimentation controls (as shown on the plans) shall be in place prior to construction and maintained during construction and removed when disturbed areas are completely stabilized;
2. There shall be no construction activity on the garage addition until all the stone protection measures are in place, as outlined in Wetlands Agent Meitzler's memo and map of 12/21/10. No work shall begin until the Wetlands Agent inspects and approves these stone protection measures.
3. However, construction can begin on the lean-to at any time, as there are no wetland issues with its construction.
4. There shall be no further additions to the garage.

This approval is valid for a period of five years (until January 3, 2016), unless additional time is requested by the applicant and granted by the Inland Wetlands Agency. The applicant shall notify the Wetlands Agent before any work begins, and all work shall be completed within one year. Any extension of the activity period shall come before this Agency for further review and comment. MOTION PASSED UNANIMOUSLY.

New Business:

W1468 - Storrs Center Alliance LLC - Modification Request-Phase 1A & 1B

Attorney Tom Cody, Robinson & Cole; Andy Graves, BL Companies; Geoff Fitzgerald, BL Companies; Macon Toledano, Storrs Center Alliance; and Howard Kaufman, Leyland Alliance, were present representing the applicant. Attorney Cody discussed the proposed modification for storm water drainage and management. The team then presented the site plan changes in Phase 1A and 1B and the effect they will have on the stormwater and wetlands.

By consensus the Agency agreed to refer the modification application to staff for review and comment and to add this item to the Field Trip Agenda on 1/12/11 and to schedule a Special Meeting on 1/18/11.

W1467 - Listro - Candide Lane - Re-Subdivision

Goodwin MOVED, Holt seconded, to receive the application submitted by John Listro (IWA File #W1467) under Section 5 of the Wetlands and Watercourses Regulations of the Town of Mansfield for a resubdivision of 2 existing lots to create a third lot, located at 12 Candide Lane and 260 Stearns Road, on property owned by Suzanne and John Listro, as show on a map dated 11/4/10, and as described in other application submissions, and to refer said application to the staff and Conservation Commission for review and comment. MOTION PASSED UNANIMOUSLY.

W1469 - Town of Mansfield - Statutory regulation revisions from 2010

Holt MOVED, Pociask seconded, to authorize staff to format the statutory revisions into the IWA Regulations and present them at the next meeting for review and scheduling of a public hearing. MOTION PASSED UNANIMOUSLY.

Favretti noted a Field Trip was set for 1/12/11 at 3:15 p.m.

Other Communications and Bills:

Noted.

Adjournment:

Favretti declared the meeting adjourned at 7:47 p.m.

Respectfully submitted,

Katherine Holt, Secretary

Memorandum:

December 28, 2010

To: Inland Wetland Agency
From: Grant Meitzler, Inland Wetland Agent
Re: Monthly Business

Informational:

We have received a notice from CL & P of upcoming brush and tree clearing. Their submission indicates approval has been given by the Connecticut DEP and the Federal EPA, and includes maps with the specific lines highlighted:

- across the south part of town from the Willimantic River through the Vernon property, Stearns Farm, Beech Mountain, Mansfield Hollow and into Chaplin.
- from the Willimantic River to the UConn power station on North Eagleville Rd.

A copy of the operation plan and specifications for the work is included. These specifications are detailed and specific. Avoidance of any spraying within 10 feet of open water is indicated. This notice indicates the contact person for further information is Matthew Colebrook, Tree Arborist at 860-665-3187.

W1419 - Chernushek - hearing on Order

- 3.10.09: The hearing on the Order remains open and should continue until the permit application under consideration is acted upon.
(The Order was dropped on approval of the application required in the Order.)
- 4.30.09: Former rye grass seeding is beginning to show green. I spoke with Mr. Chernushek this afternoon who indicated health problems that delayed his starting but indicated he will be working this weekend. I will update on this Monday evening.
- 5.26.09: A light cover of grass growth has come in. Mr. Chernushek indicates health problems and two related deaths have delayed his start of work since the permit approval was granted. It appears that some light work has started. He has further indicated that he will start a vacation on June 22, 2009 to finish the work.
- 6.13.09: Work is underway.
- 6.21.09: Bulldozer work has been completed - finish work remains. The additional silt fencing has been placed along the northerly wetlands crossing, and the additional pipe under the southerly crossing has been installed. Remaining work includes finish grading along edges, spreading stockpiled topsoil, and establishing grass growth.
- 7.01.09: I spoke with Mr. Chernushek who indicated he expects work to be completed by September 1, 2009. (Site photo attached).
- 9.03.09: Mr. Chernushek has been working on levelling and grading. The formerly seeded areas have become fairly thick growth surrounding the central wet areas. He has further indicated that with the combination of weather and the slower moving of earth with the payloader compared to the earlier rented bulldozer has led him to contact contractors for earth moving estimates which have not yet been received. The site is not yet finished but has remained quite stable.
- 9.12.09: I met with Mr. Chernushek today and discussed again what his

- plans are for stabilizing this work site.
- 10.01.09: Mr. Chernushek indicated he has not heard back from the contractor he had spoken with about removing material, and is in progress of contacting others. In discussion is removal of material from the site either within the 100 cubic yard limit or obtaining a permit for such removal.
- 10.28.09: Mr. Chernushek has indicated he has made arrangements with DeSiato Sand & Gravel to remove 750 cubic yards of material. Staff is in the process of clarifying permit requirements.
- W1445 - Chernushek - application for gravel removal from site**
- 11.30.09: Packet of information representing submissions by Mr. Chernushek, Mr. DeSiato and myself is in this agenda packet as Mr. Chernushek's request for modification.
- 12.29.09: Preparation of required information for PZC special permit application is in progress. Tabling any action until the February 1, 2010 meeting is recommended.
- 1.12.10: 65 day extension of time received.
- 2.18.10: No new information has been received.
- 2.25.10: This application has been **withdrawn**.
- 6.30.10: As viewed from the adjacent property, the upstream and downstream areas have grown to a decent protected surface. I did not see indication of sediment movement.
- 10.26.10: A sale of the East portion of the Chernushek property has been in negotiation.
- 12.27.10: The property exchange has been completed. The owner is now the neighboring property owner Bernie Brodin. He has indicated his intention to stabilize the area as weather permits.

Mansfield Auto Parts - Route 32

- 12.28.09: There are two cars that need to be moved. Mr. Bednarczyk indicates their payloader is down for repairs and the cars will be moved as soon as it is repaired.
- 1.27.10: No change - the payloader is apart with parts on order to complete repairs. It is of 1986 vintage and finding parts is a major proposition.
- 2.18.10: Same - they are in the process of rebuilding the engine on the payloader.
- 3.30.10: Same - Mr. Bednarczyk indicates a continuing problem finding engine parts.
- 4.13.10: Owner indicates the payloader is operating again.
- 4.15.10: Owner indicates he will have the cars moved this week.
- 4.23.10: No vehicles are within 25' of wetlands.**
- 5.17.10: Inspection - no vehicles are within 25' of wetlands.
- 6.02.10: Inspection - no vehicles are within 25' of wetlands.
- 6.23.10: Inspection - no vehicles are within 25' of wetlands.
- 7.15.10: Inspection - no vehicles are within 25' of wetlands.
- 9.01.10: Inspection - no vehicles are within 25' of wetlands.
- Mr. Bednarczyk has started removing tires from the westerly part of his site using roll-off containers. With this arrangement a moderately steady rate of removal of the tires should be possible to maintain until the tires are completely removed.
- 9.28.10: Inspection - no vehicles are within 25' of wetlands. Tire removal is continuing with 1 to 2 roll-off containers being removed per month.

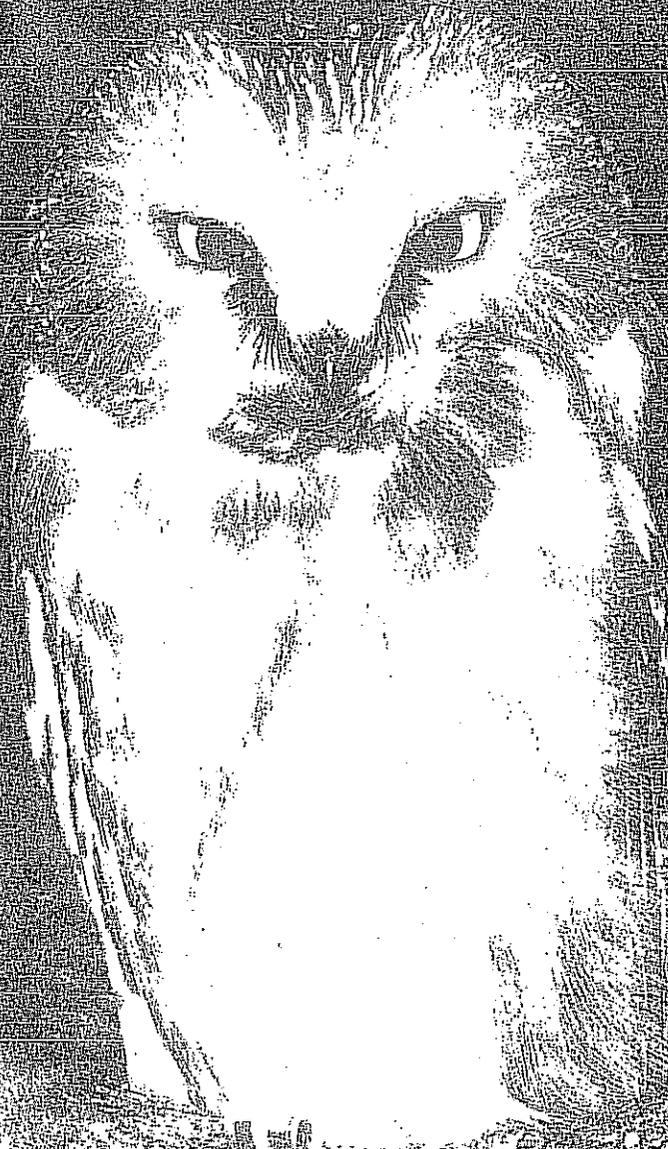
- 10.07.10: Inspection - no vehicles are within 25' of wetlands.
Tire removal has been continuing.
- 11.29.10: Inspection - no vehicles are within 25' of wetlands.
Owner has been trucking cars for crushing with 6 tires per
vehicle. He indicates 3 cars per day or 18 tires per day.
The actual number is probably lower than 18.
- 12.23.10: Inspection - no vehicles are within 25' of wetlands.

PAGE
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November/December 2010

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Connecticut Hunting & Fishing Appreciation Day 2010

After many months of hard work and planning, the Friends of Sessions Woods and DEP cosponsored a fun-filled day of free activities on Saturday, September 25, at the Wildlife Division's Sessions Woods Wildlife Management Area in Burlington (see page 9 to learn more). The idea to hold a "Connecticut Hunting & Fishing Appreciation Day" transpired with the non-profit Friends group. Friends wanted to show its appreciation to sportsmen and women for their contributions to the conservation of Connecticut's natural resources by sponsoring a special day to celebrate hunting and fishing. Why hold such an event at Sessions Woods? The acquisition of this property, which is used by hikers, school and scout groups, hunters, and anglers, was made possible through the Federal Aid in Wildlife Restoration Program. Federal aid also was instrumental in the establishment of the Sessions Woods Conservation Education Center. Hunters and anglers pay taxes and special fees on hunting and fishing equipment to help fund wildlife and fish management, habitat restoration, and other conservation programs.

One of the goals of CT Hunting & Fishing Appreciation Day was to hold a free event that would draw the participation of not only hunters and anglers, but families and others interested in the outdoors. The last Saturday in September was chosen for the event because it also is National Hunting and Fishing Day. However, several fairs and festivals also are held all over the state on the same day. The organizers of CT Hunting & Fishing Appreciation Day knew they had a tremendous task in front of them. Friends offered financial support and also obtained grants from the Main Street Community Foundation, and the Clinton S. Roberts Foundation. Organizers invited other DEP Divisions, sportsmen's organizations, and local outdoor equipment retailers to participate. They also planned a multitude of activities and presentations for all ages. Everyone did their best to spread the word about this new event.

When September 25 arrived with its warm, sunny weather, the people steadily came to Sessions Woods, curious about CT Hunting & Fishing Appreciation Day. They left happy and pleased with the activities and programs. Most surprising of all was the number of families with children that attended. CT Hunting & Fishing Appreciation Day turned out to be the perfect family outing. The organizers accomplished their objective of getting families outdoors and introducing them to a whole new world of wildlife and fisheries conservation and outdoor activities. Feedback from attendees and participants (volunteers, sportsmen's groups, retailers) has all been positive.

The Wildlife Division would like to extend its appreciation to everyone who worked hard to make CT Hunting & Fishing Appreciation Day a resounding success.

Kathy Herz, Editor

Cover:

Northern saw-whet owls spend the winter in Connecticut, roosting in dense evergreens near their hunting grounds. Read the article on page 3 to learn more about a project to improve their winter roosting habitat.

Photo courtesy of Paul J. Fusco



The Federal Aid in Wildlife Restoration Program was initiated by sportsmen and conservationists to provide states with funding for wildlife management and research programs, habitat acquisition, wildlife management area development, and hunter education programs. Connecticut Wildlife contains articles reporting on Wildlife Division projects funded entirely or in part with federal aid monies.

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Restoring Winter Roosting Habitat for the Saw-whet Owl

Written by Peter Picone

Habitat is the foundation of wildlife's existence and, for some species, special habitats can become even more important seasonally. This is the case with the Northern saw-whet owl, which uses evergreen roosting cover during late fall and winter.

The saw-whet is Connecticut's smallest owl. It hunts for white-footed mice in the darkness of night. After their hunting forays, the owls seek the protective cover of evergreens. Saw-whets winter in Connecticut, roosting in dense evergreens near their winter hunting grounds. Evergreens provide important thermal cover during the cold winter months and protection from larger avian predators during daylight hours. Saw-whets also occasionally store captured prey on evergreen branches for later consumption.

As forests age, evergreens like red cedar are displaced by oaks, hickories, and maples. Without forest management, shade-intolerant, early colonizers, such as red cedar, die off in 25 to 30 years.

The Wildlife Division received a U.S. Department of Agriculture Wildlife Habitat Incentives Program (WHIP) grant to restore evergreen habitat at a saw-whet owl winter roosting site on state land in New Haven County. Restoration and enhancement of evergreen habitat was accomplished by clearing away hardwood tree competition around existing evergreens (known as daylighting); and planting new evergreens in clusters near former and current winter roosting areas.

The daylighting of evergreens and site preparation for plantings was accomplished in 2008 with the use of a "brontosaurus" mower. This large apparatus has a drum-chop mowing head that chomps, grinds, and mulches woody vegetation to ground level. Habitat managers consider this machine one of the best tools of the trade to improve sunlight conditions and restore young forests.

In fall 2009 and spring 2010, red cedar, white pine, white spruce, and Norway spruce were planted by Division staff and volunteer Master Wildlife Conservationists in areas cleared by the brontosaurus. Fencing was placed around the cedars to protect them from deer browsing as they are a preferred winter food for deer. Some



P. J. FUSCO

The northern saw-whet owl uses evergreen cover for roosting and protection in winter.

of the planting stock (bare root white pine, Norway spruce, white spruce) was donated by Richard Jaynes of Broken Arrow Nursery, in Hamden. As the planted evergreens grow, they will improve and retain the Northern saw-whet owl's winter roosting sites on the property.

The Division is grateful to its partners who helped facilitate this habitat restora-

tion project, especially the USDA Natural Resource Conservation Service, DEP Parks Division, Master Wildlife Conservationists, and New Britain High School invasive plant management volunteers.

Peter Picone is biologist with the Wildlife Division's Habitat Management Program



P. PICONE, HABITAT MANAGEMENT PROGRAM

Master Wildlife Conservationists plant evergreens to improve winter roosting habitat for saw-whet owls.

The Future of Moose in Connecticut

Written by Andrew LaBonte

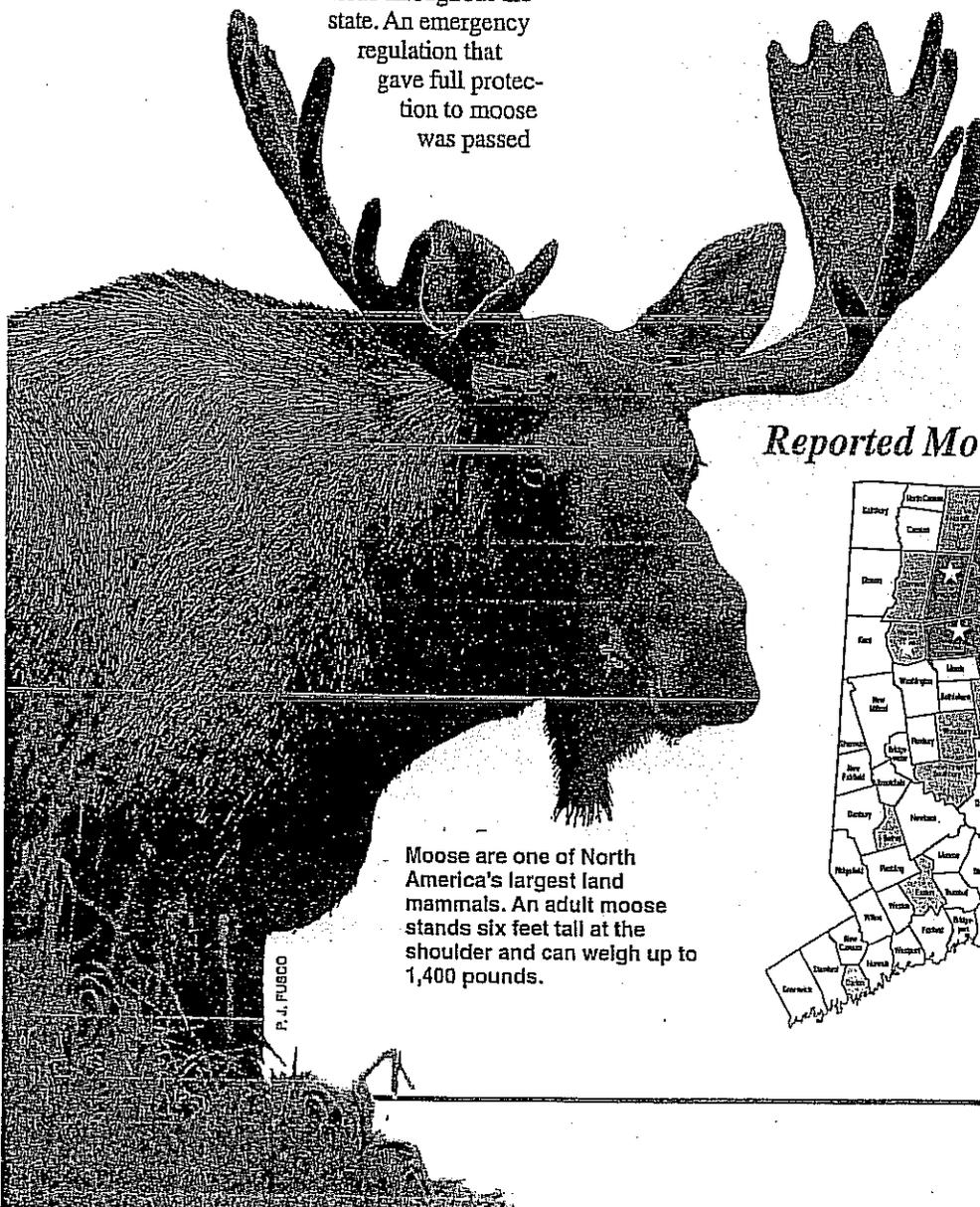
Moose are one of North America's largest land mammals and the largest member of the deer family (Cervidae). An adult moose stands six feet tall at the shoulder and can weigh up to 1,400 pounds. Moose are well adapted for the cold weather of the northern portion of their historic range, which includes the northeastern United States and eastern Canada (including Newfoundland), and westward to the Great Lakes.

Historic Accounts of Moose

Historic accounts suggest that moose existed in Connecticut, but were extirpated sometime in the early eighteenth century. According to the Connecticut State Archaeologist, no archaeological deposits of moose exist, indicating that moose, if truly ever native, likely occurred in low numbers. Beginning in the early 1900s, moose were reportedly seen on a few occasions throughout the state. An emergency regulation that gave full protection to moose was passed



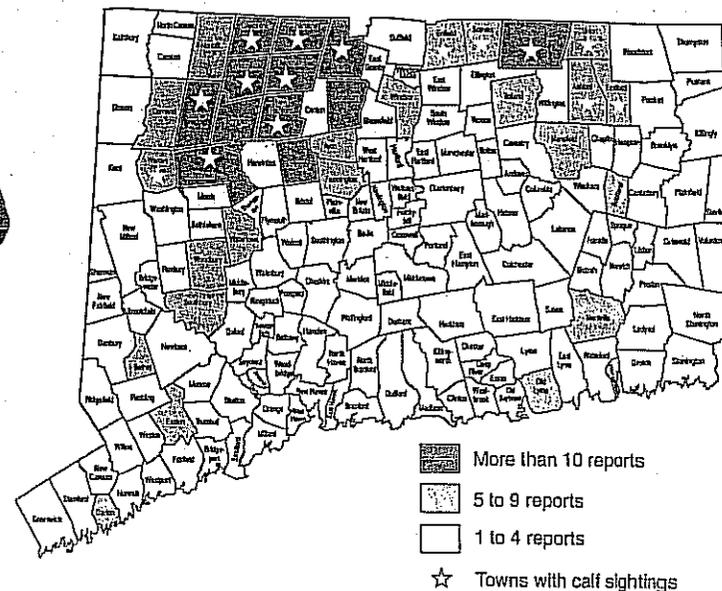
To better assess the future existence of moose in Connecticut, moose are being captured, radio-collared, and ear tagged as part of an ongoing project.



Moose are one of North America's largest land mammals. An adult moose stands six feet tall at the shoulder and can weigh up to 1,400 pounds.

in 1956. Wandering moose occasionally were reported through the early to mid-1990s; however, there was no evidence that a resident population existed. In 2000, the first sighting of a cow with a calf was documented, confirming the establishment of a resident population. Since 2000, a growing number of public and hunter sightings of moose and an increase in moose-vehicle accidents indicate the population continues to expand. The population was conservatively estimated at 74 moose in 2008.

Reported Moose Sightings 2000-2009



Limits to Population Expansion

Continued expansion of the moose population in Connecticut may be limited by several factors, including quality of habitat and food resources, weather, and disease. Optimal habitat has been described as areas dominated by early successional vegetation offering a wide variety of tree stand types and age classes that provide both mature conifer cover and open, disturbed areas for forage. Connecticut forests are primarily mature, with 78% percent of trees greater than 60 years of age. This condition provides plenty of cover from weather. However, during much of the year, moose prefer young forest stands with high stem densities and quality food that can meet the demands of their diet (40-50 pounds of food per day). Moose may expend more calories searching for food than they can consume if the density of optimal forage species is low.

Impact of Temperature and Habitat

Warm temperatures might restrict the southern range expansion of moose into areas with otherwise adequate forest habitat. Moose have difficulty dissipating surplus heat when there are warm temperatures, which can lead to heat stress. Heat stress can lead to reductions in overall activity, influencing feeding time and consumption rates, and can result in weight loss. Average daily temperatures in Connecticut exceed temperature thresholds for moose 200-300 days out of the year. Temperature readings recorded from a GPS-collared moose in northwest Connecticut revealed that the moose was exposed to temperatures above heat stress temperatures 86% of the time.

A model evaluating the suitability of Connecticut's landscape for moose was developed, based on quality and quantity of habitat and temperature. Three counties were classified as unsuitable for moose based on density of roads and humans. The total potential moose in Connecticut is 1,359, based on moose densities derived from the model. Potential moose concentration varied geographically across the state. The areas most suitable for moose exist along the Massachusetts border in northeastern and northwestern Connecticut.

Impact of Insects and Disease

In addition to the challenges associated with finding adequate food and keep-

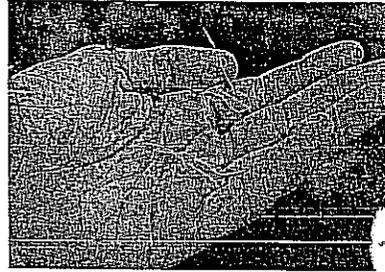
ing cool throughout the year, moose also face the challenge of coping with insects and disease. Moose can be harassed by biting flies to the point where their health is impacted because they are forced to move into less desirable habitat to escape the flies. Winter ticks, also known as "moose ticks," can significantly impact the health of moose. Unlike the deer tick, the moose tick feeds on one host throughout its life cycle, which begins when eggs hatch into larvae in summer. Larvae are picked up when a moose passes by vegetation where eggs were laid. The larvae remain on the moose through the nymphal and adult stages where they continue to feed until they drop off in May. As many as 50,000 ticks have been reported on moose in several Canadian Provinces. The consequences of heavy tick loads are

excessive grooming, hair loss, and even death. Moose with an extensive tick infestation are often referred to as "ghost moose" because they appear to be a light-colored, pale grey instead of dark brown.

A neurologic disease known as "moose sickness" is caused by a brain worm that is found in deer in eastern and central North America. Larval stages of the worm are shed by deer and found on their feces. Intermediate hosts, such as snails and slugs, pick up the larvae. As moose feed on vegetation, snails and slugs are incidentally ingested. The worms carried by the snails and slugs penetrate the wall of a moose's stomach during digestion and migrate along nerves until they reach the vertebral wall. There they enter the tissue of the spinal cord and continue to migrate towards the brain. Brain worm infestations are known to cause weakness in the hindquarters, turning of the head and neck to one side, fearlessness, lethargy, rapid eye movement, blindness, circling, and the inability to stand. Moose infected with brain worm may not always exhibit signs of infection. Brain worm also may not be the direct cause of death. However, the condition has been associated with declines in moose populations throughout North America since symptoms were first documented in Minnesota in 1912. Although

deer are the usual host for the worm, they rarely become ill from it.

During 2005, a Connecticut moose became sick and died in Burlington and another displaying symptoms associated with brain worm was euthanized in Goshen. In 2009, a third moose that was behaving oddly in Hartland was captured and later had to be euthanized after it was unable to regain mobility. All three moose were examined at the University of Connecticut and showed infestations of brain worm. This past August, an adult female moose that displayed signs of brain worm (lameness and limited ability to stand) was immobilized in Cromwell



Moose and deer ticks found on a moose captured in Hartland in 2009.

PHOTO BY P. LEWIS, DEER PROGRAM

and relocated to northwestern Connecticut, where it had the best chance of survival. The moose died the following day. Although the ultimate cause of death was unclear, it is likely that stress from either disease or injury, in combination with stress associated with capture and relocation, was too much for the animal.

Collecting Data

To better assess the future existence of moose in Connecticut, moose are being captured, radio-collared, and ear tagged as part of an ongoing project between the DEP, University of Connecticut, and Northeast Wildlife Damage Management Cooperative, along with additional cooperation from the Metropolitan District Commission. Information is being collected on age, weight, general health, habitat use, and survival of moose.

A female moose that was captured in March 2009 and had been missing since May 2009 was recently observed with a calf in Hartland. The cow had given birth to a calf earlier this year and both have been seen with a bull collared in January 2010 for the past month.

Anyone who observes a moose in urban areas of Connecticut should contact the Wildlife Division's Franklin office at 860-642-7239 or Sessions Woods office at 860-675-8130 during office hours (Monday through Friday, 8:30 AM-4:30PM), or DEP Emergency Dispatch (860-434-3333) after hours. All other observations can be reported on the DEP Web site at www.ct.gov/dep/wildlife.

Andrew LaBonte is a biologist with the Wildlife Division's Deer Program



Blue Spots and Spade Feet:

DEP study is focused on two of New England's rarest amphibians

Written by Kevin J. Ryan

Bucolic eastern Connecticut, with its gently rolling hills and scenic farm fields, is a herpetological hot spot. The region is home to two of New England's rarest amphibians: the eastern spadefoot toad and the pure-diploid blue-spotted salamander.

If "spadefoot" and "pure diploid" are terms that leave you wondering, you're in good company. Although the DEP identified the spadefoot and bluespot as "Species of Greatest Conservation Need" in its 2005 Comprehensive Wildlife Conservation Strategy and both species are endangered in Connecticut, surprisingly little is known about either animal. So, in an effort to learn more about these animals' habits and preferred habitats and to better guide conservation strategies, DEP partnered with the University of Maine Department of Wildlife Ecology and CTHerpConsultant, LLC, in 2008 to gather much-needed data on these species. The overarching goal of this study is to determine the best way to guide development in a way that supports persistence of these species. At the time of this writing, the study is in its third year, and a fourth and final season is planned for 2011.

Eastern Spadefoots: Desert Animals Stuck in Desert Ways

Little-known and somewhat misnamed, eastern spadefoots are not, in fact, true toads like our ubiquitous American and Fowler's toads. Somewhere between a toad and a frog, these desert amphibians are believed to have evolved from a common ancestor in the arid southwestern United States and northern Mexico. Over millennia, spadefoots expanded their ranges and evolved into separate species. Presently, there are six species west of the Mississippi River and one east – the eastern spadefoot. In New England, known spadefoot populations are usually found in river valleys at sites below 200 feet in elevation.

Even the most ardent spadefoot enthusiast will admit that they are odd-looking animals, and it doesn't take a trained eye to tell them apart from Connecticut's other anurans (frogs and toads). Eastern spadefoots are considerably less warty than true toads, have vertical pupils like those of a pit viper, and bear a whitish,

lyre-shaped pattern on their backs. They owe their name to the sharp-edged, spade-like projections on their hind feet called tubercles which are used for corkscrewing themselves into underground burrows. Digging burrows – which can be up to six feet deep – are a relic response to life in the deserts in which these animals evolved. Connecticut isn't exactly arid, but these burrows still allow spadefoots to avoid predators and desiccation.

Another trait that harkens back to desert origins is their arrhythmic, explosive breeding events. While every other amphibian in New England adheres to a predictable, annual breeding cycle, spadefoots wait for intense rains in spring or summer to initiate truly explosive events lasting anywhere from one night to several days. These events are best identified by raucous calling reminiscent of the cawing of crows. Yet, for all this sound and fury, a given population may go years without breeding. These periodic emergences gave rise to the myth that spadefoots remain underground, completely inactive, for years at a time. (Spadefoots do emerge periodically at night to feed.)

When they do breed, the resulting offspring bear yet another desert adaptation. Because water in the desert dries up quickly, larval spadefoots everywhere develop accordingly. Eggs can hatch in only a few days and, under the right conditions, it takes a mere two weeks for a tadpole to transform into a juvenile. Other "rapidly" developing anurans, wood frogs for example, take two to three months to develop into froglets.

While adapted to conditions other amphibians would find prohibitive, no amount of evolutionary conditioning has prepared the spadefoot for its current challenge—human-dominated landscapes. Spadefoot populations have been extirpated due to development, including one well-known population near New Haven which was extirpated in the 1930s



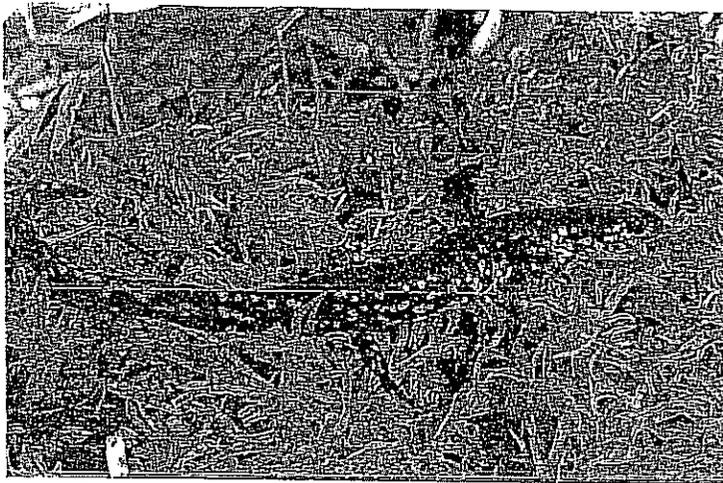
The eastern spadefoot toad has a characteristic lyre-shaped pattern on its back. This toad is listed as an endangered species in Connecticut.

—presumably to urbanization.

At the natural edge of their range and up against the ticking clock of seemingly inevitable land-use conversion, there is still time to safeguard the future of this odd little creature. Several populations are still known from the northern portion of the Central Connecticut Lowland, and more recently, spadefoots have been discovered in the Quinebaug River watershed in eastern Connecticut. As we learn more about their life history, we are better able to guide development for the mutual benefit of both species.

Pure-diploid Blue-spotted Salamanders: Normal Is Unique

Blue-spotted salamanders are one of several species of Connecticut salamanders belonging to the family Ambystomidae, the mole salamanders. Individuals



A pure-diploid blue-spotted salamander from the Quinebaug Valley. This amphibian is listed as an endangered species in Connecticut.

of this family are most often encountered on warm, rainy, spring nights when they undertake annual breeding migrations en masse to their ancestral breeding wetlands. Adult mole salamanders use wetlands only for several weeks during spring (with the exception of the marbled salamander, which breeds in the fall), spending the rest of their lives in forests adjacent to breeding wetlands.

The story of blue-spotted salamanders is a complicated one. Throughout much of New England, most salamanders we call "bluespots" are actually part of a genetic mélange which stemmed from the hybridization of two species millions of years ago. By and large, then, a bluespot isn't just a bluespot...unless it is. To better understand this, let's take a step back.

Most land-dwelling vertebrates are "diploid," meaning they have two sets of chromosomes: one from an individual's mother and one from its father. Salamanders in unisexual populations are "polyploid," meaning that they have multiple sets of chromosomes — in some cases up to five. In a given ambystomatid salamander, these extra chromosome sets can be from several other closely-related species. For Connecticut's bluespots, those extra sets come from the Jefferson salamander.

If the species' genetic ambiguity wasn't strange enough, its sexual habits are guaranteed to raise eyebrows. Populations of these hybrid species complexes generally consist only of females. Yet, despite having no males, they still need male sperm to reproduce. During the breeding season, female unisexual salamanders "steal" sperm from males of closely-related species. Male salamanders release sperm packets in the water of breeding areas before the females

recently termed "kleptogenesis."

At first blush, this sort of reproductive strategy may seem unusual. Yet, throughout New England's wetlands, genetically muddled female salamanders use sperm from unrelated males every spring. The rare exceptions occur in three known populations of sexually reproducing, genetically pure blue-spotted salamanders — on the eastern tip of Long Island, New York at Montauk; in the Hockomock Swamp in Massachusetts; and in the Quinebaug River watershed in eastern Connecticut. These diploid populations are thought to be of the same lineage which remained geographically isolated from the unisexual, kleptomaniacal masses after the last glaciation.

The rare, puritan diploid bluespots look a little different from their complex cousins. Genetically pure blue-spotted salamanders are the smallest of Connecticut's mole salamanders; they are black with blue or bluish-white spots on the sides of the body and tail. Their narrow heads taper to a rounded snout. Unisexual blue-spotted salamanders tend to be larger, brownish, and have considerably wider heads.

Most studies of blue-spotted salamanders focus on genetics of unisexual populations, and little is known about their life history. Most published studies on the species recognize that they were working with unisexual populations, but do not attempt to reconcile their ecology with their genetics. Studying the ecology of diploid bluespots serves as a baseline for examining the influence of other species' genes on unisexual populations.

Connecticut Study

The current Connecticut study is tak-

arrive. Once the females arrive at the breeding areas, they deposit the sperm packets in their bodies. The "stolen" sperm initiates egg development, but generally, the genetic material is not incorporated into the young.

This type of sperm-stealing reproduction has been

ing place at two field sites in the eastern part of the state that are both inhabited by eastern spadefoots and pure-diploid blue-spotted salamanders. Specifically, the objectives of this study are to assess the animals' breeding population sizes, fidelity to breeding sites, movement patterns to and from breeding wetlands, the proportion of juveniles surviving to become adults, and non-breeding habitat use. Tried-and-true methods complement a few new techniques to collect information on both animals.

Pitfall Trapping

Pitfall trapping is a technique used in ecological studies to capture small animals, such as insects, small mammals, reptiles, and amphibians. It allows researchers to determine the species present on a site, and to estimate population size. Due to problems with indiscriminate capture, the Wildlife Division currently only permits pitfall traps to be used for long-term permitted studies like this one.

Species composition, as determined by pitfall trapping, also gives clues to possible between-species competition for breeding sites and/or food resources; aids in the assessment of potential predator-prey interactions; and gives insight into facultative use of pools by other species.

The layout of pitfall trap arrays at research sites surrounds breeding pools and compartmentalizes the habitat types present. This allows the assessment of population-wide movements.

Blue-spotted salamanders and eastern spadefoots captured in pitfall traps are surgically implanted with Passive Integrated Transponders (PIT tags). PIT tags are glass-encased microchips that emit a unique identification number when scanned by a reading device. From that moment on, each animal with a PIT tag is identifiable at the individual level, and subsequent recaptures can be tracked.

Radio-telemetry

A subset of blue-spotted salamanders and spadefoots toads have been implanted with radio-transmitters, allowing their every move to be tracked. Each time an animal shifts its location, a suite of macro- and micro-habitat information is recorded, including canopy cover, leaf litter depth, and soil temperature. Habitat information is recorded at two random sites for each animal location to compare the habitats that study animals are using versus other available habitats.

continued next page

PIT Tag Scanning

PIT tags are being employed as a novel method of detecting blue-spotted salamanders in situ via methodical scanning with a PIT tag reading device equipped with a modified antenna. The ordeal is reminiscent of a person searching for buried treasures with a metal detector. Locating salamanders in this fashion allows for the examination of habitat use at both coarse and fine scales. If salamanders are found using a habitat disproportionately to the amount of a particular habitat, then the salamanders may be exhibiting a preference for that habitat type. As with telemetry, micro-habitat information is collected at each salamander location.

Toad-totes

To collect data on non-breeding emergences of eastern spadefoots, the antenna of another type of modified PIT tag reading device, dubbed a "toad-tote," is placed over the burrow of a PIT tag-implanted individual. The reader subsequently records the animal's PIT tag number as well as the date and time the tag number was recorded. Once a spadefoot emerges from its burrow and moves away from the antenna, its tag is no longer read, which is reflected in the stored data in the PIT tag reader. When the spadefoot returns to its burrow, the

reader again begins to record the PIT tag number. Collecting data in this fashion provides an assessment of when and for how long spadefoots emerge. Comparing emergence data to weather information will be helpful in determining what spurs spadefoots to the surface for both breeding and non-breeding emergences. This knowledge may in turn be useful for conducting presence/absence surveys as new sites can be searched when spadefoots are likely to be active.

Spadefoot searches

To discover new localities of eastern spadefoots in eastern Connecticut, researchers have been searching at night during presumed peak spadefoot activity periods. Surveys have been concentrated on areas identified by the "Predicted Spadefoot Toad Habitat Map" created by Wildlife Division technician Kate Moran. The map is based on a Geographic Information System (GIS) model which incorporates elevation and soil characteristics of known spadefoot locations to predict further areas of suitable habitat (see "GIS Aids in Identifying Potential Spadefoot Toad Habitat," in the July/August 2009 issue of *Connecticut Wildlife*).

An Opportunity to Act

Amphibians are sentinels of planetary health – the proverbial canaries in a coal mine – and they are declining worldwide more rapidly than any other vertebrate group, including birds and mammals. In

North and South America, nine species have been extirpated in the past 100 years and the present existence of another 117 species remains unknown. Of North and South America's 1,187 amphibian species, 39% face extinction, 337 of which are classified as critically endangered.

In the northeastern United States, habitat degradation, loss, and fragmentation have been identified as the main causes of decline in amphibian species.

The best-intentioned conservation efforts risk crumbling if their foundation is not one of sound science. While much of the Northeast experiences significant industrial, commercial, and residential development, eastern spadefoots and blue-spotted salamanders face greater and greater habitat loss. And, while it is a logical enough response for concerned citizens to wring hands and decry bulldozers, solid research into how these animals make their living can be used to guide most development around them. Their long-term viability hinges on the public's understanding of the value of biodiversity, the dedication of scientists logging long hours in the field and lab, and willingness of local planning departments and the development community to be open to changes in business as usual.

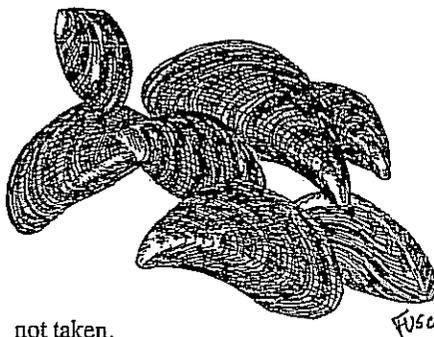
Kevin J. Ryan is a graduate research assistant from the University of Maine Wildlife Ecology Department



Zebra Mussels Discovered in Lakes Zoar and Lillinonah

The aquatic, invasive zebra mussel has been discovered in Lake Zoar and Lake Lillinonah, two large impoundments on the Housatonic River in western Connecticut. This is the first report of a new infestation since zebra mussels were discovered in Connecticut in 1998 in East and West Twin Lakes in Salisbury. It is uncertain if the mussels found in Lakes Lillinonah and Zoar are the result of downstream migration from upstream sources or a separate introduction.

Zebra mussels have the potential to cause much damage by displacing native mussels, clogging power plant and industrial water intakes, affecting public drinking water distribution systems, and disrupting aquatic ecosystems. This invertebrate can spread from one water body to another through boating and fishing activities if proper precautions are



not taken.

The zebra mussel is a black and white-striped bivalve mollusk, which was introduced into North American waters through the discharge of ship ballast water. Since its discovery in Lake St. Clair (Michigan/Ontario) in 1988, the zebra mussel has spread throughout the Great Lakes, Mississippi River system, and most of New York State.

Zebra mussels have specific water

chemistry requirements, and are limited to waters with moderate to high calcium concentrations and pH. In Connecticut, suitable habitat for zebra mussels is mostly limited to a number of water bodies in western portions of the state.

Signs are being posted at Lakes Lillinonah and Zoar to alert the public about the presence of the zebra mussels and what precautions should be taken to prevent their spread. The DEP will continue to monitor these lakes and others throughout the state. Possible sightings of zebra mussels and other aquatic nuisance species should be reported to the DEP Inland Fisheries Division at 860-424-3474. More information can be found on the DEP Web site (www.ct.gov/dep). Look for an in-depth article about zebra mussels in a future issue of *Connecticut Wildlife*.

CT Hunting & Fishing Appreciation Day Is a Huge Success

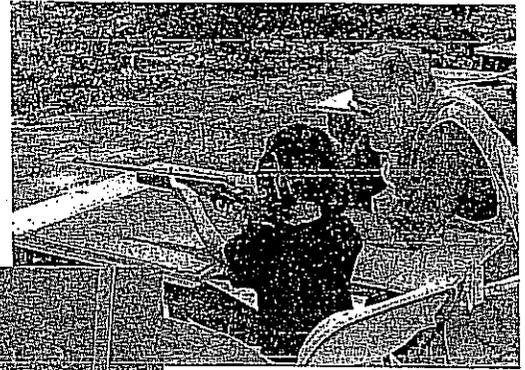
Written by Kathy Herz, Photography by Paul Fusco

The DEP and Friends of Sessions Woods cosponsored Connecticut Hunting & Fishing Appreciation Day on September 25 at the Sessions Woods Wildlife Management Area in Burlington. This first-time event was a huge success as approximately 1,000 people, mostly families, attended. There were activities for all ages, along with interesting programs and workshops about hunting and fishing, target shooting, 3-D archery, casting pools, and hunting dog demonstrations. The Congress of Rough Riders of Naugatuck provided scheduled demonstrations of Cowboy Action Shooting. Most importantly, attendees had the opportunity to speak face-to-face with DEP staff from the Wildlife, Inland and Marine Fisheries, Law Enforcement, Boating, and Forestry Divisions, as well as with representatives from over 30 conservation, hunting, and fishing organizations. Attendees age 16 and older were able to enter a drawing for door prizes, including a kayak, shotgun, and fly-rod.

Children participated in several fun activities and crafts, such as track making, face painting, a blindfolded ropes course, and a scavenger hunt. Those who completed the scavenger hunt received a bird identification book and were automatically entered into a drawing for a backyard wildlife gift package.

Financial support for the event was provided by the Friends of Sessions Woods, the Main Street Community Foundation, and the Clinton S. Roberts Foundation.

Those who attended Hunting & Fishing Day were able to make turkey calls, learn about forestry and boating in CT, observe Cowboy Action Shooting, and practice flycasting.



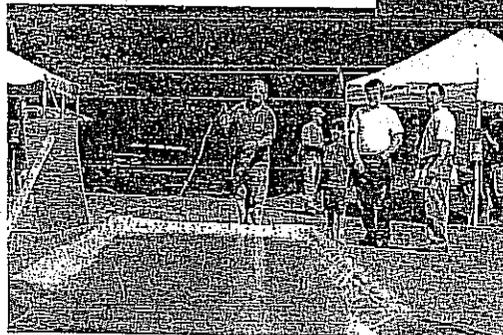
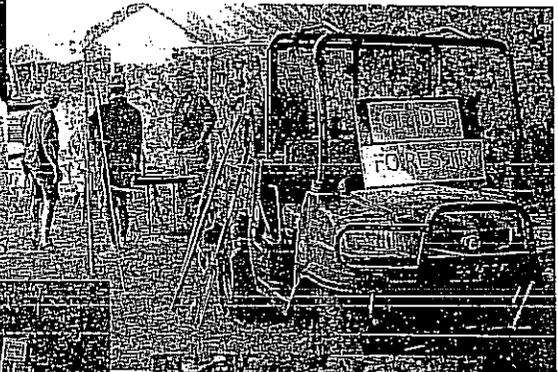
A certified range safety officer helps a youngster as he shoots a .22 rifle at a target.



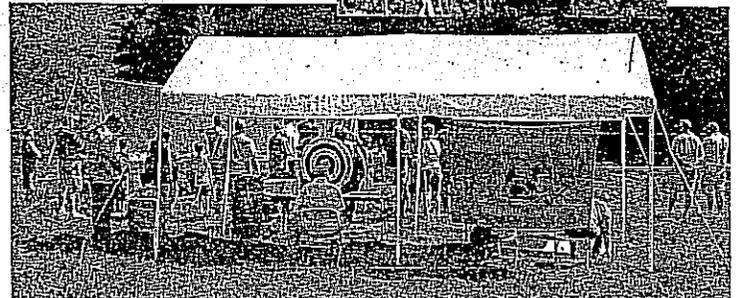
Friends of Sessions Woods members staff the welcome table.



The hands-on wildlife quiz was a popular activity.



Attendees age 16 and older were able to enter a drawing for door prizes (left). Archery was another popular activity (right). Conservation Education/Firearms Safety instructors were on hand to provide instruction.



Large and in Charge - The Great Black-backed Gull

Article and photography by Paul Fusco

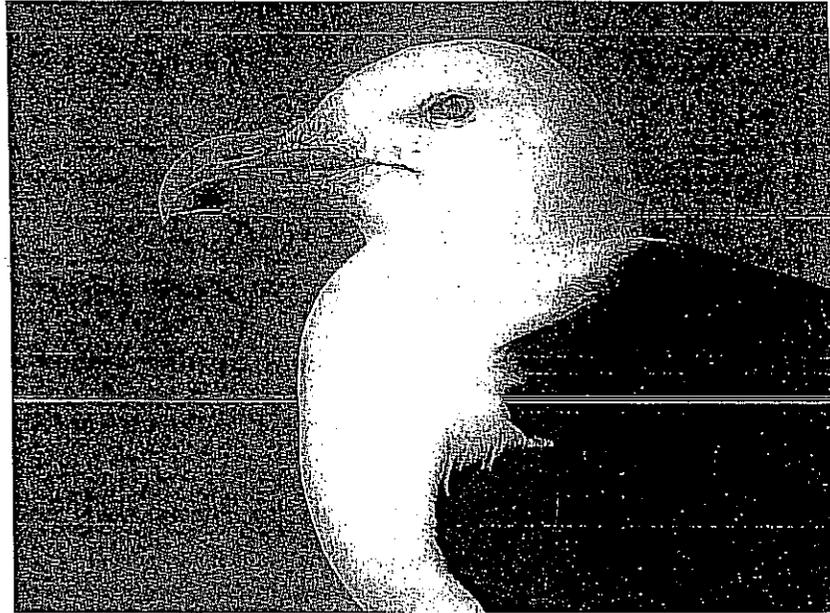
Gulls are common and familiar birds to most Connecticut residents. Some species breed here, some migrate through the state, and some spend the winter. Ten species of gulls regularly occur in Connecticut at one time of year or another. Among them is the largest gull in the world, the great black-backed.

The great black-backed gull is a resident, meaning that individuals can be found in Connecticut year round. The population in our region has increased dramatically since the first half of the twentieth century. The great black-backed is an opportunist that has adapted to taking advantage of human-related food sources. Landfills and trash along the shoreline, including fishing waste, provide a readily accessible source of food.

Description

Great black-backed gulls share the same body structure as other members of the gull family, except they are bigger. They have long, broad wings; a short, rounded tail; and webbed feet. Adults have a black back and black topside to their wings (mantle). The head, body, and wing undersides are snowy white. First year immatures have contrasting back markings, a pale head, and a black bill.

With a body length of 32 inches and a wingspan of up to five and one-half feet, the great black-backed is truly an impressive and powerful bird. The large bill is strong and stout. It has a slight hook that is used to catch and kill prey, and tear flesh. Adults have a red spot on their lower mandible that chicks will peck at to get the adults to feed them.



The strong, heavy bill of the great black-backed gull is frequently used for catching and killing prey.

Distribution

Common within their range, great black-backed gulls are found on both sides of the north Atlantic. Their breeding range extends from the middle Atlantic states north along the coasts of the Canadian Maritime provinces to southern Greenland, Iceland, and the coast of Europe from Scandinavia to Portugal. Although they are primarily sedentary, many withdraw from the northernmost latitudes in winter. Some birds may move as far south as coastal Florida and inland to large rivers or lakes as far west as the Great Lakes.

Great black-backed gulls are primarily coastal species. They are often seen foraging far out at sea as they are known to follow feeding humpback whales and tuna to take advantage of smaller fishes that may be forced to the surface. The scientific name, *Larus marinus*, is both descriptive and fitting, meaning ravenous bird of the sea.



Above, a gull calls in an aggressive posture, while at right, a great black-backed gull exits the water carrying a freshly-killed black skimmer fledgling.



Behavior

Gulls are expert fliers, using minimal energy by gliding and soaring to cover large distances in their search for food. The great black-backed is capable of covering extreme distances as it surveys its coastal and open water domain. Like an eagle, it can be seen riding the wind to circle high above the shoreline, dropping down in smaller circles to join a feeding group on the water.

It is the great black-backed gull that takes control in a group of other gulls. Its domineering behavior is so aggressive that no smaller gull dares to challenge it. Even amongst themselves, great black-backed gulls will sometimes battle one another for dominance to the point of injury. Attacks are carried out by using their powerful wings, feet, and sometimes bill to mercilessly subjugate their opponent. In fact, injuries are one of the principle causes of death in the population.

Along with scavenging, most gulls feed on small fish and invertebrates, including mollusks. The great black-backed gull also is a ruthless predator that is known to attack and kill chicks and adults of other birds, including puffins, murres, ducks, terns, skimmers, and smaller gulls. These gulls are known to knock smaller birds out of the air, coming in to kill them once they hit the water. Great black-backed gulls also are pirates, regularly robbing other seabirds of their catch.

Great black-backed gulls usually start breeding at four to five years of age. They nest singly or in loose colonies on small rocky or grassy islands, barrier beaches, and other isolated coastal areas that are free of mammalian predators.

Conservation and Management

Along with many other avian species, great black-backed gulls were once widely hunted for their eggs and feathers. That



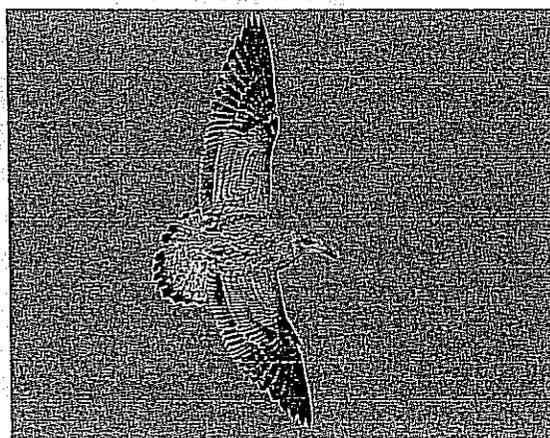
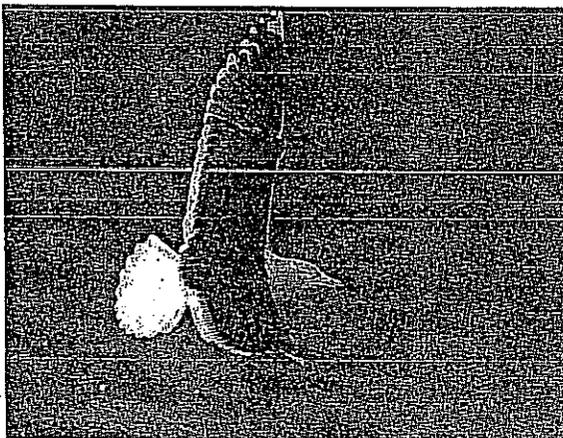
A great black-backed gull starts to make off with its catch of flounder as a common loon looks on.

practice was halted when two bird conservation laws, the Lacey Act (1900) and Migratory Bird Treaty Act (1918), were passed, preventing exploitation. Since that time, the population has been increasing and slowly spreading southward. On this side of the north Atlantic, the great black-backed was once constrained to the Canadian Maritimes. The first documented nesting in Massachusetts was in the 1930s, and Connecticut followed with its first nesting in the 1950s.

When great black-backed gulls are in close proximity to sensitive nesting colonies of terns and other seabirds, problems sometimes develop. The gulls have the capacity to greatly impact nesting and productivity of the other species. The smaller birds, along with their eggs and chicks, are highly vulnerable to the aggressive predatory behavior of the larger gull. In some situations, whole colonies of terns and other seabirds can be at risk of total nesting season failure or colony abandonment.

Wildlife managers in the Northeast region have undertaken measures to control populations of great black-backed gulls at sensitive locations to provide better nesting opportunities for endangered and threatened birds. Some of these measures have had success in protecting a few of the region's tern colonies.

Paul Fusco is the Art Director and Wildlife Photographer for the Wildlife Division's Outreach Program



Both adults (left) and immatures (right) exhibit long, broad wings and short, rounded tails. Adults have a black mantle (topside of wings and back), while young birds have contrasting markings with a pale head.

2010 Atlantic Population Canada Goose Banding: *A Personal Experience*

Written by Kelly Kubik

Three distinct populations of Canada geese are present in Connecticut during certain times of the year. Two are migratory, spending their winters in the state. The third is a year-long, resident population. One of the two migratory populations is the Atlantic Population (AP). These geese nest primarily on the Ungava Peninsula in Nunavik, in northern Quebec, Canada, and spend the winter from Massachusetts southward to the Chesapeake Bay region of the Atlantic Flyway.

Banding at Breeding Grounds

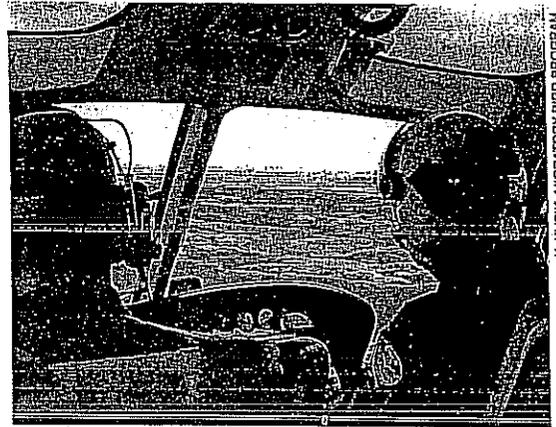
The Atlantic Population was once considered the largest Canada goose population in North America, peaking at nearly one million birds during the 1970s. Unfortunately, the AP suffered a precipitous population decline during the late 1980s and early 1990s that led to the closing of the regular Canada goose hunting season in the Atlantic Flyway in 1995. After this closure, waterfowl managers decided that AP geese needed to be monitored directly on their breeding grounds rather than on their wintering grounds, as was traditionally conducted. Part of this new monitoring program was the initiation of a breeding ground band-

ing program in 1997. This banding project is conducted in two separate regions on the Ungava Peninsula: Hudson Bay and Ungava Bay.

This pre-season banding program is vital to the management of AP Canada geese, not only in Connecticut but throughout the entire Atlantic Flyway. The data derived from this project are essential for monitoring adult and juvenile survival rates, timing and distribution of harvest, and population delineation. The program is a collaborative effort between the Arctic Goose Joint Venture, Canadian Wildlife Service, Ducks Unlimited Incorporated, Makivik Corporation, Nunavik Hunting, Fishing and Trapping Association, United States Fish and Wildlife Service, and the Atlantic Flyway Council, of which the Connecticut Department of Environmental Protection is a member.

Corralling Geese by Helicopter

This year, I participated in the pre-season banding of Atlantic Population geese along the Hudson Bay for a second time. On August 5, 2010, I arrived in the



Airplanes, helicopters, and boats are the primary means of transportation in the remote Ungava Peninsula in northern Quebec, Canada.

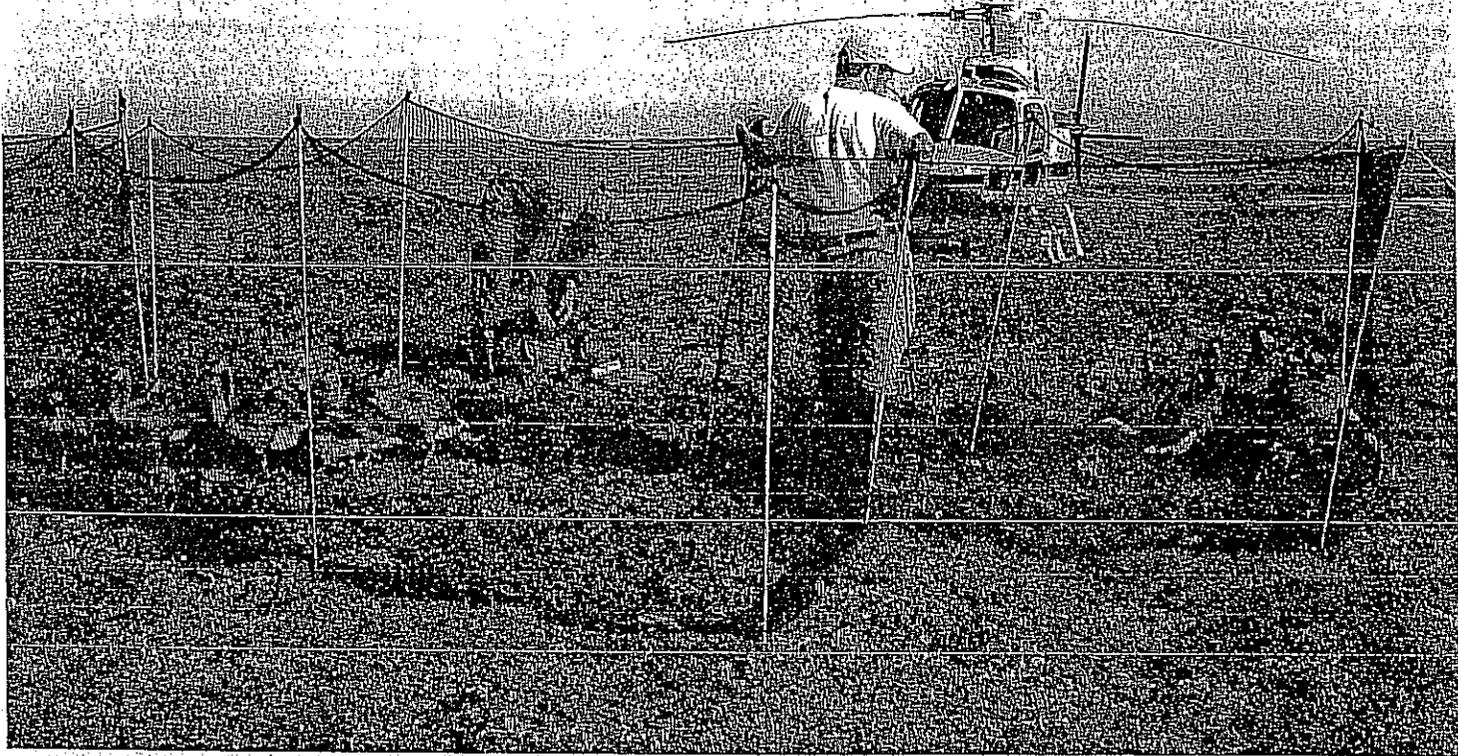
Inuit community of Puvirnituk via a seven-hour plane ride from Montreal, Quebec. I subsequently rendezvoused with an Ontario Ministry of Natural Resources (OMNR) helicopter that took me 40 miles south to our lodge on the Polemond River. There were nine individuals in our camp and we worked in two separate banding groups. I was a member of a four-person crew that was also comprised of an OMNR pilot, OMNR engineer, and a waterfowl biologist from Delaware. The other banding crew in the camp included a helicopter pilot from Nunavik Rotors and four Canadian Wildlife Service employees.

While banding geese in this remote sub-arctic region is similar to the resident Canada goose banding that occurs in Connecticut, it does have some very distinct differences. Because this area is comprised of roadless wilderness, a helicopter was used to locate, drive, and corral the geese into a portable net. After the geese were captured, we separated the goslings from the adults and then sexed and banded each goose. We also recorded the band numbers of any birds that were banded in previous years. To increase the probability of not capturing any molt migrant resident geese, only flocks of molting geese that contained goslings were caught. Skull mea-

P. LABONTE-CANADIAN WILDLIFE SERVICE



One of the banding crews consisted of (left to right) Rob Hossler (Biologist from the Delaware Division of Fish and Wildlife), Chuck Brown (OMNR Engineer), Gord Bain (OMNR Pilot), and Kelly Kubik, author and Connecticut Wildlife Division Technician.

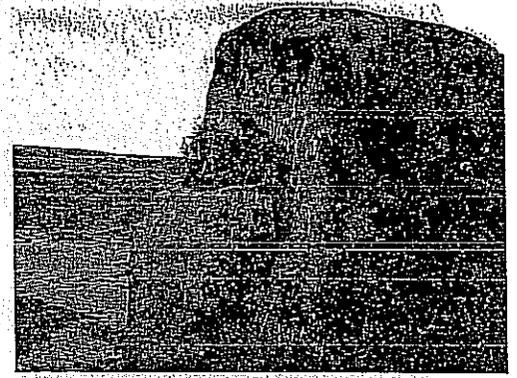


An A-Star B2 helicopter was used to local, corral, and drive molting geese into a portable net. The net was carried in a container attached to a skid on the helicopter.

Measurements were taken on approximately 10% of the geese that were caught. These measurements allowed us to differentiate between other subspecies of Canada

geese that were encountered.

Our camp banded 2,398 geese, which included 1,015 adults and 1,383 goslings. Eighty-one previously banded adults also were recaptured. The two groups conducted banding between August 6 and August 14, 2010. We made 84 catches with an average capture size of 30 geese. All of the captures occurred in an area that ranged approximately 115 miles north to south along the northern Hudson Bay coast and extended 25 miles inland. Collectively, the banding operations along



A nesting rough-legged hawk was one of the many wildlife species we observed while working in this area.

Hudson Bay and Ungava Bay banded a total of 4,594 AP geese this past year. Overall, productivity of AP geese in 2010 was classified as moderate to good.

Kelly Kubik is a wildlife technician for the Wildlife Division's Migratory Gamebird Program. The Atlantic Flyway Council, through the existing Cooperative Canada Goose Project, provided the funding for Kelly to travel to Canada to assist with this project.



The topography of the study area in northern Quebec consists of numerous ponds, lakes, rivers, and rocky outcroppings intermixed among the tundra.

Waterfowl Hunters in CT, an Aging and Declining Population

Written by Min T. Huang

Participation in waterfowl hunting in Connecticut and throughout North America has been declining since the 1980s. The reasons for this decline are varied, including low duck populations in the 1980s, steel shot requirements enacted in the late 1980s, closure of the Canada goose seasons in the Atlantic Flyway in the mid-1990s, and a general loss of interest. Changes in society, lack of leisure time, and a changing population demographic also are likely causes. The

gradual decline in the number of waterfowl hunters is not unique. Participation in hunting, in general, is declining.

Increasing recruitment and retention of waterfowl hunters in Connecticut, for the short and long-term, is crucial as waterfowlers are the single most ardent supporters of wetland habitat conservation. Waterfowl hunters constitute a small percentage of total hunters in Connecticut, but their contributions to conservation programs are significant. The sale

of annual Connecticut Duck Stamps to waterfowl hunters has provided over one million dollars that have been used exclusively for the acquisition, enhancement, and restoration of over 1,700 acres of inland and tidal wetlands since 1993. Many of these hunters also belong to nonprofit waterfowl organizations that annually raise funds to benefit not only waterfowl but all wetland dependent wildlife. Developing meaningful strategies for recruiting and retaining waterfowl hunters requires looking at a broad array of factors that affect participation.

Assessing Waterfowl Hunters

Starting in 2004, the Wildlife Division has sent two comprehensive surveys to over 1,000 waterfowl hunters. Objectives were to assess the demographics of waterfowl hunters in Connecticut but, most importantly, to gauge levels of participation, motivations for hunting, and satisfactions derived from participation.

It is clear that Connecticut's waterfowl hunter population is aging. The average age of a waterfowl hunter in the state is approximately 46, with over 20 years of waterfowl hunting experience. Annual participation is high, averaging around 85%. However, despite hunting seasons that have become more liberal in recent years, the number of days spent waterfowl hunting is decreasing. This decline can be attributed to changes in other commitments, decreasing access to hunting spots, and using limited recreational time to hunt other species, such as deer. Hunters that reported not participating in the past one or two seasons cited the same reasons as active hunters for spending fewer days hunting. At least 26% of "dropout hunters" cited lack of access to hunting areas as the overriding reason for not participating. Twenty percent cited other commitments as keeping them from waterfowl hunting, and 18% said that they hunted other species instead of waterfowl with their limited time.

Participation in Hunting

The factors that motivate hunters to participate in the activity and the satisfactions they derive from participating also can provide meaningful insight into how to maintain and recruit hunters. Spending time outdoors with family and friends has the greatest influence on participation by

M. HUANG, MIGRATORY BIRD PROGRAM



Retired Wildlife Division Assistant Director Greg Chasko (right) is an avid waterfowl hunter and former head of the Division's Waterfowl Program. He has made an effort throughout the years to mentor younger hunters interested in gaining the skills necessary to become a "waterfowler."

active waterfowl hunters. This is in stark contrast to the motivations of hunters that reported not hunting in the past year or two. Those "dropout" hunters were more motivated by the desire to harvest ducks than any other factor.

Satisfaction from Hunting

The factors that governed the satisfaction derived from a given hunt also were different between active participants and non-participants. Most participants gained satisfaction from a hunting experience through spending time outdoors with family and friends, working with hunting dogs, and seeing wildlife in general, ducks in particular. "Dropout" hunters were more inclined to derive satisfaction from taking a lot of shots on a hunt or harvesting a given number of ducks. Seeing wildlife and just being outdoors did not resonate as much with this group as it did for the hunters who participated annually.

Differences Between Active and "Dropout" Hunters

The differences in expression between active hunters and "dropout" hunters shed some light on why those who are dropping out may not continue to pursue duck hunting. Previous studies have found that hunters that pursued their sport for achievement-related reasons were more likely to drop out than those that were motivated by appreciative-related reasons. Motivations for non-participants in Connecticut to hunt ducks were less appreciative-related than for those who did participate. Non-participants were not as motivated to hunt for reasons such as merely spending time outdoors, nor were they inclined to list spending time with friends or family as highly as participants.

These motivational preferences were further exemplified in the factors that each group identified as important toward their overall satisfaction. Non-participants were more likely to derive their satisfaction from harvest-related factors than were participants. For instance, firing a lot of shots (achievement-related) on a given duck hunting trip was a greater determinant of satisfaction for non-participants. Appreciative-related satisfactions, such as working with a hunting dog and honing one's individual hunting skills, also were not as important to non-partici-



Despite hunting seasons that have become more liberal in recent years, such as the resident goose season, a recent Wildlife Division survey found that waterfowl hunters are spending less time hunting waterfowl.

pants as they were for participants. These differences point to the need to foster an identity in potential duck hunters. Hunters going into the field to experience more than just the harvest are more likely to remain hunters and conservationists for life, rather than transients.

Mentoring Is Crucial

Duck hunting is a specialized sport; it involves a great investment in time, equipment, and skill. Recruitment may be difficult if hunting access to some areas is not easy, initial experiences are not characterized by high satisfaction, and there is a lack of parental/mentor influence. One of the tools that has been touted as a way to introduce new hunters to the sport has been the establishment of Youth Waterfowl Hunter Training days by the U.S. Fish and Wildlife Service. Unfortunately, only 5% of hunters have been mentored during a youth hunt day and only 15% of hunters have mentored a youth at one of these special days. Numerous studies have indicated that participation in hunting, particularly a specialized segment such as waterfowl hunting, takes a great deal of mentoring. An overwhelming 91% of hunters said that they were mentored in becoming a waterfowl hunter by a parent, relative, or close friend.

How to Increase Participation?

The reasons for participation and dropout of waterfowl hunters are numerous and their interactions complex. It is clear, however, that longtime waterfowl hunters continue to hunt waterfowl for many reasons other than merely harvest-

ing ducks. There is an appreciation for being in a marsh with a dog and friends that is borne over many experiences and years of trial and error. Given the way that new waterfowl hunters are brought into the fold (mentoring), it is critical that waterfowl hunters give back to the sport in more than just financial ways.

The factors identified by hunters as deterring participation, such as lack of access, are issues that are difficult but not impossible to address by state agencies. Concerted efforts to increase access and potentially create more permit-only areas are merely a matter of resource allocation and diligence. More importantly, perhaps, is developing ways to foster a greater appreciation for the totality of experiences that is waterfowl hunting in new and perspective waterfowl hunters, not just the shooting and harvesting aspect.

From a conservation standpoint, it also is apparent that hunters who are annual participants were more likely to be a member of Ducks Unlimited or some other conservation organization. Many dropout hunters reported not being a member of such an organization or had recently suspended membership. The focus should not only be on how to recruit new waterfowl hunters, but also on maintaining those that already participate and fostering more mentoring from existing participants. This might be the key to maintaining the waterfowl tradition.

Min Huang is the leader of the Wildlife Division's Migratory Gamebird Program





Fees and Credits for Fishing and Hunting Licenses, Permits, and Tags

Legislation was approved and signed into law in April during the 2010 session of the Connecticut General Assembly reducing many of the fees for sportsmen's licenses and permits. This was followed in June by legislation authorizing a credit to be applied against the fee for any 2011 sportsmen's license, permit, or tag when purchase of a license, permit, or tag had been made at the higher prices in place between October 1, 2009, and April 14, 2010. The credit amount will be the difference between the higher amount paid during that time period and the amount set by the new fee structure established on April 14, 2010.

Credit redemption is not available from town clerks, retail vendors, or through DEP's Online Sportsmen Licensing System. You must purchase your 2011 license, permit, or tag by mail or in person at one of the following DEP facilities to obtain a credit (2011 licenses/permits/tags will be available starting December 1, 2010):

- Marine Headquarters, 333 Ferry Road, Old Lyme; 860-434-6043; Mon.-Fri. 8:00 AM-4:00 PM,
- Eastern District Headquarters, 209 Hebron Road (Route 56), Marlborough; 860-295-9523; Mon.-Fri. 8:30 AM-4:00 PM
- Western District Headquarters, 230 Plymouth Road, Harwinton, 860-485-0226; Mon.-Fri. 8:30 AM-4:00 PM
- Franklin WMA, 391 Route 32, Franklin, 860-642-7239; Mon.-Fri. 8:30 AM-4:00 PM
- Sessions Woods WMA, 341 Milford Street (Route 69), Burlington, 860-675-8130; Mon.-Fri. 8:30 AM-4:00 PM
- DEP Main Office, 79 Elm St, Hartford, License & Revenue Office, 860-424-3105; Mon-Fri 9:00 AM-4:00 PM and the DEP Store, 860-424-3555; Mon.-Fri. 9:00 AM-3:30 PM

Mail-in Option: A form to purchase your license, permit, or tags by mail when redeeming a credit will be available on-line at www.ct.gov/dep/sportsmensfeereduction after December 1, 2010.

To see a running tally of the 2010 archery deer harvest, go to www.ct.gov/dep/hunting and click on "2010 Archery Deer Harvest Update."

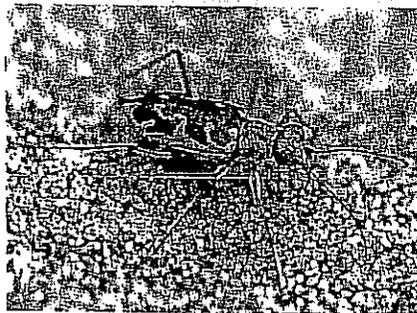


PHOTO BY P. J. FUSCO

Puritan Tiger Beetle Update

The 20th year of adult Puritan tiger beetle surveys at current and historic sites was completed in 2010. The Puritan tiger beetle is a federally threatened and state endangered species. It only occurs in New England on sandy beaches along the Connecticut River and in Maryland along the shores of the Chesapeake Bay. This handsome beetle has a two-year life cycle, spending one year as a grub-like larva feeding until emerging the next summer as a mature adult to mate and lay eggs.

Puritan tiger beetle larvae are fascinating in their own right. After a tiger beetle egg hatches, the larva digs a burrow to live in for the next year. The larva is specialized to live inside this burrow and is not often seen outside of it. It will sit in the burrow and wait for a prey item, often a spider or ant, to get close to the entrance, and then it will pop out and grab its meal. The larva has recurved spines on its back to anchor it into the burrow and keep it from getting pulled out by prey during an ambush.

The Puritan tiger beetle, like many other species, seemed to be affected by the unusually warm weather experienced this past spring, and emerged about two weeks earlier than in past years. Peak numbers of adult beetles were observed during the third week of June in 2010. Peak numbers typically are observed in the first or second week of July.

Overall, since surveys began 20 years ago, the number of adult beetles observed at Connecticut sites has either increased or remained stable. This is good news, but there still is much work to be done. Habitat management is needed at a few sites and the search continues for new locations as sandy beaches are often ephemeral due to the scouring and deposition processes of a river system. These small victories are to be savored though, as there are many hurdles and chronic issues that plague endangered species recovery.

Section 6 of the federal Endangered Species Act has provided funding for the Puritan Tiger Beetle Project.

Laura Saucier, Wildlife Diversity Program

Shelter for Bluebirds

The Wildlife Division is offering bundles of rough-cut lumber to groups free-of-charge for building bluebird nest boxes. The wood can be reserved by organized groups only on a "first come, first serve" basis beginning November 1, 2010. Group leaders should contact Wildlife Division technician Geoffrey Krukar at 860-675-8130 (Mon.-Fri., 8:30 AM-4:00 PM) or send an E-mail to Geoffrey.Krukar@ct.gov to make a reservation. Requesters must provide the following information: contact name, group name, mailing address, daytime phone number, E-mail address (if available), and number of bundles requested (limit 3 per group). Fifty bundles will be available by January 2011. Each bundle of wood yields approximately 15-20 nest boxes. The lumber consists of planks, and all groups will be responsible for cutting the wood to the correct dimensions. Only one request per group will be accepted, and participants will be mailed information packets which contain box designs and instructions, directions to a pick-up location, and claim tickets. When notified, groups will be responsible for picking up their wood at either Sessions Woods Wildlife Management Area, located at 341 Milford Street (Route 69) in Burlington, or at DEP Eastern District Headquarters, located at 209 Hebron Road (Route 66) in Marlborough.

Participating groups will be expected to construct, erect, and monitor the bluebird boxes throughout the nesting season (March-July). To be eligible to participate in future years, an annual report of box usage must be sent to the Wildlife Division.

Restoration Project at Long Beach West

A ceremony was held in late September 2010 to break ground for a project to restore Long Beach West, in Stratford, one of Connecticut's longest stretches of barrier beach. The project, supported by nearly \$1 million in American Recovery and Reinvestment Act stimulus funding, involves demolishing the dilapidated remnants of a former summer community, removing debris and contaminants, and ultimately re-establishing 35-acres of beach to its natural state for people and wildlife.

U.S. Congresswoman Rosa DeLauro joined officials from the U. S. Fish and Wildlife Service and numerous project partners for the ground breaking ceremony at the project site.

The restored beach, which has been designated as an internationally significant area by the National Audubon Society, will provide critical habitat for migratory birds, including the state and federally threatened piping plover and state-threatened least tern; rare plants; and other wildlife. Passive public access to the beach also will be restored.

Raccoon

Procyon lotor

Background

Raccoons are common throughout Connecticut. The state's expanding human population has probably benefited this opportunistic species; concentrations of people provide easy access to food sources, such as garbage, gardens, and bird feeders. Raccoons are adaptable, thriving in a large variety of habitat types. They are abundant in urban, suburban, and rural areas.

The raccoon has been an economically important furbearer in Connecticut due to its abundance and pelt value. Raccoons are harvested each year during the regulated hunting and trapping seasons, providing recreation for many Connecticut sportsmen and helping to control local raccoon populations.

Range

Raccoons range from Canada and throughout the United States (excluding the high elevations of the Rocky Mountains and much of the Southwest) into Mexico and Central America.

Description

One of the most easily recognized furbearers, the medium-sized raccoon is distinguished by a black mask across the eyes and cheeks and black rings around the bushy tail. Long, thick fur gives raccoons a typical gray-brown color, with variations ranging from sienna to silver. Other characteristics include short, slightly rounded ears bordered by white fur, and a long, pointed snout. Most adults weigh between 10 and 20 pounds, with males typically larger than females. Raccoons range in length from 23 to 38 inches, including the tail.

Habitat and Diet

Raccoons prefer wooded areas near streams, ponds, and marshes but are highly adaptable and can live in agricultural areas and in close proximity to human developments. They make their dens in tree cavities, abandoned woodchuck or fox burrows, rock crevices, brush piles, chimneys, attics, sheds, and other structures.

Opportunistic and omnivorous, the raccoon has a varied diet that includes fleshy fruits, mast (especially acorns, hickory nuts, and beechnuts), grains, invertebrates (particularly crayfish and insects), rodents, young rabbits, birds, turtles and their eggs, fish, and carrion. Raccoons are known for raiding garbage, agricultural crops, chicken coops, and pet food left outdoors.

Life History

Raccoons breed in late winter or early spring. The male does not remain with the female after breeding. The young are born in April or May after a 63-day gestation period. Females produce one litter per year, with an average of four cubs per litter. The cubs



PHOTO BY P. J. FUSCO

are born blind, helpless, and are covered with yellowish-gray fur. After 30 to 40 days, the cubs leave the den and will travel with the female for short distances to search for food. At three to four months, the cubs begin to forage on their own.

Interesting Facts

Raccoons are most closely related to the weasel (Mustelidae) and bear (Ursidae) families. They have keen senses of hearing, sight, and touch, but taste and smell are less well developed.

The front and hind paws of raccoons have five digits each. The dexterous front paws enable the raccoon to grasp and manipulate food items. Raccoons are excellent climbers, and can descend a tree head first.

Raccoons are primarily crepuscular (active at dawn and dusk) and nocturnal (active at night). They occasionally venture out in daytime, but that does not mean that they are diseased. Raccoons often adjust their feeding schedules, especially in spring when rearing their young. They may "den up" during the coldest periods in late fall and winter; however, this is not true hibernation, and the animals will wander out during warm spells.

Generally, raccoons are not social, but some pairs and families travel together.

Raccoons, especially large populations, prey on birds and their nests. In Connecticut, they often raid bluebird nest boxes that are not protected with predator guards. They also are problematic for herons and egrets on offshore islands where repeated predation can cause abandonment of the entire colony.

Diseases

Raccoon Rabies: Raccoon rabies first appeared in Connecticut in 1991 and raccoons are the primary carriers of this virus in the northeastern United States. Other mammals, including dogs, cats, skunks, foxes, woodchucks, and livestock, also have been infected with rabies. The following symptoms may indicate an

infection from rabies, distemper, or other diseases: unprovoked aggression, impaired movement, paralysis or lack of coordination, unusually friendly behavior, and disorientation. Daytime activity alone is not indicative of a raccoon with rabies; other symptoms also must be obvious. Contact with any wild or stray animal should be avoided, especially if it is behaving abnormally. Report sick or strange-acting animals to the local police, animal control officer, or the DEP. Contact your local health department or visit the DEP Web site (www.ct.gov/dep/wildlife) for more information on rabies.

Canine Distemper: Other diseases, such as canine distemper, can cause neurological symptoms similar to rabies. Distemper is a common disease that is usually fatal. However, it is not transmissible to humans and most domestic dogs are vaccinated against this virus.

Roundworm: Raccoons are primary carriers of roundworm, which is shed in raccoon feces. The roundworm rarely causes problems for raccoons, but it can be dangerous to other mammals, including humans. A person can become infected if he or she comes into contact with an item that is contaminated with raccoon feces. Therefore, it is important to keep children's sandboxes covered as raccoons may use them as latrine sites.

Management of Problems

Because of their ability to coexist with humans, raccoons can become a nuisance when they damage gardens, raid garbage cans, or inhabit human structures. They can be especially destructive on farms, where they feed heavily on crops. Because they may carry rabies, problem raccoons cannot be relocated, and only specified wildlife rehabilitators can accept injured or orphaned raccoons for rehabilitation with certain restrictions.

There are several preventive measures that homeowners can take to control or reduce problems from raccoons:

Do Not Feed or Touch Raccoons: Raccoons are wild animals. Feeding, whether directly or indirectly, may cause them to lose their fear of people.

Secure Garbage: Keep garbage in tightly closed containers. Store containers in an outdoor storage bin or in a garage or shed, and set out garbage on the morning of pickup instead of the night before. Run a rubber strap, rope, or wire through the lid and attach to the can handles. Placing ammonia directly in the can may help to repel raccoons. Keep compost in secure, vented containers to prevent access.

Feed Pets Indoors: Pet food should not be put out outside. Outdoor pet food inadvertently feeds a variety of wildlife species, including raccoons. Raccoons that congregate at a feeder also can facilitate the spread of diseases from raccoons to other wildlife or domestic animals. Livestock food should be stored in secure containers and not left outside where it is available to raccoons. Bird feeders should be placed away from trees or other structures that can be climbed by raccoons.

Eliminate Potential Denning Areas: Close off openings under porches and buildings. Seal any openings that lead into sheds or attics.

Eliminate Access Points: Raccoons can easily access roofs by climbing trees, downspouts, vines, or a trellis located near the house. Roofs and chimneys should be well-maintained to prevent

raccoons from entering houses. Replace loose shingles and repair any holes near the eaves of the roof. Limiting access to the roof by trimming trees and shrubs also may be helpful.

The simplest and most effective, permanent solution to the problem of raccoons living in a chimney is to cap it. However, there may be young present, depending on the time of year. If the young are old enough to climb out, cap the chimney after the raccoons have left for the night. Sometimes, a female raccoon can be encouraged to move her young to another location by the use of repellents, such as ammonia or moth balls, combined with a light and noise from a portable radio placed near the damper.

Install Fencing: Electric fences may help to keep raccoons out of gardens. Wires must be spaced close together and close to the ground to be effective.

Hunting and Trapping: On farms, where more effective methods are needed to control a large number of animals, hunters and trappers can harvest problem animals on the property during the regulated hunting and trapping seasons or by special permit at other times of the year.

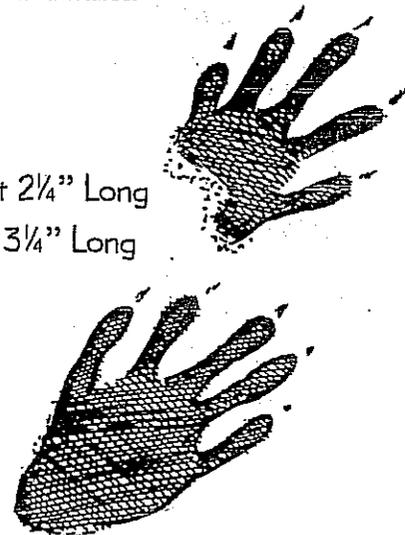


Because of their ability to coexist with humans, raccoons can become a nuisance when they raid garbage cans, damage gardens, and inhabit human structures.

Tracks

Raccoon tracks are easily identified by the five long toes on each foot. The front foot is shaped somewhat similar to a human hand. Tracks are usually paired, with the front and hind tracks positioned next to each other as the animal walks along.

Front 2 1/4" Long
Hind 3 1/4" Long



Wildlife Calendar Reminders

Programs at the Sessions Woods Conservation Education Center

Programs are a cooperative venture between the Wildlife Division and the Friends of Sessions Woods. Please pre-register by calling 860-675-8130 (Mon.-Fri., 8:30 AM-4:30 PM). Programs are free unless noted. An adult must accompany children under 12 years old. No pets allowed! Sessions Woods is located at 341 Millford St. (Route 69) in Burlington.

- Dec. 11Children's Program: Wildlife Tracks & Signs, starting at 1:30 PM. Learn about wildlife tracks indoors with Natural Resource Educator Laura Rogers-Castro and then head outside for a short walk to look for animal signs. Children also will make a wildlife track to take home. An adult must accompany all children. Meet in the exhibit area of the Conservation Education Center.
- Jan. 912 Practical Tips for Successful Wildlife Photography, starting at 1:30 PM in the education center. Wildlife photographer and Master Wildlife Conservationist Gary Melnyshyn will provide participants with 12 tips to successful wildlife images. Gary's beautiful images will support a discussion on each tip. This will be an open forum that encourages questions about photo techniques or the wildlife itself. Gary recently returned to Connecticut after working as a National Park Service Ranger in Yellowstone National Park. He has travelled throughout North and Central America concentrating on digitally documenting a variety of wildlife species.

Hunting Season Dates

- Sept. 15-Dec. 31Deer and turkey bowhunting season on private land (private land bowhunters in deer management zones 11 & 12 may hunt deer until January 31, 2011).
- Nov. 17-Dec. 7Private land shotgun/rifle and revolver deer hunting seasons.

Shepaug Bald Eagle Observation Area to Open on December 26

The Shepaug Bald Eagle Observation Area, in Southbury, opens for its 26th season on December 26, 2010. The Observation Area is run by FirstLight Power Resources, a GDF SUEZ Energy North America company, which owns and operates several hydroelectric facilities along the Housatonic River.

Observation times are Wednesdays, Saturdays, and Sundays between 9:00 AM and 1:00 PM from Sunday, December 26, 2010, through Wednesday, March 16, 2011. Although admission is free-of-charge, advance reservations are required and will be taken beginning on Tuesday, December 7. To make reservations for individuals, families, and groups, call toll-free at 1-800-368-8954 between 9:00 AM and 3:00 PM on Tuesdays through Fridays.

The Shepaug Observation Area is one of the top eagle viewing areas in New-England. It is a popular spot for eagles in winter when the turbulence below the dam keeps the water from freezing, and the fish below the dam provide a ready food source. Local experts report an average of eight eagles feeding per day. Other birds seen at the area include red-tail hawks, sharp-shinned hawks, goshawks, great blue herons, and a variety of waterfowl.

Specialists will be on site with high-powered telescopes to help visitors see the eagles in action and to answer questions about America's national symbol. Visitors are encouraged to dress warmly because the observation area is unheated and to bring binoculars, if possible, given the limited number of on-site telescopes.



The 2010 Connecticut Hunting and Trapping Guide and 2010-2011 Migratory Bird Hunting Guide are on the DEP Web site (www.ct.gov/depl/hunting), and also at town halls, DEP facilities, bait and tackle shops, and outdoor equipment stores. Go to www.ct.gov/depl/sportsmenlicensing to purchase Connecticut hunting, trapping, and fishing licenses, as well as all required deer, turkey, and migratory bird permits and stamps. The system accepts payment by VISA or MasterCard.

Connecticut Wildlife

Subscription Order

Please make checks payable to:
Connecticut Wildlife, P.O. Box 1550, Burlington, CT 06013

Check one:

- 1 Year (\$8.00) 2 Years (\$15.00) 3 Years (\$20.00)

Name: _____

Address: _____

City: _____ State: _____

Zip: _____ Tel.: _____

Check one:

- Renewal
 New Subscription
 Gift Subscription

Gift card to read: _____

Donation to the Wildlife Fund:

\$ _____

Help fund projects that benefit songbirds, threatened and endangered species, reptiles, amphibians, bats, and other wildlife species.

