

U. S. Department of Transportation
Federal Highway Administration

Connecticut Department of Transportation

FHWA-CT-EIS-98-01-D

Route 82/85/11 Corridor
Salem, Montville, East Lyme and Waterford, Connecticut

Reevaluation of the Draft Environmental Impact Statement

June 2006

INTRODUCTION

This reevaluation was prepared in accordance with Federal Highway Administration (FHWA) regulations (23 CFR part 771.129(a)), FHWA Technical Advisory TA 6640.8A, and the National Environment Policy Act regulations (40 CFR 1500, et seq.). A written evaluation of a Draft Environmental Impact Statement (DEIS) is required by FHWA if an acceptable Final Environmental Impact Statement (FEIS) is not submitted to FHWA within three years of the date of the DEIS circulation. The purpose of the evaluation is to determine whether or not there have been changes in the project or its surroundings or new information which would require a supplement to the DEIS or a new DEIS. This reevaluation incorporates the following project developments that have occurred since publication of the DEIS:

- Impact Minimization Study June 1999
- Community-sensitive Upgrade Study, February 2000
- FHWA's Engineering Evaluation of Route 82/85 Upgrade Alternatives, August 2000.
- Interagency streamlining committee – alignment variation study, 2001
- Preferred alternative E(4)m-V3 – development and assessment of impacts, 2001-2002
- I-95/I-395/Route 11 Interchange configuration modifications, 2001-2002
- Advisory Committee and Public Information Meetings, 2001-2002
- Seasonal Pool Inventory and Evaluation, 2002
- U.S. Environmental Protection Agency (EPA)/Weston Solutions, Inc. – evaluation of practicability of Route 82/85 upgrade alternatives, 2002
- EO 13274 Interagency Transportation Infrastructure Streamlining Task Force, 2002
- Draft Statement of Wetlands and Wildlife Habitat Block Impacts and Compensation Plan, October 2002
- DEIS reevaluation, November 2002
- Review of Proposed Route 82/85/11 Corridor, report by Woodlot Alternatives, Inc. for Sierra Club, December 2002
- Residential and Commercial development within the corridor, 1999-2006
- Biological surveys, 2004-2005

BACKGROUND

The DEIS for the Route 82/85/11 Corridor was released for public circulation on March 9, 1999. To date, the FEIS has not been concluded. A prior reevaluation was approved by FHWA on November 29, 2002. Three years have passed since that reevaluation without submission of the FEIS; therefore, a new evaluation of the DEIS has been prepared. This reevaluation incorporates an update of progress on the project, a summary of new information collected since publication of the DEIS, and an evaluation of project impacts.

The project has been active following circulation of the DEIS in 1999. On-going studies and coordination with regulatory agencies has occurred over this period as did a continuation of the integrated National Environmental Policy Act (NEPA), and U.S. Army Corps of Engineers (ACOE) Section 404 permit processes. The focus of these efforts has been to refine the preferred alternative to be brought forth in the FEIS, including modifications to the conceptual roadway alignment and design to minimize impacts. The assessment of project impacts was also completed and planning for mitigation and compensation for those impacts is ongoing. This evaluation incorporates the 2002 reevaluation,

provides a chronology of progress on EIS milestones, and documents new information on the affected environment and assessment of impacts.

SUMMARY OF COMPLETED EIS MILESTONES

DEIS (1999)

The DEIS presented a total of 15 alternatives, including alternatives for both modification (widening) of the existing roadway system (Routes 82 and 85) and construction of an expressway on a new location (completion of the existing Route 11 expressway). An additional alternative concept that could be applicable to any of the alternatives on new location was also discussed. This alternative, referred to as the “Innovative Design Alternative” in the DEIS, suggested that overall roadway impacts may be reduced by modifying the accepted geometric standards for an “expressway” to more closely reflect an “arterial” design in terms of horizontal and vertical geometry. Nevertheless, for purposes of examining the various concepts and locations in the DEIS, it was decided that the current roadway standards would apply and that any modification of the standards could be investigated, as appropriate, in subsequent project phases. The DEIS did not identify a preferred alternative.

Two public hearings were held in April 1999, and the public comment period for the DEIS closed on May 21, 1999. Public comments, as well as comments received from local officials during the comment period, overwhelmingly supported extension of Route 11 on a new location along the alignment identified as E(4) in the DEIS. However, many comments noted substantial interest in the Innovative Design Alternative, noting the potential to reduce impacts to private properties and sensitive natural resource features.

Comments from the regulatory agencies also expressed concern about the extent of the natural resource impacts associated with construction using the standard expressway cross section. Several agency representatives called for further examination of ways in which impacts might be reduced, specifically, by reducing the roadway cross section through application of the modified arterial standard (Innovative Design Alternative) introduced in the DEIS.

Preferred Alternative Development (1999-2001)

Given the focus of the commentary and the apparent support for a reduced cross section alternative, a subsequent study was undertaken following the close of the DEIS comment period. In June 1999, the Connecticut Department of Transportation (ConnDOT) published the report *Impact Minimization Study, Evaluation of Arterial Design Options for the Route 82/85/11 Corridor*. Of the alternatives presented in the DEIS, the E₍₄₎ alignment garnered the most support from local officials, regulatory agencies and the general public. Therefore, the focus of the Impact Minimization Study was limited to this alternative and the impact of applying the modified standards to this alignment.

The modified alignment examined in the Impact Minimization Study was termed E_{(4)m}. This alternative maintained the basic E₍₄₎ alignment, but it was modified to reduce the width of the roadway cross section, thereby minimizing impacts to wetlands. This was largely accomplished by reducing the median width between the northbound and southbound lanes and separating the directions of travel with a

concrete barrier. In addition, the conceptual plan for E₍₄₎m called for constructing additional bridges or bridge spans to minimize impacts to wetlands where crossings were unavoidable.

In other comments submitted by the EPA, it was suggested that the existing roadway (Route 85) could be upgraded in a “community sensitive” manner, while still fulfilling capacity and safety needs. An additional study, the *Community-sensitive Upgrade Study*, was specifically undertaken to evaluate EPA’s suggestion. This study, published in February 2000, showed that the “community sensitive” alternative would not meet the project purposes and needs, and a decision was made by ConnDOT and FHWA to not pursue this alternative further.

In March 2000, the ACOE requested that FHWA provide expert opinion on the community-sensitive upgrade alternative and the other DEIS Route 85 upgrade alternatives. FHWA findings were provided to the ACOE in the report, *Federal Highway Administration’s Engineering Evaluation of Route 82/85 Upgrade Alternatives, August 2000*. The conclusions of this evaluation were that the community-sensitive upgrade would not meet the long term safety and capacity needs of the corridor, and “would only serve as a short term improvement which only temporarily addresses the safety and capacity needs of the corridor”. None of the upgrade alternatives would meet the project purpose and need, or be acceptable to community residents or local officials. FHWA concluded that the upgrade alternatives would not be feasible to implement and would not be practicable.

After publication of these subsequent studies, ConnDOT and FHWA initiated a collaborative process between federal and state agencies and local officials to address remaining concerns and to reach a consensus regarding an approvable expressway configuration. Through this process, measures that could be taken to further minimize impacts were discussed and, accordingly, additional modifications were made to the conceptual plan for the roadway.

In May 2001, the ACOE convened an interagency streamlining committee to evaluate the effects of shifting a portion of the alignment to reduce impacts to aquatic resources and a large habitat block (Habitat Block No. 2). Further study took place during July and August of 2001 to determine how to best achieve this goal. Three potential variations on the E₍₄₎m alignment, identified as E₍₄₎m-V1, E₍₄₎m-V2 and E₍₄₎m-V3, were examined. On September 17, 2001, the ACOE made a determination that either the E₍₄₎m-V3 or E₍₄₎m-V1 alignment variations would satisfy the criteria for the Least Environmentally Damaging Practicable Alternative (LEDPA). Alignment variation E₍₄₎m-V3 was determined by ConnDOT and FHWA to best satisfy the project purposes and needs, while reducing impacts. This determination was the direct result of the findings of the variation study as well as the collaborative process with the regulatory agencies and local officials. The V1 variation would have resulted in substantially increased encroachments upon private properties. It would have required additional complete property takes, and would have come within a few hundred feet of established neighborhoods. For this reason, it was met with strong opposition from East Lyme residents and town officials. The time required to engage in this collaborative process and to undertake the additional studies was necessary to develop a modified version of the E₍₄₎m alignment that effectively satisfies the various

agencies' concerns.

On September 19, 2001 FHWA granted approval for ConnDOT to go forward with the FEIS, advancing the E₍₄₎m-V3 alignment as the preferred alternative. The V3 variation was chosen over the V1 variation because it reduced the extent to which the roadway footprint would impact contiguous habitat areas, while also minimizing additional impacts to the residents of East Lyme.

Throughout the FEIS process, a dialog with federal regulators has continued, with on-going efforts devoted to developing a comprehensive mitigation program that appropriately compensates for remaining project impacts.

**FEIS
Initiation/
Public
Updates
(2001-2002)**

In October 2001, a meeting was held with the Route 11 Advisory Committee to discuss the preparation of the FEIS, the concept for preferred alternative E₍₄₎m-V3 and the details on the ramp configurations of the two new interchanges at Route 161 and I-395/I-95. A subcommittee was formed to focus on options for interchange designs. By January 24, 2002 consensus was reached by the subcommittee on the final configuration of the interchanges, which were then incorporated into preferred alternative E₍₄₎m-V3. The preferred interchanges provide all essential connections with the intersecting roadways and are similar in scale and function to those evaluated in the DEIS for alternative E₍₄₎, but they also minimize impacts to wetlands. A meeting was held on March 11, 2002 with ACOE, EPA, and the U.S. Fish and Wildlife Service (FWS) to discuss the preferred interchange concepts.

On March 12, 2002 a Public Information Meeting was held to present the preferred alternative and to inform the public about impact minimization measures that had been incorporated since the alternatives were evaluated in the DEIS. The following information was provided in displays, handouts and presentations at this meeting: the EIS process and project history; preferred alternative E₍₄₎m-V3 sketch plan and aerial photo graphic, cross sections and cost; sketch plans of all interchange options evaluated; analysis of natural resources, noise and traffic (including specific studies of the interchange and effects on Route 161); impact comparison matrix of DEIS alternatives and preferred alternative E₍₄₎m-V3; and a comment form. The public was informed about studies undertaken since DEIS publication and the following documents were available for review: DEIS, Impact Minimization Study, and Community-sensitive Upgrade Study.

Coordination with the State Historic Preservation Office (SHPO) resumed in September 2001 with a focus on preferred alternative E₍₄₎m-V3. Additional intensive archaeological investigations along the preferred alignment were performed during 2002, in consultation with the SHPO. Documentation of coordination with the SHPO, as well as with the federally-recognized Indian Tribes, will be incorporated into the FEIS and a Memorandum of Agreement (MOA) will be concluded.

At the request of the FWS, an additional field study was performed to inventory and assess seasonal pools located within 500 feet of the area of disturbance of the preferred alternative E₍₄₎m-V3. A report documenting this study, *Seasonal Pool Inventory and Evaluation*, was prepared in 2002.

**Mitigation
Planning
(2002-2006)**

Development of a conceptual compensatory mitigation plan for wetlands and wildlife impacts began in 2002. This involved a coordinated effort by ConnDOT, FHWA, ACOE, EPA, FWS, and the Connecticut Department of Environmental Protection (DEP). A draft plan entitled *Statement of Wetlands and Wildlife Habitat Block Impacts and Compensation Plan* was distributed to the agencies for review and comment in October 2002.

In comments provided on the Draft Compensation Plan, EPA, FWS and DEP indicated that they did not agree with the estimates of acreage of indirect impacts and suggested that an additional evaluation be performed using alternative methods. A preferred method was not specified, however. These agencies also requested that comprehensive inventories of flora and fauna be conducted throughout the Route 11 corridor so that the resource agencies could understand all potential project impacts before agreeing on a compensatory mitigation plan.

In March 2003, the senior executives of the above agencies appointed a working group that was charged with reaching an agreement on project impacts and plans for mitigation and compensation. Progress on this task was facilitated and monitored by these senior executives.

After agency discussions during several meetings of the working group, and at the request of the ACOE, ConnDOT retained the University of Massachusetts to utilize their Conservation Assessment and Prioritization System (CAPS) computer modeling program to analyze indirect impacts and potential compensation areas. The report *CAPS Analysis for the Proposed Route 11 Extension* was distributed in May 2004. The results were consistent with the analysis performed by ConnDOT for the Draft Compensation Plan.

Although ConnDOT and FHWA believed that sufficient information on flora and fauna was provided in the DEIS, it was agreed that additional field surveys would be performed to address resource agency requests. The extent of the surveys to be performed was discussed during a series of meetings of the working group and was finalized in March 2004. Work began on the surveys in June 2004 and was completed in December 2005. The *Biological Survey Report* was distributed in February 2006.

The complexity of the mitigation and compensation planning process, coupled with difficulties in reaching an agreement among the agencies on the details of the plan, led the working group to focus only on developing a mitigation framework to be included in the FEIS. The framework was initiated by the ACOE with input from the working group. It lays out a process and provides a concept for the development of a compensatory mitigation plan that will be undertaken during the design and permitting phase of the project.

The *Mitigation and Compensation Framework* was completed in April 2006 and includes roadway design enhancements to avoid, minimize or mitigate direct and indirect impacts to wetlands (e.g. erosion and sedimentation controls, stormwater management systems, aquatic habitat enhancements, etc.). It also includes compensation for the direct loss of wetland functions and values through restoration and/or establishment of wetlands. Compensation for indirect impacts to aquatic habitats

will involve the acquisition of a minimum of 686 acres of suitable high-value habitat for mitigation and/or preservation.

**Executive
Order 13274
(2004)**

On August 17, 2004, the U.S. Department of Transportation designated Route 11 as a priority project under President Bush's Executive Order No. 13274. The Executive Order (EO) established an Interagency Transportation Infrastructure Streamlining Task Force in 2002 "to enhance environmental stewardship and streamline the decision-making process in connection with major transportation projects. The EO instructs DOT to select priority projects and establishes an interagency Task Force to coordinate expedited decision-making across the federal agencies". The EO resulted in Task Force oversight of progress on the project.

ENVIRONMENTAL IMPACTS OF THE PREFERRED ALTERNATIVE

This evaluation provides a summary of the environmental impacts estimated for preferred alternative E₍₄₎m-V3 as compared with DEIS alternative E₍₄₎. Following the text below, Table 1 provides a summary comparison of impacts for alternatives E₍₄₎m-V3 and E₍₄₎, and Table 2 provides a comparison of E₍₄₎m-V3 with all of the DEIS alternatives.

**Preferred
Alternative
Concept and
Cost**

The concept for DEIS alternative E₍₄₎ was a new four-lane limited access expressway extending from the I-95/I-395 interchange in East Lyme/Waterford to the existing terminus of Route 11 in Salem at Route 82. The typical cross section consisted of four 3.6 m (12 ft) lanes, 3.0 m (10 ft) outside shoulders and 1.2 m (4 ft) inside shoulders. The opposing lanes were separated by a 20 m (66 ft) wide grassed and/or wooded median. New full-service interchanges were included at Route 11/I-95/I-395/Route 1 and at Route 11/Route 161 in Montville. Approximately 5.14 km (3.19 mi) of I-95 and I-95 Interchange 74 at Route 161 in East Lyme would be reconstructed. The cost, estimated in 1999 construction dollars, for DEIS alternative E₍₄₎ was \$255,000,000.

The E₍₄₎m-V3 alignment is also a four-lane limited access roadway that consists of four 3.6 m (12 ft) lanes, 3.0 m (10 ft) outside shoulders and 1.2 m (4 ft) inside shoulders. The opposing northbound and southbound lanes would be separated by a concrete barrier rather than a wide median for most of its 13.7 km (8.5 mi) length, reducing the total width of the roadway cross section. A 61 m (200 ft) right-of-way is proposed along the majority of the alignment. However, a 152 m (500 ft) right-of-way would be maintained within the town of Salem, where the state currently owns land adjacent to the preferred alignment.

The interchanges at Route 11/Route 161 in Montville and Route 11/I-95/I-395/Route 1 in East Lyme/Waterford are similar to those of DEIS alternative E₍₄₎. The latter would provide all necessary connections between Route 11, I-95, I-395 and Route 1. Approximately 4.8 km (3 mi) of I-95 would be reconstructed. The differences in the configuration of this interchange between E₍₄₎ and E₍₄₎m-V3 include: changing the I-95 northbound to I-395/Route 11 northbound ramp from a tight loop in the southeast quadrant to an extended curve in the northeast quadrant; reinstating the northbound ramp from Route 1 and southbound ramp to Route 1, versus elimination of all movements to and from Route 1; and improvements to existing ramps and

intersections at I-95 Interchange 74 and Route 161 in East Lyme rather than full reconstruction.

The wide median used for DEIS alternative E₍₄₎ was eliminated to reduce wetland and other right-of-way impacts. Other impact minimization modifications incorporated into the alignment included geometric adjustments (lower horizontal minimum radius, higher maximum slope limit), the addition of bridges over wetlands, and a shift in the location of the southern portion of the alignment. Seven bridges were added and six bridges were extended to minimize impacts to wetlands and wildlife. The alignment shifts approximately 380 m (1,250 ft) to the west south of Route 161 to minimize the fragmentation of Habitat Block No. 2 and archeological resources.

The cost for preferred alternative E₍₄₎m-V3 is estimated to range between \$462,500,000 and \$647,500,000, in projected year of expenditure (2012) dollars. Of this, between \$191,500,000 and \$268,000,000 is associated with the I-95/I-395/Route 1 interchange. Much of the higher cost of the preferred alternative is attributed to the additional bridges and other structures added to minimize environmental impacts and as a result of the annual rate of inflation projected for the year of expenditure.

Traffic and Transportation

The traffic capacity analysis performed for DEIS alternative E₍₄₎ projected that levels of service (LOS) under the 2020 build condition on Route 85 and at intersections, between Route 82 and I-395, would improve as compared with the 2020 no build condition from unacceptable (LOS E or F) to acceptable (LOS D or better).

Traffic flow with preferred alternative E₍₄₎m-V3 would be the same as with alternative E₍₄₎, and traffic LOS would also be the same.

Both the E₍₄₎ and the E₍₄₎m-V3 alternatives provide full service interchanges at Route 82, Route 161, and I-395/I-95. Because changes (described above) were made in the configuration of the ramps for preferred alternative E₍₄₎m-V3, at Route 11, I-395 and I-95, an additional highway capacity analysis was performed to determine the effects on traffic flow at the interchange.

LOS analyses were conducted for the 2020 no build condition and for E₍₄₎m-V3, using the 2000 Highway Capacity Manual and Highway Capacity Software, for I-95 mainline segments, weaving areas, ramp junctions, and signalized and unsignalized intersections in the I-95 corridor between Interchanges 74 and 81. This analysis provided a higher level of detail for I-95 than had been provided in the alternatives analysis in the DEIS.

Mainline segments: Under the 2020 no build condition, all northbound and southbound freeway segments along I-95 between interchanges 74 and 81 are projected to operate at LOS E or LOS F during the PM peak hour period and in the northbound direction during the AM peak hour. Conditions improve to LOS C and D for the southbound AM peak period. With the interchange configuration proposed for E₍₄₎m-V3, this condition would improve to LOS D or better, largely because of the addition of a third lane in both the northbound and southbound direction on I-95 proposed for the new interchange.

Weaving analysis: The weaving analysis, performed for I-95 northbound and southbound between Route 1 and I-395, estimated a LOS F for the weaving condition for the 2020 no build peak hours. With E₍₄₎m-V3, the existing weaving movements would be eliminated.

Ramp junctions: Under the 2020 no build condition, most of the I-95 ramp junctions are projected to operate at LOS E or LOS F during the PM peak period and on the northbound mainline during the AM peak period. The southbound mainline AM peak period condition is estimated to be LOS C or better. With E₍₄₎m-V3, the I-95 ramp junctions are estimated to operate at LOS D or better during the peak periods. New proposed ramp junctions, associated with I-395, Route 11 and the Route 1 frontage road, are projected to operate at LOS A, B, or C as a result of the improvements.

Intersections: Intersections in proximity to I-95 Interchanges 74 through 81 were also analyzed. Of nine intersections analyzed, two are projected to operate at LOS F under the 2020 no build condition:

- Interchange 74, Route 161 and I-95 southbound off-ramp
- Interchange 75, Route 1 south and I-95 southbound off-ramp

Intersection improvements proposed as part of preferred alternative E₍₄₎m-V3 are projected to improve operations at these intersections to LOS D or better.

The traffic forecasting division at ConnDOT has reviewed the DEIS 2020 projected traffic volumes in light of recent (2004) automated traffic recorder counts collected at several locations on Routes 82 and 85. A comparison of the 2004 counts with the projections provided in the DEIS determined that the traffic volume increase predicted in the DEIS is consistent with current volumes.

Other roadway projects ongoing within the Route 11 corridor include a roadway safety improvement project on Route 85, which is scheduled to begin in 2007 and be completed in 2009. This project was considered the base condition in the traffic analysis for the DEIS. The reconstruction of Interchange 81 on I-95 at Cross Road is currently underway and expected to be completed in 2006. This project was included in the base condition for the traffic analysis performed for the I-95 interchange for preferred alternative E₍₄₎m-V3. A Feasibility Study containing recommendations for improvements to I-95 between Branford and Rhode Island was completed in 2004.

There have been no changes in traffic conditions within the corridor or to the preferred alternative that would affect the validity of the traffic analysis documented in the DEIS.

Emergency Management

Regional emergency management measures, including emergency evacuation routes and estimated evacuation times from the region's nuclear power plants, were discussed in the DEIS. Since distribution of the DEIS, several changes have occurred relative to the Millstone and Haddam Neck nuclear power plants.

In April 2001, Dominion Resources, Inc. purchased the Millstone Point Power Station. Dominion Resources and the Town of Waterford have established East Hartford as the host community (formerly Wethersfield) that would provide food and shelter to Waterford residents in the event an evacuation is necessary. East Hartford continues to be the host community for Montville and New Haven the host for East Lyme. Montville and Waterford rely on Route 85, Route 82 and Route 11 as an evacuation route, with I-95 and I-395 as alternates. In view of a heightened awareness of the threat of terrorism that has occurred since September 11, 2001, the Connecticut Office of Emergency Management and the Town of Waterford have taken steps to improve emergency evacuation readiness.

As of the time of writing of the DEIS, the Connecticut Yankee nuclear facility at Haddam Neck was scheduled to be shut down. The plant is no longer operating.

There have been no changes that affect the impact analysis provided in the DEIS. The Route 82, 85 and 11 corridor continues to be a vital emergency evacuation route.

Noise

The noise analysis performed using FHWA's STAMINA 2.0 for DEIS alternative E₍₄₎ resulted in seven receptors predicted to exceed FHWA Noise Abatement Criteria (NAC) in 2020 as a result traffic traveling on the new roadway.

The noise analysis performed for E₍₄₎m-V3 resulted in only one new NAC exceedance over the no build condition in 2020. The analysis involved the evaluation of 26 sensitive receptors located within 300 feet of the proposed roadway. Noise levels were predicted using FHWA's STAMINA 2.0 for the 2020 no build and 2020 build (E₍₄₎m-V3) conditions. This noise model was used for the analysis of E₍₄₎m-V3 to be consistent with the DEIS, which was prepared prior to the release of the newer noise analysis models. Noise levels at five receptors, located along I-95, exceeded NAC under the 2020 no build. One additional receptor, on Beckwith Hill Drive, was projected to increase 15 decibels in 2020 with E₍₄₎m-V3, for a total of six receptors approaching or exceeding NAC. The five receptors located along I-95 would actually experience an improvement because I-95 would be shifted farther away, but still required consideration for mitigation. A noise barrier analysis using the FHWA OPTIMA model determined that these five receptors would benefit from noise barriers and would likely qualify under cost/benefit guidelines. Because of elevations at Beckwith Hill Drive, the analysis determined that a noise barrier might not be effective there.

Specific conditions along the roadway alignment will be reassessed during the roadway design process, and it is possible that any changes in the location or elevation of the roadway may affect the mitigation modeling results and thus the location where barriers would be effective. The noise analysis will be updated at that time using the FHWA Traffic Noise Model (FHWA TNM) Version 2.5 (or the latest version).

Preferred alternative E₍₄₎m-V3 reduced new NAC exceedances by six receptors as compared with DEIS alternative E₍₄₎. Mitigation at five receptors currently exceeding NAC will reduce noise and result in an improvement over the no build alternative.

Air Quality

The microscale analysis documented in the DEIS indicated that there would be no violations of the one-hour or eight-hour National Ambient Air Quality Standards (NAAQS) for the full build expressway alternatives, including alternative E₍₄₎. The mesoscale analysis provided in the DEIS concluded that construction of DEIS alternative E₍₄₎ would require that an indirect source permit be granted by the DEP Bureau of Air Management.

The conditions of the DEIS microscale analysis are the same for preferred alternative E₍₄₎m-V3, therefore a new analysis is not necessary. However, because of changes in the configuration of the preferred interchange at Route 11/I-95/I-395, intersections not previously included in the DEIS microscale analysis, and projected to have an LOS of D or worse in 2020, had to be evaluated. LOS F was projected at the intersection of the I-95/I-395 southbound ramp and Route 1 (Interchange 75) under 2020 no build conditions. Since this intersection would be affected by the proposed changes, an additional analysis was required.

A microscale analysis was performed for Interchange 75 utilizing the EPA MOBILE5b model, which was also used for the DEIS. Concentrations of one-hour and eight-hour carbon monoxide (CO) levels were predicted at this intersection. The microscale analysis indicated that there would be no violations of the one-hour or eight-hour NAAQS.

Since the results of the CO microscale “hot spot” analyses were originally published in the DEIS in 1999, a new vehicle emissions factors model (Mobile6) was released by EPA in January 2002, and is now in use. In June 2003, a comparison of Mobile5 and Mobile6 CO emissions factors was included in a presentation entitled, "Survey of Screening Procedures for Project-Level Conformity Analyses" by Jeffrey Houk and Michael Claggett, Ph.D., of FHWA, given at the 96th Annual Conference of the Air & Waste Management Association in San Diego, California. Among their observations, the authors reported that ambient CO concentrations nationwide are in sharp decline. They also presented a comparison of CO emissions factors for queuing and free-flow conditions that indicate these factors are lower using the Mobile6 program than for the Mobile5 program for all years after 2003 (see <http://www.fhwa.dot.gov/resourcecenter/surscreenproc.pdf>). Based on Houk and Claggett's documented correlation between Mobile5 and Mobile6 CO emissions factors, together with the results of the CO microscale “hot spot” analyses performed for preferred alternative E₍₄₎m-V3 (which used Mobile5b CO emissions factors), for the purpose of this reevaluation, the FHWA considers it acceptable to rely on this correlation to support the conclusions concerning predicted CO concentrations (based on Mobile5b CO emissions factors). To be consistent with current EPA regulations and FHWA policy, revised CO microscale “hot spot” analyses using Mobile6 emissions factors will be prepared and incorporated into the FEIS.

Conditions that would affect the mesoscale analysis remain unchanged with the preferred alternative from those analyzed in the DEIS; therefore, no additional mesoscale analysis was necessary. As reported in the DEIS for alternative E₍₄₎, construction of preferred alternative E₍₄₎m-V3 would require that an indirect source

permit be granted by the DEP Bureau of Air Management.

FHWA has recently established interim guidance for addressing Mobile Source Air Toxics (MSAT) because of an emerging need to include this analysis in NEPA documents. According to the FHWA Interim Guidance on Air Toxics Analysis dated February 3, 2006, the preferred alternative is a project with low potential MSAT effects, for which a qualitative level of analysis is applicable. The preferred alternative corresponds to item four of Appendix B of the guidance – a new interchange with new connector roadway, with a project design year average annual daily traffic (AADT) of less than 140,000. The FEIS will include a qualitative analysis of MSATs as described in the guidance.

Preferred alternative E₍₄₎m-V3 will not result in adverse effects on air quality. Additional air quality analysis requirements effective since publication of the DEIS will not result in the identification of new adverse impacts associated with the project.

Biological Diversity

Studies of biological resources undertaken for the DEIS involved literature searches, map and aerial photo review, consultations with DEP and field visits. Substantial data collection for flora and fauna was performed in the field during wetlands assessments.

At the request of the natural resource regulatory agencies, additional species-specific biological field surveys were performed in the Route 11 corridor between October 2004 and October 2005. The detailed information provided by the surveys is intended to augment the analysis performed for the DEIS and to provide additional data for the mitigation planning process.

Surveys were conducted using widely accepted survey protocols for determining the presence of wildlife species and wildlife habitat. Special efforts were made to detect the presence of federally listed and state listed species included in the DEP *County Report for Connecticut's Endangered, Threatened, and Special Concern Species, New London County*, and the 2004 list for Connecticut, with a focus on wetland-dependent species. Development of target lists of species to be surveyed involved a review of a multitude of public and private data sources, published literature, and inventorying efforts currently underway by other entities (e.g. UCONN database on Connecticut Odonata). The scoping of survey protocols involved coordination with DEP and the interagency Route 11 working group. Consultations with specialists and extensive scientific literature and data review informed the development of the survey protocol. Final decisions on surveys to be performed were made by the ACOE.

The overall limits of the survey area were confined to undeveloped areas (e.g. habitat blocks) within the Route 11 corridor, which may be directly or indirectly affected by the new roadway alignment. Surveys were limited to land to which the property owner granted access permission. New information documented in the surveys is included in the following sections. A summary of documented species is provided in Table 3.

Vegetation

The DEIS reported the primary plant communities within the corridor study area to be

dominated by mixed oak, chestnut oak, red maple, maple-ash and pine-spruce communities. The DEIS also discussed the presence of shrubland and grassland communities within the study area. The DEIS noted 34 plant species that are representative dominant species of the vegetation communities identified in the study area. Although not listed in the DEIS in an effort to keep the document clear and concise for public review, numerous other non-dominant species were documented in field investigations. Approximately 270 vegetation species were documented during data collection for the DEIS.

The DEIS reported that small whorled pogonia (federally threatened/state endangered), could potentially be present in the Route 11 corridor based on habitat requirements and county records. Also documented as potentially occurring in the study area were three other listed plant species included in the DEP Natural Diversity Database (NDDDB) (see *Threatened and Endangered Species*).

The 2004-2005 field survey included a vegetation classification survey to further characterize vegetation communities present within the corridor. Surveys were conducted along 16 transects established for the avian survey (discussed below), which traverse sections of the preferred roadway alignment as well as greater portions of the habitat blocks identified in the DEIS. All of the community types documented in the DEIS were identified during the 2005 surveys. In general, the more refined vegetation associations identified during the surveys were very similar to the vegetation community types described in the DEIS. Over 40% of the survey area is dominated by the northern red oak/black oak/chestnut oak association.

Although the survey was not designed to identify all species, 544 species of vascular plants were documented along the transects. The 2004-2005 survey documented additional species not identified during DEIS surveys because it included a more in-depth investigation of upland areas. The additional species documented during the field survey, however, do not represent a significant change in conditions of the study area or the assessment of impacts. The community types are essentially the same as reported in the DEIS, with a few exceptions.

Five listed species were identified: small whorled pogonia (federally threatened/state endangered), creeping bush-clover (state special concern), New England grape (state special concern), slender needlegrass (state special concern), and purple milkweed (state special concern). The E₍₄₎m-V3 alignment, as well as all of the DEIS full build alternatives, would directly impact two areas containing listed plant species that occur in the early successional habitat created by previous land clearing. The New England grape and slender needlegrass are located on the power line right-of-way in Montville, and creeping bush-clover and slender needlegrass were found at the existing rock cut on the unfinished section of Route 11, south of Route 82 in Salem. Other listed plant species reported in the DEIS or found during the 2005 vegetation survey would be avoided by the E₍₄₎m-V3 alignment.

An independent vegetation species study was prepared by Woodlot Alternatives, Inc. for the local Sierra Club chapter in 2002 and submitted to FHWA and ConnDOT for review and consideration. This study noted a potential impact to the plant sweet gum

(*Liquidambar styraciflua*) as a concern. The DEIS identified one sweet gum individual, a species of special concern (native populations only) according to DEP, in the southeast portion of the DEIS study area along the shore of Lake Konomoc during field evaluations for the Route 85 widening alternatives. No other individuals were detected along any of the other alternative alignments. This species has not been detected since that time and was not encountered during the 2004-2005 field surveys.

The grass *Sphenopholis nitida* was reported by the Woodlot study to be an uncommon species observed in the study area. This species does not appear on state or federal lists, even as an historical species, according to DEP lists from 2004, 1998 and 1995. This species was observed in the field and reported in the Biological Survey Report.

The Woodlot study also reported that there is a general "lack of invasive species" within forest blocks of the corridor. While this may have been the general case in the late 90's, invasive species have since spread throughout much of the corridor, including forest blocks, due to natural and anthropogenic dispersal. While the 2004-2005 biological survey focused on vegetation communities, 19 species of non-native invasive plants were documented along the survey transects. During the biological survey fieldwork, invasives were most frequently, although not exclusively, encountered in areas of logging activity, off-road motor vehicle trails, and other disturbances.

The vegetation surveys conducted in 2004-2005 for preferred alternative E₍₄₎m-V3 as well as information collected from other sources did not result in significant changes in the assessment of adverse impacts to vegetation described in the DEIS analysis for alternative E₍₄₎.

Fisheries and Aquatic Biota

The DEIS reported that the major streams within the Route 11 corridor study area are of excellent water quality (DEP designated Class A) and provide good habitat for fish and other aquatic biota. It was estimated that DEIS alternative E₍₄₎ could impact streams or other wetlands at 44 locations including eight perennial stream crossings. No known threatened or endangered aquatic species were reported in the DEIS, based on consultations with state and federal resource agencies.

Additional data on aquatic resources was collected during the 2004-2005 biological surveys. Surveys for aquatic invertebrates were conducted using stream bioassessments and visual searches along 10 stream reaches representing the variety of habitat types found in the Route 11 corridor as well as different subregional drainage basins. At each site, a habitat assessment and benthic macroinvertebrate (BMI) sampling was conducted. Among the specimens of BMI collected, laboratory analysis confirmed the collection of the tiger spiketail, a state threatened dragonfly, from a first order tributary to Latimer Brook originating in Habitat Block No. 2.

The results of the aquatic survey were consistent with the analysis presented in the DEIS in that the representative streams evaluated in this survey meet DEP criteria for benthic invertebrates that inhabit Class A streams.

Targeted surveys were also performed for the aquatic and terrestrial phases of the Odonata (dragonflies and damselflies) with a focus on the potential presence of listed species. The Odonata surveys resulted in the identification of 60 species of Odonata, including the state threatened tiger spiketail, also identified during the BMI sampling. In addition, one state threatened species of butterfly, the frosted elfin, was encountered during the Odonata surveys at the southerly end of the existing rock cut south of Route 82. Both of the identified listed species could be directly impacted by the either preferred alternative E₍₄₎m-V3 or DEIS alternative E₍₄₎.

Impacts to streams and corresponding adverse impacts to aquatic biota were minimized in the concept for preferred alternative E₍₄₎m-V3 by the addition and/or extension of bridges or use of oversized, natural bottom culverts at major streams, tributaries and other wetlands. Preferred alternative E₍₄₎m-V3 impacts streams or other wetlands at 41 locations including four perennial stream crossings.

The total area of aquatic impact and corresponding adverse effects on aquatic biota was reduced with E₍₄₎m-V3 as compared with DEIS alternative E₍₄₎ (also see *Wetlands and Water resources*).

Avian

The DEIS documented 117 species of birds that were reported in the literature as confirmed, probable or possible breeders within the Route 11 corridor and surrounding area, including coastal habitats. The forest habitat identified in the corridor study area was noted as habitat for migratory species, included neotropical migrants. The DEIS identified the listed species Bald Eagle and Peregrine Falcon as potentially occurring in the corridor as transient species. The listed species Savannah Sparrow (a suspected migrant) and Red Shouldered Hawk (a suspected breeder) were also reported. The Cerulean Warbler, currently under review for potential listing as threatened by FWS (Federal Register October 23, 2002), was observed and reported as a migrant, while the state special concern Brown Thrasher was observed and noted as a probable breeder.

Potential impacts to currently, formerly, or potentially future listed species were not necessarily addressed on an individual species-specific basis in the DEIS, but rather by generic groups. For instance, the Red-shouldered Hawk, which has since been delisted as a special concern species, is considered a forest interior species that prefers forested wetlands and adjacent mesic woodland. The impacts to avifauna associated with forest interior fragmentation and loss of palustrine forested wetland habitat discussed in the DEIS would apply to this species, while the discussion regarding impacts to neotropical migrant passerines would apply, at least in part, to the Cerulean Warbler, Brown Thrasher, and Savannah Sparrow.

Avian surveys were conducted in 2004-2005 to augment information on the bird species within the corridor that may be directly or indirectly affected by the E₍₄₎m-V3 alignment, especially federal and state listed species documented for New London County. Through a combination of selected survey methods, 144 species were recorded over three separate survey seasons. This comprehensive tally includes a mixture of winter residents, spring migrants, summer breeders, and summer residents.

Of these, there were 86 species of confirmed, probable or possible breeders. In addition, a cumulative list of avifaunal species observed in the survey area throughout the biological survey study period (October 2004 – September 2005) was provided. Additional rare avifauna expected to frequent the survey area outside of the seasonal timeframe covered by the biological surveys were also discussed

The role of study area habitats to avian species included on conservation priority lists from the following organizations were included in the report: World Conservation Union (IUCN) – IUCN Top Priority List; Partners in Flight – Highest Priorities for Southern New England and Connecticut; Audubon–Watch List Avifauna; FWS Conservation Concern (National and Continental); FWS Conservation Concern (Priorities for Northeast US and Connecticut); Additional Species that may be of concern in Connecticut (Lower Concern)

Twelve state listed bird species were identified during the survey efforts within or adjacent to the study area, and two of these may be directly impacted by E₍₄₎m-V3. State listed species that were observed in appropriate habitat during the breeding season are suspected breeding residents. Among these species, the state special concern species Brown Thrasher and Bobolink were found to occur within anticipated direct impact areas. The Bobolink was not a state listed species until 2004. Very limited suitable breeding habitat exists for the Bobolink within the alignment corridor, therefore impact to this species is limited. The same habitat and location where the Bobolink was observed would likely also support a population of Savannah Sparrows, since the two species tend to co-occur in Connecticut cool-season grasslands.

Other state listed species observed in appropriate breeding habitat during the breeding season were Whip-poor-will, (Special Concern), Great Egret (Threatened), and Snowy Egret (Threatened), but these species were found outside the E₍₄₎m-V3 alignment direct and indirect impact areas. The Bald Eagle, which is also federally threatened, and the Common Loon (Special Concern) were noted during migration and are not suspected breeding residents. The Cerulean Warbler was observed during the spring survey and is believed to be a migrant species in the corridor.

Avian communities documented by these surveys were similar to those identified in the DEIS. Habitat Blocks 2 and 4 had the highest percentage of forest interior bird species. A majority of the bird population detected during the breeding season was composed of neotropical migrant species, as was originally anticipated and reported in the DEIS. Potential direct impacts to two state special concern species were identified that would occur for either preferred alternative E₍₄₎m-V3 or DEIS alternative E₍₄₎.

While additional data has been compiled on specific avian species for preferred alternative E₍₄₎m-V3, the overall characterization of impacts to avian communities is comparable with the anticipated impacts reported in the DEIS. That is, potential direct impacts to two state special concern species were identified that would occur for either preferred alternative E₍₄₎m-V3 or DEIS alternative E₍₄₎. Fragmentation of contiguous forest habitat blocks would likely impact forest interior species, a large component of which is composed of neotropical migrants. No significant changes have been identified.

Herpetofauna

The DEIS reported that 17 herpetofauna species were observed within the Route 11 corridor during field reviews, and that 36 species were reported in scientific literature sources as known to occur in this area of southeastern Connecticut. Impacts to these species were reported as direct impacts to individuals and habitat and indirect impacts from water quality degradation, barriers to movement and forest fragmentation.

The Woodlot Alternatives report noted the Blanding's turtle (*Emydoidea blandingii*) as a species that could be adversely affected by impacts to vernal pools. This species has been documented in "widely separated sections of Connecticut" as reported by Klemens (1993). The range of the Blanding's turtle is not reported to extend into Connecticut by Degraaf and Yamasaki (2001). It is not reported to occur in Connecticut according to Klemens (2000), DEP (1988), and Hammerson (2004). This species is still considered non-indigenous and no additional individuals have been reported since Klemens (1993) was published (Gruner, personal comm.)

Herpetofauna surveys conducted in 2004-2005 focused on two state listed wetland species – eastern ribbon snake and wood turtle. Twenty-six herpetofaunal species were encountered during the survey. Two state special concern species, the eastern ribbon snake and the eastern box turtle were confirmed residents of the survey area. The eastern ribbon snake was found in wetlands associated with Latimer Brook that are outside of the E₍₄₎m-V3 alignment direct impact area, and along Shingle Mill Brook where a bridge for the proposed highway is planned. The eastern box turtle was encountered near lower Pember Road, outside of the anticipated impact area. A possible nesting site for the wood turtle, a state species of special concern, was encountered along Latimer Brook outside and upstream of the E₍₄₎m-V3 alignment direct impact area. The targeted herpetofauna surveys added an additional nine observed herpetofauna species for the survey area above those observed during DEIS evaluations. In addition, a cumulative list of herpetofauna species expected to occur in the survey area (based on identified habitats and specific habitat requirements of the species) was provided.

Potential impacts on herpetofauna were reduced with preferred alternative E₍₄₎m-V3 because of the reduction in direct wetland and upland impacts, the addition and extension of bridges and oversized culverts, and a reduction in the fragmented area of Habitat Block No. 2.

Mammalian

The DEIS reported that the corridor study area could potentially support 45 species of mammals. Habitat Block No. 2 was identified as particularly valuable habitat to top mammalian carnivore predators that require large un-fragmented forest blocks for suitable habitat, such as the bobcat and mink. The DEIS identified linear forested habitat areas that function as habitat corridors used by mammals and other wildlife. The DEIS noted that the New England cottontail is likely to occur within the project corridor. This species is a candidate species under review by the FWS for potential listing as threatened or endangered (Federal Register notice May 11, 2005).

The 2004-2005 surveys included the identification of wildlife movement corridors along the preferred alignment E₍₄₎m-V3. Surveys for mammal tracks and other signs were conducted in winter and spring, and collectively resulted in the documentation of 16 mammalian species. Seven mammal species were recorded during the survey in addition to those already listed as observed in the DEIS. Predators identified as suspected in the DEIS, specifically bobcat and mink was confirmed during the surveys. Fisher, also a top carnivore, was identified within the two large contiguous forest habitat blocks, and sign of black bear was also observed.

The winter and spring survey efforts served to identify and further define movement locations across the proposed alignment and within all habitats. Movement corridors were identified for river otter, mink, red fox and white-tailed deer. These animals would likely utilize the many bridges and oversize culverts included in the preferred alternative. These structures would function as wildlife passages and help to maintain habitat connectivity. It was found that coyote, gray fox, fisher, and bobcat did not necessarily use distinct corridors but instead may move in more stochastic movements while actively searching for food. It is more difficult to estimate the usage of passage structures for these species.

Targeted surveys were also conducted for New England cottontail in 2004-2005. Mitochondrial DNA testing was utilized to confirm the presence of this species at two locations along the alignment corridor (the power line in Montville and the rock cut on the unfinished section of Route 11 south of Route 82), while at a third potential location the testing was inconclusive. The habitat at all three locations was created by past human disturbance and consists of deciduous cover containing a high woody stem count density in the shrub layer.

The E₍₄₎m-V3 alignment would result in an overall reduction in mammalian impacts when compared with alternative E₍₄₎. This is because E₍₄₎m-V3 would result in less direct impact to habitat because of the reduction in roadway width, additional bridges and reduced fragmented land area in Habitat Block No. 2. Both alternatives would affect the candidate species, New England Cottontail. No changes in the project surroundings have been identified.

Threatened and Endangered Species

The DEIS documented six state or federal listed species reported by the DEP NDDDB or FWS as potentially occurring within the project area. Three state listed special concern species were observed within the study area. These include reports of four listed plant species – small whorled pogonia (federally threatened/ state endangered), Small's yellow-eyed grass (state endangered), American chaffseed (federal endangered/state special concern-historic record) and thread-leaved sundew (state special concern-historic record), and five bird species – Bald Eagle (federal threatened/state endangered), Peregrine Falcon (state endangered), Red-shouldered Hawk (state special concern), Savannah Sparrow (state special concern) and Brown Thrasher (state special concern). Potential direct impacts were identified for only the Brown Thrasher as a probable breeding resident within the impact area of the DEIS alternatives, including E₍₄₎.

Information on federal and state threatened and endangered species provided in the DEIS was augmented in evaluations of preferred alternative E₍₄₎m-V3 and during the 2004-2005 biological surveys. The surveys confirmed or reconfirmed the presence of 23 listed species within the survey area, including two federally listed, plus two species under review for federal listing. Direct or indirect impacts to nine listed species (including one FWS candidate species under review) are anticipated. The locations where these species were detected were presented in the sections above. The impacts to these listed species would occur with either preferred alternative E₍₄₎m-V3 or DEIS alternative E₍₄₎.

The nine species include: three state special concern plant species – creeping bush-clover, New England grape, and slender needle grass; two state special concern bird species – Bobolink and Brown Thrasher; one state special concern herpetofauna species – eastern ribbon snake; and two state threatened invertebrates – tiger spiketail (dragonfly) and frosted elfin (butterfly); and one FWS candidate species of mammal – New England cottontail.

While additional data have been compiled on specific threatened and endangered species for preferred alternative E₍₄₎m-V3, the nature of the impacts is comparable with the anticipated impacts documented in the DEIS. No significant changes have occurred.

Habitats

Unfragmented forest blocks, grassland blocks, wetlands and wildlife corridors are habitat features of the Route 11 corridor that were discussed in the DEIS. Six forest habitat blocks were identified, two of these (Habitat Blocks No. 1 and 2) are greater than 200 ha (500 ac) and are considered important forest habitat. Habitat Block No. 2 was identified as the largest habitat block in the corridor study area. Grassland habitat is present in the study area, but not of sufficient size to be considered significant blocks. Five wildlife corridors were identified that consist of 50 ha (123 ac) linear forested areas that connect the larger forest blocks. The DEIS reported that many of the wetlands in the corridor function as wildlife habitat.

No additional forest blocks, grassland blocks, or wildlife corridors were discovered in studies conducted after publication of the DEIS for preferred alternative E₍₄₎m-V3. Since publication of the DEIS, the total area of habitat block in the corridor is gradually being reduced by ongoing development. Examples include a new housing subdivision constructed in Habitat Block No. 1 and a golf course under development in Habitat Blocks No. 4 and 5. Clearing of areas of forest and evidence of soil testing has been observed within Habitat Block No. 2. Housing developments along Route 161 are continuing to expand into the western side of Habitat Block No. 2.

Field surveys conducted in 2004-2005 substantiated the habitat descriptions provided in the DEIS through the confirmation of vegetation communities and species present, the wildlife identified in the survey area and corresponding habitat qualities. No new unique habitats were identified as a result of the field surveys, although several are known to exist adjacent to the survey area. These include bogs that have formed in gravel pits in the vicinity of Davis Pond and Lake Konomoc to the east, and Atlantic

White Cedar Swamps reported by Dr. Richard Goodwin, in comments received on the DEIS, to occur in the area along or adjacent to DEIS alternatives G and H - to the west of the survey area. These habitats do not occur within the survey area.

Impacts to habitat blocks were minimized with alternative E₍₄₎m-V3 by a reduction in the total width of the roadway footprint and the shift of a two-mile segment of the alignment that resulted in the minimization of fragmentation impacts to Habitat Block No. 2. Alternative E₍₄₎ would have resulted in the fragmentation of approximately 31% of the habitat block land area, while E₍₄₎m-V3 would fragment approximately 13.5%. The wildlife value of the fragmented land area has already been impacted in many areas by the proximity of both existing and planned subdivisions, logging, clear cutting, recreational uses (e.g. hunting, all terrain vehicles) and existing forest roads. Preferred alternative E₍₄₎m-V3 also reduced impacts to wetland wildlife habitat because of a reduction in wetland impacts as compared with DEIS alternative E₍₄₎.

Preferred alternative E₍₄₎m-V3 eliminates a wide median between the north and southbound lanes, which necessitates the use of a concrete barrier to provide safe separation between the two directions of travel. The use of these barriers within the habitat blocks will reduce the permeability of the roadway to wildlife movement and cause an increase in wildlife mortality from vehicle collisions. As discussed under *Mammalian* above, the addition of bridges, and other structures would minimize impediments to wildlife movement where wildlife use these structures for passage under the roadway. The E₍₄₎m-V3 preferred alternative alignment includes 11 bridges across watercourses and wetlands. Maintaining connectivity between forest blocks and allowing passage along these high value corridors will minimize impacts to wildlife habitat. Some of these bridges are proposed in areas where culverts were originally proposed for the DEIS alternatives. Other bridges proposed for the E₍₄₎m-V3 preferred alternative include extended spans that incorporate upland riparian area, as opposed to shorter spans included in the DEIS alternatives. In addition, preliminary analysis determined that at least five over-sized culverts could be provided along the alignment, increasing the connectivity among existing habitats and resulting in a roadway that provides a wildlife crossing at intervals of 0.5 miles. This frequency provides a higher degree of permeability than other recent highway construction projects in the U.S.

An overall reduction in impacts to wildlife habitat was achieved with preferred alternative E₍₄₎m-V3. No changes in the project surroundings have been identified.

Topography and Geology

DEIS alternative E₍₄₎ was estimated to require 4,560,300 cubic meters (m³) (5,964,300 cubic yards (y³)) of earth cuts and 2,889,100 m³ (3,778,600 y³) of fill.

Preferred alternative E₍₄₎m-V3 incorporates lower-impact design standards that reduce the volume of cuts and fills along the alignment as compared with all of the DEIS full-build expressway alternatives. Total earth cuts required would be approximately 4,241,300 m³ (5,547,100 y³), with almost half occurring at the interchange of Route 11 and I-395/I-95. The total volume of fill required would be 2,677,000 m³ (3,501,200 y³). Approximately one third of total fill would occur at the Route 11/I-395/I-95 interchange.

Impacts to geologic features would be the same for preferred alternative E₍₄₎m-V3 as those identified for the alternative E₍₄₎. The magnitude, however, would be less because of the reduced roadway cross section and minimization of earth cuts and fills.

Water Resources and Water Quality

The DEIS reported that surface waters in the corridor are considered to be Class A and groundwater is Class GA. The DEIS estimated the effects from the introduction of pollutants to surface water via untreated roadway runoff. Exceedances of acute aquatic life criteria for copper, lead and zinc would result with all the build alternatives including E₍₄₎ during the majority of storm events. Exceedances were sharply reduced when analyzed with stormwater treatments. No Class I or II public water supply watershed land impacts were reported for DEIS alternative E₍₄₎. Groundwater impacts for E₍₄₎ consist of the placement of 1.4 ha (3.5 ac) of new roadway pavement and impermeable structures over potential recharge areas of high yield aquifer.

Impacts to surface waters are the same for preferred alternative E₍₄₎m-V3 as reported for the build alternatives in the DEIS. Potential impacts to Class I and II watershed lands have also been avoided with the preferred alternative. Impacts to high yield aquifer recharge areas have been reduced to 0.68 ha (1.7 ac) with E₍₄₎m-V3.

No changes to water resources or water quality have been identified for the preferred alternative. Impacts to groundwater recharge areas have been reduced.

Wetlands

Direct wetland impacts estimated for DEIS alternative E₍₄₎ based on Natural Resource Conservation Service (NRCS) soils mapping were 14.27 ha (35.26 ac). The most frequently impacted functions and values noted for alternative E₍₄₎ were wildlife habitat, groundwater discharge/recharge, and nutrient retention/transformation.

Wetlands along preferred alternative E₍₄₎m-V3 were delineated according to state of Connecticut and federal guidelines. Delineations occurred on land for which property owner permission to access was granted; 87% of the alignment was accessible. For the remaining properties that could not be accessed, wetland impact was calculated using NRCS soils mapping. The preferred alternative would directly impact 6.7 ha (16.6 ac) of wetlands, a significant reduction in wetland impacts as compared with DEIS alternative E₍₄₎.

Wetland functions and values for wetlands identified along the realigned section of preferred alternative E₍₄₎m-V3 (alignment shift south of Route 161) were evaluated during field delineation. The same methodology described in the DEIS was used to evaluate wetland areas located along the new portions of the alignment that were not investigated in the DEIS. The most frequently impacted functions and values are the same for the preferred alternative as for DEIS alternative E₍₄₎, except the size of the impact is much lower for E₍₄₎m-V3, as noted above.

Seasonal Pools

The DEIS reported that one seasonal vernal pool, which was identified during wetlands evaluations, would be directly impacted by alternative E₍₄₎.

Additional studies were conducted along the E₍₄₎m-V3 alignment in 2002 and 2005 based on the current scientific literature pertaining to seasonal (e.g. vernal) pool ecology. The 2002 study was conducted within the footprint of the alignment and out to 500 feet on either side of the area of disturbance (i.e., cut and fill limits). The 2005 study was conducted along 16 transects located throughout the corridor in conjunction with the 2005 avian surveys within the forest blocks in the corridor. Seasonal pools were identified and evaluated.

There were 33 seasonal pools inventoried during the 2002 and 2005 studies. Because of the rolling terrain and glacial till surface characteristics of the corridor, seasonal pools were found to be scattered throughout the survey area. Four seasonal pools would be directly impacted as a result of fill placement within the seasonal pool boundary. One of these pools, located at the southern end of the alignment, was created by the I-395 embankment and would be completely filled during reconstruction of the interchange; the remaining three would be partially filled. Of the 33 pools, 24 would be indirectly impacted by E₍₄₎m-V3. Indirect impacts would consist of disturbance to the upland habitat area within 230 m (750 ft) of the edge of a seasonal pool.

Direct impacts to four seasonal pools were identified for alternative E₍₄₎m-V3, based on the targeted field inventories performed, as compared with one seasonal pool identified for alternative E₍₄₎ during the DEIS wetlands assessments. Total impacts to wetland area and wetland functions and values were reduced for the preferred alternative as compared with those reported for E₍₄₎ in the DEIS.

While additional detailed information on seasonal pools was collected since publication of the DEIS, this information does not significantly affect wetlands functions and values impacts assessments. Overall, wetland impacts were reduced by approximately 50% with preferred alternative E₍₄₎m-V3 as compared with DEIS alternative E₍₄₎.

Floodplains

Impacts on the 100-year floodplain estimated in the DEIS for alternative E₍₄₎ were 2.3 ha (5.6 ac).

Floodplain impacts estimated for E₍₄₎m-V3 areas are 1.17 ha (2.9 ac). As with alternative E₍₄₎, the majority of impact would occur along Latimer Brook at the Route 161 interchange and along Oil Mill Brook at the I-95 interchange. Other areas of impact would occur along Shingle Mill Brook in Salem and Latimer Brook near Grassy Hill Road.

Adverse impacts on the 100-year floodplain were reduced with the preferred alternative as compared with DEIS alternative E₍₄₎.

Land Use and Community Characteristics

DEIS alternative E₍₄₎ was estimated to require the taking of 22 residential houses and 16 commercial/industrial buildings on a total of 24 property parcels. Also estimated was complete acquisition of 17 parcels of vacant land, and the partial acquisition of land from 52 parcels. Of 93 affected parcels, 82 are zoned for residential uses and 11 are zoned for commercial, industrial or special uses. The total land area that would need to be

acquired for the construction of the roadway would be approximately 279.9 ha (684.2 ac). Since publication of the DEIS, development has occurred and is ongoing on previously undeveloped land within the corridor study area. Examples include new housing constructed in Montville within the proposed right-of-way of DEIS alternative E₍₄₎ and preferred alternative E₍₄₎m-V3, a new housing subdivision in Salem south of Horse Pond within Habitat Block No. 1, and a golf course under development on the Montville-East Lyme border along the power line within Habitat Blocks No. 4 and 5. Development of commercial and industrial zoned land is also progressing, including commercial development along Routes 82 and 85 in Salem, and light industrial development between Route 85 and Butlertown Road in Montville. Development is proceeding in accordance with existing zoning, except that a special permit was required for development of the golf course.

Construction of E₍₄₎m-V3 requires the total taking of 10 residential houses, six total takings of parcels of vacant land, and the partial taking of land from 33 parcels. All of the houses are located in Montville; two of these involve new homes constructed since publication of the DEIS in 1999. Of the 49 affected parcels, 42 are zoned residential, five are zoned commercial or industrial, one is zoned special use and one is designated open space. The total land area that needs to be acquired for the construction of the roadway is approximately 126.3 ha (312 ac).

Preferred alternative E₍₄₎m-V3 changed land use impacts described in the DEIS for the towns of East Lyme and Waterford. The DEIS full build expressway alternatives, including E₍₄₎, traversed land in Waterford in the southern portion of the alignment, whereas, E₍₄₎m-V3 shifted the alignment into East Lyme to avoid the fragmentation of Habitat Block No. 2 and to minimize impacts to archaeological resources. Although there would not be any taking of homes in East Lyme, properties that were previously unaffected by the DEIS alternatives would now be partially impacted by right-of-way acquisitions. In addition, neighborhoods along the east side of Route 161 in East Lyme would be much closer to the alignment than with E₍₄₎.

During the preferred alternative selection process, efforts were made to avoid the taking of residences. Use of a reduced cross section rather than the typical expressway cross section minimized the number of property impacts by approximately 50%. However, complete avoidance of all properties was impossible. The E₍₄₎m-V3 alternative was a compromise between avoidance of forest fragmentation and maintaining an alignment that was as far as possible from neighborhoods.

A *Conceptual Stage Relocation Survey* was prepared in July 2002 to determine the availability of replacement housing in the corridor. It was determined that there is a sufficient supply of single-family housing for sale in the Route 11 corridor to offset displaced residences.

Overall, the preferred alternative resulted in a reduction in property impacts as compared with DEIS alternative E₍₄₎. The reduced cross section of the preferred alternative minimizes the presence of the new roadway in the community as compared with DEIS alternative E₍₄₎, except for a portion of the alignment in East Lyme that is

closer to neighborhoods in that area.

Farmland

DEIS alternative E₍₄₎ was estimated to require the taking of 6.32 ha (15.61 ac) of prime farmland.

Preferred alternative E₍₄₎m-V3 would require the taking of 3.4 ha (8.4 ac) of prime farmland. The farmland consists of approximately 2.3 ha (5.8 ac) of currently active hayfields and the remaining impact area consists of residential uses. This impact would not preclude farming on adjacent areas of prime farmland.

This level of impact does not require formal review by the Connecticut Department of Agriculture because less than 10 ha (25 ac) will be converted to non-farm use, and the land is not under the protection of the State Farmland Preservation Program. In accordance with the Farmland Protection Policy Act of 1981, and after consultation with the NRCS, a Farmland Conversion Impact Rating Form For Corridor Type Projects (NRCS-CPA-106) was completed and entered into the project files. Preferred alternative E₍₄₎m-V3 does not exceed the threshold of total site assessment points that would require further review by the NRCS.

Prime farmland affected by preferred alternative E₍₄₎m-V3 was reduced compared with impacts identified for DEIS alternative E₍₄₎.

Socioeconomics

There have been no significant changes in trends within the Route 11 corridor towns in population, income, employment, or real estate since publication of the DEIS. Recent analysis using the 2000 Census shows that, in general, rates of growth in population and housing in the four corridor towns were somewhat higher, than projections reported in the DEIS.

Salem's population was projected to increase by 13%, but actually grew by 16.6% between 1990 and 2000 and continued at this pace through 2004. The high growth rate in housing experienced in the 1980's (40%) continued between 1990 and 2000 at 32.9%. This rate of housing growth slowed to 7% between 2000 and 2004. The unemployment rate improved from 4.2% in 1998 to 3.0% in 2005.

The population of Montville was predicted to grow by 4% between 1990 and 2000, but actually grew by 11.2% and remained close to this rate through 2004. Housing units grew by 8.3% between 1990 and 2000 and have continued at that pace. The unemployment rate improved from 4.5% in 1998 to 3.8% in 2005.

Waterford grew slightly ahead of projections with a 6.8% increase in population between 1990 and 2000, as compared with projections of 4%. Since 2000, the rate of population growth has continued to increase to a rate of more than 1% per year. The unemployment rate was 3.5% in 1998 and increased to 4.1% in 2005. Waterford was the only corridor town to see an increase in unemployment, and is representative of the New London County labor market area as a whole, which was 4.1% in 2005.

East Lyme grew much faster than predicted with a population increase of 18.1% between 1990 and 2000, as compared with a projected rate of 8.5%. As also predicted,

this rate has slowed since 2000 to less than 1% per year. Housing units grew by 10% between 1990 and 2000 and growth remains steady at this rate. The unemployment rate remained level at 3.2% in 1998 and 3.3% in 2005.

The socioeconomic effects evaluated for preferred alternative E₍₄₎m-V3 are the same as those documented in the DEIS for the full build alternatives, including E₍₄₎.

Historic and Archaeological

Historic Resources

Investigations undertaken for the DEIS identified 25 historic resources eligible for inclusion in the National Register of Historic Places (NRHP) and three non-eligible cemeteries within the Route 82/85/11 corridor study area. Alternative E₍₄₎ was estimated to affect one historic architectural property (21 Gurley Road).

Preferred alternative E₍₄₎m-V3 traverses essentially the same area of potential effect as DEIS Alternative E₍₄₎. None of the historic buildings, structures, districts, or sites identified as eligible for the NRHP in the DEIS would be directly impacted by preferred alternative E₍₄₎m-V3. One NRHP-eligible resource, at 21 Gurley Road, is located immediately adjacent to the preferred Route 11/I-95 interchange. The interchange ramps will be designed to avoid encroachment onto this property.

In addition to resources included in the DEIS, a small early 19th-century family cemetery, the Tabor Cemetery, was identified within the area of the I-395/I-95 interchange improvements. Cemeteries are not normally eligible for NRHP listing unless they possess exceptional historic or landscape significance (NRHP criteria consideration D). Although the Tabor Cemetery does not fulfill this criteria consideration, it was considered in the overall planning effort so that the project could avoid its disturbance.

Improvements to Route 1, included in the preferred interchange concept for preferred alternative E₍₄₎m-V3, will occur in front of two circa 1870 vernacular houses at 44 and 46 Boston Post Road. It was determined, in consultation with the SHPO, that they are not eligible for listing in the NRHP, and the roadway improvements will not affect these properties.

Archaeological Resources

It was documented in the DEIS that alternative E₍₄₎ would bisect two areas within the central portion of the NRHP-eligible archaeological district known as Wolf Pit Village. It was estimated that at least 25 archaeological sites would be impacted, with a potential for as many as 100. No determination of NRHP eligibility was made for the sites at that time.

A reconnaissance archaeological survey, partially completed in 1998 as part of evaluations for the DEIS, was completed during 2002 for the area that would be affected by preferred alternative E₍₄₎m-V3. Property access issues prevented walk-over assessment and testing of some areas, but it is estimated that 80% of the project area was investigated. The untested areas can be assumed to be about as productive of

archaeological resources as tested areas.

The reconnaissance survey identified 40 archaeological sites within the project area. The sites include 28 prehistoric period sites, five historic period sites, and seven sites with both prehistoric and historic components. Intensive survey investigations at the 40 sites were conducted in 2002 to determine if identified sites are eligible for inclusion in the NRHP, and whether or not their significance is chiefly for their information value. The 2002 work also included intensified background research in order to better identify the boundaries of the collection of sites identified as Wolf Pit Village, the area between Butlertown Road in Waterford and Route 161 in East Lyme.

The historical background and archaeological research substantiates the conclusion that, collectively, the sites and landscape features in the undeveloped portions of this area constitute an NRHP-eligible archaeological district identified as Wolf Pit Hills. This entity contains at least 31 individually significant archaeological sites and is a collectively eligible resource. As a result of the intensive survey, a total of 16 archaeological sites were identified as eligible for inclusion in the NRHP.

Preferred alternative E₍₄₎m-V3 will affect the 16 NRHP-eligible sites. Seven of the sites are also contributing resources within the collectively eligible Wolf Pit Hills archaeological district. All but one of these sites will be impacted by the construction of the preferred roadway. In consultation with the SHPO, it was determined that the 16 archaeological sites are chiefly significant for their information value. These sites have minimal value for preservation in place, a requirement for consideration under Section 4(f) of the Department of Transportation Act of 1966. Consequently, it is appropriate to mitigate the project effects by undertaking data recovery at the sites. It was also determined that the project had only a minimal effect on the integrity of the Wolf Pit Hills archaeological district, provided that data recovery was undertaken for the affected sites within the eligible district. In accordance with Section 106 of the National Historic Preservation Act, a draft MOA has been prepared outlining an agreement on the protection of identified archaeological resources, including the establishment of an archaeological preserve. Because preferred alternative E₍₄₎m-V3 would not affect resources qualifying for protection under Section 4(f), a final Section 4(f) Evaluation will not be necessary.

Alternative E₍₄₎ would have affected more of the core area of the Wolf Pit Hills archaeological district, which is centered along former Pember Road east of the East Lyme/Waterford town boundary. The alignment shift featured in preferred alternative E₍₄₎m-V3, that reduced the fragmentation of Habitat Block No. 2, also reduced the fragmentation of the archaeological district.

Impacts to historic and archaeological resources were reduced for the preferred alternative as compared with DEIS alternative E₍₄₎. No significant changes in the project surroundings were identified.

**Section 6(f)
and Non-
historic 4(f)**

There were no impacts to Section 6(f) or non-historic 4(f) lands identified for in the DEIS for alternative E₍₄₎. Likewise, there are none affected by preferred alternative E₍₄₎m-V3.

Visual and Aesthetics

The DEIS described visual and aesthetic impacts of alternative E₍₄₎ as being most evident at the three overpasses over existing roadways and from residential neighborhoods that lie east and west of the alignment.

The visual and aesthetics effects of preferred alternative E₍₄₎m-V3 would be similar to DEIS alternative E₍₄₎. However, south of Route 161, preferred alternative E₍₄₎m-V3 is closer to the expanding residential neighborhoods along Route 161 in East Lyme. The preferred alternative in this area would be situated at topographic elevations of between 49 m and 76 m (160 ft and 250 ft). To a great extent, hills, ridges and trees would obscure views of the new roadway. However, a visual impact would occur from relatively higher elevations on several residential streets. Trees would obscure these views for much of the year. In some locations, views would only occur from second floor levels.

A detailed analysis of the visual impact of the interchange of Route 11, I-395 and I-95 was performed for preferred alternative E₍₄₎m-V3. At the interchange the new ramps for Route 11 would be constructed above the existing interchange, thereby raising the highest elevation of the structures. The highest point on the proposed ramps for Route 11 is 8.5 m (28 ft) over the existing I-395 southbound ramp. The total area covered by the existing interchange is 25 ha (62 ac), while the new interchange would cover an area of 55 ha (137 ac). This increase in area primarily occurs on the north side of the existing interchange.

Visual and aesthetics impacts estimated for the preferred alternative do not represent a significant change over those reported in the DEIS.

Hazardous Waste/Contaminated Sites

In evaluations of the entire Route 11 corridor study area performed for the DEIS, a computer database search for known waste disposal sites was conducted. This information along with site observations was combined to provide screening level data of known or potential sites that may have been subject to the release, uncontrolled loss, or seepage of oil and other regulated (including potentially hazardous) materials. During that screening level effort for the DEIS two sites were identified along alternative E₍₄₎.

A more detailed analysis was performed in May 2002 for the preferred alternative following ConnDOT protocol in the form of a Task 110 Corridor Land Use Evaluation. These evaluations are conducted to assess the environmental risk associated with current and former land uses in the vicinity. This involves a parcel by parcel evaluation of current or former land use resulting in the ranking of each parcel along the corridor as being a low, moderate or high risk for potentially being impacted by oil or other regulated materials. As a result of this evaluation, four parcels in the study area were assigned a moderate risk and six parcels were assigned a high risk. In addition to those individual parcels, the state highway right-of-way at the I-395/I-95 interchange was identified as the site of 16 spill incidents. In total, 11 sites associated with the preferred alternative were considered to be of environmental concern.

The number of hazardous waste/contaminated sites identified for the preferred

alternative E₍₄₎m-V3 are not considered a significant change vs. the number of sites identified for the various alternatives in the DEIS, including alternative E₍₄₎.

Secondary and Cumulative Impacts Secondary Impacts

The DEIS reported secondary development is likely to occur near the new interchanges proposed for alternative E₍₄₎ at Route 82 and Route 161, especially on land already zoned for commercial or light industrial uses. Conversely, a shift in through traffic to the new alignment would likely slow on-going highway-oriented development along Route 85. This development pattern is consistent with local economic plans and plans of conservation and development.

A quantitative analysis was performed in 2002 for preferred alternative E₍₄₎m-V3 to estimate the potential acres of secondary commercial and industrial development that could be induced by the extension of Route 11. This analysis is currently being updated. Federal and state transportation agencies typically find that land within a one-mile radius of a new highway interchange is susceptible to induced commercial or industrial development. The 2002 analysis included commercial and industrial zoned land within a one-mile radial distance of preferred alternative E₍₄₎m-V3 at three key existing or proposed interchanges. Because future changes in zoning cannot be predicted, the analysis used existing zoning designations in each of the four towns.

Lands exhibiting limitations to highway-related commercial and industrial development were eliminated from the total area using Geographic Information Systems (GIS) data layers. These development limitations included residential zoning, roadway right-of-way, state-owned land, state forest, water company land, dedicated open space, 100-year floodplain, wetlands, steep slopes, shallow depth to bedrock soils (limitation for septic systems), and land already developed. Because of the complex factors that contribute to the location of residential development, a separate analysis is being performed for residential land.

The results of the 2002 analysis showed that 229 ha (567 ac) of land would be susceptible to commercial and industrial development induced by preferred alternative E₍₄₎m-V3. Of this land, 61 ha (150 ac) are located within the six corridor habitat blocks. The analysis presents a worst-case scenario in that it assumes that all development would be attributable to Route 11. Some of this land has already been developed since 2002.

Preliminary results of the updated analysis of residential development indicate that a small fraction of future residential development may be attributed to the slight reduction in travel time (2-7 minutes) and the reduction in the aggravation of commuting on a congested arterial. Other factors in decisions to construct residential housing, such as, employment, cost, availability of land, quality of setting, utilities, roadway frontage, building constraints (e.g. wetlands, slopes, bedrock, etc.) and school systems weigh more heavily than the benefit that will come with the completion of Route 11.

Since the extension of Route 11 improves the connection of an existing highway

network, it will not introduce new access to an undeveloped area, but, in fact, will support planned growth in the region. Therefore, much of the ongoing and predictable lost of habitat would not be as a result of the new roadway, but rather the result of ongoing and planned development.

Cumulative Impacts

The DEIS included a qualitative discussion of the cumulative effects on biological resources, water resources, floodplains and farmlands from the combined impacts of the completion of Route 11 and the secondary development induced by new interchange access. The predicted development is consistent with local zoning and plans of conservation and development.

An improved cumulative impacts analysis is currently in progress for preferred alternative E₍₄₎m-V3. A preliminary analysis was performed in 2002, which showed that the cumulative effects of potential secondary growth, when considered in the context of past, present and future regional projects, include an increased demand for supporting businesses, services, affordable housing and labor within the region.

The completion of Route 11 would be one of many factors contributing to continued growth in the services and tourism and entertainment sectors in the region which have become more prominent since reductions in the defense industry. An increased labor force demand in the region, coupled with a direct highway link for transit bus service, could draw potential employees from the Greater Hartford area where a relatively large pool of unemployed, transit-dependent persons is concentrated.

Such growth could be accommodated in areas targeted for growth within the Southeast Region, while ongoing efforts by preservation groups (e.g. Route 11 Greenway Authority Commission) to conserve environmentally valuable land will help discourage development in areas targeted for preservation. Development in targeted growth areas may include infill or redevelopment projects in the urbanized areas of the region, which would be highly beneficial for the region's cities.

In general, secondary and cumulative impacts discussed in the DEIS remain applicable to preferred alternative E₍₄₎m-V3. There have been no changes in the project concept or in existing conditions, including local economic plans and plans of conservation and development, that would result in unforeseen adverse impacts.

Response to Agency Comments on the Reevaluation

FHWA provided the Administrative Draft Reevaluation dated March 9, 2006 to the ACOE, EPA, FWS and DEP for review and comment. Comments received from EPA and FWS via email March 28, 2006 are appended to this document and have been addressed as follows.

FWS requested clarification of FHWA adherence to the criteria of 40 CFR 1509.9(c) in determining the need for a supplemental to the DEIS. // This regulation was in fact the criteria used in this reevaluation, and this point has been clarified in the applicable sections.

FWS requested that information developed by other sources, public and private, including the review of the DEIS performed by Woodlot Alternatives, Inc. of Topsham, ME for Sierra Club of Mystic, CT, be included in the reevaluation. // The DEIS and the recently completed Biological Survey incorporated extensive data available from the private, state and federal scientific community, which has been noted in the “Biological Diversity” section of this reevaluation. Because of the detailed nature of the field surveys and Biological Survey Report, the majority of the concerns identified in the Woodlot report have been addressed. Several species-specific issues raised by Woodlot were discussed in the “Biological Diversity” section.

FWS and EPA expressed concern about the need for the public to be kept informed about new information and activities on the project since 1999. // As explained in the section “FEIS Initiation and Public Updates (2001-2002)” of this reevaluation, the public was brought up to date on all project developments in 2002 and was provided opportunity for further comment. A public information meeting is scheduled for June 19, 2006 to inform the public about more recent project developments.

FWS contends that alternative variation E₍₄₎m-V1 is less environmentally damaging than E₍₄₎m-V3 and that either alternative requires “world class mitigation”. // The sound reasoning for the selection of E₍₄₎m-V3 (which was inclusive of public input) is explained in the above section “Preferred Alternative Development”. The commitment to an extensive mitigation plan is included in the *Mitigation and Compensation Framework* discussed under “Mitigation Planning”.

EPA noted concerns about road salt. // No changes in the analysis included in the DEIS or adverse impacts have been identified for the preferred alternative. The *Mitigation and Compensation Framework* includes provisions for the protection of water quality.

FWS and EPA expressed the opinion that additional data collected on biological resources represents significant new information, particularly with regard to vegetation. // Additional information has been provided in the section “Biological Diversity” to address this point. For example, it is explained that the DEIS listed only 34 dominant species representative of vegetation communities in the corridor, but at least 270 total species were documented during the field investigations. The DEIS reported sufficient information to provide a succinct analysis of the affected area for public review. The 2004-2005 surveys provided additional biological detail, but did not change the overall characterization of the corridor natural resources described in the DEIS.

FWS requested that the secondary and cumulative impacts analysis be included in the reevaluation. // The update of this information will not be finalized until public input is received at the upcoming public information meeting.

EPA cited updated data and analysis of traffic, including a 2002 report by EPA’s traffic consultant on the practicability of the upgrade alternatives and FHWA’s analysis of the report, and also population growth and development in the study area

that may affect projections in the DEIS. // FHWA's 2000 evaluation of the upgrade alternatives has been summarized on page 3 of this reevaluation. The section on "Traffic and Transportation" includes a discussion of the recent verification of traffic volume forecasts. In addition, updated data on population and development are included in the sections on "Socioeconomics" and "Land Use and Community Characteristics".


Conclusion

The preferred alignment E₍₄₎m-V3 advanced during preparation of the FEIS has not changed substantially from the E₍₄₎ alternative presented in the DEIS. The ACOE and FHWA have agreed that the alignment refinement is not substantial and therefore does not meet the conditions stipulated in 40 CFR 1502.9(c)(1)(i).

The evaluations provided above for each of the environmental resources indicate that significant changes, as stipulated in §1502.9(c)(1)(ii), have not been identified in either the project surroundings or in the evaluation of impacts for the preferred alternative (E₍₄₎m-V3) as compared with impacts evaluated for the alternatives in the DEIS.

Based on the above evaluation, it has been shown that there are no new environmental factors or features in the project area or in the project concept that have changed, nor have there been changes in the laws or regulations that would significantly affect the information presented in the DEIS. It is therefore concluded that the information presented in the DEIS remains valid and applicable for use in the FEIS. Neither the conditions of 23 CFR 771.129(a) nor of 40 CFR 1502.9(c) have been met; therefore, a supplement to the DEIS is not necessary.

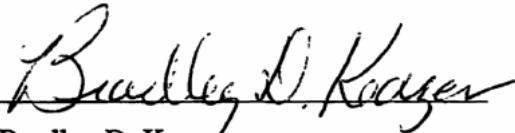
**State of Connecticut
Department of Transportation**

By: 

Date: 6/2/2006

Edgar T. Hurle
Director of Intermodal and Environmental Planning

**U.S. Department of Transportation
Federal Highway Administration**

By: 

Date: 6/2/06

Bradley D. Keazer
Division Administrator

APPENDIX A

TABLES

TABLE 1
 REEVALUATION 2006 – COMPARISON OF IMPACTS
 PREFERRED ALTERNATIVE E₍₄₎M-V3 AND DEIS ALTERNATIVE E₍₄₎

IMPACTS	DEIS ALTERNATIVE E ₍₄₎	PREFERRED ALTERNATIVE E ₍₄₎ M-V3	CHANGE IN IMPACTS DEIS TO PREFERRED
Wetlands	14.27 ha (35.26 ac)	6.7 ha (16.6 ac)	-7.57 ha (-18.7 ac)
Number of Habitat Blocks	>200 ha - 2 50-200 ha - 3	>200 ha - 2 50-200 ha - 3	No change
Habitat Block Area	63.8 ha (157.6 ac)	48.4 ha (119.6 ac)	-15.4 ha (-38 ha)
Habitat Block No. 2 Area Fragmented	257.5 ha ⁽³⁾ (636 ac)	113 ha (279 ac)	-144.5 ha (-357 ac)
Class I & II Lands	None	None	No change
High Yield Aquifers	1.4 ha (3.5 ac)	0.68 ha (1.7 ac)	-0.72 ha (-1.8 ac)
Threatened/ Endangered Species *2005 survey	n/a	9* (CT threatened or special concern)	n/a
Prime Farmland	6.32 ha (15.61 ac)	3.4 ha (8.4 ac)	-2.92 ha (-7.21 ac)
Floodplains	2.3 ha (5.6 ac)	1.17 ha (2.9 ac)	-1.13 ha (-2.7 ac)
Historic/ Archaeological	1 property/ 25-100 potential	0/ 16 NRHP-eligible sites, reduced impact to Wolf Pit Hills—eligible archaeological district	-1/ reduced impact to Wolf Pit Hills—eligible archaeological district
Structures Potentially Affected	22 dwellings 16 commercial	10 dwellings 0 commercial	-12 dwellings -16 commercial
Noise Receptors Exceeding Criteria ⁽¹⁾	7	1	-6
Potential/Known Hazardous Waste/ Contaminated Sites	2	11 ⁽⁴⁾	+9 ⁽⁴⁾
Cost ⁽²⁾ (millions)	\$255.2	\$462.5 to \$647.5	+207.3 to +392.3

1 = Does not include the number of receptors already exceeding criteria (NAC) under existing conditions

2 = Construction cost including estimated ROW acquisition costs; DEIS alternative E₍₄₎ in 1999 dollars; Preferred alternative E₍₄₎m-V3 in 2012 year of expenditure dollars

3 = Not evaluated in DEIS, acreage listed was calculated for Alignment Variation Study.

4 = Identified through a detailed Corridor Land Use Evaluation for the preferred alternative (includes low, moderate and high risk sites).

n/a = not applicable: analysis was not performed for the DEIS alternatives

TABLE 2 REEVALUATION 2006 – COMPARISON OF IMPACTS OF THE PREFERRED ALTERNATIVE AND DEIS ALTERNATIVES

Proposed Alternative	Wetlands	Number of Habitat Blocks	Habitat Block Area	Habitat Block No. 2 Area Fragmented	Class I & II Lands	High Yield Aquifers	Threatened/ Endangered Species *2005 survey	Prime Farmland	Floodplains	Historic/ Archaeological	Structures Potentially Affected	Noise Receptors Exceeding Criteria ⁽¹⁾	Potential/ Known Hazardous Waste/ Contaminated Sites	Cost ⁽²⁾ (millions)
Preferred Alternative (Data based on 2000-2005 impact minimization studies, FEIS analyses and mitigation planning studies for the preferred alternative)														
E₍₄₎m-V3	6.7 ha (16.6 ac)	>200 ha - 2 50-200 ha - 3	48.4 ha (119.6 ac)	113 ha (279 ac)	None	0.68 ha (1.7 ac)	9* (CT threatened or spec. concern)	3.4 ha (8.4 ac)	1.17 ha (2.9 ac)	None/ Yes	10 dwellings	1	11⁽³⁾	\$462.5 to \$647.5
DEIS Alternatives (Data based on 1999 Draft EIS impact analysis for 15 alternatives)														
No Build	None	None	None	None	None	None	None	None	None	None/ None	None	4	None	None
W ₍₄₎	2.07 ha (5.12 ac)	>200 ha - 2 50-200 ha - 0	2.9 ha (7.2 ac)	None	I - 2.99 ha (7.39 ac) II- 0.52 ha (1.28 ac)	3.5 ha (8.7 ac)	n/a	0.32 ha (0.78 ac)	1.6 ha (3.9 ac)	11 properties/ Yes	32 dwellings 7 commercial 1 institutional	4	20	\$41.0
W ₍₄₎ m	1.52 ha (3.77 ac)	>200 ha - 2 50-200 ha - 0	1.4 ha (3.5 ac)	None	I - 2.47 ha (6.06 ac) II- 0.44 ha (1.09 ac)	1.8 ha (4.3 ac)	n/a	0.26 ha (0.65ac)	1.1 ha (2.7 ac)	11 properties/ Yes	25 dwellings 7 commercial 1 institutional	4	20	\$33.0
W ₍₂₎	1.37 ha (3.37 ac)	>200 ha - 2 50-200 ha - 0	1.2 ha (3.0 ac)	None	I - 2.42 ha (5.96 ac) II- 0.46 ha (1.15 ac)	1.3 ha (3.3 ac)	n/a	0.18 ha (0.45 ac)	1.0 ha (2.4 ac)	11 properties/ Yes	17 dwellings 3 commercial	4	20	\$31.1
TSM	0.26 ha (0.65 ac)	None	None	None	None	0.2 ha (0.5 ac)	n/a	0.12 ha (0.3 ac)	0.2 ha (0.5 ac)	None/ None	2 dwellings 3 commercial 2 institutional	4	8	\$1.7
TDM/Transit	None	None	None	None	None	None	n/a	None	None	None/ None	None	4	None	\$1.4 ⁽⁴⁾
92PD	14.17 ha (35.01 ac)	>200 ha - 2 50-200 ha - 2	59.2 ha (146.2 ac)	n/a	None	1.6 ha (4.1 ac)	n/a	6.32 ha (15.61 ac)	2.7 ha (6.6 ac)	1 properties/ Yes	31 dwellings 16 commercial	7	2	\$255.6
E₍₄₎	14.27 ha (35.26 ac)	>200 ha - 2 50-200 ha - 3	63.8 ha (157.6 ac)	n/a	None	1.4 ha (3.5 ac)	n/a	6.32 ha (15.61 ac)	2.3 ha (5.6 ac)	1 properties/ Yes	22 dwellings 16 commercial	7	2	\$255.2
E ₍₂₎	7.89 ha (19.50 ac)	>200 ha - 2 50-200 ha - 3	47.5 ha (117.3 ac)	n/a	None	0.5 ha (1.1 ac)	n/a	5.93 ha (14.65 ac)	1.2 ha (3.0 ac)	None/ Yes	13 dwellings	7	2	\$154.7
F ₍₄₎	11.62 ha (28.72 ac)	>200 ha - 2 50-200 ha - 4	68.3 ha (168.7 ac)	n/a	None	1.9 ha (4.6 ac)	n/a	34.49 ha (85.23 ac)	1.8 ha (4.5 ac)	2 properties/ Yes	29 dwellings 16 commercial 2 institutional	7	3	\$329.7
F ₍₂₎	6.21 ha (15.35 ac)	>200 ha - 2 50-200 ha - 4	51.6 ha (127.5 ac)	n/a	None	0.8 ha (2.1 ac)	n/a	30.55 ha (75.48 ac)	0.7 ha (1.6 ac)	1 properties/ Yes	16 dwellings 2 institutional	7	3	\$213.1
G ₍₄₎	13.23 ha (32.69 ac)	>200 ha - 2 50-200 ha - 4	68.3 ha (168.7 ac)	n/a	None	2.9 ha (7.2 ac)	n/a	25.58 ha (63.19 ac)	2.3 ha (5.8 ac)	3 properties/ Yes	38 dwellings 16 commercial 2 institutional	7	3	\$344.8
G ₍₂₎	7.93 ha (19.59 ac)	>200 ha - 2 50-200 ha - 4	51.6 ha (127.5 ac)	n/a	None	1.1 ha (2.6 ac)	n/a	21.21 ha (52.40 ac)	1.0 ha (2.4 ac)	2 properties/ Yes	24 dwellings 2 institutional	7	3	\$224.6
H ₍₄₎	4.40 ha (10.87 ac)	>200 ha - 2 50-200 ha - 3	38.1 ha (94.1 ac)	n/a	I - 2.98 ha (7.36 ac) II- 0.52 ha (1.28 ac)	3.0 ha (7.3 ac)	n/a	16.73 ha (41.35 ac)	1.2 ha (3.0 ac)	4 properties/ Yes	28 dwellings 1 commercial	8	14	\$113.6
H ₍₂₎	3.0 ha (7.41 ac)	>200 ha - 2 50-200 ha - 3	28.8 ha (71.1 ac)	n/a	I - 2.41 ha (5.95 ac) II- 0.46 ha (1.15 ac)	1.0 ha (2.5 ac)	n/a	7.40 ha (18.28 ac)	0.6 ha (1.5 ac)	4 properties/ Yes	20 dwellings	8	14	\$81.9

1 = Does not include the number of receptors already exceeding criteria (NAC) under existing conditions

2 = Construction cost including estimated ROW acquisition costs; DEIS alternatives in 1999 dollars; Preferred alternative E(4)m-V3 in 2012 year of expenditure dollars

3 = Identified through a detailed Corridor Land Use Evaluation for the preferred alternative (includes low, moderate and high risk sites)

4 = Cost of implementation for Route W only

n/a = not applicable; analysis was not performed for the DEIS alternatives

TABLE 3
REEVALUATION 2006 – COMPARISON OF 1999 DEIS AND 2005 FIELD SURVEYS

Document	Total Species Observed ¹	Total Species Reported from Literature ¹	Observed or Reported to Occur					
			Federal Status Under Review Species	Federal Endangered Species	Federal Threatened Species	Connecticut Endangered Species	Connecticut Threatened Species	Connecticut Special Concern Species ²
VEGETATION								
1999 DEIS (incl. historic records)	NC	NR	- 0 -	1	1	2	- 0 -	1 (2)
2005 Field Surveys	544	NR	- 0 -	- 0 -	1	1	- 0 -	4
FISHERIES and AQUATIC INVERTEBRATES								
1999 DEIS	NC	NR	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -
2005 Field Surveys	NC	NR	- 0 -	- 0 -	- 0 -	- 0 -	2	1
AVIFAUNA								
1999 DEIS	NC	(117)	- 0 -	1	1	- 0 -	- 0 -	3
2005 Field Surveys	144 (86)	NR	1	- 0 -	1	- 0 -	- 0 -	12
HERPETOFAUNA³								
1999 DEIS	17	36	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -
2005 Field Surveys ³	26	NR	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	3
MAMMALS⁴								
1999 DEIS	NC	45	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -
2005 Field Surveys ⁴	16	NR	1	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -

KEY: NC = Not counted
NR = Not reported

¹ Number in parentheses () indicates estimated number of breeding species

² Number in parentheses () indicates species is believed to be extirpated

³ Wetland-dependent species targeted during surveys

⁴ Wildlife movement survey along entire alignment

APPENDIX B

AGENCY COMMENTS ON THE ADMINISTRATIVE DRAFT REEVALUATION

From: <Varney.Robert@epamail.epa.gov>
To: "Keazer, Bradley" <bradley.keazer@fhwa.dot.gov>
Date: 3/28/2006 8:16 AM
Subject: RE: Rte 11 NEPA re-evaluation by FHWA and CONN DOT
CC: Anne-Marie Costello <anne-marie.costello@po.state.ct.us>, "Keazer, Bradl...
Hi Brad -

Thank you for the forwarding the administrative draft of the Re-evaluation document prepared by FHWA to determine the need for a supplement to the CT Route 11 DEIS published in 1999. We greatly appreciate your sharing this internal draft with the federal and state regulatory agencies and seeking our comments before making your final decision. We also recognize the time and effort invested in preparing the draft and commend the FHWA for addressing many of the issues raised by EPA and others with respect to the question of preparing a supplemental DEIS.

The administrative draft Re-evaluation concludes that a supplement is not warranted and explains the reasoning for this conclusion. In my September 20, 2005, email message to you, I listed a variety of factors that EPA felt leaned heavily in favor of the need for a supplement. The administrative draft addresses several of the points we raised, and we better understand the basis for FHWA's conclusion. Still, EPA believes that a supplement is the most appropriate way to advance the NEPA process and develop a public record that fully supports the findings of an eventual Record of Decision. Overall, we remain concerned that significant information contained in several documents (referenced in the administrative draft) that have been produced over the last 8 years has not been provided to the public, the regulatory agencies, and other interested parties in a comprehensive fashion to allow a thorough and complete understanding of this proposed project, and to solicit comments based upon that complete picture. Our concern is heightened by the fact that new information, new analysis and several project changes have occurred over several years. Examples include:

- The location, design, and environmental impacts associated with the proposed highway interchanges;
- The information contained in the recently produced report on the 2005 biological surveys;
- An evaluation of cumulative and secondary impacts, including the use and effects of road salt--an emerging and increasingly important water quality issue;
- In light of the issues mentioned above, the scope and nature of compensatory mitigation required for this project; and,
- Updated data/information on and analysis of traffic (including the 2002 report produced by EPA's contractor, Weston Solutions, Inc., and its subcontractor, Transportation Planning and Design, Inc., that further evaluated the practicability of the upgrade alternatives and FHWA's analysis of these reports), population growth, and development in the study area that would help "ground truth" the projections contained in the DEIS.

Once again, we applaud FHWA's effort to carefully consider the Supplemental EIS questions and I look forward to our discussion on March 30th.

- Bob

From: Michael_Bartlett@fws.gov
To: "Keazer, Bradley" <bradley.keazer@fhwa.dot.gov>
Date: 3/28/2006 12:17 PM
Subject: Route 11 NEPA re-evaluation

M. Barlett – Page 1 of 2

CC: Anne-Marie Costello <anne-marie.costello@po.state.ct.us>, "Keazer, Bradl...
Brad

I sincerely appreciate your openness in providing the draft Route 11 re-evaluation document for our review. Your willingness to do so clearly demonstrates an intent to foster the interagency deliberative process begun several years ago on this important project.

In my September 16, 2005 email message to you, I indicated that I believed a supplemental DEIS should be prepared for this project. I continue to believe so. In our opinion the project changes, changed circumstances, and new information have neither been adequately explored nor analyzed in the draft re-evaluation. The re-evaluation document appears to undertake a segment-by-segment evaluation of a large number of subjects that have a bearing on the project. We could not detect where an analysis was undertaken to bring together all of these new pieces of information, project changes, or changes in circumstances to determine if the cumulative effects in each category or the combination as a whole reached the thresholds in 40 CFR 1502.9(c).

The re-evaluation is based almost exclusively on information generated by the Connecticut Department of Transportation and the Federal Highway Administration, and appears to exclude information developed by other sources, public and private (e.g., Woodlot Alternatives, Inc.study). We do not believe that 40 CFR 1502.9(c) limits the review to information generated only by the proponent of the action. Accordingly, we believe the scope of the analysis needs to be widened to include new information generated by sources other than ConDOT and FHWA.

It does not appear to us that the re-evaluation considered the vast amount of new information developed since the DEIS was published in 1999. Since the DEIS was issued, the level of detail in the information baseline has been transformed from a very general level to a considerably more detailed level. As a consequence, the public now has a substantial body of corridor-specific data from which to draw conclusions about environmental effects and acceptability of the project.

Both positive and negative changes have resulted from the numerous project modifications that have been proposed since the DEIS was issued in 1999, and both categories need to be considered when deciding whether the 1502.9 (c) criteria have been met. For instance, direct impacts to wetlands have been reduced by adding new or increasing the size of structures. Unfortunately, these changes (as well as inflation) are apparently responsible for the cost of the revised project going from \$255,000,000 in 1999 to \$462,500,000 today, a factor that in and of itself seems to call for discussion in a supplemental EIS.

The draft re-evaluation document (page 3) indicates that "The time required to engage in this collaborative process and to undertake the additional studies was necessary to develop a modified version of the E(4)M alignment that effectively satisfies the various agencies' concerns." I feel the need to note that the Fish and Wildlife Service has consistently argued that alternative E(4)M-V1 is less environmentally damaging than E(4)M-V3, that the upgrade on existing alignment is less environmentally damaging than E(4)M-V1, and that neither E(4)M-V3 nor E(4)M-V1 is practicable, absent world class mitigation on a scale that has not been demonstrated in New England, because they would cause or contribute to significant

The draft re-evaluation document seems to lack a sense of scale for some of the analyses conducted. As an example, on page 11, the document states that "the DEIS noted 34 plant species that are representative of the vegetation communities identified in the study area." Three paragraphs later, on the same page, the document states that "Although the survey was not designed to identify all species, 544 species of vascular plants were documented along the transects." In our opinion, this represents important new information. Similar, but generally less dramatic examples occur in the other field studies for biological resources. We believe this body of new information sheds greater clarity on the context, intensity, and severity of the impacts when viewed in contrast to the level of detail in the information used in the DEIS. When viewed as a whole, we think it represents significant new information that is relevant to environmental concerns bearing on the proposed action and its impacts.

The draft re-evaluation indicates that the secondary and cumulative impact analyses are currently being updated. We suggest that a better approach would be to include the secondary impact analyses for industrial/commercial development and residential development and the cumulative impact analysis into the draft re-evaluation while it is still a deliberative document.

The conclusions section raises a procedural question about what criteria should be addressed in the CEQ rules. In our view, the draft re-evaluation document (page 25) appears to be addressing criteria substituted by the highway agencies for the specific criteria in 1502.9(c). We recommend that the re-evaluation process and conclusions adhere to the criteria in 1502.9 (c).

In conclusion, I think that it is important to step back and focus for a moment on the purpose of NEPA as set forth in the Act and implementing regulations. It has now been seven years since the DEIS was released. We think it is likely that most members of the public that were living in or near the corridor, or that otherwise had an interest in the project in 1999, have probably not retained the information from the DEIS, and most likely are not well informed about the new information, changed circumstances, or project changes that have occurred over the past seven years. This would almost certainly be true for the residents that have recently moved into the study corridor. With this as a backdrop, we simply do not see how the FHWA can meet the purpose and timeframe set forth in 40 CFR 1500.1(b) and 1502.5 to "insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken." A similar purpose statement is also set forth in 1502.1. Given the seven-year time lapse, changed circumstances, project changes, and new information, we believe the preponderance of the evidence compels a supplemental DEIS.

Thank you again for the opportunity to comment.

Mike

Michael J. Bartlett
Supervisor
New England Field Office
70 Commercial Street
Concord, NH 03301
phone: (603) 223-2541x26
fax: (603) 223-0104
email: michael_bartlett@fws.gov
