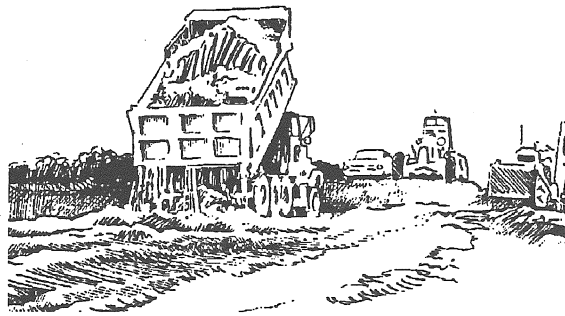


DiSiato Sand and Gravel Excavation



Windham, Connecticut

Eastern Connecticut Environmental Review Team Report

**Eastern Connecticut
Resource Conservation and Development Area, Inc.**

**DiSiato
Sand and Gravel
Excavation**

Windham, Connecticut

Environmental Review Team Report

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

**for the
Conservation Commission
Windham, Connecticut**

February 1999

**CT Environmental Review Teams
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Acknowledgments

This report is an outgrowth of a request from the Windham Conservation Commission to the Windham County Soil and Water Conservation District (SWCD). The SWCD referred this request to the Eastern Connecticut Resource Conservation and Development Area (RC&D) Executive Council for their consideration and approval. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

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

The field review took place on Thursday, January 21, 1999.

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I would also like to thank George Cloutier, chairman, conservation commission, James Finger, town planner, Ray Murphy, zoning and inland wetlands official, Barbara Buddington, director, WINCOG, Philip DiSiato, applicant, Joseph Boucher, project engineer, Mark Branse, project attorney, and John Ianni, project soil scientist, for their cooperation and assistance during this environmental review.

Prior to the review day, each Team member received a summary of the proposed project with location and soils maps. During the field review Team members received plans and later were mailed additional information. Following the review, reports from each Team member were submitted to the ERT coordinator for compilation and editing into this final report.

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

The Eastern Connecticut RC&D Executive Council hopes you will find this report of value and assistance in reviewing this proposed sand and gravel excavation project.

If you require additional information please contact:

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Introduction

Introduction

The Windham Conservation Commission has requested assistance from the Eastern Connecticut Environmental Review Team in conducting an environmental review for a proposed sand gravel excavation.

The 38 acre site is located on Jordan Lane which is off of Route 203 south of Route 6. The application consists of the removal of 850,000 cubic yards of material. There is an active area of 5.5 acres which was begun by the previous landowner and a total of 22.0 acres is proposed to be excavated. The project will be conducted in five phases and will utilize a "down cutting" method that will contain all stormwater runoff to the site.

The first activity proposed will be to build a new access road leading from Route 203 to Jordan Lane to bypass an existing residential neighborhood on LaBarre Drive and homes/school on Jordan Lane. The removal of material will start from the southeasterly portion of the site, working an area of five acres maximum per phase. A minimum of 100' buffer will remain around the excavation at all times.

The proposed gravel road will be within the 75' regulated area as it leads to Jordan Lane. A wetlands crossing needs to be constructed with a total disturbed area of 1,925 square feet. The total amount of fill to be placed in the wetlands is approximately 100 cubic yards.

Objectives of the ERT Study

The Conservation Commission is seeking an independent evaluation of the environmental impacts of the excavation on the project site and the surrounding area. The major emphasis of their concerns are on: the geology, hydrology, effect

upon wells and septic systems, stormwater management, water quality, wetlands, wildlife, land use, dust and noise.

The ERT Process

Through the efforts of the conservation commission this environmental review and report was prepared for the Town of Windham.

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

The review process consisted of four phases:

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

The data collection phase involved both literature and field research. The field review was conducted on Thursday, January 21, 1999 and some Team members made individual or additional site visits. The emphasis of the field review was on the exchange of ideas, concerns and recommendations. Being on site allowed Team members to verify information and to identify other resources.

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

Figure 1.

Location and Topographic Map

Scale 1" = 2000'

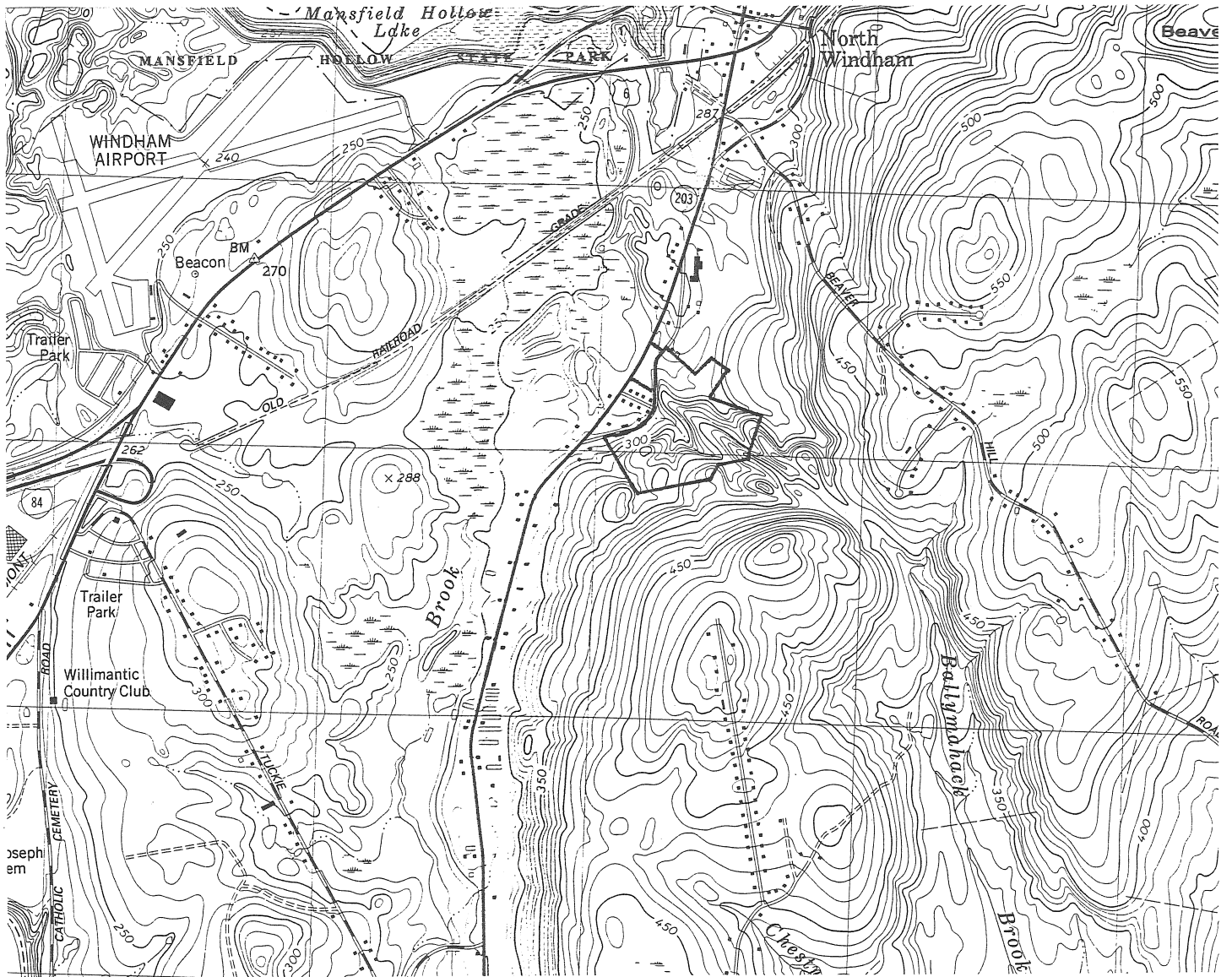
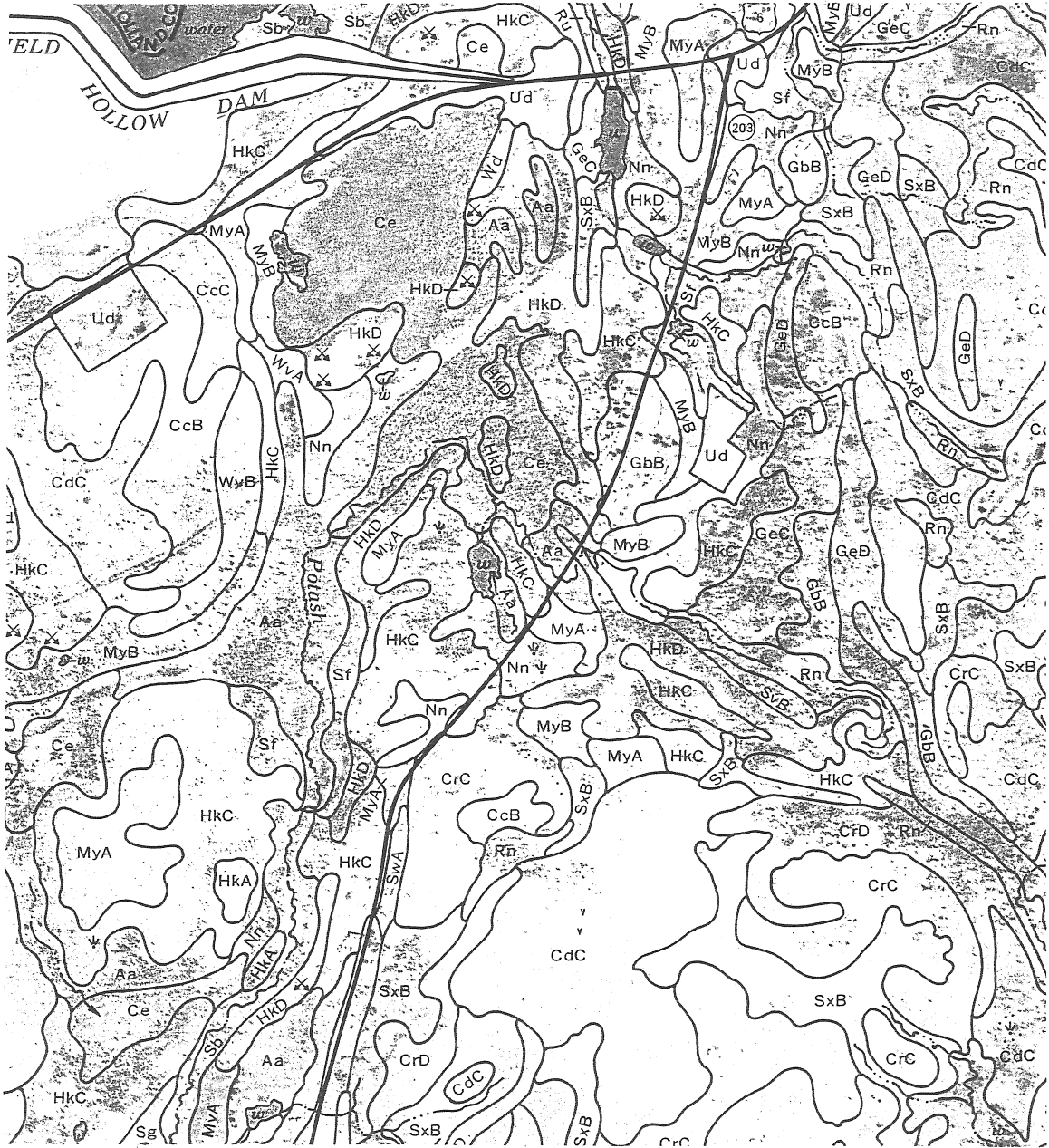


Figure 2.

Soils Map

Scale 1" = 1320



Geologic Assessment

The proposed excavation straddles a conspicuous 3-mile long ridge of coarse-grained sands and gravels deposited by subglacial meltwaters 12 to 14,000 years ago. The ridge is well known to Connecticut geologists, as its origin has been the subject of much debate and discussion. Clebnik (1979, 1980, 1982) felt that the Jordan Ridge was an esker formed by a major southward flowing subglacial stream. Black (1977, 1979, 1982) on the other hand proposed that the ridge was deposited by a north-flowing subglacial stream originating at a glacial "moulin" (a vertical shaft along which torrents of glacial meltwaters cascade down from the surface of the ice to its base) near the bedrock divide at the head of Ballymahack Brook. Musiker (1984) attempted to resolve the dispute but the lack of exposures and the difficulty of digging pits into the extremely coarse gravel (boulders up to 5 feet in diameter) prevented her from documenting the flow direction of the waters which deposited the material of the ridge.

The Jordan Ridge is an exceptional sand and gravel resource. The deposit is 30 to 50 feet thick and covers an area of at least 23 acres west of Jordan Lane (Clebnik, 1984; Meade, 1976). The coarse-grained character of the deposit reflects the high velocity and turbulence of a subglacial stream. The well-rounded 3-foot diameter boulders mixed in throughout the deposit could only have been moved by water velocities in excess of 30 feet per second. Fine silt and clay sized materials were carried well beyond the ice tunnel and deposited in open meltwater streams and lakes. The lack of fines makes the material extremely porous. Preliminary data from newly installed observation wells suggests that the groundwater table lies only a few feet above the fractured bedrock surface, well below the floor of the proposed excavation. The local bedrock is a gray to brown colored medium grained sillimanite-garnet schist (Synder, 1964). The gravel is predominantly made up of light-colored granite gneiss. Very few rusty weathering (i.e. sulfide bearing) clasts were noted.

The following observations based on the geology of the deposit may be useful to those attempting to assess the environmental impacts of the proposed excavation:

- The excavations as designed is unlikely to affect either the availability or the quality of groundwater in the immediate vicinity.
 - Because of the permeability of the material the groundwater table lies only a few feet above the bedrock surface and does not rise under the ridge. The floor of the designed excavation is well above the water table and would have minimal impact on its seasonal variation. The groundwater will not be aware of the fact that 20 or so feet of overburden was removed.
 - The absence of sulfide bearing rocks suggests that the influx of slightly more oxygenated waters into the subsurface during excavation would have little affect on the acidity or iron content of the underlying groundwater.
- The absence of substantial silt and clay in the Jordan Ridge Esker material suggests that airborne dust and runoff silting is likely to be less of a problem than is common at sand and gravel operations exploiting ice contact delta and kame deposits.
- The deposit is an exceptional resource and as the proposed excavation involves only a small portion of the total sand and gravel available, there is little likelihood that the operation would unexpectedly close due to the lack of quality material.

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Stormwater Management

The CT DEP regulates stormwater runoff from industrial and construction activities. Below is a description of the appropriate stormwater permits that will apply to the proposed sand and gravel mining activity on this site.

Industrial Activities

This proposed activity is an industrial activity as defined in Connecticut's General Permit for the Discharge of Stormwater associated with Industrial Activities, issued October 1, 1997, Section 2, definition 3, based upon the activity SIC code of 1442 (sand and gravel mining). The permit covers stormwater runoff from an industrial activity. It does not cover stormwater discharges to ground. CT DEP policy has dictated that retention of a 100-year storm event on site may be considered to be a discharge to ground. Since the current site design is for retention of a 50-year storm event, a permit will be necessary, even though it is likely that a 100-year storm event would be retained.

The general permit requires preparation of a Stormwater Pollution Prevention Plan (SWPPP) and annual monitoring of stormwater from the site. During years where there is no discharge, the permittee would still need to submit a Stormwater Monitoring Report form, describing the storm event and writing "no discharge" on the form.

The SWPPP requires creation of a pollution prevention team, a description of potential pollutant sources (in this case primarily sediment from the mining activity) and a description of all measures and controls appropriate for preventing polluted runoff. This includes good housekeeping measures (which will include keeping access roads clean and dust down), sediment and erosion controls, employee training, management of runoff and maintenance of management measures (including sedimentation basins) and site inspections. The SWPPP should also include a section on dust control

activities, since airborne particulates can become sources of stormwater pollution. The SWPPP must be certified by a Professional Engineer licensed to practice in Connecticut and must be kept on site at all times.

Construction Activities

Since the construction of the access road will disturb less than five acres, the project will not need a General Permit for the Discharge of Stormwater and Dewatering Wastewaters. Construction should be conducted with a local wetlands permit and following the Connecticut Guidelines for Soil Erosion and Sediment Control ("guidelines"). At the completion of mining activities should the envisioned residential subdivision be constructed, a construction general permit would then be necessary.

The greatest potential impact from the proposed activity would be in the construction of the proposed haul road. Due to the need for limiting access through the residential areas of the neighborhood, however, this does appear to be the most reasonable alternative for the haul road. Additional erosion and sedimentation controls other than the those depicted on the plan may be necessary, as the notes on the plan states, all installation must be done in accordance with the guidelines. Frequent inspections by qualified personnel during installation of the culvert and construction of the access road are recommended.

The proposed limiting of disturbed areas to less than five acres is a recommended best management practice, as is the installation of the retention basins and stabilization of all slopes along the access road prior to the start of excavation. Some additional diversion trenches may be necessary in order to ensure that all runoff from exposed areas enters the basins.

The proposed activity will significantly improve existing site conditions and repair damage done by the previous landowner through the restoration of western portions of

the site and the installation of appropriate erosion and sedimentation controls. The proposed anti-tracking pad and the use of road millings for the temporarily haul road, along with phasing, limited summer activities, and use of dust control water where necessary, if completely and properly implemented, will meet requirements for dust control.

Inland Wetlands Review

While the relatively small areas of direct impacts to wetlands and watercourses (approximately 2000 s.f., most of which is proposed to be temporary), appear to be approvable based on the information reviewed, it is the many potential indirect wetland impacts that should require careful regulatory review. A majority of these impacts pertain to erosion and sedimentation control. It is recommended that the following items should be addressed by the applicant:

1. Phase boundaries should be clearly and permanently marked in the field so that operators as well as regulatory personnel can readily judge the extent of operations in relation to these boundaries. This can be accomplished through a variety of means including (in order of descending preference) iron pins, hub and stake, construction fencing, or colored plastic flagging.
2. A sediment barrier should be included at the toe of the proposed cut on Jordan Lane in the vicinity of the proposed access road.
3. It may be more practical to use a constructed earthen berm for the sediment barrier called for between the access road and the wetlands, for the purposes of this multi-year project since sediment fences and hay bale barriers are considered a temporary measure.
4. The access road will have a run of approximately 600 ft. at a 6% grade from the temporary sediment basins down to Jordan Lane. Slowing the velocity of stormwater runoff as it flows down the road to Jordan Lane should be addressed. Perhaps a series of staggered "wing walls" attached to the sediment barrier proposed to parallel the road would accomplish this goal. This would in effect create a series of very small sediment basins along the barrier. Regular maintenance of these features would be needed.

5. The reed canary grass called for in the grass mix is considered by many to be a non-native invasive species. It is recommended that a substitute be found or it should be eliminated because of its tendency for aggressive growth, eventually out competing and displacing other native species. (Please refer to Wildlife Resources section for further comment.)

6. Outlets should be planned for the small, temporary silt basins proposed for the top of the access drive on phases 1 and 5.

7. It may be advantageous to chip some of the trees coming off the property to be used for the mulching of disturbed surfaces.

8. The term "stabilization" should be more precisely defined within the E & S narrative. At this point the proposed plan infers that once a phase has been permanently seeded and mulched it is "stabilized". This may or may not actually be the case. Stabilization could be considered to be the ability of a once disturbed soil surface to remain in a non-excessive erosional state due to the application of appropriate Best Management Practices. The determination of stability typically requires a span of time after seeding and mulching to allow for some vegetative growth and performance testing under typical storm events. Measurements of stability include the adequate density of vegetative growth as well as avoidance of rilling and gullyng of the earth's surface. Perhaps a longer inter-phase period is needed as well as insertion of a condition whereby the next phase will not be initiated without approval of the applicant's engineer as well as the local zoning inspector.

9. Control of fugitive dust often involves appropriate application of wetting materials throughout the entire work-site, not just on the access road as it is currently proposed.

10. More narrative detail is recommended for the proposed stream crossing as it relates to the diversion of waterflow or potential waterflow, during the construction period. The stream was flowing almost to bankfull during the Team wetland specialist's site

visit, however this was during a period of high stormwater runoff. Ideally, the crossing should be done during the "dry" season of late summer/early fall. In any case, the proper diversion of existing or potential flows should be planned for.

11. A construction sequence and restoration plan should be included for the removal of this temporary crossing.

12. The check dam proposed exclusively utilizes 1 1/4 inch stone. This size may be too small for potential flows. Perhaps a larger stone "chalked" or faced with the smaller size would be more functional.

13. Removal of one of the two existing wetland crossings in the vicinity of wetland flag #222 and #227 could be considered a mitigative measure for unavoidable wetland impacts as described in section 22a41(a)(4) C.G.S. Which crossing is removed could be based on the proposed final use of this portion of land.

14. Restoration of the existing wetland encroachment in the vicinity of wetland flag #266 is also recommended. Simply filling this area over with soil and planting with grass may result in small sink holes or "piping" of this soil down through the large boulders which comprise the existing fill. Piping in this area was observed during the site visit. Removal of the deposited debris from the small area of impacted wetland should be followed by proper dressing and vegetative stabilization of the resulting slopes. Natural succession of plant species should then soon follow in the restored wetland area.

The Natural Diversity Data Base

The Natural Diversity Data Base maps and files have been reviewed regarding the project area. According to our information, there are no known extant populations of Federal or State Endangered, Threatened or Special Concern Species that occur at the site in question.

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

It is now possible for individuals to conduct an initial endangered species review using the "State and Federal Listed Species and Significant Natural Communities" maps available for viewing through each town's Town Hall. The Town Planner should have a copy of the map. This map shows the generalized locations for listed species and communities as gray-shaded areas on a 1:24,000 scale map of the town. There is an attached sheet for instructions on how to use the map to conduct an endangered species review.

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

Wildlife Resources

Wildlife Habitats and Values

Existing

With exception to a small field/wet meadow located in the northeast section of the property and the previously disturbed excavation site, the DiSiato property is comprised of mature forest dominated by eastern white pine, eastern hemlock and oak. The forest is characterized by a closed overstory canopy with minimal development of shrub, midstory and ground vegetation. Wetland habitats consist of primarily forested wetlands including a brook that flows through the wet meadow toward Jordan Lane. Red maple also dominates portions of the wetlands. Wildlife species potentially inhabiting the property are listed in Table 1 (see Appendix).

Oaks provide acorns that serve as a valuable food resource for many species of wildlife during an important time of the year. Many wildlife species must build up a good fat reserve by feeding on mast in the fall. These fat reserves assist in survival during the winter months and help ensure that animals will be in good breeding condition in the Spring. In the oak/hardwood dominated forests of Connecticut, conifers provide an important variation in our forest ecosystem. Many wildlife species use conifer-dominated stands for nesting, feeding and cover, particularly in winter. Given the amount of undeveloped forest habitat that exists on adjoining properties, you can expect animals that require relatively large tracts of continuous forest to occupy the DiSiato property, including some species of forest-interior breeding birds and mammals with large home ranges. Given its size and location, the field/wet meadow likely supports animals considered to be common.

The wetlands survey does not indicate the presence of any vernal pools on the DiSiato property. However, a quick look at an aerial photograph, conversations with Mr.

Cloutier, and the knolly topography that characterizes the area, all indicate that vernal pools may be found on adjoining properties. If they are active, the DiSiato property may serve as foraging habitat for some species of amphibians. (Please see Soil and Water Conservation District Review section.)

Post-Excavation and Stabilization

Wildlife species potentially inhabiting the property post-excavation and stabilization are listed in Table 1 (see Appendix). Bank swallows require sandbanks and sloughed off embankments on woodland edges for nesting. Although it is difficult to say whether swallows will use the property for nesting once operations are underway, it is worth noting that sand pits have become one of the principle nest sites for this species in Connecticut. They nest from May through July typically in dense colonies where 10 to as many as 300 borrows may be constructed.

As each phase of excavation and stabilization is complete, habitat and wildlife diversity will increase. Non-forested habitats such as grasslands and old fields contribute to greater wildlife diversity within forest-dominated landscapes. Wildlife diversity is further increased where brushy habitat develops at forest-field edges. These "soft edges" support species that would otherwise not be found in either heavily forested or very open habitats. Numerous species of wildlife, some of which are experiencing consistent population declines here in the Northeast, will benefit from the resulting conversion of forest to early successional stage habitats over the next 10 years.

Impact Assessment

Direct loss of forested upland habitat will lead to a complete change in wildlife species composition on the property. Forest-interior breeding birds will be dispersed from the property due to lack of adequate territory. Adequate undeveloped forest habitat may exist on adjoining properties to continue to support small populations of some forest-interior birds at least in the short term. Disturbance due to heavy equipment operation

may discourage some birds from nesting adjacent to the excavation site during operations from April through July. Although the wetlands on the property are considered relatively low value to wildlife, protecting them from siltation and pollution is of importance to protecting the functions and habitat values of the larger wetland complex (i.e., spruce bog) between Route 6 and 203.

Recommendations

The following recommendations should be considered to minimize impacts to wildlife:

- Conduct land clearing activities outside of the peak bird nesting period (mid-May through mid-July).
- Install soil erosion and sediment control devices and maintain a buffer of vegetation (minimum of 100 feet where possible) along the wetlands and watercourses to maintain water quality and provide travel corridors for wildlife.
- Allow a margin of habitat (minimum 25 feet in width) to revegetate between the excavated areas and the forest edge following tree removal to increase habitat diversity.
- Use plantings that provide good quality wildlife habitat. Native warm season grasses (e.g., big bluestem, little bluestem and indiagrass) are recognized as being superior to cool season varieties in providing wildlife habitat.

However, their expense may outweigh the benefits provided unless a relatively large acreage (+20 acres) are maintained in the long term as wildlife habitat. Given that a subdivision is being planned, it may be prudent to use the cool season grasses and other legumes as proposed. All proposed plantings, with exception to the fall fescue (KY-31), are considered to have excellent wildlife value. Given the high quality of the wetland system to the west, the use of reed canary grass also should be reevaluated. Although it is considered excellent for controlling erosion and providing food and cover for wildlife, it can be invasive in wetland habitats. Other suggested alternatives

for erosion control and wildlife habitat are orchardgrass, switchgrass, white clover and white pine.

- Remove silt fences following stabilization.

In the long term, consideration should be given to mitigating at least some of the values lost as a result of the excavation and in the development of the subdivision. Mr. DiSiato could be asked to consider placing a conservation easement on a portion of the property which would restrict future development and minimize the creation of manicured grass and the use of chemical applications.

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Soil and Water Conservation District Review

In lieu of a detailed, resource-specific assessment, these will be general comments relating to several resources as integrated features.

Natural Diversity and Education

Although, as duly noted, the Connecticut Department of Environmental Protection's Natural Diversity Data Base does not show any entries of listed species for this site, the approach to natural diversity perhaps does not yet adequately account for the occurrence of unique geologic features. The esker at this site, and its associated kames and kettles, constitute a diversity of geologic features that — when considered in a landscape mosaic with the nearby Atlantic white cedar wetland — have significant intrinsic value.

Students at the school only a stroll away from this site are perhaps relegated to learning about eskers and other glacial landforms from the dry pages of an anonymous textbook while an exemplary landform, practically behind the school, is an impressive outdoor geology lesson waiting to happen. Natural diversity in its broadest sense, and educational potential of the site in its present form, should be given careful consideration. Needless to say, once converted, these values are irretrievable.

Vegetation

Casual observation reveals hills with conifer cover, not strikingly different from countless other sites throughout the region at first glance. Realizing, however, that a significant component of the conifer cover is eastern hemlock, *Tsuga canadensis*, does make it noteworthy. It isn't just the presence of hemlock that is remarkable, hemlock is not an uncommon tree in the region — but the physical nature and moisture regime of the soils in which it grows here make for something of an unusual occurrence.

Eastern white pine, *Pinus strobus*, (also represented here) and pitch pine, *Pinus rigida*, (not detected) typically compete well and occur commonly on these kinds of xeric sites. Such a preponderance of hemlock under these conditions, on the other hand, is atypical. Floristics here seem unique and warrant a closer look.

Wetland Functions and Values

Really an integral part of features already noted but necessarily separated for discussion purposes are the surface water features at and near the site. The intermittent stream flanking the esker on its northeast side has associated with it at least one small pool that is contiguous with the stream during times of high water, but is most likely separated from it under lower water conditions, possibly retaining water when the streambed has gone dry. The pool is perhaps 1/6 acre in size by a very rough visual estimate. (Please see Figure 3 for an approximate location.)

This wetland is very likely functioning as an ephemeral breeding pool and is typical of pools that support ambystomatid (mole) salamanders (spotted salamanders, *Ambystoma maculatum*, and possibly marbled salamanders, *Ambystoma opacum*) and wood frogs (*Rana sylvatica*).

The pool appears to lie outside the proposed site boundaries to the southeast by perhaps 500+/- feet. Since the amphibians listed in the previous paragraph spend the majority of their lives in uplands, however, and use these kinds of wetlands for breeding, the upland and wetland are functionally integral; disturbance in upland areas, even a 1/4 mile or more away, is not without potential impact to these values.

Water Quality and Nonpoint Source Pollution

'The glaciofluvial deposits present on this site, with current vegetative cover, no doubt contribute in a significant and positive way to groundwater quality. Changes in landuse first with additional material extraction, and, eventually, with subdivision development — obviously stand to affect the complexion of both ground and surface water quality.

Conversion of this portion of the local watershed from a landuse that is relatively free of nonpoint pollution sources (with the notable exception of existing excavated areas) to uses having such sources as inherent attributes (despite minimization with Best Management Practices) should be an important consideration.

General Comments

Attributes discussed under the four headings above are considered separately for purposes of discussion, but should really, of course, be integrated with each other and with other factors not covered here when judging the site. A foray into an area by a review team provides but a snapshot of a dynamic, seasonally active, natural system.

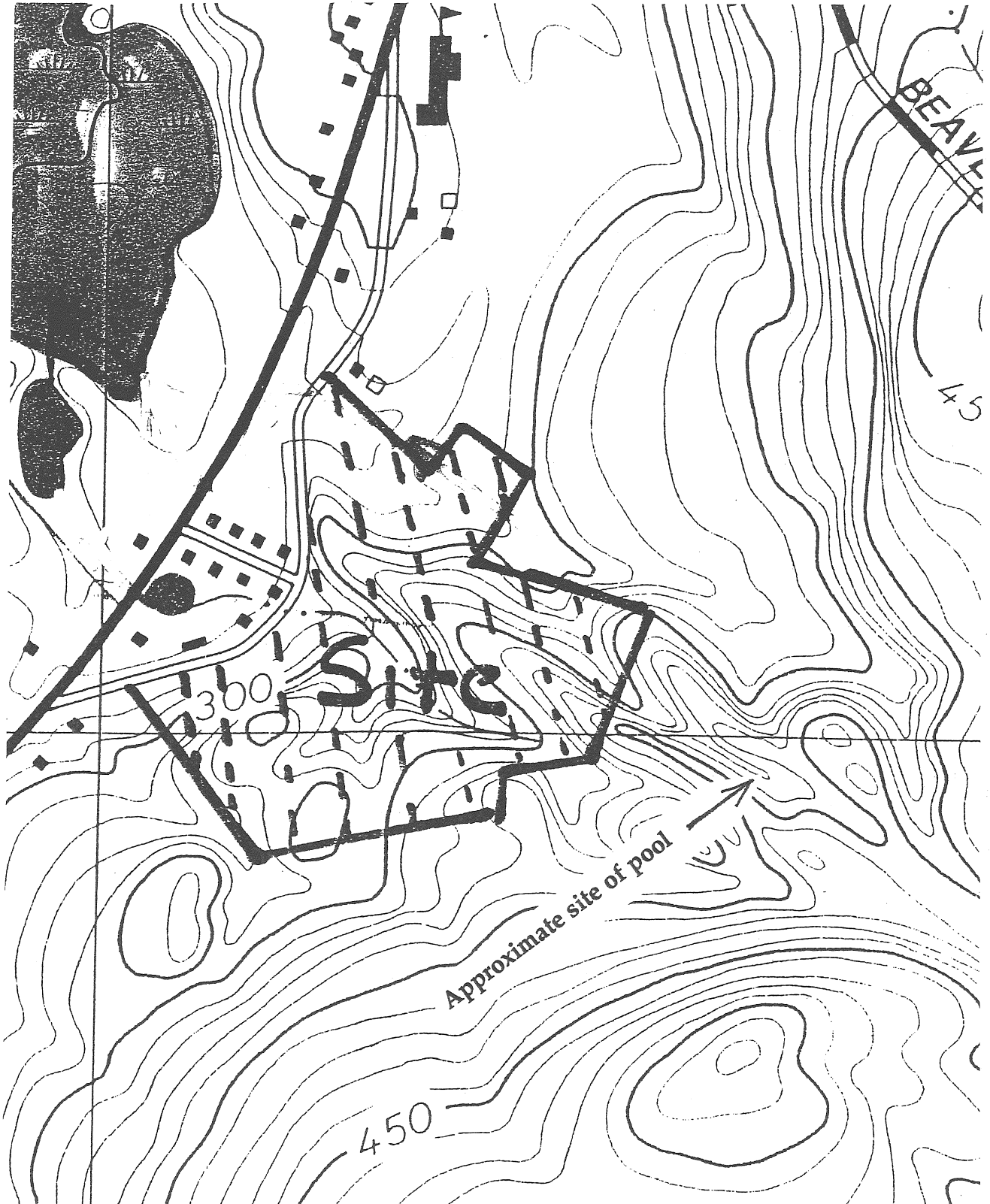
With that caveat noted, if there are one or two attributes that stands out and perhaps point to related features that warrant closer scrutiny of the site and more careful consideration of landuse decisions here, it is the fairly imposing presence of the esker, and what may prove to be a regionally unique forest cover type on Hinckley soils.

Figure 3.

↑
N

Approximate Location of Potential Vernal Pool

Scale 1" = 500'



Archaeological Review

A review of the Connecticut Archaeological Site Files and Maps shows one known archaeological site on the project area and two sites immediately adjacent to the proposed gravel excavation area. These archaeological sites were recorded during the cultural resource management field study for the proposed I-84 corridor through Eastern Connecticut. The site on the project area represents a prehistoric Native American encampment of unknown age. The sites in close proximity to the project area consist of two 1,000 year old camps occupied by hunting and gathering Indians utilizing the resources of the brook systems in the area. These sites are situated within and around the well-drained soils of the proposed gravel excavation area.

The Office of State Archaeology strongly recommends an archaeological survey for the proposed area. This survey should be conducted to locate and mitigate the existing site, and to identify any other archaeological resources which might be affected by the proposed undertaking. Mitigation can include avoidance of the resources, or professional archaeological removal of the resources prior to excavation activities. All archaeological survey work should be conducted in accordance with the Connecticut Historical Commission's *Environmental Review Primer for Connecticut Archaeological Resources*. The Office of State Archaeology is prepared to offer any technical assistance to the property owner and the Town of Windham in conducting the recommended survey.

In summary, the project area has demonstrated a high sensitivity for archaeological resources. A prehistoric Indian encampment is known to exist there and two others are situated in close proximity. An archaeological survey to identify the known site is strongly recommended. The Office of State Archaeology looks forward to working with the property owner and the Town of Windham in the preservation of this cultural resource.

Planning Considerations

Consistency with Local/Regional/State Plans

The local zoning classification of the proposed site for DeSiato Sand and Gravel off Jordan Lane in North Windham is R-1 residential. Along Jordan Lane and LaBarre Drive, there is an older residential neighborhood on smaller lots that predated the present zoning regulations. Sand and gravel operations are permitted as special exceptions in all zones within Windham. The 1994 Plan of Development Summary for the Town of Windham shows the project site and adjacent neighborhood and undeveloped areas as planned low density residential development with on-site water and septic systems. The ultimate proposed use of the 38 acre parcel as five single-family residential lots appears to be consistent with the current Town of Windham Plan of Development and zoning regulations. Development of five more level residential lots with reasonable buffer to Jordan Lane would provide for the slow growth of the Windham population and preserve rural and neighborhood character.

The most current Regional Growth and Preservation Guide Plan for the Windham Region was amended in 1981. The Plan suggests that the more rural areas in the Windhams should be developed with low density residential units, no extensions of public water and sewer systems, and minimum use of road frontage. The DeSiato project appears to be consistent with the Windham Regional Growth and Preservation Guide Plan.

The State Plan of Conservation and Development 1998-2003 designates the project area and surrounding lands as conservation areas while local and regional plans suggest low density residential development. While not totally consistent with the wording of the state plan, the resulting land use from the reclaimed sand and gravel operation would be a logical and appropriate use given the residential units on adjacent parcels.

Surrounding Land Use

Access to the proposed sand and gravel site to the south of Route 203 is through a residential neighborhood with medium to high density of housing. There is industrial land to the north of Route 203 including a small industrial park which was reclaimed from an earlier sand and gravel operation conducted by the applicant. At the northern end of Jordan Lane, there is the North Windham Elementary School near the intersection with Route 203.

Roads/Traffic

The applicant has two feasible alternatives to access the site with a maximum of 56 trucks per day. The first alternative uses LeBarre Drive and the existing gravel road to the site. The second alternate route proposes a temporary access road which crosses Jordan Lane and directly across another piece of property owned by the applicant to exit onto Route 203. This second alternative would have temporary wetlands impacts while sand and gravel is actively removed in five phases from the site. The site and wetlands crossing would be restored after the project is complete. This alternative would remove the need for any trucks passing from Route 203 through the residential neighborhood on LeBarre Drive or along the narrow Jordan Lane. The alternate route proposed would reduce the noise and dust from much of the local neighborhood. As long as the temporary wetlands impact is not excessive, this alternate route would appear to be a sound mitigative measure.

Site Plan

Upon reclamation, the site would be restored as a subdivision with five large lots and more level characteristics to make them more saleable. The site plan also provides some permanent berming and plantings which would mitigate possible wetlands impacts of the unpermitted removal and grading activities by the former owner of the

property. After the site plan activities have occurred, it is reasonable to use the parcel as a residential subdivision at low density and with few road cuts on rural Jordan Lane. The configuration of Lot 1 as a triangle does not appear to be consistent with Section 4.2.3 of the Windham Subdivision Regulations which call for more regular shaped lots when possible. The odd triangular shape of proposed Lot 1 might be changed by making it a parallelogram using some of the acreage of Lot 2.

Appendix

TABLE I. WILDLIFE SPECIES POTENTIALLY INHABITING THE DISIATO PROPERTY PRE- AND POST-EXCAVATION AND STABILIZATION, WINDHAM, CT (1999).

COMMON NAME (Status ^a)	PRE-	POST-	*
REPTILES			
Common snapping turtle	X	X	
Painted turtle		X	
Spotted turtle		X	
Wood turtle (SC)	X	X	
Eastern box turtle (SC)	X	X	
Stinkpot		X	
Eastern worm snake	X		
Northern black racer	X	X	
Northern ringneck snake	X		
Black rat snake	X	X	
Eastern hognose snake (SC)	X	X	
Eastern milk snake	X	X	
Eastern smooth green snake		X	
Northern brown snake	X	X	
Northern redbelly snake	X		L
Eastern ribbon snake (SC)	X		L
Eastern garter snake	X	X	
Northern copperhead	X		L
AMPHIBIANS			
Spotted salamander	X		
Northern dusky salamander	X		
Northern two-lined salamander	X		
Northern spring salamander (T)	X		L
Four-toed salamander	X		
Redback salamander	X		

COMMON NAME (Status^)	PRE-	POST-	*
Red-spotted newt	X		
Eastern american toad	X	X	
Fowler's toad	X	X	
Northern spring peeper	X	X	
Gray treefrog	X		
Bullfrog	X		
Pickereel frog	X		
Wood frog	X		
Eastern spadefoot (E)	X	X	L
MAMMALS			
Virginia Opposum	X	X	
Masked shrew	X		
Water shrew	X		L
Smoky shrew	X		L
Short-tailed shrew	X		
Hairy-tailed mole	X	X	L
Eastern mole		X	
Little brown myotis	X	X	
Northern long-eared bat	X	X	
Silver-haired bat (SC)	X	X	L
Eastern pipistrelle	X	X	L
Big brown bat	X	X	
Red bat (SC)	X	X	L
Hoary bat (SC)	X	X	L
Eastern cottontail		X	
New England cottontail		X	L
Snowshoe hare	X		L
Eastern chipmunk	X	X	

COMMON NAME (Status ^A)	PRE-	POST-	*
Woodchuck		X	
Gray squirrel	X	X	
Red squirrel	X	X	
Southern flying squirrel	X		
Northern flying squirrel	X		L
Deer mouse	X	X	L
White-footed mouse	X	X	
Southern red-backed vole	X	X	L
Meadow vole		X	
Woodland vole	X	X	
Southern bog lemming (SC)	X	X	L
Norway rat		X	
House mouse		X	L
Meadow jumping mouse		X	
Woodland jumping mouse	X	X	L
Porcupine	X	X	L
Covote	X	X	
Red fox	X	X	
Gray fox	X	X	
Raccoon	X	X	
Fisher	X		
Short-tailed weasel	X	X	
Long-tailed weasel		X	L
Mink	X		
Striped skunk	X	X	
River otter	X		
Bobcat	X	X	
White-tailed deer	X	X	

COMMON NAME (Status ^A)	PRE-	POST-	*
BIRDS			
Turkey vulture	X	X	
Sharp-shinned hawk (E)	X	X	
Cooper's hawk (T)	X	X	
Northern goshawk	X	X	
Red-shouldered hawk (SC)	X		
Broad-winged hawk	X	X	
Red-tailed hawk	X	X	
American kestrel (SC)		X	L
Ruffed grouse	X	X	
Eastern wild turkey	X	X	
Killdeer		X	
Spotted sandpiper		X	L
American woodcock		X	L
Rock dove		X	L
Mourning dove	X	X	
Black-billed cuckoo	X	X	L
Yellow-billed cuckoo	X	X	L
Eastern screech owl	X	X	L
Great horned owl	X	X	
Barred owl	X	X	
Long-eared owl (E)	X	X	L
Northern saw-whet owl (SC)	X	X	L
Common nighthawk (T)	X	X	L
Whip-poor-will (SC)	X	X	L
Chimney swift		X	L
Ruby-throated hummingbird	X	X	
Red-bellied woodpecker	X	X	

COMMON NAME (Status ^A)	PRE-	POST-	*
Downy woodpecker	X	X	
Hairy woodpecker	X	X	
Northern flicker	X	X	
Pileated woodpecker	X	X	
Olive-sided flycatcher (SC)	X		L
Eastern wood-pewee	X	X	
Alder flycatcher (SC)		X	L
Willow flycatcher		X	L
Least flycatcher		X	
Eastern phoebe	X	X	
Great-crested flycatcher	X	X	
Eastern kingbird		X	
Horned lark (T)		X	L
Purple martin (SC)		X	L
Tree swallow		X	
Bank swallow		X	
Cliff swallow		X	L
Barn swallow		X	
Blue jay	X	X	
American crow	X	X	
Common raven (SC)	X		L
Black-capped chickadee	X	X	
Tufted titmouse	X	X	
Red-breasted nuthatch	X		
White-breasted nuthatch	X	X	
Brown creeper	X		
Carolina wren		X	
House wren		X	

COMMON NAME (Status^)	PRE-	POST-	*
Winter wren	X		
Gray catbird	X	X	
Northern mockingbird		X	
Brown thrasher (SC)		X	L
Eastern bluebird	X	X	
Veery	X	X	
Hermit thrush	X	X	
Wood thrush	X		
American robin	X	X	
Blue-gray gnatcatcher	X	X	
Cedar waxwing	X	X	
European starling		X	
White-eyed vireo		X	
Solitary vireo	X		L
Blue-winged warbler		X	
Golden-winged warbler		X	L
Yellow warbler		X	
Chestnut-sided warbler		X	
Yellow-rumped warbler	X	X	L
Black-throated green warbler	X		
Blackburnian warbler	X		L
Pine warbler	X		
Prairie warbler		X	
Black-and-white warbler	X		
American redstart	X		
Worm-eating warbler	X		
Ovenbird	X		
Northern waterthrush	X		L

COMMON NAME (Status ^A)	PRE-	POST-	*
Common yellowthroat		X	
Yellow-breasted chat (E)		X	L
Scarlet tanager	X		
Northern cardinal		X	
Rose-breasted grosbeak		X	
Indigo bunting		X	
Rufous-sided towhee		X	
Chipping sparrow	X	X	
Field sparrow		X	
Vesper sparrow (E)		X	L
Savannah sparrow (SC)		X	L
Grasshopper sparrow		X	L
Song sparrow		X	
Bobolink		X	L
Red-winged blackbird		X	L
Eastern meadowlark (SC)		X	L
Common grackle	X	X	
Brown-headed cowbird		X	
Orchard oriole		X	L
Northern oriole		X	
Purple finch	X		L
House finch		X	
American goldfinch		X	
House sparrow		X	

Key

^AE = Endangered, T = Threatened, SC = Special Concern

Covertypes

Pre-Excavation

Softwood

Grass

Wetland

Post-Excavation (0-10 years of succession)

Grass

Shrub/Old Field

Wetland

Residential Edge

* L = Low probability of occurrence based on habitat requirements, distribution and relative abundance in Connecticut

ABOUT THE TEAM

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

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

PURPOSE OF THE TEAM

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

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

REQUESTING A REVIEW

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

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