

ENDANGERED SPECIES HABITAT ASSESSMENT

for

Atkins Road, East Sandwich, MA

October 22, 2008

Applicant

Raymond W. Caterino

Monomoy Properties LLC

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Representative

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January 21, 2008

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ENDANGERED SPECIES HABITAT ASSESSMENT

Raymond W. Caterino Property
Atkins Road
East Sandwich, MA

NHESP Tracking No. 08-23986

1.0 Introduction

ENSR prepared this Endangered Species Habitat Assessment report for a proposed residential subdivision on a 36.91 acre parcel located off Atkins Road in Sandwich, MA (Figure 1a. Site Locus Map). The wildlife habitat assessment report was prepared as requested in the Natural Heritage and Endangered Species Program correspondence letter dated January 21, 2008 to the client and project engineer. The wildlife habitat assessment was performed to assess the suitability of the pine-oak forest habitat and the old sand and gravel mining areas on the site for Eastern Box Turtles (*Terrapene carolina*), a Species of Special Concern, for use as overwintering, migratory, feeding, aestivating, and breeding and nesting habitat. The assessment was performed in accord with the guidelines in the NHESP document: *Endangered Species Habitat Assessment Guidelines: Wildlife, 3/1/2006*.

2.0 Methodology

Field surveys were performed on March 31, 2008, April 5, 2008, July 6, 2008, July 13, 2008, September 25, 2008, and October 10, 2008. Visual Encounter Surveys (VES) were performed by an ENSR biologist in the oak-pine forest and abandoned sand and gravel mining areas to evaluate the suitability of the site for Eastern Box Turtles. Plant communities were inspected during the site assessments to develop cover type maps. Weather conditions were variable and ranged from overcast to partially cloudy skies with cool to moderate (35-60°F) temperatures in March and April to hazy, hot (75-80°F), and humid conditions on July 6, 2008 and July 13, 2008. The September site inspection was conducted under clear skies with mild temperatures (60-65°F).

Meander transects were walked in the upland forest with linear transects along the sand access road into the site and along the ATV trails in the forest habitat. The abandoned sand and gravel mining areas and forest habitats immediately adjacent to the site were also surveyed. Grass dominated areas and disturbed areas were investigated for signs of forms, nesting activity, and skeletal remains. Pine-oak forest habitat and sand and gravel mining areas were surveyed during each site survey.

Windfalls and forest edges were searched where filtered sunlight and suitable turtle habitat was present. Transects were also walked along the wire fence along the southern property line with the Mid-Cape Highway property. The wildlife habitat assessment follows the guidelines in the NHESP document *Endangered Species Habitat Assessment Guidelines: Wildlife (Dated 3/1/06) (MA NHESP 2006a)*.

An inventory of higher vascular plants recorded commonly during the field surveys is included in Appendix A. Wildlife species recorded during the field surveys are listed in Appendix B. Representative photographs of the upland forest habitat and abandoned sand and gravel mining areas are included in Appendix C. Plant nomenclature follows *The Vascular Plants of Massachusetts: A County Checklist* (Sorrie and Somers 1999).

Field guides and manuals used to prepare the plant inventory included *Manual of Vascular Plants of Northeastern United States and Adjacent Canada* (Gleason and Cronquist 1993), *Gray's Manual of Botany* (Fernald 1950), and *The Illustrated Companion to Gleason and Cronquist's Manual - Illustrations of the Vascular Plants of Northeastern United States and Adjacent Canada* (Holmgren et al. 1998).

Wildlife distribution maps in *Amphibians and Reptiles of New England* (DeGraaf and Rudis 1983) and *New England Wildlife: Habitat, Natural History, and Distribution* (DeGraaf and Yamasaki 2001) were reviewed prior to the field surveys.

The NHESP list of Endangered, Threatened, and Special Concern species for the Town of Sandwich was reviewed as part of the site assessment. The Eastern Box Turtle fact sheet prepared by NHESP was also reviewed (MA NHESP 2007a).

3.0 Existing Site Conditions

The project site is an undeveloped property located at the southern end of Atkins Road in East Sandwich, MA (Figure 1a. Site Locus Map). The project site occurs in Estimated Habitat and Priority Habitat as identified in the 12th Edition of the *Massachusetts Natural Heritage Atlas* (MA NHESP 2006b). Certified vernal pools were not identified on the site and viable vernal pool habitat was not observed during the surveys performed in March and April 2008. Pine-oak forest habitat is the dominant community type on the site. Cover types were field verified during the site surveys. Mature forest habitat is present along the eastern property line on land owned by the Town of Sandwich. Single-family residences are present along the western property line and on the northwestern and northern edge of the site. The Mid-Cape Highway (Route 6) is present along the southern property line. The sand and gravel mining areas within the site have been inactive for many years and the exposed soils are being colonized by young oaks and pines.

4.0 Habitat Cover Types

Oak-pine forest habitat is the dominant cover type on the site and covers approximately 93% of the site. The disturbed areas created by the past sand and gravel mining operations located in the interior of the site and near to Atkins Road access point cover approximately 6% of the site. Open grass dominated areas are essentially restricted to the edges of the roads and internal paths. Grassy habitat accounts for approximately 1% of the site. Dominant tree species recorded in the forest community include black oak (*Quercus velutina*), white oak (*Quercus alba*), scarlet oak (*Quercus coccinea*), and pitch pine (*Pinus rigida*).

Associate tree species recorded in the field surveys include tree and sapling specimens of red maple (*Acer rubrum*), black cherry (*Prunus serotina*), eastern white pine (*Pinus strobus*), and eastern red cedar (*Juniperus virginiana*). Sassafras (*Sassafras albidum*), black locust (*Robinia pseudoacacia*), and American holly (*Ilex opaca*) specimens are present in the woodland community. Juvenile pitch pines and big-tooth aspen (*Populus grandidentata*) saplings are common in the disturbed area along the northern edge of the old sand and gravel mining area near Atkins Road.

Canopy cover is an estimated 50% to 55% with mature trees ranging from 4 inches to 10 inches DBH. Mature trees are an estimated 60 to 85 ft. in height. Standing deadwood and snags are present in the forest habitat. Storm damaged trees are also present in the forest habitat.

Shrubs recorded in the understory layer include arrow-wood (*Viburnum dentatum*), black huckleberry (*Gaylussacia baccata*), highbush blueberry (*Vaccinium corymbosum*), lowbush blueberry (*Vaccinium pallidum*), sheep-laurel (*Kalmia angustifolia*), and bayberry (*Myrica pensylvanica*). Shrubs recorded in the altered areas include staghorn sumac (*Rhus typhina*) and bush honeysuckle (*Lonicera morrowii*). Native vines recorded in the field surveys include sawbrier (*Smilax glauca*), catbrier (*Smilax rotundifolia*), wild grape (*Vitis labrusca*), Virginia creeper (*Parthenocissus quinquefolia*), poison ivy (*Toxicodendron radicans*), and dewberry (*Rubus* sp.). Oriental bittersweet (*Celastrus orbiculata*) vines were recorded infrequently in the woodland habitat.

Herbaceous species and low-ground cover species observed in the forest habitat include Pennsylvania sedge (*Carex pensylvanica*), teaberry (*Gaultheria procumbens*), spotted wintergreen (*Chimaphila maculata*), and bracken fern (*Pteridium aquilinum*). Upland ferns included hay-scented fern and bracken fern. Herbaceous species common to waste places and altered areas were also common along the edges of the previously disturbed areas.

A general vegetative cover map is presented in Figure 2a.

5.0 Habitat Functions

The project site supports suitable habitat for Eastern Box Turtles. Suitable habitat is present for migratory and feeding functions in the upland forest community. Limited breeding and nesting habitat is present along the edges of the sand access road, but more suitable habitat for breeding and nesting appears to be present in the disturbed area along the northern edge of the old sand and gravel mining area in the northern section of the site where piles of loam material are present on the northern property line.

The two Eastern Box Turtles observed during the field surveys were found near the northern property line and may have migrated onto the site from the adjacent woodland habitat. The piles of soil material pushed up along the northern edge of the site were searched for evidence of turtle nesting activity, but no signs of nesting activity were observed. The piles of debris and asphalt in this area of the site may provide overwintering habitat. Potential overwintering habitat is also present in the Burrow Pit associated with the sand and gravel mining area in the interior of the site.

6.0 Proposed Conditions and Impacts

The proposed project is a clustered subdivision consisting of 22 lots serviced by a paved road with buried water lines and utility lines. A summary of impacts to the forest habitat and disturbed areas associated with the abandoned sand and gravel mining areas is presented in Table 1.

Table 1. Proposed impacts to upland habitats and cover types mapped on Mass GIS color orthophotographs.

Impact Analysis	Areas Unaltered	Areas Altered	Total Area	% of Available Habitat Altered
Habitat Cover Type				
Forested Uplands (Mixed) (FOR UPL)	20.1 Ac (874,601 sf)	14.4 Ac (626,147 sf)	34.5 Ac (1,500,748 sf)	42%
Sand and Gravel Mining Area (SAG)	1.8 Ac (78,062 sf)	0.3 Ac (15,823 sf)	2.1 Ac (93,893 sf)	17%
Grassy Habitat	0.2 Ac (6,706 sf)	0.1 Ac (6,471 sf)	0.3 Ac (13,177 sf)	49%
Total Area (Acres)	22.1	14.8	36.9	
Habitat Function				
Potential Feeding, Migratory, Aestivating & Overwintering Habitats	20.2 Ac (635,265 sf)	14.6 Ac (635,265 sf)	34.8 Ac (1,518,396 sf)	41.8%
Potential Breeding & Nesting Habitats (Includes 2 FT Shoulders along Dirt Roads)	1.3 Ac (54,452 sf)	0.2 Ac (10,028 sf)	1.5 Ac (64,480 sf)	15.6%
Potential Overwintering, Breeding and Nesting Habitats	0.5 Ac (21,740 sf)	0.1 AC (3,163 sf)	0.6 Ac (24,903 sf)	12.7%
Total Area (Acres)	22	14.9	36.9	

Approximately 14.4 acres of forest habitat will be impacted by the proposed project. Activity in the old sand and gravel mining areas will alter approximately 0.3 acres on the site. Alteration of the grassy habitat on the

site is minimal and will be increased through the enhancement of turtle nesting habitat in suitable areas on the site. Open space parcels total approximately 22 acres or 60% percent of the property. The conceptual site plan enclosed with the MESA application provides additional information.

7.0 Summary

The subject parcel provides feeding, overwintering, aestivation, migratory, and potential breeding and nesting habitat for Eastern Box Turtles. As proposed the project will alter approximately 20.2 acres of upland forest habitat suitable for feeding, migratory, and overwintering habitat. Alteration of the potential breeding and nesting habitat in the old sand and gravel mining areas will be minimized to the greatest extent possible. Alteration of the scrub pine and poplar community present along the northern edge of the sand and gravel mining area near the northern property line is limited to the removal of old piles of asphalt fill and thinning of the scrub pines and poplars in order to pave and widen the existing dirt site road which will service the development. The existing alignment of the dirt road will be essentially maintained. Roadway widths will be kept to town approved minimums.

The project design maintains a significant undisturbed buffer zone along the southern property line and the Mid-Cape Highway (Route 6). An undisturbed buffer zone is also protected along the eastern property line adjacent to the Town of Sandwich parcels. The open space areas provide wildlife corridors to the forest habitat east of the site. Maintaining the landscape connection to the Town of Sandwich parcels east of the project site and the forest habitat to the northeast of the property is particularly important for the movement of wildlife across the site. Wildlife movements across the site from the south are limited by the wire fence along the southern property line where a common border with the Mid-Cape Highway (Route 6) exists.

ENSR believes the cluster subdivision plan protects potential breeding and nesting habitat in the overgrown sand and gravel mining areas located in the central and northeastern corner of the site. Existing vegetative communities outside the proposed work areas associated with the construction of the subdivision road, storm water management structures, and individual residences will be protected under a Conservation Restriction.

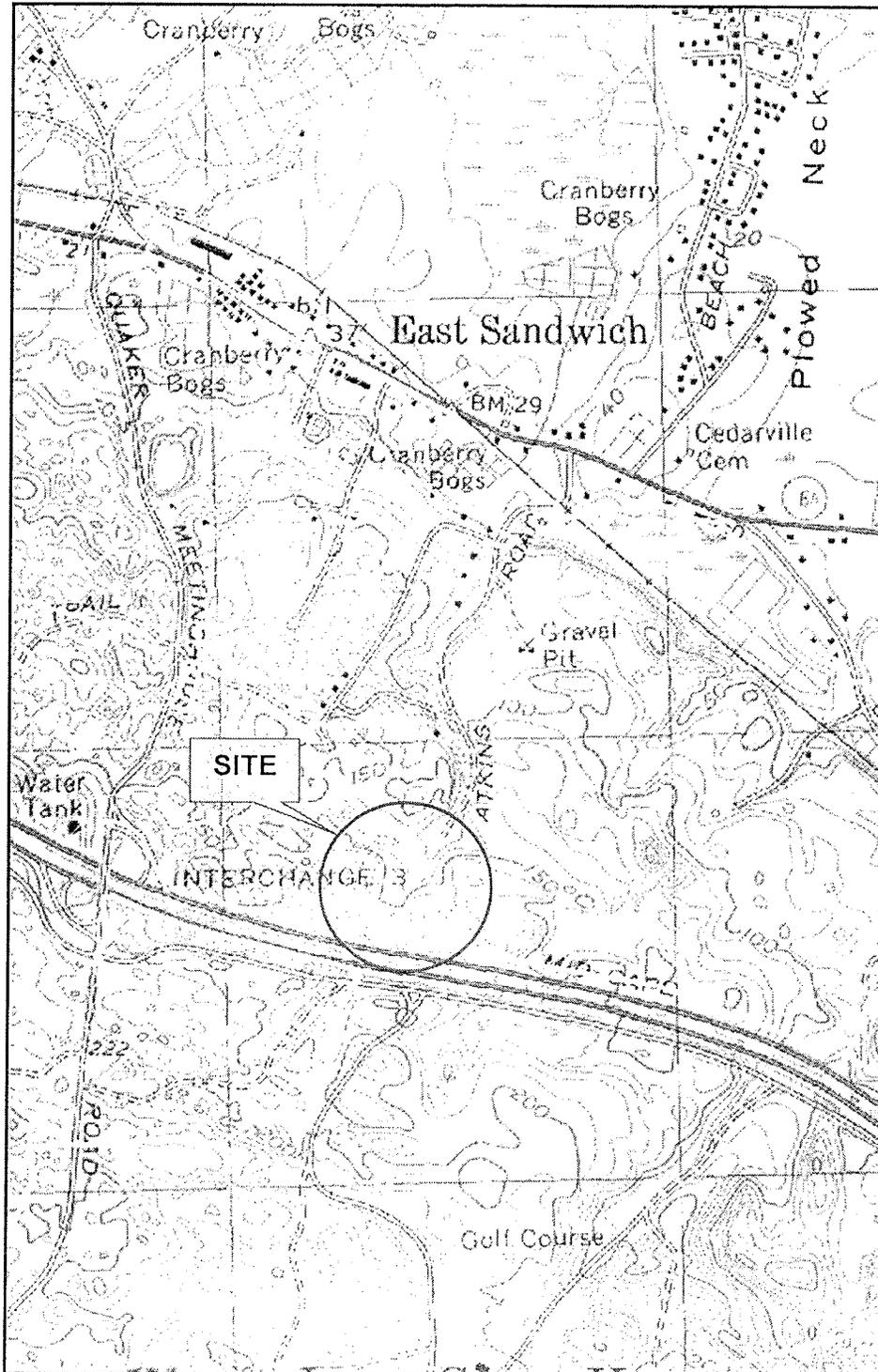
Creation of turtle nesting habitat is proposed in the old sand and gravel mining areas where management of the encroaching pines and young hardwood species will enhance the existing community. A rare species observation form for the individual Eastern Box Turtles observed in this section of the property is enclosed.

8.0 References

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- Massachusetts Natural Heritage and Endangered Species Program. 2007b. Advisory Guidelines for Creating Turtle Nesting Habitat. MA Division of Fisheries and Wildlife, Westborough, MA. Draft-May 17, 2007.
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- Swain, P. C., and J. B. Kearsley. 2000. Classification of Natural Communities of Massachusetts. Natural Heritage and Endangered Species Program, Massachusetts Division of Fisheries and Wildlife, Westborough, MA. (July Draft).

Figures



Legend

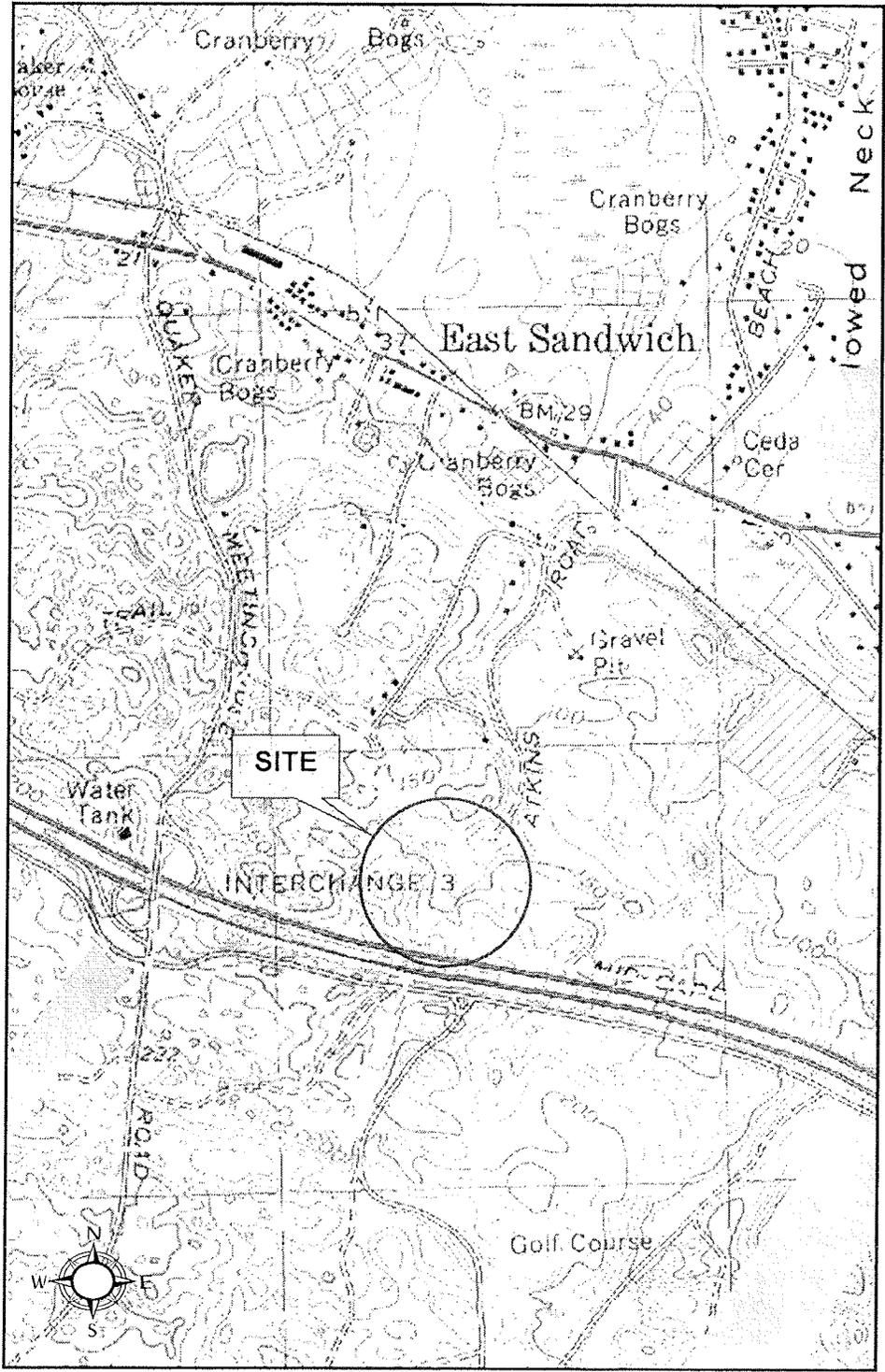
2008 Priority Habitat

**FIGURE 1a: SITE LOCUS &
MNHESP PRIORITY HABITAT MAP
ATKINS ROAD, EAST SANDWICH, MA**

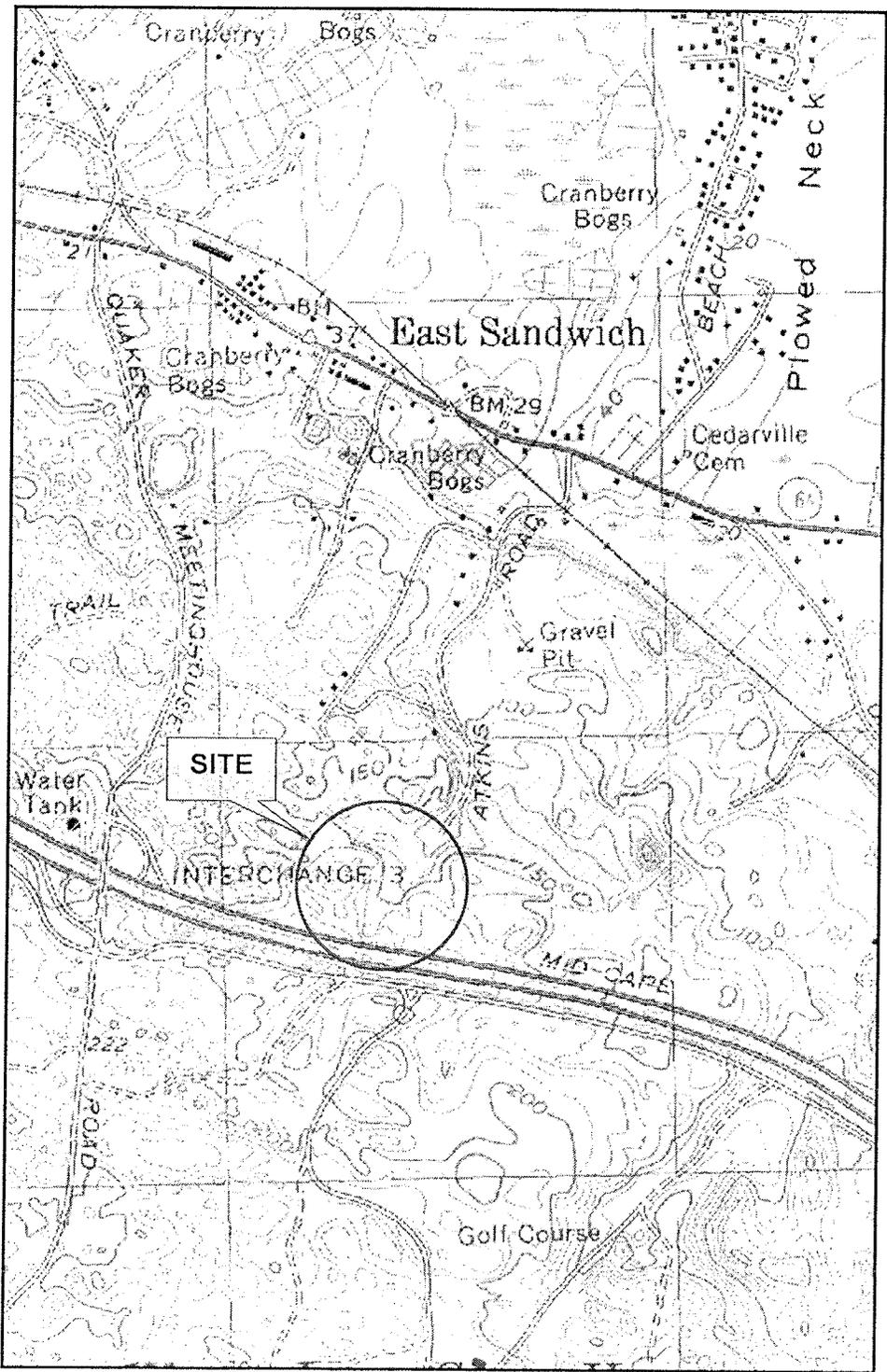
SCALE 1:15,000
USGS 7.5 MINUTE TOPOGRAPHIC QUAD
SANDWICH, MA

Baxter Nye
Engineering & Surveying

78 North St., 3rd Floor
Hyannis, MA 02601
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<p>Legend</p> <ul style="list-style-type: none">  2008 Priority Habitat  Open Space Ⓟ Conservation  Open Space Ⓟ Unknown  Conservation Restriction 	<p>FIGURE 1b: MNHESP PRIORITY HABITAT & OPEN SPACE ATKINS ROAD, EAST SANDWICH, MA</p> <p>SCALE 1:15,000 USGS 7.5 MINUTE TOPOGRAPHIC QUAD SANDWICH, MA</p>	<p>Baxter Nye Engineering & Surveying</p> <p>78 North St., 3rd Floor Hyannis, MA 02601 Ph 508-771-7502 Fax 771-7633</p>
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Legend

2008 Estimated Habitat
 Certified Vernal Pools

**FIGURE 1c: MNHESP ESTIMATED
 HABITAT & CERTIFIED VERNAL POOLS
 ATKINS ROAD, EAST SANDWICH, MA**
 SCALE 1:15,000
 USGS 7.5 MINUTE TOPOGRAPHIC QUAD
 SANDWICH, MA

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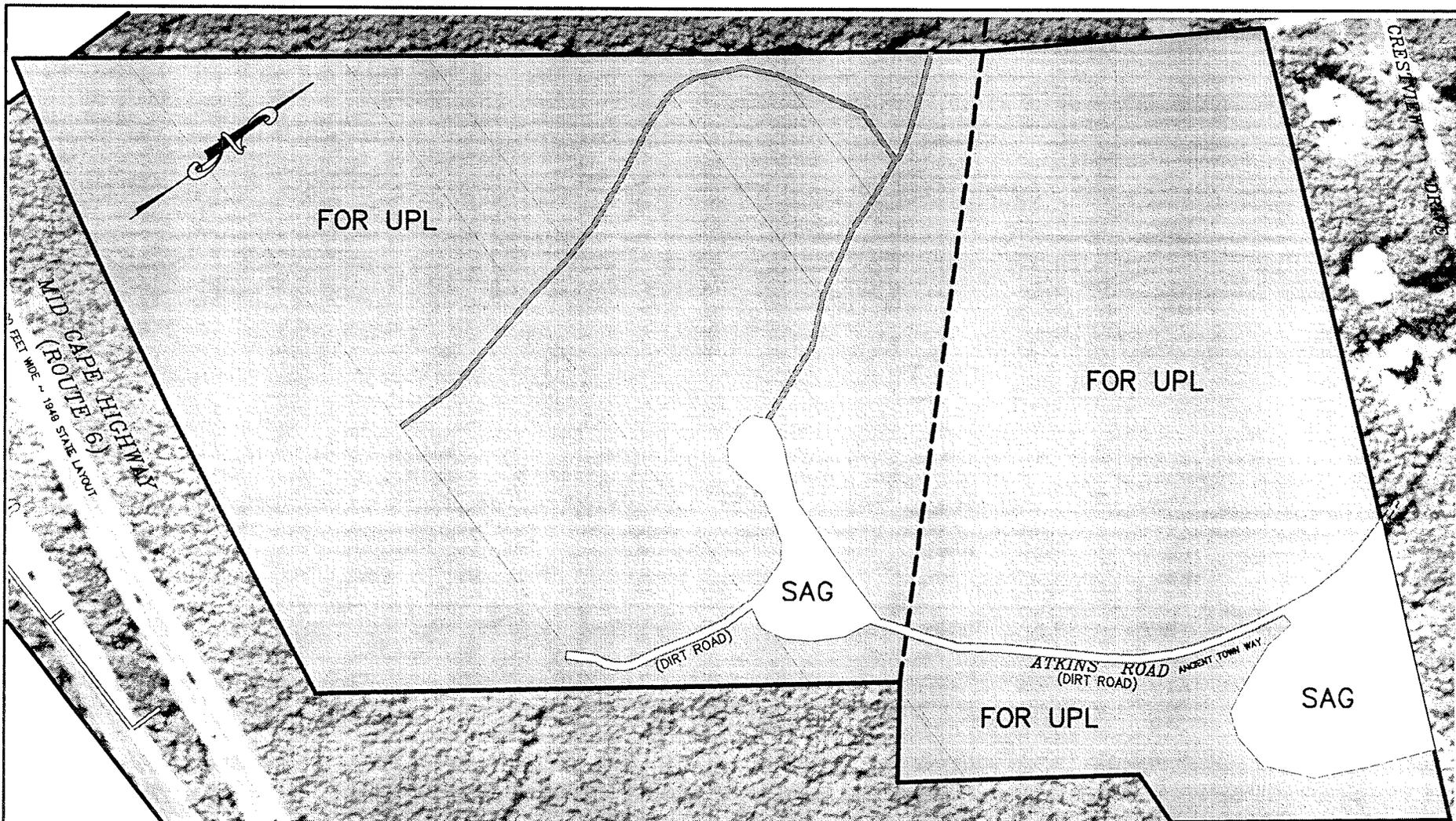


FIGURE 2A
COVER TYPES
 RELATIVE TO EASTERN BOX TURTLE

LEGEND

- | | |
|---|--|
| <ul style="list-style-type: none">  FORESTED UPLANDS (MIXED)  SAND & GRAVEL MINING AREA (INCLUDES DIRT ROADS)  GRASSY HABITAT (FOOT PATHS & 2 FT SHOULDER ALONG DIRT ATKINS ROAD) | <ul style="list-style-type: none">  APPROXIMATE PROPERTY BOUNDARY |
|---|--|

Scale : 1" = 200' Date : 10-21-2008

Atkins Road Sandwich, MA 2008-019

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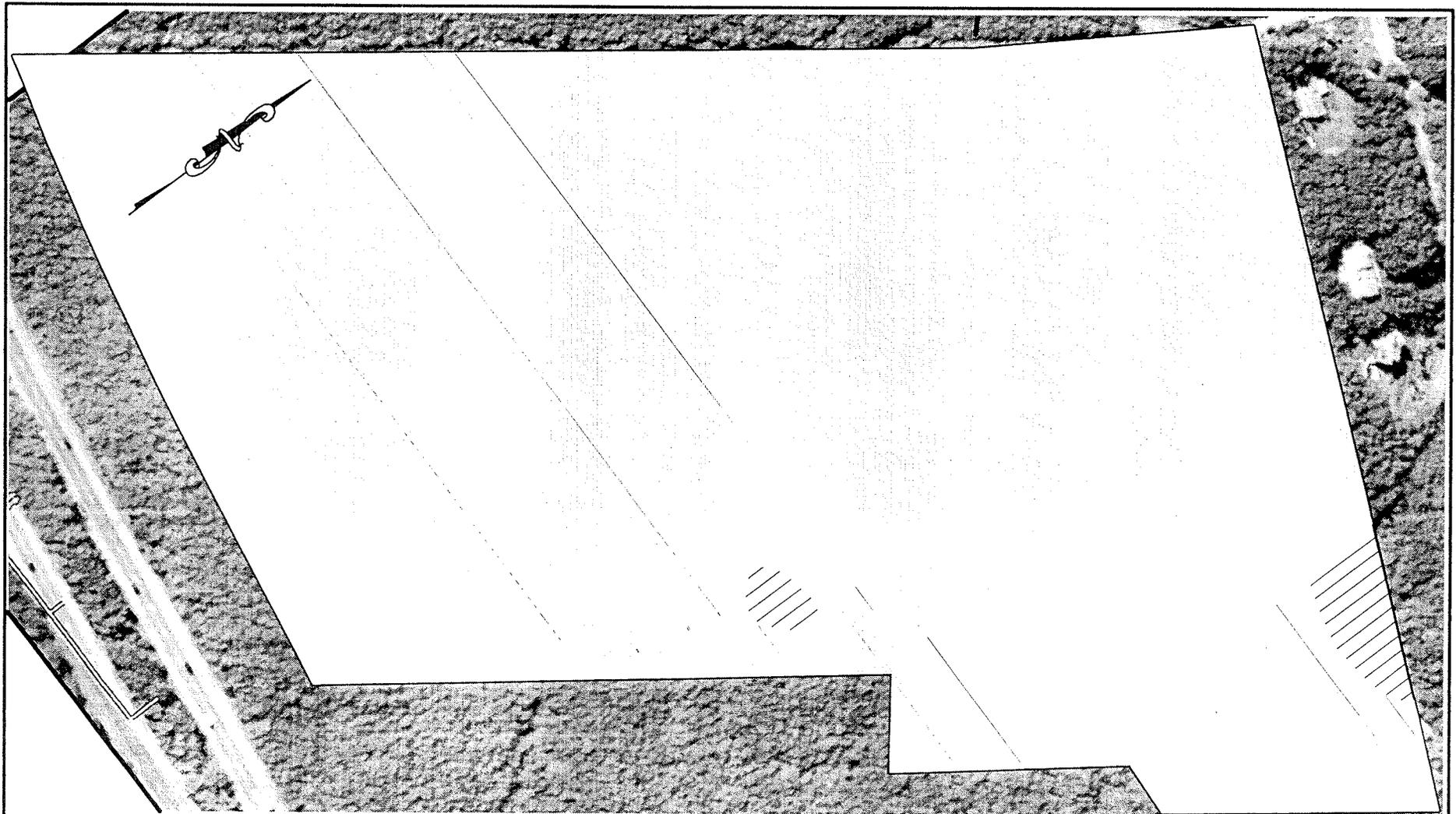


FIGURE 2B
HABITAT FUNCTIONS
 RELATIVE TO EASTERN BOX TURTLE

LEGEND



POTENTIAL FEEDING, MIGRATORY, AESTIVATING, & OVERWINTERING HABITATS



POTENTIAL BREEDING & NESTING HABITATS (INCLUDES 2 FT SHOULDERS ALONG DIRT ROADS)



POTENTIAL OVERWINTERING, BREEDING & NESTING HABITATS



APPROXIMATE PROPERTY BOUNDARY

Scale : 1" = 200' Date : 10-21-2008

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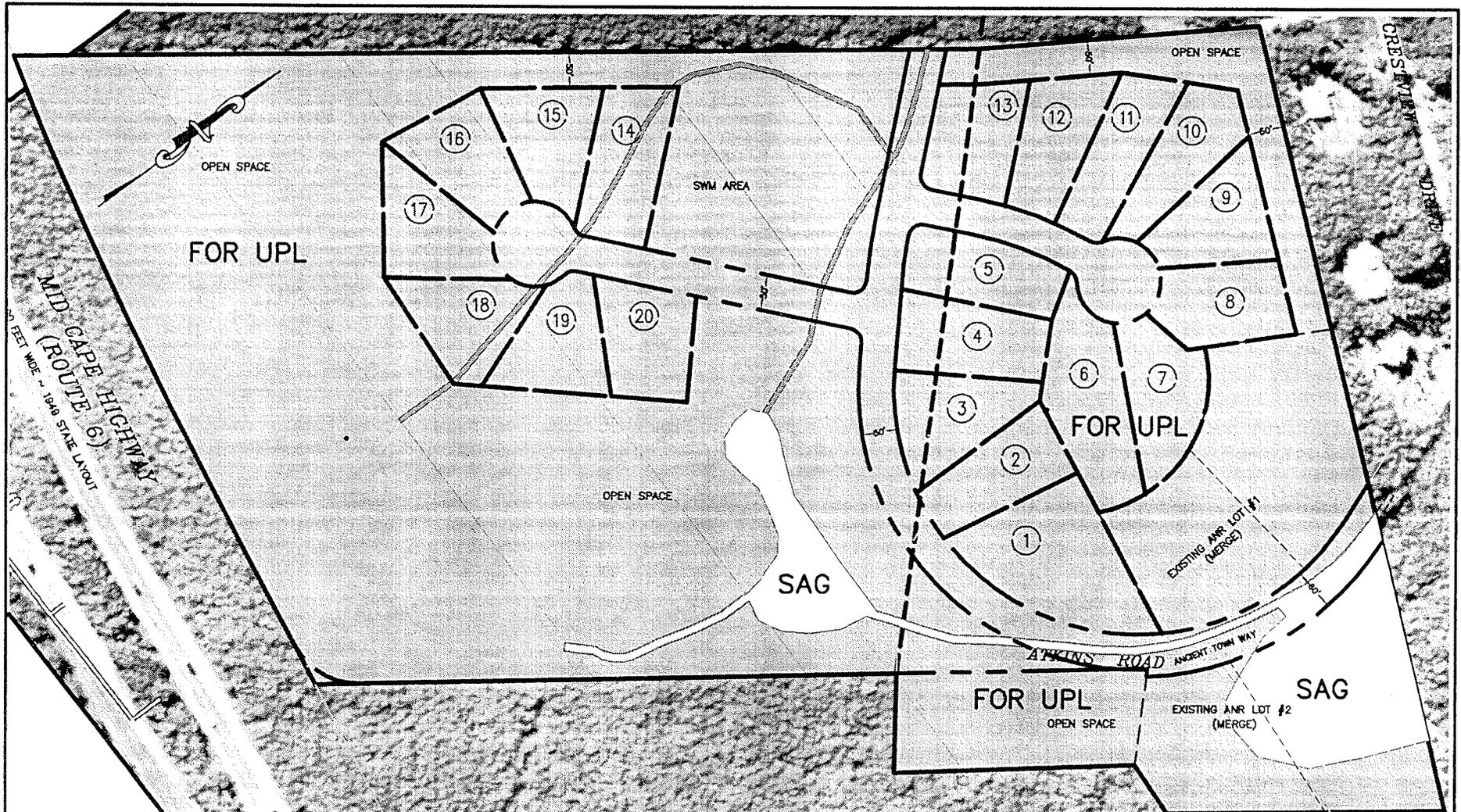


FIGURE 3A
PROPOSED DEVELOPMENT / COVER TYPES
 RELATIVE TO EASTERN BOX TURTLE

LEGEND

- | | |
|--|--|
| <ul style="list-style-type: none"> FORESTED UPLANDS (MIXED) SAND & GRAVEL MINING AREA (INCLUDES DIRT ROADS) GRASSY HABITAT (FOOT PATHS & 2 FT SHOULDER ALONG DIRT ATKINS ROAD) | <ul style="list-style-type: none"> APPROXIMATE PROPERTY BOUNDARY PROPOSED LIMITS OF WORK |
|--|--|

Scale : 1" = 200' Date : 10-21-2008

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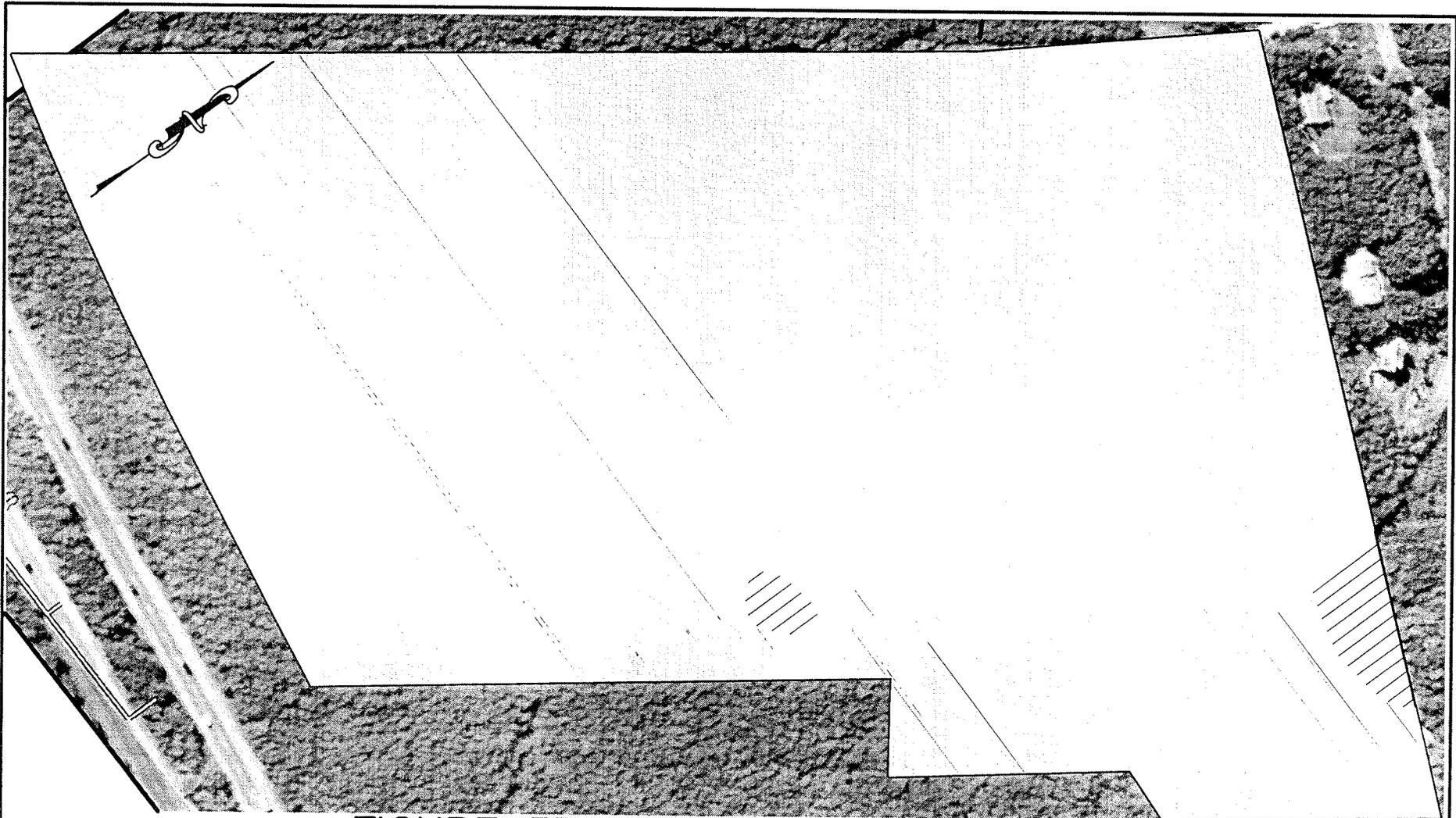


FIGURE 3B
PROPOSED DEVELOPMENT / HABITAT FUNCTIONS
RELATIVE TO EASTERN BOX TURTLE

LEGEND

- | | |
|--|---|
| <p> POTENTIAL FEEDING, MIGRATORY, AESTIVATING, & OVERWINTERING HABITATS</p> <p> POTENTIAL BREEDING & NESTING HABITATS (INCLUDES 2 FT SHOULDERS ALONG DIRT ROADS)</p> | <p> POTENTIAL OVERWINTERING, BREEDING & NESTING HABITATS</p> <p> APPROXIMATE PROPERTY BOUNDARY</p> <p> PROPOSED LIMITS OF WORK</p> |
|--|---|

Scale : 1" = 200' Date : 10-21-2008

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Appendix A

Preliminary List of Higher Vascular Plants

APPENDIX A

HIGHER VASCULAR PLANT SPECIES

**Raymond W. Caterino Project Site
Atkins Road
East Sandwich, MA**

A preliminary list of higher vascular plant species recorded in the forest and disturbed habitats includes:

Trees and Saplings

Red Maple	<i>Acer rubrum</i>	N
Gray Birch	<i>Betula populifolia</i>	N
American Holly	<i>Ilex opaca</i>	N
Eastern Red Cedar	<i>Juniperus virginiana</i>	N
Tupelo	<i>Nyssa sylvatica</i>	N
Pitch Pine	<i>Pinus rigida</i>	N
White Pine	<i>Pinus strobus</i>	N
Scotch Pine	<i>Pinus sylvestris</i>	I
Big-tooth Aspen	<i>Populus grandidentata</i>	N
Eastern Black Cherry	<i>Prunus serotina</i>	N
Black Locust	<i>Robinia pseudoacacia</i>	N
Sassafras	<i>Sassafras albidum</i>	N
White Oak	<i>Quercus alba</i>	N
Scarlet Oak	<i>Quercus coccinea</i>	N
Black Oak	<i>Quercus velutina</i>	N

Shrubs

Shadbush	<i>Amelanchier</i> sp.	N
Sweetfern	<i>Comptonia peregrina</i>	N
Autumn Olive	<i>Elaeagnus umbellata</i>	I
Black Huckleberry	<i>Gaylussacia baccata</i>	N
Dangleberry	<i>Gaylussacia frondosa</i>	N
Inkberry	<i>Ilex glabra</i>	N
Sheep-laurel	<i>Kalmia angustifolia</i>	N
Bush Honeysuckle	<i>Lonicera morrowii</i>	I
Maleberry	<i>Lyonia ligustrina</i>	N
Bayberry	<i>Myrica pensylvanica</i>	N
Beach Plum	<i>Prunus maritima</i>	N
Scrub Oak	<i>Quercus ilicifolia</i>	N
Virginia Rose	<i>Rosa virginiana</i>	N
Shining Sumac	<i>Rhus copallinum</i>	N
Staghorn Sumac	<i>Rhus hirta</i>	N
Lowbush Blueberry	<i>Vaccinium angustifolium</i>	N
Highbush Blueberry	<i>Vaccinium corymbosum</i>	N
Early Sweet Blueberry	<i>Vaccinium pallidum</i>	N
Arrow-wood	<i>Viburnum dentatum</i>	N

Vines

Bittersweet	<i>Celastrus orbiculata</i>	I
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	N
Climbing False Buckwheat	<i>Polygonum scandens</i>	
Blackberry	<i>Rubus</i> sp.	
Sawbrier	<i>Smilax glauca</i>	N
Bullbrier	<i>Smilax rotundifolia</i>	N
Poison Ivy	<i>Toxicodendron radicans</i>	N

APPENDIX A

HIGHER VASCULAR PLANT SPECIES

**Raymond W. Caterino Project Site
Atkins Road
East Sandwich, MA**

Herbaceous and Low Woody Species

Ferns and Clubmosses

Wood Fern	<i>Dryopteris</i> sp.	N
Bracken Fern	<i>Pteridium aquilinum</i>	N
Tree Clubmoss	<i>Lycopodium obscurum</i>	N

Grasses, Sedges, and Rushes

Bentgrass	<i>Agrostis</i> sp.	
Sweet Vernalgrass	<i>Anthoxanthum odoratum</i>	I
American Beachgrass	<i>Ammophila breviligulata</i>	N
Drooping Brome	<i>Bromus tectorum</i>	I
Brome Grass	<i>Bromus</i> sp.	
Orchard Grass	<i>Dactylis glomerata</i>	I
Poverty Grass	<i>Danthonia spicata</i>	N
Hairgrass	<i>Deschampsia flexuosa</i>	N
Auburn Panic-grass	<i>Dichanthehium acuminatum</i>	N
Deer-tongue Grass	<i>Dichanthehium clandestinum</i>	N
Panic-grass	<i>Dichanthehium</i> sp.	
Quackgrass	<i>Elytrigia repens</i>	N
Sheep Fescue	<i>Festuca ovina</i>	I
Velvet Grass	<i>Holcus lanatus</i>	I
Switchgrass	<i>Panicum virgatum</i>	N
Timothy	<i>Phleum pretense</i>	I
Little Bluestem	<i>Schizachyrium scoparium</i>	N
Pennsylvania Sedge	<i>Carex pensylvanica</i>	N
Sand-sedge	<i>Bulbostylis capillaris</i>	N
Sedge	<i>Carex</i> sp.	
Flat-sedge	<i>Cyperus</i> sp.	
Greene® Rush	<i>Juncus greenei</i>	N
Path Rush	<i>Juncus tenuis</i>	N

Forbs and Wildflowers

Yarrow	<i>Achillea millefolium</i>	I
Ragweed	<i>Ambrosia artemisiifolia</i>	N
Bearberry	<i>Arctostaphylos uva-ursi</i>	N
Common Milkweed	<i>Asclepias syriaca</i>	N
Wild Yellow Indigo	<i>Baptisia tinctoria</i>	N
Bindweed	<i>Calystegia sepium</i> ssp. <i>sepium</i>	I
Spotted Knapweed	<i>Centaurea biebersteinii</i>	I
Brown Knapweed	<i>Centaurea jacea</i>	I
Striped Wintergreen	<i>Chimaphila maculata</i>	N
Trailing Arbutus	<i>Epigaea repens</i>	N

APPENDIX A

HIGHER VASCULAR PLANT SPECIES

**Raymond W. Caterino Project Site
Atkins Road
East Sandwich, MA**

Fleabane	<i>Erigeron</i> sp.	
Hyssop-leaved Boneset	<i>Eupatorium hyssopifolium</i>	N
Slender-leaved Goldenrod	<i>Euthamia tenuifolia</i>	N
Madder	<i>Galium</i> sp.	
Teaberry	<i>Gaultheria procumbens</i>	N
Hawkweed	<i>Hieracium</i> sp.	
Canadian Rockrose	<i>Helianthemum canadense</i>	N
Low Rockrose	<i>Helianthemum propinquum</i>	N
Beach Heather	<i>Hudsonia tomentosa</i>	N
Orangegrass	<i>Hypericum gentianoides</i>	N
Spotted Cat-ear	<i>Hypochaeris radicata</i>	I
Stiff Aster	<i>Ionactis linariifolius</i>	N
Sheep-bit	<i>Jasione Montana</i>	I
Pinweed	<i>Lechea</i> sp.	N
Rounded-headed Bush-clover	<i>Lespedeza capitata</i>	N
Ox-eye Daisy	<i>Leucanthemum vulgare</i>	I
Butter-and-eggs	<i>Linaria vulgaris</i>	I
Whorled Loosestrife	<i>Lysimachia quadrifolia</i>	N
Cow-wheat	<i>Melampyrum lineare</i>	N
Pinesap	<i>Monotropa hypopithys</i>	N
Indian Pipe	<i>Monotropa uniflora</i>	N
Evening Primrose	<i>Oenothera biennis</i>	N
Sickle-leaved Golden Aster	<i>Pityopsis falcata</i>	N
Sand Jointweed	<i>Polygonella articulata</i>	N
Japanese Knotweed	<i>Polygonum cuspidatum</i>	I
Sheep Sorrel	<i>Rumex acetosella</i>	I
Flat-topped White Aster	<i>Sericocarpus asteroides</i>	N
Bladder Campion	<i>Silene vulgaris</i>	I
Goldenrod	<i>Solidago</i> sp.	N
Early Goldenrod	<i>Solidago juncea</i>	N
Rough Goldenrod	<i>Solidago rugosa</i>	N
Bushy Aster	<i>Symphotrichum domosus</i>	N
Blue Curls	<i>Trichostema dichotomum</i>	N
Rabbit-foot clover	<i>Trifolium arvense</i>	I
Wild Oats	<i>Uvularia sessilifolia</i>	N
Common Mullein	<i>Verbascum thapsus</i>	I
Spanish Bayonet	<i>Yucca filamentosa</i>	I

N = Native Species

I = Introduced Species

Site visits were performed on March 31, 2008, April 6, 2008, July 6, 2008, July 13, 2008, and September 25, 2008.

Revised September 25, 2008

Appendix B

Wildlife Species Recorded in the Field Surveys

APPENDIX B

Ray W. Caterino Project Site
Atkins Road
East Sandwich, MA

Wildlife Species Recorded During the Site Surveys

Birds:

Ruffed Grouse
American Robin
Blue Jay
Gray Catbird
Northern Cardinal
Northern Oriole
Red-tailed Hawk
Great Crested Flycatcher
Eastern Towhee
Mourning Dove
White-breasted Nuthatch
American Crow
American Woodcock
Wood Peewee
Black-capped Chickadee
American Goldfinch

Mammals:

Coyote
Eastern Cottontail
White-footed Mouse
Northern Short-tailed Shrew
Raccoon
Striped Skunk
White-tailed Deer

Reptiles:

Eastern Box Turtle
Eastern Garter Snake

Amphibians:

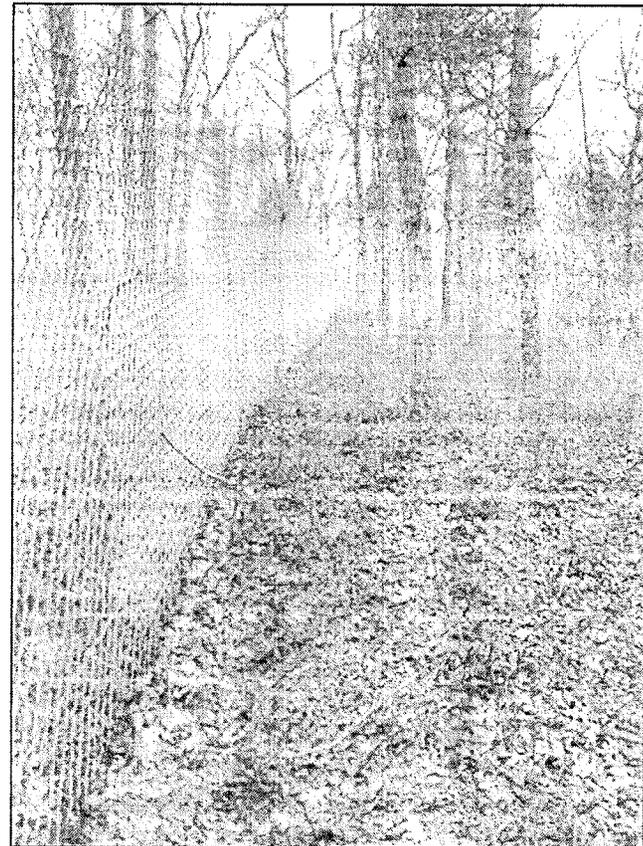
Redback Salamander

Appendix C

Representative Site Photographs of Primary Habitats



ATV Trail
by Route 6 \rightarrow Westbound
(April 6, 2008)



MassHighway Right of Way Fencing
along Route 6 \rightarrow Westbound
(March 31, 2008)



General View of the Pine-Oak Forest Habitat
(July 13, 2008)

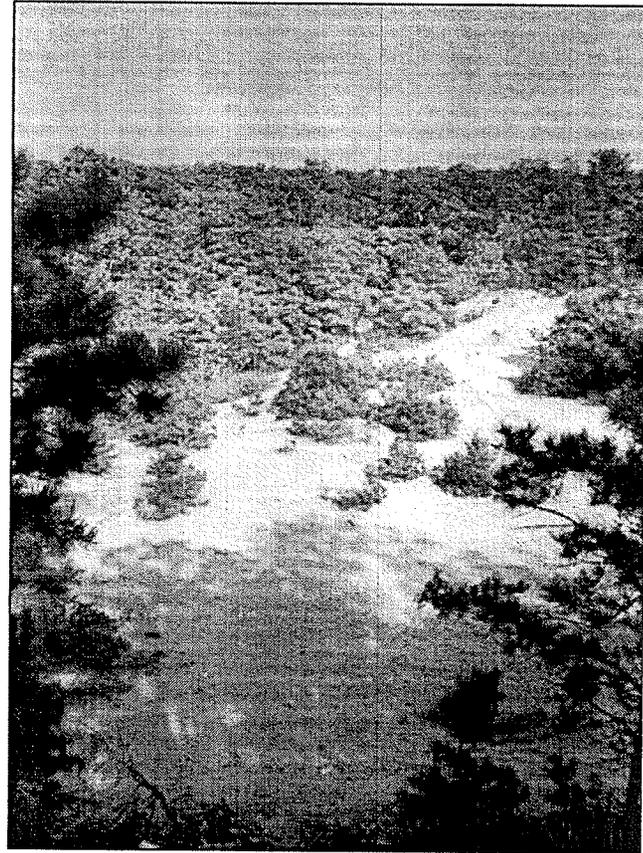
Representative of the relatively dense understory.
Shrub layer comprised of black huckleberry
(*Gaylussacia baccata*) & lowbush blueberries
(*Vaccinium pallidum* & *V. angustifolium*).



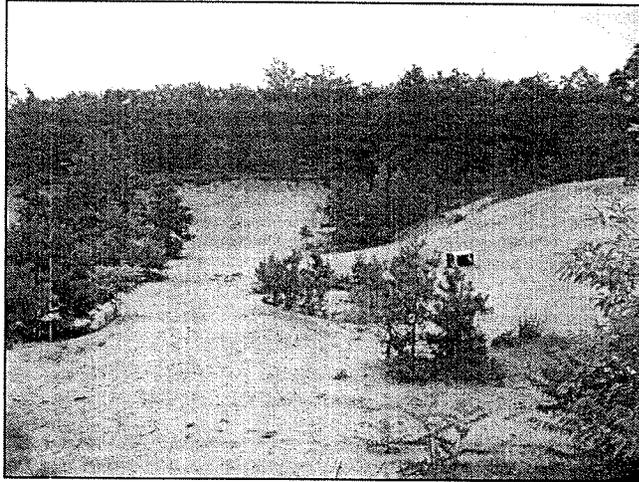
General View of the Pine-Oak Woodland



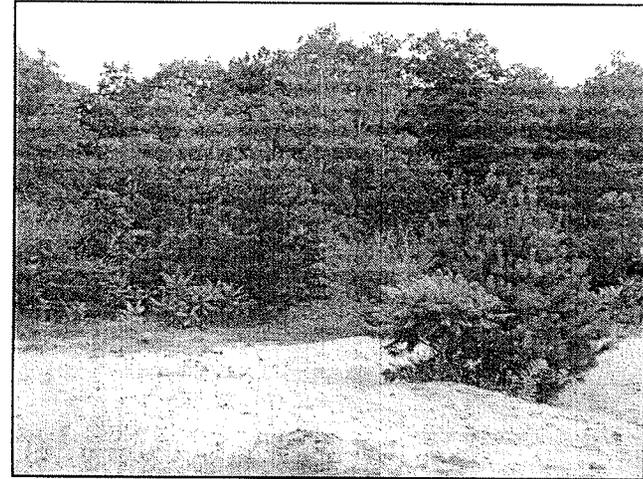
Woodland Road: General View to the South of the Access Road into the Site
(July 6, 2008)



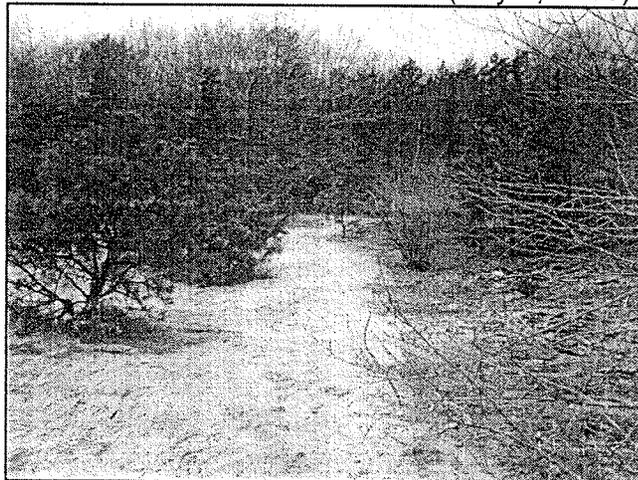
Open Sand Pit Near the Northern Property Line
(Looking South/Southeast from the Access Road)
(April 6, 2008)



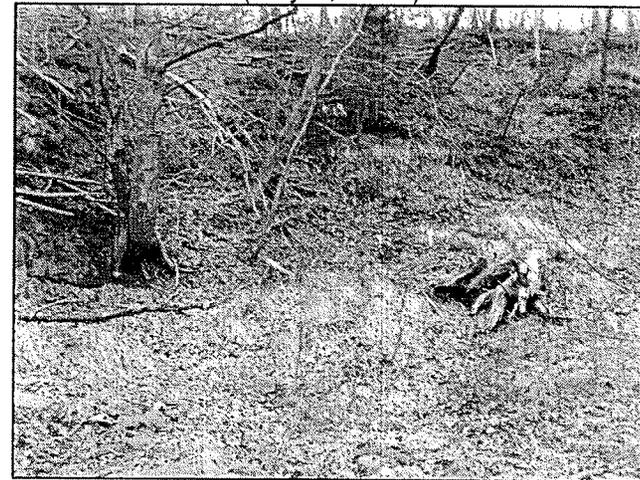
Abandoned Sand & Gravel Pit
Northern Section of the Site
Near the Atkins Road Entrance (July 6, 2008)



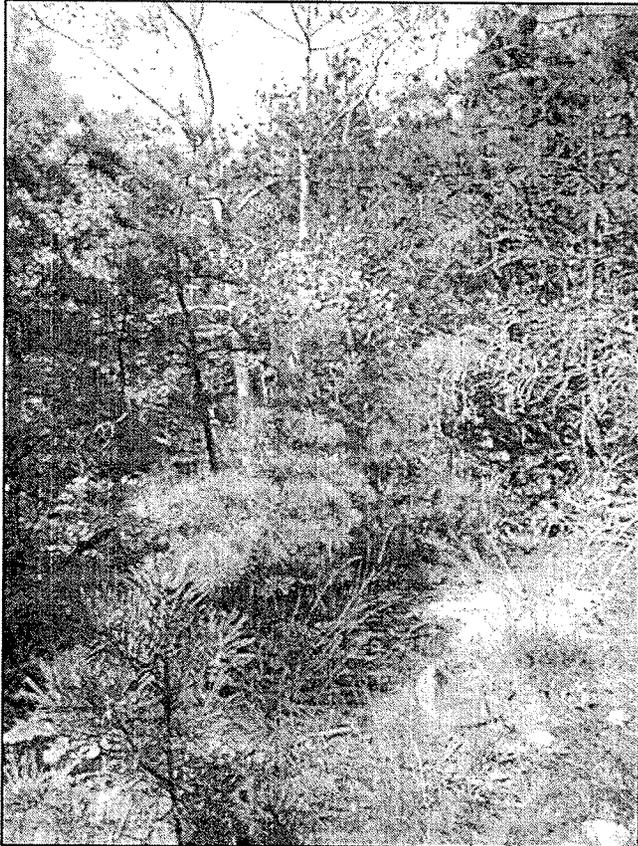
Immature Pitch Pines Colonizing the Interior
of the Sand & Gravel Pit
(July 6, 2008)



Interior Sand & Gravel Pit
(April 6, 2008)



Old Sand Removal Area Along the
Eastern Edge of the Access Rd.
near the Boundary of ANR Lot 2 & the Open Space Area



Scrub Pine & Aspen Habitat in Sand & Gravel Mining Area on Northern Property Line (View to the West, Sept. 25, 2008)

Both Eastern Box Turtles (EBT) were found in this habitat



EBT recorded on July 6, 2008 in the young poplars and pitch pines at the abandoned sand and gravel pit (near the northern property line).



EBT recorded in the same area. (July 13, 2008)



Interior Sand & Gravel Area
in the Interior of the Site
(Sept. 25, 2008)

Appendix D

MNHESP Rare Animal Observation Form

**MNHESP Rare Species Information Response Letter
Dated January 21, 2008**

Assessor's Map & Property List



Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries & Wildlife

Please submit field forms, a copy of a USGS map, and all supporting documentation to:
Database Manager
Natural Heritage and Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Route 135, Westborough MA 01581
(508) 389-6360

Rare Animal Observation Form

Species name (scientific or common): EASTERN BOX TURTLE (*Terrapene Carolina*)
 Date and time of observation: JULY 6, 2008 @ 9:30 AM + JULY 13, 2008 @ 9:30 AM
 Amount of time spent surveying area: ± 8 hrs. (July 6 + July 13, 2008)

Location Information

Town: SANDWICH, MA County: BARNSTABLE CO. Waterbody: _____

Please attach a photocopy of the appropriate section of a USGS topo map (or similar map if a topo map is unavailable). Please carefully mark the site where you observed this rare species. Topo Name: _____

Describe how to get to the site of the observation using obvious permanent landmarks such as a road intersection (measuring to at least the nearest 1/10 mile): ATKINS ROAD IS ACCESSED OFF ROUTE 6A IN SANDWICH, MA. FOLLOW ATKINS ROAD TO SOUTH INTO THE SUBJECT PARCEL.

Population Information

Number, age and sex of animals observed: 7.6.08: FEMALE (CSL 13.6cm, PSL 12.9cm)
7.13.08 FEMALE (CSL 13.1cm, PSL 12.5cm)

Evidence (if any) of breeding activity at this site (e.g. eggs, nests, carrying food to young, copulation): NO
EVIDENCE OF BREEDING ACTIVITY WAS OBSERVED.

Behavioral notes (e.g. crossing road, basking): MOVING ACROSS NORTHERN SECTION OF OLD GRASS PLOT.
 Have you observed this species at this site in previous years? If yes, please give details: NO.

Species Identification

Description of the specific characteristics upon which the ID was based (including how age and sex were determined):
SEX BASED ON PLASTRAL SHAPE; EYE COLOR, AND AGE ESTIMATED (25 ± YEARS)

Photographs or slides taken (Y/N)? If yes, please submit a clear photograph or slide of the animal. Please label the back of the photograph with the date it was taken, the location, and your signature.

Specimen taken (Y/N)? If yes, where will the specimen be deposited? _____

Site Information

Description of habitat at site where the species was observed. List dominant vegetation, size of habitat, and information on the physical environment such as substrate type, hydrology, moisture regime, slope, and aspect. If possible, provide information on the surrounding land use: Box turtles observed in early succession community at old gravel pit. young red maple + pitch pines were common. Area includes old piles of asphalt, rubble, and top soil. Surrounding land use includes residential development.

Associated species: OPEN woodlot, abandoned gravel mining operation, and town conservation land. ASH, BITTERSWEET, WHITE BLOSSOM.

Alteration of ecological processes (e.g. damming, logging, rip-rapping of stream)? If yes, describe: Site contains abandoned sand and gravel mining operation, active ATV trails, and walking paths.

Observed or potential threats to the species or its habitat at this site (e.g. land clearing, development project)? If yes, describe:

Landowner's name and address, if known:

Additional comments:

Observer Information

Observer: Name: Donald Schall Phone Number: 508-888-3900 Address: 95 State Road, Sagamore Beach, MA 02562 Affiliation/Qualifications: ENSR, Senior Biologist

Form filled out by: Name: same Phone Number: Address: Affiliation/Qualifications:

Briefly explain your previous field experience with this species: NHESP EASTERN BOX TURTLE surveys in southeastern MA.

List names and qualifications of other observers (if any):

Certification

I hereby certify under pains and penalties of perjury that the information contained in this report is true and complete to the best of my knowledge.

Signature: Donald Schall Date: Sept. 12, 2008

Thank you for contributing to the Natural Heritage & Endangered Species Program database. Your efforts are valuable and appreciated.



Commonwealth of Massachusetts

Division of Fisheries & Wildlife

JAN 24 2008

MassWildlife

Wayne F. MacCallum, Director

January 21, 2008

Laura Schofield
Schofield Brothers of Cape Cod
PO Box 101
Orleans MA 02653

RE: Project Location: Atkins Road
Town: SANDWICH
NHESP Tracking No.: 08-23986

To Whom It May Concern:

Thank you for contacting the Natural Heritage and Endangered Species Program ("NHESP") of the MA Division of Fisheries & Wildlife for information regarding state-listed rare species in the vicinity of the above referenced site. Based on the information provided, this project site, or a portion thereof, is located within *Priority Habitat 1232* (PH 1232) and *Estimated Habitat 821* (EH 821) as indicated in the *Massachusetts Natural Heritage Atlas* (12th Edition). Our database indicates that the following state-listed rare species have been found in the vicinity of the site:

<u>Scientific name</u>	<u>Common Name</u>	<u>Taxonomic Group</u>	<u>State Status</u>
<i>Terrapene carolina</i>	Eastern Box Turtle	Reptile	Special Concern

The species listed above is/are protected under the Massachusetts Endangered Species Act (MESA) (M.G.L. c. 131A) and its implementing regulations (321 CMR 10.00). State-listed wildlife are also protected under the state's Wetlands Protection Act (WPA) (M.G.L. c. 131, s. 40) and its implementing regulations (310 CMR 10.00). Fact sheets for most state-listed rare species can be found on our website (www.nhesp.org).

Please note that projects and activities located within Priority and/or Estimated Habitat must be reviewed by the NHESP for compliance with the state-listed rare species protection provisions of MESA (321 CMR 10.00) and/or the WPA (310 CMR 10.00).

Wetlands Protection Act (310 CMR 10.00)

If the project site is within Estimated Habitat and a Notice of Intent (NOI) is required, then a copy of the NOI must be submitted to the NHESP so that it is received at the same time as the local conservation commission. If the NHESP determines that the proposed project will adversely affect the actual Resource Area habitat of state-protected wildlife, than the proposed project may not be permitted (310 CMR 10.37, 10.58(4)(b) & 10.59). In such a case, the project proponent may request a consultation with the NHESP to discuss potential project design modifications that would avoid adverse effects to rare wildlife habitat.

A streamlined joint MESA/WPA review process is now available. When filing a Notice of Intent (NOI), the applicant may now file concurrently under the MESA on the same NOI form and qualify for a 30-day streamlined joint review. For a copy of the revised NOI form, please visit the MA Department of Environmental Protection's website: <http://www.mass.gov/dep/water/approvals/wpaform3.doc>.

www.masswildlife.org

Division of Fisheries and Wildlife

Field Headquarters, North Drive, Westborough, MA 01581 (508) 389-6300 Fax (508) 389-7891

An Agency of the Department of Fish and Game

MA Endangered Species Act (M.G.L. c. 131A)

If the proposed project is located within Priority Habitat and is not exempt from review (see 321 CMR 10.14), then project plans, a fee, and other required materials must be sent to NHESP Regulatory Review to determine whether a probable "take" under the MA Endangered Species Act would occur (321 CMR 10.18). Please note that all proposed and anticipated development must be disclosed, as MESA does not allow project segmentation (321 CMR 10.16). For a MESA filing checklist and additional information please see our website: www.nhesp.org ("Regulatory Review" tab).

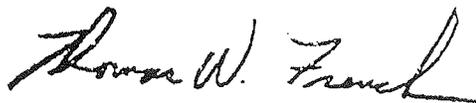
Please note that the NHESP will require that a rare species habitat assessment be conducted for this project location. The rare species habitat assessment must follow the NHESP guidelines, which can be found at our website under "Regulatory Review" and "Endangered Species Habitat Assessments & Survey Protocols". The assessment must be performed by qualified individuals who are familiar with the habitat requirements of the above-listed rare species. As part of the habitat assessment, vegetation cover types should be described and mapped. In addition, if the rare species list provided above includes one or more plant species, then suitable habitat that meets the growing requirements of those rare plant species should be described and mapped. If the rare species list provided above includes one or more wildlife species, then, depending upon the life history characteristics of those species, suitable feeding, breeding, migrating, nesting, overwintering, and estivating habitat should be described and mapped. Finally, the habitat assessment should include a detailed evaluation of the potential impacts of the proposed project on state-listed rare species and their habitats.

To expedite the review process, the applicant may elect to submit the habitat assessment with the MESA filing or prior to the submission of a MESA filing. We recommend that rare species habitat concerns be addressed during the project design phase prior to submission of a formal MESA filing, as avoidance and minimization of impacts to rare species and their habitats is likely to expedite endangered species regulatory review.

If NHESP determines that the proposed project would "take" a rare species, then it may be possible to redesign the project to avoid a "take." If such revisions are not possible, the applicant should note that projects resulting in the "take" of state-protected wildlife may only be permitted if they meet the performance standards for a "Conservation and Management Permit" under MESA (321 CMR 10.23). Please note that projects resulting in a "take" may require submission of an Environmental Notification Form, pursuant to the MA Environmental Policy Act regulations (301 CMR 11.00). On a case by case basis, field surveys may be required as part of the MESA review process in order to locate rare species on the project site, and to determine their patterns of distribution and habitat use.

This evaluation is based on the most recent information available in the Natural Heritage database, which is constantly being expanded and updated through ongoing research and inventory. If you have any questions regarding this letter please contact Amy Coman, Endangered Species Review Assistant, at (508) 389-6364.

Sincerely,



Thomas W. French, Ph.D.
Assistant Director

Town of Sandwich

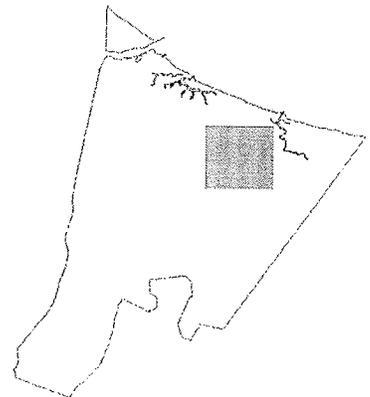


Property ID	34-079-
Number	5
Address	ATKINS ROAD
Current Owner	MONOMOY PROPERTIES LLC



MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Because of different update schedules, current property assessments may not reflect recent changes to property boundaries. Check with the Board of Assessors to confirm boundaries uses at the time of assessment.



RECORD OF OWNER LIST BY PARCEL
ATKINS ROAD, EAST SANDWICH
(from Town of Sandwich Assessor's Web Site)

Parcel	Owner of Record	Street	Town
34-052-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-053-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-054-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-055-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-056-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-067-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-068-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-069-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-070-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-072-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-005-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-006-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-007-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-008-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-073-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-074-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-075-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-076-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-077-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
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34-011-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-012-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-013-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-071-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660
34-051-	MONOMOY PROPERTIES LLC	79 COVE ROAD	SOUTH DENNIS, MA 02660

Appendix E

Existing Conditions Plan

Concept Cluster Subdivision Plan