

# **RUNWAY SAFETY AREA PROJECT IGOR I. SIKORSKY MEMORIAL AIRPORT STRATFORD, CT**



## **AVIAN SURVEY REPORT**

**STATE PROJECT NO. 15-336**

**May 2013**

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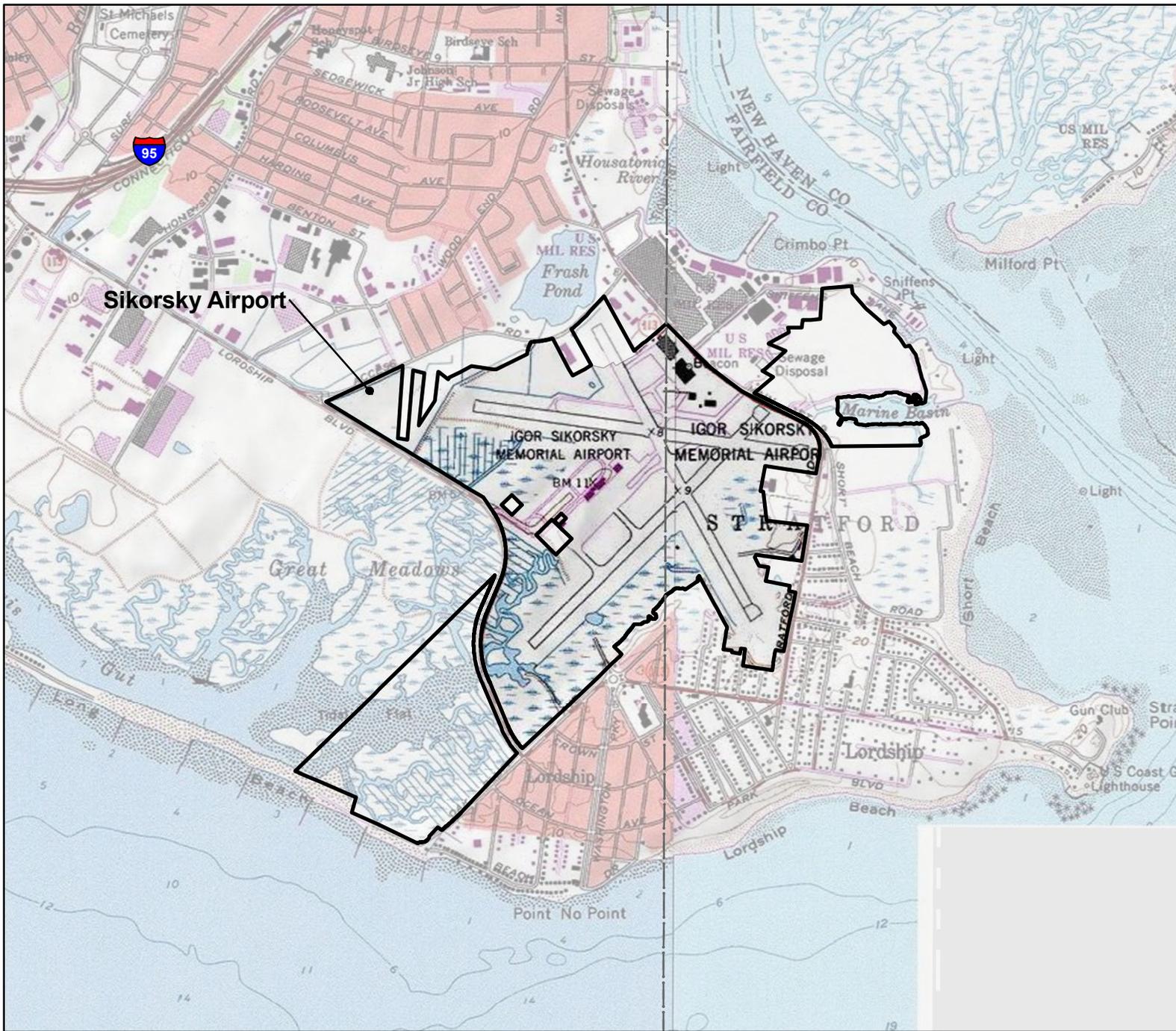
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# 1.0 Introduction

The Connecticut Department of Transportation (CTDOT), in cooperation with the City of Bridgeport, is currently assessing safety improvements at Igor I. Sikorsky Memorial Airport (BDR) in Stratford, Connecticut. The project involves the improvement of the runway safety area (RSA) of Runway 6-24 and relocation of Route 113 (Main Street).

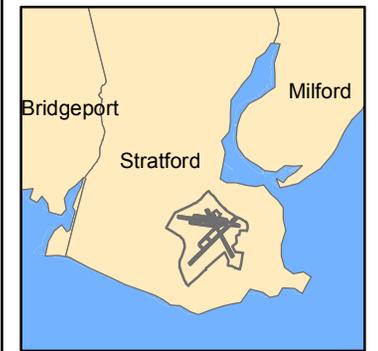
As part of the consultant team on the project, Fitzgerald & Halliday, Inc. (FHI) and biologists from the Connecticut Audubon Society (CAS) conducted avian surveys at BDR in during the 2012 field season. Resumes of those who conducted the surveys are included in **Appendix A**. **Figure 1** displays the site location of the surveys. Using a combination of survey techniques frequently used by both the United States Fish and Wildlife Service (USFWS) and the Connecticut Department of Energy and Environmental Protection (CTDEEP), qualified biologists conducted avian observations across the limits of the airport site, including parcels owned by the airport to the south of Lordship Boulevard, west of the airfield proper, and east of the airfield across Main Street in Stratford. Marsh, shrubland, field, lawn, woodland, tidal creek, barrier beach, open water, and ruderal habitats were included in the areas surveyed. These surveys were designed and implemented to generally identify the avifauna using the airport site, and specifically to assess the status (presence vs. not detected level) and site usage patterns of one or more target bird species of state and federal conservation concern. BDR, Stratford Great Meadows, and adjacent habitats are known to now or formerly provide habitat to a suite of avifauna and other biota included on the Connecticut Endangered Species Act list of Special Concern, Threatened, or Endangered Species (CTDEEP, 2010). Correspondence documenting consultation with the CTDEEP's Natural Diversity Database is included in **Appendix B**.



Legend

-  Sikorsky Airport Property Boundary
-  USGS Topographic Boundary

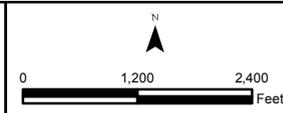
1:24,000  
USGS Quadrangles  
Milford, Bridgeport



Map Title:  
Vicinity Map

Project No.  
15-336  
Date:  
Nov. 2012

Project Title:  
Runway Safety Area Project  
Igor I. Sikorsky Memorial Airport  
Town of Stratford



Town:  
Stratford, CT  
Figure 1



## 2.0 Environmental Setting

The site is found on the United States Geological Survey (USGS) Bridgeport Connecticut 7.5 minute topographic series Quadrangle Map. Elevations on the site range from a topographic high of approximate elevation of 10 feet (ft) North American Vertical Datum of 1988 (NAVD 88) at a bench mark along Lordship Boulevard down to approximate elevation 0 ft NAVD 88 along the tidally-influenced marshes of Stratford Great Meadows (SGM).

The site lies within the Western Coastal Ecoregion of the Coastal Hardwoods Zone (Dowhan and Craig, 1976).

Based upon the most current ecoregion classification system for Connecticut, developed by Metzler and Barret (2006), the site lies within the Southern New England Coastal Lowland Subsection of the larger Eastern Broadleaf Forest Province. The site consists of the following notable coastal habitat attributes:

- Tidally-flooded grasslands vegetated with smooth cordgrass (*Spartina alterniflora*) in comparatively lower elevations of the marsh and saltmeadow cordgrass (*Spartina patens*) in comparatively higher elevation areas of the marsh
- Tidally flooded shrubland areas vegetated with Northern marshelder, also known as high-tide bush, (*Iva frutescens*) and groundsel tree (*Baccharis halimifolia*)
- Back dune system vegetated with American beachgrass (*Ammophila breviligulata*), beach plum (*Prunus maritima*), and Northern Bayberry (*Morella pensylvanica*)

Other smaller habitat types noted included stands of Cattail (*Typha spp.*) along landward borders of the tidal marshes (especially at upstream reaches where salinity decreases), and stands of Common reed which occur along the landward edge of the salt marsh in areas where nutrient rich stormwater, groundwater discharges, or historic fill material, exist. Further information regarding the flora of the project area can be found in the botanical report.

The habitats and sub-habitats/vegetative communities of conservation priority identified in Connecticut’s Comprehensive Wildlife Conservation Strategy (CCWCS) Plan (Connecticut Department of Environment Protection (CTDEP) 2005) that can be found at the site are provided in **Table 1**.

**Table 1: Habitats and Sub-habitats/Vegetative Communities of Conservation Priority\***

Habitat	Subhabitat
Upland Herbaceous	Coastal Dunes
	Sandplain and other Warm Season Grasslands
Tidal Wetland	Tidal Wetland
Freshwater Aquatic	Coastal Plain Ponds
Estuarine Aquatic	Coastal Embayment
	Sedimentary Bottoms
	Shellfish Reefs/Beds
	Open Water
Intensively Managed Habitats	Early Successional Shrublands and Forests

\*Identified in Connecticut’s Comprehensive Wildlife Conservation Strategy (CCWCS) Plan (CTDEP, 2005)

Using the Cowardin, *et al.* (1979) classification system, the tidal wetlands at the site are considered estuarine. Two subsystems of the Estuarine system are represented: subtidal and intertidal. Within these subsystems are various classes and subclasses based upon the characteristics of the benthic habitat. Further details regarding wetland habitats are provided in the Soil Scientist Report.

Portions of the salt marsh wetland system have to some extent, been impaired by historic filling and development within the system. Invasive vegetation such as common reed has colonized and proliferated around these fill areas, likely reducing the species diversity and structural diversity of the emergent community. As a result, the developed portions of BDR and associated ruderal habitats have comparatively less biological indicators of diversity and ecosystem health than the nearby Great Meadows Unit of the Stewart B. McKinney National Wildlife Refuge to the west and the CTDEEP's Nell's Island Wildlife Management Area in the Housatonic River estuary to the east. Nonetheless, the position of BDR in relation to these natural areas, its location along the Atlantic coastal Flyway, undeveloped portions of the airport property, and some on-site attributes assures that biota of conservation concern are present during various times of the year.

### 3.0 Methodology

Structured field work for this study took place between 27<sup>th</sup> of April and 25<sup>th</sup> of October, 2012. Bird surveys were conducted by qualified biologists across the airport site, with particular attention to the proposed impacted sites. To do this, a series of point counts, wetland call back surveys, and other observations were conducted throughout the survey period. During this time period, 11 point count surveys, three call-back surveys, and one nocturnal survey were conducted. A Short-eared Owl survey was also conducted on February 16, 2012. Dates of the surveys are provide in **Table 2**.

Additional noteworthy observations made outside specific survey times are indicated as such herein. The survey period overlaps with the active reproductive season of the target species and the majority of resident birds inhabiting the site, SGM and surrounding environs. Each of the survey methods are described in further detail below.

**Table 2: Survey Dates and Methods**

Survey Date	Survey Method
2/16/2012	Transect survey
4/27/2012	Point count survey
5/17/2012	Point count survey
6/1/2012	Point count survey
6/6/2012	Point count survey
6/19/2012	Point count survey
6/20/2012	Point count survey
6/29/2012	Call back survey
7/5/2012	Point count survey
7/6/2012	Point count survey
7/24/2012	Point count survey
7/25/2012	Point count survey
7/26/2012	Call back survey
8/7/2012	Point count survey
8/21/2012	Point count survey
8/22/2012	Point count survey
8/23/2012	Call back survey
9/7/2012	Point count survey
9/12/2012	Point count survey
9/28/2012	Point count survey
10/1/2012	Point count survey
10/25/2012	Point count survey
10/26/2012	Point count survey

## **Point Counts**

A 200 x 200 meter grid was overlaid across the Sikorsky site to create a network of 42 fixed observation points. **Figure 2** displays the survey point locations. This system of observation points is anchored to the previously established CT-DEEP protocol survey points at Stewart B. McKinney Wildlife Refuge, adjacent to airport property, to enable improved comparison of data between agencies and between survey types. It also complies with the methodology used by CAS during a breeding bird survey of the area conducted in 2009, and other atlas efforts in the region.

At each of the 42 observation points, point count surveys were carried out using five minute observation periods in a 100 meter diameter circle, centered on each point's coordinates. During ground-truthing of survey points, occasional minor adjustments had to be made to their location. For instance if – using the 200 x 200 meter grid – a point fell within the middle of a roadway, or within the middle of open water, the closest safe point was selected to the grid intersection to establish that point.

Point counts were conducted between 0530 and 1030 hours. All birds seen or heard at the point were recorded on field data forms. Bird sightings were categorized into those within a 50 m radius of the point center and those outside the 50 m radius. Bird behavior was also noted. Birds observed to be flyovers were so noted. Observations were aided with 8 x 40 magnification binoculars, and in open areas using a Swarovski AT80 telescope equipped with a 20 - 60 x zoom lens when needed.

## **Wetland Callback Surveys**

To augment the point counts, wetland call-back surveys were also conducted during the breeding season to survey for secretive marsh birds. These surveys were conducted by broadcasting the breeding calls of the target species out over the marsh and listening for any responses. These surveys were used to survey for American Bittern, Least Bittern, King Rail, Common Gallinule, and Pied-billed Grebe. Call back surveys were conducted on the following dates between 0530 and 1030 hours: June 29<sup>th</sup>, July 26<sup>th</sup>, and August 23<sup>rd</sup>, 2012.

## **Winter Short-eared Owl Survey**

A winter transect survey was conducted for Short-eared Owl (*Asio flammeus*) within suitable habitat areas at Sikorsky Airport. Transects were walked at the upland/tidal wetland interface adjacent to all runway areas. The project area in the vicinity of the proposed Route 113 roadway realignment was also surveyed via the transect method. Biologists walked the transect at a slow pace, taking time to observe avifauna and habitat along the transect. The survey was conducted during the late afternoon and dusk time period. One survey was conducted on February 16, 2012. Additional surveys are scheduled for early 2013 as 2012 was a notably mild winter and therefore may not have been indicative of seasonal use at the airport.



**Legend**

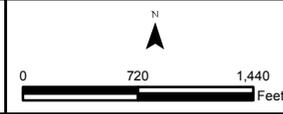
-  Sikorsky Aiport Property Boundary
-  Runway Safety Area
-  Surveyed Structure for Barn Owls
-  50 Meter Bird Observation Area
-  12 Bird Survey Point Location



Map Title:  
Survey Locations

Project No.  
15-336  
Date:  
Nov. 2012

Project Title:  
**Runway Safety Area Project**  
Igor I. Sikorsky Memorial Airport  
Town of Stratford



Town:  
Stratford, CT  
Figure 2



## Other Observations

In addition to the Point Count surveys and wetland callback surveys, other observations augment the results of the 2012 avifauna survey season. For one, airport buildings and structures were inspected for the presence of Common Barn Owl (*Tyto alba*). The various structures inspected are depicted on Figure 2. Secondly, opportunistic sightings of avifauna made while travelling to or from established survey locations and within the project area were noted when they concerned listed species. Third, anecdotal sightings posted on the CTBirds List Serve by qualified birders and information presented in the eBird website were monitored to understand when the various listed species were being seen in the area.

All birds recorded during the various surveys were identified to species, number of individuals counted, and their location was documented as precisely as possible. Coordinates for encountered nests, egg shells, or young birds were logged on the actual site of discovery if that was possible without disturbing a nest or bird. However, since most bird sightings were based on moving individuals, observed from a distance, most are logged as occurring within a specific zone or count circle.

During the breeding season, evidence of breeding was recorded at three levels (Possible, Probable & Confirmed) using the following criteria and codes (adapted from: McGowan & Corwin, eds., 2008):

- Possible breeding
  - X Species observed in possible nesting habitat, but no other indication of breeding noted. Singing male(s) present (or breeding calls heard) in breeding season
  
- Probable Breeding
  - S Singing male(s) present (or breeding calls heard) on more than one date at least a week apart in the same place
  - P Pair observed in suitable habitat in breeding season
  - T Bird, or pair, apparently holding territory
  - C Courtship display, copulation, agitated behavior or anxiety calls from adults observed, suggesting nearby presence of nest or young
  - N Visiting probably nest site
  - B Nest building or excavation of nest cavity

- Confirmed Breeding
  - DD Distraction display or injury-feigning behavior observed
  - UN Used nest found
  - FE Female with egg in oviduct caught in mist net
  - FL Recently fledged young present
  - ON Adult(s) entering or leaving nest in circumstances indicating occupied nest
  - FS Adult carrying fecal sac
  - FY Adult(s) with food for young
  - NE Identifiable nest and eggs, adult sitting on nest, identifiable egg shells found below nest, identifiable dead nestling found
  - NY Nest with young

The specifics of a certain observation may meet the criteria for including a species in one of the three breeding survey categories (possible, probable, or confirmed), but careful analysis of individual sightings is needed to ascertain the validity of the perceived breeding status. For example, many species passing through the BDR / SGM area at the end of spring migration qualify for *possible breeding* status based on the criteria for this category, even though they do not breed there. Likewise, observations of relevant social behaviors in species such as Great Egret and Snowy Egret qualify them as *confirmed breeders*, even though their actual nesting colonies are located outside of the BDR/SGM boundaries. In order to put the breeding bird survey status for each species in perspective, information is arranged in individual species accounts in Section 4.0 - Results.

## ***Target Species***

Preference was given to the detection and documentation of Federal and Connecticut Endangered Species Act (ESA) listed species known or suspected as having potential to occur on site as a breeder or in some cases as a non-breeder where conservation status warranted. Therefore, the system of point counts, call back surveys, and other observations all together served to assess usage of site habitats by priority listed species. The target priority species for the site, their Connecticut and Federal ESA status and the methodology utilized to survey the site is provided in **Table 3**.

The survey locations represent four distinct zones on BDR, representing similar habitat, land use history, or a combination of factors linking their commonality. These zones were created for ease of reporting results and discussing habitat features distinctive to the site. A brief physical description of the four survey zones is provided below, and shown on **Figure 3**:

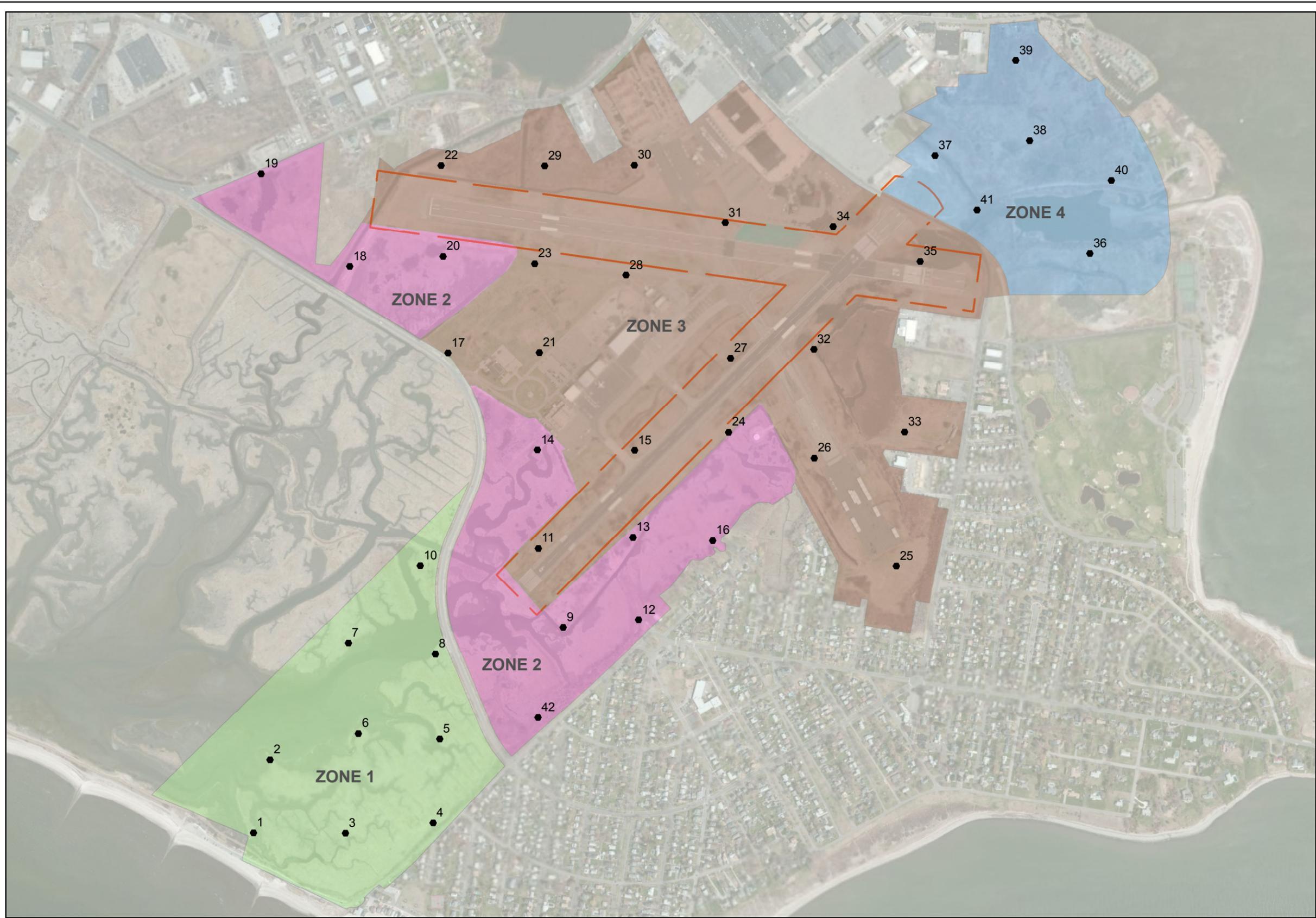
- Zone 1 – Points 1-8, 10 (9 Points)

Encompasses the section of SGM south of Lordship Boulevard. It contains predominantly estuarine marsh habitats. Zone 1 comprises the back dune of Long Beach and the salt marsh habitat between Long Beach and Lordship Blvd. The habitat is primarily saltmarsh, but also includes small strips of shrubland along former dikes that bisect the marsh.

**Table 3: Listed Species Targeted for Surveys on the Bridgeport-Sikorsky Airport Site**

<i>Scientific Name</i>	<b>Common Name</b>	<b>Status (state/federal)</b>	<b>Survey Method*</b>
<i>Accipiter striatus</i>	Sharp-shinned Hawk	E/--	Point count
<i>Ammodramus caudacutus</i>	Saltmarsh Sparrow	SC/--	Point count
<i>Ammodramus maritimus</i>	Seaside Sparrow	T/--	Point count
<i>Anas discors</i>	Blue-winged Teal	T (Nesting population only)	Point count
<i>Ardea alba</i>	Great Egret	T/--	Point count
<i>Asio flammeus</i>	Short-eared Owl	T/--	Transect survey
<i>Asio flammeus</i>	Short-eared Owl (winter populations)	T/--	Point count
<i>Bartramia longicauda</i>	Upland Sandpiper	E/--	Point count
<i>Botaurus lentiginosus</i>	American Bittern	E/--	Call-back survey
<i>Charadrius melodus</i>	Piping Plover	T/T	Point count
<i>Circus cyaneus</i>	Northern Harrier	E/--	Point count
<i>Cordeiles minor</i>	Common Nighthawk	E/--	Point count
<i>Egretta caerulea</i>	Little Blue Heron	SC/--	Point count
<i>Egretta thula</i>	Snowy Egret	T/--	Point count
<i>Eremophila alpestris</i>	Horned Lark	E/--	Point count
<i>Falco peregrinis</i>	Peregrine Falcon	T/--	Point count
<i>Falco sparverius</i>	American Kestrel	T/--	Point count
<i>Gallinula chloropus</i>	Common Moorhen	E/--	Call-back survey
<i>Ixobrychus exilis</i>	Least Bittern	T/--	Call-back survey
<i>Passerculus sandwichensis</i>	Savannah Sparrow	SC/--	Point count
<i>Passerculus sandwichensis princeps</i>	Ipswich Sparrow	SC/--	Point count; transect
<i>Plegadis falcinellus</i>	Glossy Ibis	SC/--	Point count
<i>Podilymbus podiceps</i>	Pied-billed Grebe	E/--	Call-back survey
<i>Rallus elegans</i>	King Rail (Nesting Populations only)	E/--	Call-back survey
<i>Sternula antillarum</i>	Least Tern	T/--	Point count
<i>Sturnella magna</i>	Eastern Meadowlark	SC/--	Point count
<i>Toxostoma rufum</i>	Brown Thrasher	SC/--	Point count
<i>Tyto alba</i>	Common Barn Owl	E/--	Point count, structure inspection

\* In appropriate habitat for the target species

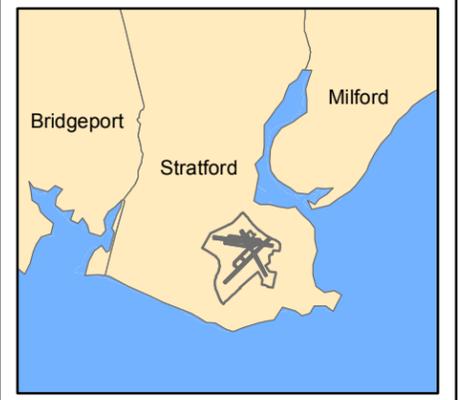


**Legend**

- Avian Survey Point

**Avian Zone**

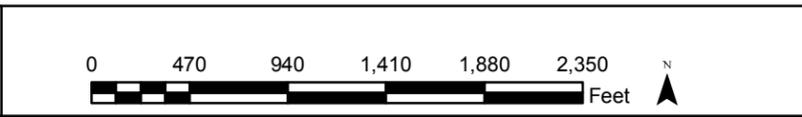
- Zone 1
- Zone 2
- Zone 3
- Zone 4



Map Title: Avian Survey

Project No. 15-336  
Date: Nov. 2012

Project Title: Runway Safety Area Project  
Igor I. Sikorsky Memorial Airport  
Town of Stratford



Town: Stratford, CT  
Figure 3



- Zone 2 – Points 9, 11-14,16, 18-20,24, 42 (11 Points)

Zone 2 has a grassland feature associated with it as it includes the safety zone areas around the outer perimeter at the southern end of Runway 6/24. It is primarily composed of high marsh saltmarsh vegetation, though there are substantial areas of common reed. Zone 2 features some small pools of water or salt pans with exposed mudflats during times of low water levels. There are areas of trees and shrubs of varying types along the perimeter of the Zone.

- Zone 3 – Points 15,17, 21-23,25-35 (16 Points)

Zone 3 includes the airfield proper including the grassy runway safety areas, taxiways, approaches, the civil air patrol training area, the South Ramp, North Ramp, and other auxiliary areas as depicted in Figure 3.

- Zone 4 – Points 36-41 (6 points)

This zone includes the impact area, Marine Basin, and associated airport site to the north of Main Street.

Surveys were conducted on clear to partly cloudy days when sustained wind speeds were reported to be less than 15 miles per hour in Stratford and visibility was favorable. Days of precipitation were avoided so that rain droplets would not impede the acuity of our optics, and high sustained winds would not impede our ability to hear bird vocalizations.

## 4.0 Results

Surveys were conducted from April 27, 2012 to October 26, 2012 with 14 survey periods during that time span. During the survey period 147 species were observed. Out of the total 147 species, 20 observed species are included on the Connecticut list of endangered, threatened or special concern species (CTDEP, 2010). The 20 observed listed species, in addition to seven (7) other listed species expected but not observed, are summarized in Table 4. An additional 30 species otherwise designated as Greatest Conservation Need (GCN) Species by Connecticut's Comprehensive Wildlife Conservation Strategy (CCWCS) (CTDEP, 2005) are summarized in **Table 5**. Detailed accounts of those species identified during the survey period are also provided. BDR avian species occurrences are also displayed in **Appendix C**.

**Table 4: CT-ESA Listed Species Observed (*in bold*) or Expected at BDR**

Common Name ( <i>Scientific name</i> ) (observed species in bold)	CT / Federal ESA Status	Preferred Habitat/Habitat Attributes	Locations on site where recorded
<b>Blue-winged Teal</b> <i>Anas discors</i>	T (nesting pop.) / --	Shallow areas of estuarine marshes provide migratory stopover habitat	Z1, Z2, Z3
<b>Pied-billed Grebe</b> <i>Podilymbus podiceps</i>	E / --	Open water areas underlain by submerged aquatic vegetation provide potential winter foraging habitat	Z2
Least Bittern <i>Ixobrychus exilis</i>	T/ --	Freshwater and brackish marshes with dense, tall growths of emergent vegetation (e.g. <i>Typha</i> , <i>phragmites</i> ). Occasionally in salt marshes.	
<b>American Bittern</b> <i>Botaurus lentiginosus</i>	E / --	Salt and Brackish Marsh/ Secluded marshes with little to no human disturbance	Z2
<b>Great Egret</b> <i>Ardea alba</i>	T/ --	Streams, ponds, lakes, rice fields, freshwater and saltwater marshes, mud flats	Z1, Z2, Z3, Z4
<b>Snowy Egret</b> <i>Egretta thula</i>	T/ --	Lives around fresh, brackish, and salt water, sometimes dry agricultural fields in association with cattle	Z1, Z2, Z3, Z4
<b>Little Blue Heron</b> <i>Egretta caerulea</i>	SC / --	Prefers freshwater marshes, ponds, lakes and marshy borders of streams; also frequents salt or brackish water marshes	Z1, Z2
<b>Yellow-crowned Night-Heron</b> <i>Nyctanassa violacea</i>	SC / --	Lush riverine swamps and marshes the tidal creeks within the IBA are important foraging areas for this species.	Z1, Z2, Z3, Z4
<b>Glossy Ibis</b> <i>Plegadis falcinellus</i>	SC / --	Salt Marsh/ Salt Pannes and grassy areas of high marsh for feeding	Z1, Z2, Z4
<b>Northern Harrier</b> <i>Circus cyaneus</i>	E / --	Salt marshes and other extensive grasslands. Other open areas provide foraging habitat during migration	Z1, Z2

Sharp-shinned Hawk <i>Accipiter striatus</i>	E / --	Woodland edges and paths, brushy fields and meadows, and other small openings in vegetation provide suitable hunting during migration	Not detected but expected on most years as a migrant
<b>American Kestrel</b> <i>Falco sparverius</i>	T/ --	Wide variety of open to semi-open habitats, including meadows, grasslands, and early successional communities	Z2, Z3
<b>Peregrine Falcon</b> <i>Falco peregrinus</i>	T/ --	Flat, open, sandy, coastal beaches and associated bays, estuaries, and ocean	Z1, Z2
<b>Piping Plover</b> <i>Charadrius melodus</i>	T/ T	Barrier Beach Strand ( <i>Crepidula midden</i> ) helps to disguise and camouflage eggs, Wrack lines contain an abundance of marine amphipods and other invertebrates that are important prey items for Piping Plovers	Z1
<b>Least Tern</b> <i>Sterna antillarum</i>	T/ --	Flat, open, sandy, coastal beaches and associated bays, estuaries, and ocean	Z1
<b>Common Tern</b> <i>Sterna hirundo</i>	SC / --	Nests in colonies near extremity of some beach sandpits, isolated islands of sand and oyster shells, dredge spoil bank, or ledges.	Z1, Z2
<b>American Oystercatcher</b> <i>Haematopus palliatus</i>	SC / --	Barrier beach and sandy shoals/jetties. Sand spits in IBA used for roosting and foraging	Z1
Barn Owl <i>Tyto alba</i>	E / --	Open areas (salt marsh and coastal upland grasslands) provide productive foraging areas; IBA could provide potential breeding habitat with proper nest box installation	Single individual observed at Pleasure Beach on multiple occasions between May and August; former nesting species on BDR
Northern Saw-whet Owl <i>Aegolius acadicus</i>	SC / --	Dense thickets provide migration and winter foraging habitat and cover	Not detected but expected as a possible migrant
Long-eared Owl <i>Asio otus</i>	E / --	Dense conifers and other vegetation provide potential winter roost sites; open marshlands provide suitable foraging sites	Not detected but expected as a possible migrant
Short-eared Owl <i>Asio flammeus</i>	T (winterin g pops.) / --	Dunes and salt marsh areas provide migration and winter foraging habitat and cover	Not detected but expected as a probable migrant or winter resident
<b>Savannah Sparrow</b> <i>Passerculus sandwichensis</i>	SC / --	Open grassy areas; field margins provide migration foraging habitat and cover	Z2, Z3
Ipswich Sparrow <i>Passerculus sandwichensis princeps</i>	SC / --	Beach dunes	Not detected but expected in winter months at Long Beach
<b>Saltmarsh Sparrow</b> <i>Ammodramus</i>	SC / --	Salt Marsh/ High marsh zones dominated by Salt Meadow Cordgrass, Spike Grass, and Black Grass for	Z1, Z2, Z3

<i>caudacutus</i>		nesting and cover, tidal mudflats for foraging	
<b>Seaside Sparrow</b> <i>Ammodramus savannarum</i>	T/ --	Salt Marsh/use low marsh zones for breeding	Z1, Z2, Z3
<b>Bobolink</b> <i>Dolichonyx oryzivorus</i>	SC / --	Mixed, tall grass fields and meadows with some forbs	Z3, Z4
<b>Eastern Meadowlark</b> <i>Sturnella magna</i>	SC / --	Open grassy areas of airport and salt marsh provide potential migration foraging habitat	Z3

**Table 5: CCWCS Greatest Conservation Need Species Observed at BDR**

<b>Common Name (Scientific name)</b>	<b>Preferred Habitat/Habitat Attributes</b>	<b>Locations on site where recorded</b>
American Black Duck <i>Anas rubripes</i>	A variety of freshwater and coastal habitats including brackish marshes	Z1, Z2, Z4
Great Blue Heron <i>Ardea herodias</i>	A variety of freshwater and coastal habitats including marshes, open water or wetland habitats	Z1, Z2, Z4
Green Heron <i>Butorides virescens</i>	A variety of freshwater and saltwater habitats; primarily in marshes, salt marshes, mud flats and human-created canals and ditches (requires shallow waters for feeding)	Z1, Z4
Black-crowned Night-Heron <i>Nycticorax nycticorax</i>	A wide variety of freshwater, saltwater, and brackish water wetlands and wooded areas near coastal marshes	Z1, Z2, Z4
Osprey <i>Pandion haliaetus</i>	A wide range of habitats in close proximity to large waterbodies and coastal waters; elevated nest perches next to abundant fish supply	Z1, Z2, Z4
Clapper Rail <i>Rallus longirostris</i>	Coastal brackish and saltwater marshes with abundant vegetation	Z1, Z2
Virginia Rail <i>Rallus limnicola</i>	Primarily shallow freshwater marshes occasionally brackish and salt marshes with robust stands of emergent vegetation	Z2
Sora (Rail) <i>Porzana carolina</i>	Prefers freshwater marshes but also inhabits brackish marshes with shallow to intermediate water depths and dominated by emergent vegetation	Z1, Z2
Spotted Sandpiper <i>Actitis macularia</i>	Edges of ponds, lakes, and streams, or at the edges of tidal creeks and salt marshes	Z2, Z4
Willet <i>Catoptrophorus semipalmatus</i>	Salt marshes, marshy lake edges, tidal creek banks, exposed mudflats, dry uplands near water	Z1, Z2, Z3, Z4
Ruddy Turnstone <i>Arenaria interpres</i>	Stony, rocky, or sandy beaches; muddy banks of tidal creeks, and open marshes	Z1
Sanderling <i>Calidris alba</i>	Sandy beaches, sandbars, flats of bays and inlets, rocks covered with seaweed	Z1
Semipalmated Sandpiper <i>Calidris pusilla</i>	Salt hay meadows, inland shores, and intertidal zones	Z1
White-rumped Sandpiper <i>Calidris fuscicollis</i>	Intertidal zones, wet grassy areas, tidal pools	Z2
Chimney Swift <i>Chaetura pelagic</i>	Nesting sites (unused chimneys of buildings in cities, towns and farms)	Z3

Belted Kingfisher <i>Ceryle alcyon</i>	Occurs near ponds, streams, estuaries, and harbors; requires vertical banks for nesting; prefers small clear bodies of water for foraging	Z1, Z2, Z4
Northern Flicker <i>Colaptes auratus</i>	Open and riparian woodlands, swamps, clearcuts with tree stubs; coastal coniferous forests in winter	Z1, Z2, Z3, Z4
Great Crested Flycatcher <i>Myiarchus crinitus</i>	Woodlots with large canopy trees and scattered gaps of second growth	Z2
Eastern Kingbird <i>Tyrannus tyrannus</i>	A variety of open habitats containing scattered trees or tall shrubs usually near a wetland	Z2, Z3
Willow Flycatcher <i>Empidonax traillii</i>	Prefers open brushy fields, edges of wetlands, damp to dry upland fields and dense roadside growth	Z1, Z2, Z3, Z4
Warbling Vireo <i>Vireo gilvus</i>	Edges of woodlands, bottomlands, and roadsides and shade trees of residential areas	Z3, Z4
Common Raven <i>Corvus corax</i>	Clearings in coastal regions	Z4
Northern Rough-winged Swallow <i>Stelgidopteryx serripennis</i>	Open country, feeds over freshwater and saltwater marshes and scrub/shrub wetlands	Z1, Z2, Z3
Bank Swallow <i>Riparia riparia</i>	Grasslands, open areas adjacent to water	Z1, Z2, Z3
Marsh Wren <i>Cistothorus palustris</i>	Large brackish and saltwater marshes with abundant tall emergent vegetation	Z1, Z2, Z3
Gray Catbird <i>Dumetella carolinensis</i>	Common in dense shrubby thickets and roadside scrub, abandoned farmlands and homesites	Z1, Z2, Z3, Z4
American Redstart <i>Setophaga ruticilla</i>	Occupies a wide variety of forest and woodland edge habitat	Z3, Z4
Common Yellowthroat <i>Geothlypis trichas</i>	Common in brushy habitat with scattered shrubs and trees most often in or near scrub/shrub wetlands	Z1, Z2, Z3, Z4
Orchard Oriole <i>Icterus spurius</i>	Common in orchards, farmlands, gardens, shade trees, rural roads, and floodplains	Z1, Z4
Baltimore Oriole <i>Icterus galbula</i>	Open and semi-open areas, roadside shade trees; requires tall deciduous trees for nesting	Z2, Z3, Z4

## Species Accounts – CT ESA Listed Species

<b>Great Egret</b>	<b>2012 Breeding Status</b>	Confirmed site usage for foraging during breeding season
	<b>2009 BBS status</b>	—
<i>Ardea alba</i>	<b>CT-ESA</b>	Threatened
	<b>CT-CCWCS</b>	Most Important
	<b>Audubon Watchlist</b>	—
<p>Great Egrets are a fixture in all zones at the site. The site provides exceptionally important habitat for foraging and roosting before, during, and after the breeding season. Since the BDR/SGM survey area lies proximal to egret breeding colonies on offshore islands, it is a very important foraging location for this species. They also use the area for roosting after the breeding season. Recently, reports of Great Egret remaining in Connecticut throughout the seasons have become more frequent and it is likely that this species will be found year-round at the airport site in years to come.</p>		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Summer / migrant	Critical foraging and roosting habitat for birds nesting nearby and important stop-over site for migrants. SGM habitats are increasingly becoming more important as a wintering site.	
		
Great Egret		

<b>Snowy Egret</b>	<b>2012 Breeding Status</b>	Confirmed site usage for foraging during breeding season
	<b>2009 BBS status</b>	Possible
<i>Egretta thula</i>	<b>CT-ESA</b>	Threatened
	<b>CT-CCWCS</b>	Very Important
	<b>Audubon Watchlist</b>	—

Snowy Egrets were frequently seen in Zones 1 and 2. They heavily utilize the area for feeding and roosting due to the close proximity of the site to their offshore nesting locations. The SGM marshes are also used as a post-breeding distribution area and stop-over habitat for migrants. Their numbers decreased towards the end of the survey period due to the fact that they are still predominantly a summer breeding resident and rarely reported during winter months in Connecticut.

<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>
Summer / migrant	Critical foraging and roosting habitat for birds nesting nearby and important stop-over site for migrants.



<b>Yellow-crowned Night-Heron</b>	<b>2012 Breeding Status</b>	---
	<b>2009 BBS status</b>	—
<i>Nyctanassa violacea</i>	<b>CT-ESA</b>	Special Concern
	<b>CT-CCWCS</b>	Very Important
	<b>Audubon Watchlist</b>	—

This species was encountered in all zones on the property, and seen throughout zones 1, 2, and 4 on a regular basis. It utilizes the marsh habitats for feeding, but evidence of breeding on the airport site was not confirmed. After the breeding period we saw a marked increase in individuals - including juveniles - using the site for feeding and roosting. Due to its close proximity to known nesting locations the airport site is very important for this species' biological resource needs. The site is used heavily for pre- and post-migrational birds.

<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>
Summer / migrant	Very important foraging area for young and adult birds during the breeding season

<b>Northern Harrier</b>	<b>2012 Breeding Status</b>	Not detected
	<b>2009 BBS status</b>	Possible
<i>Circus cyaneus</i>	<b>CT-ESA</b>	Endangered
	<b>CT-CCWCS</b>	Most Important
	<b>Audubon Watchlist</b>	—
<p>During the summer of 2008 a pair of Northern Harriers successfully nested in close proximity to the airport. There is a reasonable possibility that they might breed on the airport site in the future. We encountered this species late in the survey period after the breeding season. This species prefers to forage in an open habitat and particularly marshes. Northern Harrier utilizes the site regularly during migration as the airport and surrounding property provide important hunting and roosting sites during the fall, winter, and spring.</p>		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Winter / migrant / rare summer	Important wintering grounds and migration stop-over site. The most recent successful nesting of this species in CT took place in the SGM in 2008 (outside the airport property).	
		
One of three nearly fledged Northern Harrier chicks found by CAS in the SGM in July 2008		

<b>Pied-billed Grebe</b>	<b>2012 Breeding Status</b>	Unlikely
	<b>2009 Previous BBS status</b>	Probable
<i>Podilymbus podiceps</i>	<b>CT-ESA</b>	Endangered
	<b>CT-CWCS</b>	Most Important
	<b>Audubon Watchlist</b>	Red
<p>This species is a historical breeder within the SGM but was not observed during this study during the breeding season. There is apparently suitable habitat on the site (Access Road Pool) for the possibility of future breeding. Observations of this species made during this study were likely of those individuals that were using the airport for migrational stop-over habitat or post breeding dispersal.</p>		
<b>Status in SGM</b>	<b>SGM importance</b>	
migrant	Important area for migrating individuals and potential for breeding in the future.	

<b>American Kestrel</b>	<b>2012 Breeding Status</b>	Possible
	<b>2009 BBS status</b>	Confirmed
<i>Falco sparverius</i>	<b>CT-ESA</b>	Threatened
	<b>CT-CCWCS</b>	Very Important
	<b>Audubon Watchlist</b>	—
<p>American Kestrels were formerly a confirmed breeding species in Stratford (Bevier ed., 1994). In past years a pair of American Kestrels was spending considerable amounts of time at Stratford Point. A nest box was erected for their usage in early May, but unfortunately, the pair left the area a day or two later and no American Kestrel were sighted in the area again until mid-July, which is typically after the breeding season.</p> <p>This species was only encountered on the airport property before and after the breeding season as they used the site for migration foraging and post-breeding dispersal habitat. There is viable breeding habitat for this species on the site but competition with European Starlings for nesting cavities is often a deterrent to successful nest site establishment.</p> <p>Suitable breeding habitat remains at Stratford Point and Pleasure Beach, assuming European Starlings do not deter them. Appropriate maintenance of habitat, proper mowing techniques, and the addition of nest boxes in or near the Sikorsky Airport could also provide improve chances that this species will breed again in the SGM system.</p>		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Year-round	Important foraging site for migrating and wintering birds, with the possibility of becoming an important breeding site	

<b>King Rail</b>	<b>2012 Breeding Status</b>	Probable
	<b>2009 BBS status</b>	—
<i>Rallus elegans</i>	<b>CT-ESA</b>	Endangered (nesting)
	<b>CT-CCWCS</b>	Most Important
	<b>Audubon Watchlist</b>	Yellow
<p>This was a particularly difficult species to get an accurate reading for its occurrence on the site. On more than one occasion there was a King Rail type call heard, but no visual evidence was obtained. Some of the significant evidence was obtained during call back surveys when an individual that did not particularly look like a King Rail responded quite vigorously. This individual may have been a hybrid King x Clapper or “Kling” Rail. Clapper Rails always respond to King Rail calls during callback surveys conducted on the site. This suggests that Clapper Rails have heard King Rail calls during the breeding season and associate that call with potential competition with King Rails.</p>		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Migrant / occasional in summer	Possible nesting in past	

<b>Peregrine Falcon</b>	<b>2012 Breeding Status</b>	----
	<b>2009 BBS status</b>	—
<i>Falco peregrinus</i>	<b>CT-ESA</b>	Threatened
	<b>CT-CCWCS</b>	Very Important
	<b>Audubon Watchlist</b>	—
No evidence of breeding was observed on the site, likely due to the lack of suitable nesting sites. However, due to the close proximity of known nesting locations, the site and surrounding area provides important breeding season foraging and post-breeding dispersal habitat.		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Year-round	Important foraging area, especially during winter months, when area is covered with ice and snow, and while rearing young in summer and into early fall.	
		
Juvenile Peregrine Falcon on Stratford Point after conclusion of the BBS (8 August 2009). Although not breeding within the boundaries of the site, Peregrine Falcons reliably forage in the area		

<b>Common Loon</b>	<b>2012 Breeding Status</b>	Unlikely
	<b>2009 BBS status</b>	—
<i>Gavia immer</i>	<b>CT-ESA</b>	Special Concern
	<b>CT-CCWCS</b>	Very Important
	<b>Audubon Watchlist</b>	—
Observed feeding in zone 1 and 2. The marsh is an important area for this species for pre and post-migrational stop-over foraging. This species does not breed in coastal CT.		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Winter / migrant	Long Island Sound is an important wintering area for this species	

<b>Piping Plover</b>		<b>2012 Breeding Status</b>	Breeds at Nearby Long Beach
		<b>2009 BBS status</b>	--
<i>Charadrius melodus</i>		<b>CT-ESA</b>	Threatened
		<b>CT-CCWCS</b>	Most Important
		<b>Audubon Watchlist</b>	Red
This species was only encountered once when a single individual was observed utilizing Zone 1 for feeding. With the close proximity to Long Beach (where on average 6-8 pairs breed) the airport property parcel that encompasses a portion of Long Beach is an important feeding area for this Federally Threatened species.			
<b>Status in BDR/SGM</b>		<b>BDR/SGM importance</b>	
Summer / migrant		Long Beach is one of the most productive breeding areas for this species in CT. The airport property at Long Beach therefore is considered within the zone of usage for Long Beach breeding Piping Plovers.	
			

<b>American Bittern</b>		<b>2012 Breeding Status</b>	Possible
		<b>2009 BBS status</b>	—
<i>Botaurus lentiginosus</i>		<b>CT-ESA</b>	Endangered
		<b>CT-CCWCS</b>	Most Important
		<b>Audubon Watchlist</b>	—
This species was detected at two locations: a single sighting at the end of Zone 2 at point 9 during a callback survey and a vocalization southeast of Point 20 in Zone 2. There is a possibility this species breeds on the airport site since viable breeding habitat occurs on the site, but evidence of breeding was not observed. Due to this species' reclusive behavior it is hard to establish breeding confirmation. The site also provides important stopover habitat for migrating individuals, and it is also possible that some individuals may winter at the site and adjoining property within SGM.			
<b>Status in BDR/SGM</b>		<b>BDR/SGM importance</b>	
Rare winter / migrant / occasional summer		Migration stop-over and wintering site for small number of birds	

<b>American Oystercatcher</b>		<b>2012 Breeding Status</b>	Probable at Long Beach
		<b>2009 BBS status</b>	—
<i>Haematopus palliatus</i>		<b>CT-ESA</b>	Threatened
		<b>CT-CCWCS</b>	Very Important
		<b>Audubon Watchlist</b>	—
Only observed feeding or flying over in Zone 1. This species nests on Long Beach on a regular basis, but were not successful in their nesting attempts this year. In future years if this species is more successful in the state as a breeding resident, portions of the airport property (e.g., that portion of Long Beach owned by the airport) may be a key factor in their success, providing these birds with suitable foraging and roosting habitat.			
<b>Status in BDR/SGM</b>		<b>BDR/SGM importance</b>	
Summer / migrant		Important foraging area in summer and during migration.	
			

<b>Glossy Ibis</b>		<b>2012 Breeding Status</b>	Not Detected
		<b>2009 BBS status</b>	—
<i>Plegadis falcinellus</i>		<b>CT-ESA</b>	Special Concern
		<b>CT-CCWCS</b>	Very Important
		<b>Audubon Watchlist</b>	—
Glossy Ibis were encountered infrequently throughout the survey period, and mostly as fly-overs. This species was observed on one occasion utilizing zone 2 for feeding. No evidence of breeding on the site was noted. Due to the close proximity of known breeding locations on off-shore islands and the increase of breeding pairs in the region, this species may begin to be encountered more frequently at the site in the future.			
<b>Status in BDR/SGM</b>		<b>SGM importance</b>	
Migrant		Utilizes the site as a foraging area during migration	

<b>Least Tern</b>	<b>2012 Breeding Status</b>	Nesting attempts at nearby Long Beach
	<b>2009 BBS status</b>	--
<i>Sterna antillarum</i>	<b>CT-ESA</b>	Threatened
	<b>CT-CCWCS</b>	Most Important
	<b>Audubon Watchlist</b>	Red
<p>Seen occasionally foraging in Zone 1 and Zone 2. Due to the large colony of nesting birds on Long Beach and the colony's close proximity to Zone 1, the marshes of the airport property are important habitat for this species. The airport site is only going to increase in importance for this species in the coming years. The 2012 season was a relatively unsuccessful breeding season in Stratford for this species, but during successful years they may utilize the marsh heavily for feeding while tending to their young.</p> <p>This is a Connecticut Audubon Society "Top 20 Conservation Priority" species.</p>		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Summer / migrant	Extremely important breeding area for this species, often one of the most productive sites in Connecticut	
		
One of the first Least Tern nests of the season on Long Beach but outside of the Airport Property (9 June 2009)		Least Tern on a nest on Long Beach (19 June 2009). Note the tidal wrack line right behind the bird. High tides would curtail this second nesting attempt shortly after this photo was taken

<b>Common Tern</b>	<b>2012 Breeding Status</b>	Probable
	<b>2009 BBS status</b>	Confirmed
<i>Sterna hirundo</i>	<b>CT-ESA</b>	Special Concern
	<b>CT-CCWCS</b>	Very Important
	<b>Audubon Watchlist</b>	—
<p>Seen using Zones 1, 2, and 3 for feeding. Due to the large numbers of breeding birds proximal to the airport, the marshes on the airport property are important foraging habitat and used as a post-breeding dispersal and migratory stop-over staging area.</p> <p>This is a Connecticut Audubon Society “Top 20 Conservation Priority” species.</p>		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Summer / migrant	Historically a known breeding location. Although not confirmed in the 2009 CAS BBS or this 2012 survey effort, the area could be considered a potential breeding area. At the very least, this species relies on the SGM as a foraging area during breeding season and in migration.	
		
Common Tern on Long Beach (July 2012)		

<b>Bobolink</b>	<b>2012 Breeding Status</b>	Possible
	<b>2009 BBS status</b>	—
<i>Dolichonyx oryzivorus</i>	<b>CT-ESA</b>	Special Concern
	<b>CT-CCWCS</b>	Very Important
	<b>Audubon Watchlist</b>	—
<p>Encountered only towards the end of the surveys during southbound migration period. This is a species we theorized to encounter more often and possibly breeding on the site. However, although there appears to be suitable habitat for breeding, the vigorous mowing schedule likely discourages it from becoming a breeding resident. It is still an important stop over site for migrants.</p> <p>This is a Connecticut Audubon Society “Top 20 Conservation Priority” species.</p>		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Year-round	These birds regularly use the site and surrounding areas (e.g. Stratford Point) as a stop-over site during migration.	

<b>Saltmarsh Sparrow</b>	<b>2012 Breeding Status</b>	Confirmed
	<b>2009 BBS status</b>	Confirmed
<i>Ammodromus caudacutus</i>	<b>CT-ESA</b>	Special Concern
	<b>CT-CCWCS</b>	Most Important
	<b>Audubon Watchlist</b>	Red

This species was found to nest in zones 1 and 2 within the site. The first breeding area is a fairly large section in zone 2. They were found readily during the breeding season in the appropriate habitat. After the breeding season they dispersed to more widespread areas for feeding and post breeding dispersal. As the survey period went on we started to encounter migrating individuals utilizing the habitat for many of their biological needs. The site proved to be an important breeding area and migratory stop-over habitat.

Due to the locations of nesting sites and limited access we could not count the number of actual nesting birds. We did have abundant evidence of breeding (e.g., birds carrying nesting material into appropriate habitat, adults observed taking food into said appropriate habitat areas, and fledglings being tended by parents after the nesting season).

Saltmarsh Sparrows construct tightly wound cup nests located low to the ground. Nests are made of the same grasses in which they are located (generally Salt Meadow Hay, *Spartina patens*). Nests are generally located in saltmarsh grasses of uniformly medium height, some distance from taller vegetation such as *Phragmites*. The nests typically contain brown, dead blades of grass to conceal the nest.

Using the Saltmarsh Sparrow’s specific microhabitat preferences gleaned from these surveys, it will be possible to document more detailed observations and more precise counts of both population and breeding levels in future surveys, if needed. This experience, combined with more cooperative weather conditions, could lead to the discovery of more individuals and nests in the future.

This is a Connecticut Audubon Society “Top 20 Conservation Priority” species.

<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>
Summer / migrant	Significant breeding, very important stop-over and foraging site for migrants



Saltmarsh Sparrow eggshells found in a nearby area of SGM during the 2009 Breeding Bird Survey (9 July 2009)

A recently fledged Saltmarsh Sparrow (7 July 2009)



Saltmarsh Sparrow nest (7 July 2009)

<b>Savannah Sparrow</b>	<b>2012 Breeding Status</b>	Confirmed
	<b>2009 BBS status</b>	—
<i>Passerculus sandwichensis</i>	<b>CT-ESA</b>	Special Concern
	<b>CT-CCWCS</b>	Very Important
	<b>Audubon Watchlist</b>	—

The Savannah Sparrow breeds in limited areas in Zone 3. Recently fledged young were noted within the un-mowed grassy islands west of Runway 6/24. Mowing in this area was suspended during the growing season in deference to the on-going botanical surveys at the time. The airport is heavily used during migration. We encountered dozens of Savannah Sparrows during migration, showing the importance of this site for post-breeding migration stop-over.

<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>
Year-round	Very important migration and wintering site (including “Ipswich” Savannah Sparrow); potential for breeding on-site



Savannah Sparrow at Sikorsky Airport’s grassland habitat (1 July 2009)

Frequent mowing and disturbances such as this blimp likely prevents successful breeding in most years (15 June 2009)

<b>Seaside Sparrow</b>	<b>2012 Breeding Status</b>	Confirmed
	<b>2009 BBS status</b>	Probable
<i>Ammodromus maritimus</i>	<b>CT-ESA</b>	Threatened
	<b>CT-CCWCS</b>	Most Important
	<b>Audubon Watchlist</b>	Red

Seaside Sparrows occupied the same two zones on the site that are used by Saltmarsh Sparrows. This species was found to nest in Zones 1 and 2 on the site. The first breeding area is a fairly large section in Zone 2. They were found readily during the breeding season in the appropriate habitat. After the breeding season they dispersed to more widespread areas for feeding and post breeding dispersal. As the survey period went on we started to encounter what appeared to be additional individuals utilizing the site as migratory stopover habitat.

Seaside Sparrows were most commonly found breeding in areas of Zone 2, with the greatest number of birds and possibly nests recorded here. On a few occasions, young birds were observed here and in some instances adult birds were seen feeding young, confirming successful breeding.

Seaside Sparrows usually construct their nests well above the ground, considerably higher than Saltmarsh Sparrow nests. Generally, nests are located in, and constructed with Smooth Cordgrass (*Spartina alterniflora*). Nests are usually completely domed, contrasting with the description of Seaside Sparrow nests found in *The Birds of North America Online*. The domed nest type is possibly a response to the extreme tide levels experienced in the area. Covering the nest decreases exposure to predators and to the elements when nests are constructed higher above the ground where they are potentially more visible. Domed nests placed higher up in the vegetation could ensure tidal protection without increasing predator exposure.

The Seaside Sparrow faces many of the same challenges as the Saltmarsh Sparrow. Nevertheless, the selection of nest sites seems to give them an advantage in terms of being able to survive rising water levels. However, their reliance, usage, and nest placement in proximity to small mud flats renders them more vulnerable to ground-based predators such as raccoons and feral cats.

This is a Connecticut Audubon Society “Top 20 Conservation Priority” species.

<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>
Summer / migrant	Significant breeding, very important stop-over and foraging site for migrants



Domed Seaside Sparrow nest

A recently fledged Seaside Sparrow



<b>Barn Owl</b>	<b>2012 Breeding Status</b>	Possible
	<b>2009 BBS status</b>	Probable
<i>Tyto alba</i>	<b>CT-ESA</b>	Endangered
	<b>CT-CCWCS</b>	Most Important
	<b>Audubon Watchlist</b>	—

Barn Owl, endangered in Connecticut, has, historically, been documented nesting on Sikorsky property. Although no individuals were observed during the 2012 survey, the barn owl is a known previous nester on airport property, as recently as 2009. Although no Barn Owls were observed on the airport property, a single roosting individual was seen on four occasions in an abandoned building on Pleasure Beach from April through August, 2012. It is likely that this long-time resident utilizes the marsh on the site and surrounding areas for foraging habitat. This species requires extensive grassy areas to hunt (DeGraaf and Yamasaki, 2001), so it is likely to use the marsh and fields of the Airport property for foraging. The blighted buildings and hangars on the property appear to offer suitable potential breeding or roosting sites for this species, but we did not encounter breeding evidence at these locations. Unfortunately, the top floor of one building remained inaccessible during the survey do to safety concerns and could not be thoroughly inspected. According to CTDEEP, a Barn Owl nested on the airport property up until 2009, however the structure used is no longer suitable for nesting. If the Pleasure Beach bird successfully breeds, its offspring might find suitable breeding habitat on the airport to establish its own breeding territory.

<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>
Year-round	A significant site, one of the few year-round locations, if not the only year-round location, for Barn Owls in Connecticut.



Barn Owl roosting in a building on Pleasure Beach (25 June 2009)	Barn Owl flying away from pleasure beach (April, 2012)
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## Species Accounts – CCWCS Greatest Conservation Need Species

<b>American Black Duck</b>	<b>2012 Breeding Status</b>	Probable
	<b>2009 CAS Breeding Bird Survey (BBS) status</b>	Confirmed
<i>Anas rubripes</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Very Important
	<b>Audubon Watchlist</b>	—
<p>Seen quite regularly during the survey period in all zones. The species obviously uses the airport site for all of its biological needs. Although we could not confirm breeding during the breeding season due to limited access to viable nesting habitat they most certainly were. Due to the viable habitat and confirmation of previous surveys in the area this, is most certainly an important area for breeding. At the end of our surveys we could also see the importance of the site due to the increase in sightings due to post breeding dispersal and pre-migrational foraging. There is also likely a population that uses the marsh year-round due to individuals staying in Connecticut year-round. This is one of CT's most important wintering grounds for <i>Anas rubripes</i>. Ninety percent of CT's wintering black duck population is found on the coast between the New York and New Hampshire borders (Merola, P.R. and G.G. Chasko. 1989).</p> <p>The American Black Duck is a Connecticut Audubon Society "Top 20 Conservation Priority" species. (CAS,2008)</p>		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Year-round	Important breeding, foraging and wintering area	

<b>Great Blue Heron</b>	<b>2012 Breeding Status</b>	Probable
	<b>2009 BBS status</b>	—
<i>Ardea herodias</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Important
	<b>Audubon Watchlist</b>	—
<p>This species was not noted until later in our surveys, which suggests that the site is an important area for post breeding dispersal and for migrating individuals. The site is probably used throughout the winter and into the spring for feeding, after which individuals disperse to surrounding islands or more remote inland wetlands for breeding. Since this species can be found in Connecticut all year long, their appearance as a year-round species on the site may increase.</p>		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Year-round	Post-breeding dispersal habitat	

<b>Ruddy Turnstone</b>	<b>2012 Breeding Status</b>	Unlikely
	<b>2009 BBS status</b>	—
<i>Arenaria interpres</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Important
	<b>Audubon Watchlist</b>	—
<p>A migratory shorebird species that appeared on the airport site (Zone 1) on a few occasions during the northbound and southbound migration periods and appears very unlikely to be a breeding resident species on site or surrounding areas of SGM.</p>		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Summer / migrant	Migration stop-over and foraging area	

<b>Green Heron</b>	<b>2012 Breeding Status</b>	Probable
	<b>2009 BBS status</b>	Confirmed
<i>Butorides virescens</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Very Important
	<b>Audubon Watchlist</b>	—
Green Herons were seen frequently in Zone 4. Although no actual evidence of breeding was observed, there is a distinct possibility that they are breeding on the site. Suitable habitat is found in a few areas for this species. They apparently utilize the area for pre and post-migrational foraging.		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Summer / migrant	Potential breeding, pre- and post-migration foraging	
		

<b>Sanderling</b>	<b>2012 Breeding Status</b>	---
	<b>2009 BBS status</b>	—
<i>Calidris alba</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Important
	<b>Audubon Watchlist</b>	Yellow
A migratory shorebird species that appeared on the airport site (Zone 1) on a few occasions during the northbound and southbound migration periods and appears very unlikely to be a breeding resident species on site or surrounding areas of SGM.		
This is a Connecticut Audubon Society “Top 20 Conservation Priority” species.		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Winter / migrant	Important migration stop-over and wintering foraging grounds.	

<b>Semipalmated Sandpiper</b>	<b>2012 Breeding Status</b>	---
	<b>2009 BBS status</b>	—
<i>Calidris pusilla</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Important
	<b>Audubon Watchlist</b>	Yellow
A migratory shorebird species that appeared on the airport site on a few occasions during the northbound and southbound migration periods and appears very unlikely to be a breeding resident species on site or surrounding areas of SGM.		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Migrant	Important migration stop-over and foraging area	

<b>Black-crowned Night-Heron</b>		<b>2012 Breeding Status</b>	Possible
		<b>2009 BBS status</b>	Confirmed
<i>Nycticorax nycticorax</i>		<b>CT-ESA</b>	—
		<b>CT-CCWCS</b>	Important
		<b>Audubon Watchlist</b>	—
Encountered in all zones on a regular basis. This species was seen throughout zone 1, 2, and 4. Black-crowned Night-Herons utilize the marsh for feeding, but are likely not breeding on the airport property. After the breeding period we saw a marked increase in individuals using the site for feeding and roosting. Due to its close proximity to known nesting locations, the airport property is very important habitat for this species. Pre- and post-migration birds use the site heavily.			
<b>Status in BDR/SGM</b>		<b>BDR/SGM importance</b>	
Year-round, rare in winter		Important foraging and breeding area	
			

<b>Spotted Sandpiper</b>		<b>2012 Breeding Status</b>	Possible
		<b>2009 BBS status</b>	Confirmed
<i>Actitis macularia</i>		<b>CT-ESA</b>	—
		<b>CT-CCWCS</b>	Important
		<b>Audubon Watchlist</b>	—
A confirmed breeder in the SGM system in 2009, our surveys of the airport property failed to produce confirmation of breeding in 2012. Spotted Sandpipers were noted foraging along the edges of the major tidal creeks in Zone 1 and in Access Road pool early in the season. It is unknown why other sightings were not encountered within the apparently suitable breeding habitat of the site, especially since this species is generally known as an adaptable habitat generalist.			
<b>Status in BDR/SGM</b>		<b>BDR/SGM importance</b>	
Summer resident; Spring and Fall Migrant		Possible breeding; post breeding dispersal foraging and migratory stopover	

<b>Osprey</b>	<b>2012 Breeding Status</b>	Breeds at Adjacent Long Beach, Short Beach, and the former Stratford Army Engine Plant
	<b>2009 BBS status</b>	—
<i>Pandion haliaetus</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Important
	<b>Audubon Watchlist</b>	—
<p>Seen hunting on the site throughout, but not breeding on site. Breeding occurred just outside of Zone 1 (at Long Beach) and Zone 4 (at the former Stratford Army Engine Plant). Due to the extreme close proximity of breeding the site is an important area for this species. They were frequently observed hunting along the tidal creeks in Zones 1 and 2, and the Marine Basin in Zone 4. Due to the growing population of Ospreys in the state, and their adaptive ability to breed on man-made structures, Ospreys may attempt to breed on the site in the future.</p>		
<b>Status in SGM</b>	<b>BDR/SGM importance</b>	
Summer / migrant	Sometimes forages along tidal creeks	
		
Osprey eating a fresh catch near the warehouse pools on Lordship Boulevard (6 July 2009)		Osprey building nest on Long Beach West (22 June 2009)

<b>Sora</b>	<b>2012 Breeding Status</b>	Possible
	<b>2009 BBS status</b>	—
<i>Porzana carolina</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Very important
	<b>Audubon Watchlist</b>	—
<p>This species was observed late in the survey period after the breeding season. Suitable habitat for breeding may exist within the SGM system.</p>		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Summer / migrant	Stop-over and foraging area during migration, likely a relevant breeding area	

<b>Clapper Rail</b>	<b>2012 Breeding Status</b>	Confirmed	
	<b>2009 BBS status</b>	Probable	
	<i>Rallus longirostris</i>	<b>CT-ESA</b>	—
		<b>CT-CCWCS</b>	Very Important
	<b>Audubon Watchlist</b>	Yellow	
A common species in Zones 1 and 2, the Clapper Rail was confirmed as a breeder on the property with downy young seen crossing Lordship Boulevard between Zones 1 and 2. Adults were regularly heard vocalizing throughout the breeding season in those two zones. The marshes of the site and surrounding areas of the SGM system are important habitat for this species in all facets of their life stages.			
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>		
Migrant / summer	Very important breeding grounds and migration stop-over		
			
Adult Clapper Rail found in Great Meadows Marsh		Clapper Rail chicks in Great Meadows Marsh	

<b>Virginia Rail</b>	<b>2012 Breeding Status</b>	Probable	
	<b>2009 BBS status</b>	—	
	<i>Rallus limnicola</i>	<b>CT-ESA</b>	—
		<b>CT-CCWCS</b>	Important
	<b>Audubon Watchlist</b>	—	
While never encountered during our surveys, an individual was seen in the access road pool (Point 19) by a competent birder during our survey period. This species could breed on the site due to the viable habitat in some areas, but it was not observed or detected during our point counts or call-back surveys. The site may also be viable for migrating individuals, but due to their reclusive nature and lack of access to their preferred habitat areas, this was hard to assess.			
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>		
Summer / migrant	Stop-over and foraging area during migration, likely a relevant breeding area		

<b>Willet</b>	<b>2012 Breeding Status</b>	Confirmed
	<b>2009 BBS status</b>	Confirmed
<i>Catoptrophorus semipalmatus</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Important
	<b>Audubon Watchlist</b>	—

Although historically considered at risk (i.e., included in earlier versions of CT's ESA list of Special Concern, Threatened, and Endangered Species), Willet populations have recovered considerably in CT to the point where they are no longer listed in the state ESA. In fact, Willets were one of the most commonly seen species during the survey period, with confirmed nesting recorded in all zones except Zone 4. Individuals were still noted in Zone 4 foraging within the Marine Basin during breeding season.

This species utilizes the airport site heavily for feeding and breeding and was found to be one of the most common breeding non-passerines encountered on the site. In their attempts to protect nests of a perceived threat, Willets often challenged observers conducting point counts. Individual birds would often join together in distraction displays and alarm calls in an attempt to chase away the observers. Willets responded readily to the suspended mowing regime while botanical surveys were being conducted, as they nested within the tall grasses of the runway safety areas in Zone 3 which are typically maintained as mowed lawn in most years.

<b>Status in BDR/SGM</b>	<b>SGM importance</b>
Summer / migrant	Important breeding and foraging area; migration stop-over site



Willet uttering alarm call in attempt to defend nest (23 June 2009)	Willet Nest ( June 2012)
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<b>White-rumped Sandpiper</b>	<b>2012 Breeding Status</b>	---
	<b>2009 BBS status</b>	—
<i>Calidris fuscicollis</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	—
	<b>Audubon Watchlist</b>	Yellow

A migratory shorebird species that appeared on the airport site (Zones 1 and 2) on a few occasions during the northbound and southbound migration periods and appears very unlikely to be a breeding resident species on site or surrounding areas of SGM.

<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>
Migrant	Migration stop-over and foraging area

<b>Chimney Swift</b>	<b>2012 Breeding Status</b>	Probable
	<b>2009 BBS status</b>	—
<i>Chaetura pelagica</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Very Important
	<b>Audubon Watchlist</b>	—
Observed in Zone 3 infrequently hunting over the site. Evidence of breeding was not observed on the site. It also utilizes the site as migratory stop-over habitat.		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Summer / migrant	Post Breeding Dispersal Foraging	

<b>Belted Kingfisher</b>	<b>2012 Breeding Status</b>	Possible
	<b>2009 BBS status</b>	—
<i>Ceryle alcyon</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Important
	<b>Audubon Watchlist</b>	—
Seen infrequently on the airport site and rarely during the breeding season. Later in the season it became evident that it was an important area for stop-over migration and wintering grounds.		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Year-round	Foraging habitat (tidal creeks and Marine Basin)	

<b>Northern Flicker</b>	<b>2012 Breeding Status</b>	Confirmed
	<b>2009 BBS status</b>	Probable
<i>Colaptes auratus</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Important
	<b>Audubon Watchlist</b>	—
Seen infrequently throughout the breeding season, but seen abundantly during migration. The airport and adjacent areas are used as a migratory stopover site for feeding and roosting.		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Year-round	Breeding and migratory stopover site	

<b>Great Crested Flycatcher</b>		<b>2012 Breeding Status</b>	
		<b>2009 BBS status</b>	—
<i>Myiarchus crinitus</i>		<b>CT-ESA</b>	—
		<b>CT-CCWCS</b>	Very Important
		<b>Audubon Watchlist</b>	—
Observed only in migration during the survey period. This species does not breed on the site most likely due to the lack of large tracts of mature forest. It was found during pre and post-migration, so the site is still used by stop-over habitat for this species.			
<b>Status in BDR/SGM</b>		<b>BDR/SGM importance</b>	
Migrant		Migratory stopover site	

<b>Eastern Kingbird</b>		<b>2012 Breeding Status</b>	Confirmed
		<b>2009 BBS status</b>	Possible
<i>Tyrannus tyrannus</i>		<b>CT-ESA</b>	—
		<b>CT-CCWCS</b>	Important
		<b>Audubon Watchlist</b>	—
Seen Infrequently during the breeding season, but at least one individuals was observed feeding fledglings on the site. Based on the evidence of observing the fledglings, and the fact there is suitable habitat, this was a confirmed breeder. It also utilizes the site as migratory stop-over habitat.			
<b>Status in BDR/SGM</b>		<b>BDR/SGM importance</b>	
Summer / migrant		Breeding and migratory stopover site	



Two fledglings being fed by a parent (South Ramp August 2012)

<b>Warbling Vireo</b>	<b>2012 Breeding Status</b>	Possible
	<b>2009 BBS status</b>	—
	<i>Vireo gilvus</i>	
	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Important
	<b>Audubon Watchlist</b>	—
Observed only in migration during the survey period. This species did not appear to breed on the site most likely due to the lack of large-diameter shade trees. It was found during migration, so the site appears to be used as migratory stopover habitat for this species.		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Summer / migrant	Migratory stopover site	

<b>Common Raven</b>	<b>2012 Breeding Status</b>	Probable
	<b>2009 BBS status</b>	—
	<i>Corvus corax</i>	
	<b>CT-ESA</b>	---
	<b>CT-CCWCS</b>	Very Important
	<b>Audubon Watchlist</b>	—
This former Special Concern species was only observed as a fly-over at BDR. It most likely utilizes the airport sporadically as a foraging area. There is the possibility that this species may use the site with increased frequency in the future due to the fact that its breeding population is increasing steadily.		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Year-round	Potential future breeding habitat? Currently a year-round foraging area	

<b>Northern Rough-winged Swallow</b>	<b>2012 Breeding Status</b>	Probable
	<b>2009 BBS status</b>	—
	<i>Stelgidopteryx serripennis</i>	
	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Important
	<b>Audubon Watchlist</b>	—
Seen on occasion in Zones 1 and 2 using the airport site as migratory stop-over habitat.		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Summer / migrant	Foraging habitat for possible local breeders.	

<b>Bank Swallow</b>	<b>2012 Breeding Status</b>	Probable
	<b>2009 BBS status</b>	Probable
	<i>Riparia riparia</i>	
	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Important
	<b>Audubon Watchlist</b>	—
Bank Swallows were most frequently seen in Zone 3, but occasionally occurred in Zones 1 and 2. A likely nesting colony was observed in a partially excavated sand mound on the nearby 42-acre plot to the west of the airport property during the 2009 Breeding Bird Survey, but that site was not accessed during this survey effort.		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Summer / migrant	Foraging habitat for possible local breeders.	

<b>Marsh Wren</b>	<b>2012 Breeding Status</b>	Confirmed
	<b>2009 BBS status</b>	Confirmed
<i>Cistothorus palustris</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Very Important
	<b>Audubon Watchlist</b>	—
Breeding was confirmed in Zones 1, 2, and 3 with the observation of newly fledged young at many plots within these zones. One of the most frequently encountered breeding passerine on the airport site, it was recorded from all points that were in, or adjacent to, suitable habitat during the breeding season. After breeding season was over, many birds were seen dispersed around the airport property taking advantage of the site's grassy habitats to use as post-breeding foraging and perhaps migratory stop-over habitat. Although this species can be found in CT year round the airport population disperses after breeding.		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Summer / migrant	Significant breeding area, among the larger ones in Connecticut	
		
An adult Marsh Wren in zone 1 (7 July 2009)		Marsh Wren nest in zone 1 (7 July 2009)

<b>American Redstart</b>	<b>2012 Breeding Status</b>	Probable
	<b>2009 BBS status</b>	—
<i>Setophaga ruticilla</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Important
	<b>Audubon Watchlist</b>	—
Observed only in migration during the survey period, this species does not breed on the site, most likely due to the lack of large forested tracts. It was found easily during migration, so the site is still important as migratory stop-over habitat for this species.		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Migrant	Migratory stop-over site	

<b>Gray Catbird</b>		<b>2012 Breeding Status</b>	Confirmed
		<b>2009 BBS status</b>	Probable
<i>Dumetella carolinensis</i>		<b>CT-ESA</b>	—
		<b>CT-CWCS</b>	Important
		<b>Audubon Watchlist</b>	—
<p>Seen breeding in multiple locations throughout the shrubland areas on the airport property, the highest density of this species was in Zone 4, but many were also observed in Zones 1 and 3. This species was found throughout the majority of the survey period. The site provides many of the necessary biological needs for this species to be a successful breeder. The airport property is also an important migratory stop-over site.</p>			
<b>Status in BDR/SGM</b>		<b>BDR/SGM importance</b>	
Summer / migrant		Breeding and migratory stopover habitat	
			
<p>Gray Catbird in Zone 3 gathering nesting material (24 June 2009)</p>			

<b>Common Yellowthroat</b>		<b>2012 Breeding Status</b>	Confirmed
		<b>2009 BBS status</b>	Confirmed
<i>Geothlypis trichas</i>		<b>CT-ESA</b>	—
		<b>CT-CCWCS</b>	—
		<b>Audubon Watchlist</b>	—
<p>The incessant singing of this species made it one of the more easily detected species, and as a result it ranks among the species that heavily use the airport for breeding, especially in Zones 3 and 4. It was also found during migration, so the site is important for stop-over habitat for this species as well.</p>			
<b>Status in BDR/SGM</b>		<b>BDR/SGM importance</b>	
Summer / migrant		Breeding and migratory stopover habitat	

<b>Willow Flycatcher</b>		<b>2012 Breeding Status</b>	Confirmed
		<b>2009 BBS status</b>	Probable
<i>Empidonax traillii</i>		<b>CT-ESA</b>	—
		<b>CT-CCWCS</b>	Important
		<b>Audubon Watchlist</b>	Yellow
<p>Seen breeding in multiple locations throughout the shrubland areas on the airport property. The highest density was in Zone 4, but individuals were also observed in Zones 1 and 3. This species was found throughout the majority of the survey period. The site provides many of the necessary habitat attributes for this species to become a successful breeder. These portions of the site also serve as important migratory stopover habitat.</p>			
<b>Status in BDR/SGM</b>		<b>BDR/SGM importance</b>	
Migrant / summer		Significant breeding area	
			
<p>An all too typical brief glimpse of a Willow Flycatcher</p>			

<b>Orchard Oriole</b>		<b>2012 Breeding Status</b>	Possible
		<b>2009 BBS status</b>	Possible
<i>Icterus spurius</i>		<b>CT-ESA</b>	—
		<b>CT-CCWCS</b>	Important
		<b>Audubon Watchlist</b>	—
<p>Only seen once on the survey at the end of Zone 4. It was singing when observed in the middle of the breeding season. There is suitable habitat on the site for breeding but evidence of breeding was not observed.</p>			
<b>Status in BDR/SGM</b>		<b>BDR/SGM importance</b>	
Migrant / summer		Possible breeding habitat	

<b>Baltimore Oriole</b>	<b>2012 Breeding Status</b>	Confirmed
	<b>2009 BBS status</b>	—
<i>Icterus galbula</i>	<b>CT-ESA</b>	—
	<b>CT-CCWCS</b>	Important
	<b>Audubon Watchlist</b>	—
<p>This species was seen very infrequently yet could be confirmed as a breeder due to presence of its telltale nest. Due to the reclusive nature during the breeding season it is a difficult bird to see, but heard on a few occasions. The site provides suitable habitat for breeding. It was also observed during migration, so this species utilizes the site for migratory stopover habitat as well.</p>		
<b>Status in BDR/SGM</b>	<b>BDR/SGM importance</b>	
Migrant / summer	Breeding habitat	
		
A female Baltimore Oriole at the nest (8 June 2009)		

## 5.0 Discussion

### ***Avian Community Overview of Stratford Great Meadows System***

There are distinct seasonal trends in Avifaunal occurrence and abundance that can be noted at BDR and adjacent areas. An overview of the avian community is provided in this section. Species mentioned below in this section typically occur on BDR and the greater Stratford Great Meadows system and associated habitats in general unless specifically stated otherwise. Tables 5 and 6 display the specific occurrences on BDR of listed species and other species of conservation concern, respectively. **Table 6** displays a Comprehensive List of Avian Species Observed within the entire system during the survey period. Those species that specifically did not occur on BDR property are so indicated.

Numerous bird species use the marshes and associated habitats of the Stratford Great Meadows System and BDR during the summer for breeding and foraging. In the summer, Osprey (*Pandion haliaetus*) nest on platforms on adjacent parcels at Short Beach, Long Beach, and one nest was noted atop a light pole in the parking lot of the former Stratford Army Engine Plant's waste water treatment plant parking lot. These piscivorous hawks feed on the plentiful fish in the mouth of the nearby Housatonic River and within Lewis Gut of the Stewart B. McKinney NWR's Great Meadows Marsh, as well as major tidal creeks elsewhere in the system, including the site.

Common and Least Terns also take advantage of these food sources and spend hours snatching small fish out of the water from the tidal creeks. Red-winged Blackbirds, Marsh Wrens, Willets, Saltmarsh and Seaside Sparrows, and Clapper Rails all nest in the marshes of the system and can be heard commonly during the breeding season. Northern Harrier has nested sporadically in recent years in the adjacent Great Meadows Unit of the Stewart B. McKinney National Wildlife Refuge and is routinely present as a fall migrant and winter resident.

Long-legged waders such as Great Egrets, Snowy Egrets, and Great Blue Herons, feed daily in the pools and creeks during the breeding season. Yellow-crowned Night Herons, Black-crowned Night Herons, and Green Herons are also frequently encountered and can be reliably found at certain observation points on the BDR site. On the other hand, Glossy Ibis and Little Blue Herons were curiously absent from BDR property but occurred elsewhere in the Stratford Great Meadows system during the breeding season.

Northern Harriers search the marsh for small mammals and birds during the non-breeding season (and have on occasion – including recently (CAS, 2009) – nested within the adjacent Great Meadows marsh). Red-tailed Hawks (*Buteo jamaicensis*) occur year-round. During migration, raptors and shorebirds that are absent during other times of the year can be found in the marshes, while passerines that breed at more northern latitudes pass through the wooded areas. Migrant raptors include American Kestrels (*Falco sparverius*), Cooper's Hawks (*Accipiter cooperii*), Merlins (*Falco columbarius*), and Peregrine Falcons (*Falco peregrinus*). Shorebirds commonly seen feeding in pools, ditches and creeks during migration include Semipalmated Plovers, both Greater and Lesser Yellowlegs, Short-billed Dowitchers, Least Sandpipers, and Semipalmated Sandpipers.

Undisturbed or protected portions of the barrier beach habitat adjacent to but outside of the airport

property support a population of Least Tern (*Sterna antillarum*) and Piping Plover (*Charadrius melodus*). American Oystercatcher (*Haematopus palliatus*) has attempted to nest there as well. Horned Lark (*Eremophila alpestris*) is a routine winter visitor, but was not encountered during the breeding season.

Aerial insectivores such as Tree Swallows and Barn Swallows (*Hirundo rustica*) are numerous over the marsh, while Northern Rough-winged Swallows (*Stelgidopteryx ruficollis*) and Chimney Swifts (*Chaetura pelagica*) can be seen occasionally. Willow Flycatcher is frequently encountered throughout the shrubland areas during the breeding season.

**Table 6: Comprehensive List of Bird Species Detected at BDR/SGM during 2012 Survey Season (April 27 - October 26, 2012)**

Comprehensive List of Bird Species Detected at BDR/SGM During 2012 Survey Season April 27 - October 26, 2012		
Family	Species name	Scientific name
Gaviidae	Common Loon	<i>Gavia immer</i>
	Red-throated Loon	<i>Gavia stellata</i>
Podicipidae	Pied-billed Grebe	<i>Podilymbus podiceps</i>
Ardeidae	Great Blue Heron	<i>Ardea herodias</i>
	Great Egret	<i>Ardea albus</i>
	Snowy Egret	<i>Egretta thula</i>
	Little Blue Heron	<i>Egretta caerulea</i>
	Tri-colored Heron	<i>Egretta tricolor</i>
	Green Heron	<i>Butorides virescens</i>
	Black-crowned Night-heron	<i>Nycticorax nycticorax</i>
	Yellow-crowned Night-heron	<i>Nyctanassa violacea</i>
	American Bittern	<i>Botaurus lentiginosus</i>
Threskiornitidae	Glossy Ibis	<i>Plegadis falcinellus</i>
Cathartidae	Turkey Vulture	<i>Cathartes aura</i>
Anatidae	Mute Swan	<i>Cygnus olor</i>
	Canada Goose	<i>Branta canadensis</i>
	American Brant	<i>Branta bernicula</i>
	Wood Duck	<i>Aix sponsa</i>
	Mallard	<i>Anas platyrhynchos</i>
	Black Duck	<i>Anas rubripes</i>
	Gadwall	<i>Anas strepera</i>
	Green-winged Teal	<i>Anas crecca</i>
	Blue-winged Teal	<i>Anas discors</i>
	American Wigeon	<i>Anas americana</i>
Accipitridae	Hooded Merganser	<i>Lophodytes cucullatus</i>
	Osprey	<i>Pandion haliaetus</i>
	Northern Harrier	<i>Circus cyaneus</i>
	Cooper's Hawk	<i>Accipiter cooperii</i>
	Red-tailed Hawk	<i>Buteo jamaicensis</i>
	Rough-legged Hawk	<i>Buteo lagopus</i>
	American Kestrel	<i>Falco sparverius</i>
	Merlin	<i>Falco columbarius</i>
Peregrine Falcon	<i>Falco peregrinus</i>	
Tetraonidae	Wild Turkey	<i>Meleagris gallopavo</i>
	Virginia rail	<i>Rallus limicola</i>
	Sora	<i>Porzana carolina</i>
	Clapper Rail	<i>Rallus longirostris</i>
Charadriidae	Yellow Rail	<i>Coturnicops noveboracensis</i>
	Killdeer	<i>Charadrius vociferus</i>
	Semipalmated Plover	<i>Charadrius semipalmatus</i>
	American Golden Plover	<i>Pluvialis dominica</i>
	Black-bellied Plover	<i>Pluvialis squatarola</i>
	Piping Plover	<i>Charadrius melodus</i>
	American Oystercatcher	<i>Haematopus palliatus</i>
	Spotted Sandpiper	<i>Actitis macularia</i>
	Solitary Sandpiper	<i>Tringa solitaria</i>
	Whimbrel	<i>Numenius phaeopus</i>
	Ruddy Turnstone	<i>Arenaria interpres</i>
	Willet	<i>Catoptrophorus semipalmatus</i>
	Greater Yellowlegs	<i>Tringa melanoleuca</i>
	Lesser Yellowlegs	<i>Tringa flavipes</i>
	White-rumped Sandpiper	<i>Calidris fuscicollis</i>
	Least Sandpiper	<i>Calidris minutilla</i>
	Pectoral Sandpiper	<i>Calidris melanotos</i>
	Stilt Sandpiper	<i>Calidris himantopus</i>
	Buff-breasted Sandpiper	<i>Tryngites subruficollis</i>
	Semipalmated Sandpiper	<i>Calidris pusilla</i>
Short-billed Dowitcher	<i>Limnodromus griseus</i>	
Sanderling	<i>Calidris alba</i>	

**Table 6: Comprehensive List of Bird Species Detected at BDR/SGM during 2012 Survey Season  
(April 27 - October 26, 2012) - Continued**

<b>Family</b>	<b>Species name</b>	<b>Scientific name</b>
Laridae	Herring Gull	<i>Larus argentatus</i>
	Great Black-backed Gull	<i>Larus marinus</i>
	Ring-billed Gull	<i>Larus delawarensis</i>
	Common Tern	<i>Sterna hirundo</i>
	Least Tern	<i>Sterna antillarum</i>
Columbidae	Mourning Dove	<i>Zenaida macroura</i>
	Rock Dove	<i>Columba livia</i>
	Barn Owl	<i>Tyto alba</i>
Apodidae	Chimney Swift	<i>Chaetura pelagica</i>
Trochilidae	Ruby-throated Hummingbird	<i>Archilochus colubris</i>
Psittidae	Monk Parakeet	<i>Myiopsitta monachus</i>
Alcedinidae	Belted Kingfisher	<i>Ceryle alcyon</i>
Picidae	Downy Woodpecker	<i>Picoides pubescens</i>
	Hairy Woodpecker	<i>Picoides villosus</i>
	Red-bellied Woodpecker	<i>Melanerpes carolinus</i>
	Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>
	Northern Flicker	<i>Colaptes auratus</i>
Tyrannidae	Eastern Kingbird	<i>Tyrannus tyrannus</i>
	Eastern Pheobe	<i>Sayornis pheobe</i>
	Willow flycatcher	<i>Empidonax traillii</i>
	Great-crested Flycatcher	<i>Myiarchus crinitus</i>
Hirundinidae	Purple Martin	<i>Progne subis</i>
	Tree Swallow	<i>Tachycineta bicolor</i>
	Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
	Bank Swallow	<i>Riparia riparia</i>
	Barn Swallow	<i>Hirundo rustica</i>
Corvidae	Blue Jay	<i>Cyanocitta cristata</i>
	American Crow	<i>Corvus brachyrhynchos</i>
	Fish Crow	<i>Corvus ossifragus</i>
	Common Raven	<i>Corvus corax</i>
Paridae	Black-capped Chickadee	<i>Poecile atricapillus</i>
	Tufted Titmouse	<i>Baeolophus bicolor</i>
Sittidae	Red-breasted Nuthatch	<i>Sitta canadensis</i>
	White-breasted Nuthatch	<i>Sitta carolinensis</i>
Troglodytidae	Carolina Wren	<i>Thryothorus ludovicianus</i>
	House Wren	<i>Troglodytes aedon</i>
	Marsh Wren	<i>Cistothorus palustris</i>
Musicapidae	Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>
Sylviidae	Ruby-crowned Kinglet	<i>Regulus calendula</i>
	Golden-crowned Kinglet	<i>Regulus satrapa</i>
Turdidae	Hermit Thrush	<i>Catharus guttatus</i>
	Wood Thrush	<i>Hylocichla mustelina</i>
	American Robin	<i>Turdus migratorius</i>
Mimidae	Northern Mockingbird	<i>Mimus polyglottus</i>
	Gray Catbird	<i>Dumetella carolinensis</i>
Bombycillidae	Cedar waxwing	<i>Bombycilla cedrorum</i>
Sturnidae	European Starling	<i>Sturnus vulgaris</i>
Vireonidae	White-eyed vireo	<i>Vireo griseus</i>
	Solitary Vireo	<i>Vireo solitarius</i>
	Warbling Vireo	<i>Vireo gilvus</i>
	Red-eyed Vireo	<i>Vireo olivaceus</i>
Parulidae	Blue-winged Warbler	<i>Vermivora pinus</i>
	Yellow Warbler	<i>Dendroica petechia</i>
	Yellow-rumped Warbler	<i>Dendroica coronata</i>
	Palm Warbler	<i>Dendroica palmarum</i>
	Black-and-white Warbler	<i>Mniotilta varia</i>
	Prairie Warbler	<i>Dendroica discolor</i>
	Ovenbird	<i>Seiurus aurocapillus</i>
	Northern Waterthrush	<i>Seiurus noveboracensis</i>
	Common Yellowthroat	<i>Geothlypis trichas</i>
	American Redstart	<i>Setophaga ruticilla</i>

**Table 6: Comprehensive List of Bird Species Detected at BDR/SGM during 2012 Survey Season  
(April 27 - October 26, 2012) - Continued**

<b>Family</b>	<b>Species name</b>	<b>Scientific name</b>
Cardinalidae	Northern Cardinal	<i>Cardinalis cardinalis</i>
Emberizidae	Chipping Sparrow	<i>Spizella passerina</i>
	Clay-colored Sparrow	<i>Spizella pallida</i>
	Field Sparrow	<i>Spizella pusilla</i>
	White-throated Sparrow	<i>Zonotrichia albicollis</i>
	White-crowned Sparrow	<i>Zonotrichia leucophrys</i>
	Dark-eyed Junco	<i>Junco hyemalis</i>
	Savanna Sparrow	<i>Passerculus sandwichensis</i>
	Seaside Sparrow	<i>Ammodramus maritimus</i>
	Swamp Sparrow	<i>Melospiza georgiana</i>
	Song Sparrow	<i>Melospiza melodia</i>
	Saltmarsh Sparrow	<i>Ammodramus caudacutus</i>
	Nelson's Sparrow	<i>Ammodramus nelsoni</i>
Icteridae	Red-winged Blackbird	<i>Agelaius phoeniceus</i>
	Bobolink	<i>Dolichonyx oryzivorus</i>
	Eastern Meadowlark	<i>Sturnella magna</i>
	Common Grackle	<i>Quiscalus quiscula</i>
	Boat-tailed Grackle	<i>Quiscalus major</i>
	Brown-headed Cowbird	<i>Molothrus ater</i>
	Orchard Oriole	<i>Icterus spurius</i>
	Northern Oriole	<i>Icterus galbula</i>
Fringillidae	Purple Finch	<i>Carpodacus purpureus</i>
	House Finch	<i>Carpodacus mexicanus</i>
	Pine Siskin	<i>Carduelis pinus</i>
	American Goldfinch	<i>Carduelis tristis</i>
	House Sparrow	<i>Passer domesticus</i>

## Seasonal Changes to the Avian Communities

Bird species richness, abundance, and composition change with the seasons at BDR. Generally, winter is the time of lowest species richness, but the abundance of certain species may swell when compared to other seasons. For instance, American Black Duck numbers are greatest during the winter months. Spring months likely have the greatest species richness as winter residents linger, northbound migrants are passing through and year-round residents are simultaneously present. Species richness once again drops during early summer months as spring migration ends and summer residents begin breeding. By late summer, species richness is again increasing, as a wide variety of migratory birds exploit the food resources within the site's habitats. Shorebird abundance increases dramatically and transient flocks can be found on the perimeter intertidal flats or high marsh salt pans. Still others, such as Sanderlings, Semipalmated Sandpipers, Semipalmated Plovers, *et cetera* use the beach strand to forage, rest or both. Shorebird southbound migration commences in July, peaks in early August, and then gives way to hawk and neotropical passerine migration in September, followed by waterfowl in October and November.

## State and Federal Listed Avian Species

The site's importance to rare avifauna is evident by the number of species that are listed under CT's ESA that regularly occur within the Airport site, based upon consultation with the CT DEEP Natural Diversity Database. Use of the site varies with species and season, and many species use more than one area of the site. References to breeding season occurrences contained herein are based primarily on the phenograms provided by Haniseck (2005) and occurrence frequency histograms generated in eBird. Regularly occurring state listed species, their known habitat / special habitat attributes and locations found on the site are provided in Table 4, and are discussed below.

### *State Endangered Species*

A number of state endangered species occur on the site from time to time but have not been recorded as nesting on the site or within the adjacent Great Meadow Marshes in recent years or during our study. Based upon reports from the CTDEEP Natural Diversity Database, these species are as follows: the state endangered Northern Harrier (*Circus cyaneus*) - which *has* nested at least once in the recent past within the adjacent Stewart B. McKinney NWR (CAS, 2009), Pied-billed Grebe (*Podilymbus podiceps*), American Bittern (*Botaurus lentiginosus*), Common Moorhen (*Gallinula chloropus*), King Rail (*Rallus elegans*), Blue-winged Teal (*Anas discors*), Barn Owl (*Tyto alba*), and Horned Lark (*Eremophila alpestris*). King Rail was not detected during the 2012 surveys at the airport, but curiously, many Clapper Rails responded to broadcast King Rail calls during call back surveys. Mixed pairings and hybrids of this species have been known to occur in the Atlantic Coast populations (Reid et al, 1994). The response of Clapper Rails to broadcast King Rail calls suggests that the resident Clapper Rails do have, or may have had, interspecific contact with King Rail in the recent past.

### *State Threatened Species*

The state threatened Peregrine Falcon (*Falco peregrinus*) has nested in proximity to the site but was not found to be nesting on the site during our survey or as a result of other investigations (USFWS, 2007; CAS, 2009). Young Peregrine Falcons were observed hunting over BDR indicating that the Airport site provides valuable post breeding dispersal habitat for this species. The state threatened American Kestrel (*Falco sparverius*); Piping Plover (*Charadrius melodus*), Great Egret (*Ardea alba*), Snowy Egret (*Egretta thula*), Least Tern (*Sterna antillarum*), and Seaside Sparrow can be found within the Airport site as well. All but the American Kestrel were noted on site during the breeding season.

Both the Piping Plover and Least Tern have been recorded nesting off-site on the adjacent portions of Long Beach and both were recorded feeding within the marsh habitats within the boundary of the Airport site, but south of Lordship Boulevard. No evidence of nesting by these two colonial waterbirds was detected on the airport property. Likewise, Great Egret and Snowy Egrets regularly use the site to forage during the breeding season, but no evidence of nesting on the airport property was noted. The American Kestrel forages over the site as a post-breeding dispersal. The state-threatened Least Bittern (*Ixobrychus exilis*) formerly nested within the Great Meadow marsh system. Apparently suitable habitat may still exist within the more brackish water areas of the site such as the marsh surrounding Access Road pool, yet no detections of this species were made during either the point counts or call-back surveys. Seaside Sparrows were frequently detected in Zones 1 and 2 of the site in suitable breeding habitat, during breeding season, and exhibiting breeding behavior. Recently fledged young birds were observed in these areas. Therefore, the breeding status of this threatened species on site is considered confirmed.

### *Special Concern Species*

Among the various state special concern species that are known to occur on the site, the following were regularly observed during the breeding season: Yellow-crowned Night Heron (*Nyctanassa violacea*), Common Tern (*Sterna hirundo*), Seaside Sparrow (*Ammodromus maritimus*), Saltmarsh Sparrow (*Ammodromus caudacutus*) and Savannah Sparrow (*Passerculus sandwichensis*). Breeding was confirmed for Savannah Sparrow in Zone 3, and confirmed for Saltmarsh Sparrow in Zones 1 and 2. Glossy Ibis (*Plegadis falcinellus*) and Little Blue Heron (*Egretta caerulea*) were not encountered during the breeding season but the former was seen during the spring surveys, and the latter was noted as post-breeding dispersals after the breeding season. Brown Thrasher (*Toxostoma rufum*), is a special concern species that has been documented as a breeder on adjacent Long Beach but was not encountered during surveys at BDR.

Other Connecticut-listed species known to use the refuge and adjacent lands outside the breeding season – but noted infrequently during our study – include the following: the state threatened Purple Martin (*Progne subis*), and the state special concern Eastern Meadowlark (*Sturnella magna*), and Bobolink (*Dolichonyx oryzivorus*). The Purple Martin nests at the nearby Milford Point but was not recorded on the airport site during the breeding season. The Eastern Meadowlark and Bobolink breed in Connecticut grasslands (Zeranski and Baptist, 1990), but were not detected on the airport property during the breeding season and were noted infrequently on BDR outside of the breeding season. Ipswich Sparrow (*Passerculus sandwichensis* ssp. *princeps*) is expected to occur on Long Beach during winter

months (consultation with CTDEEP NDDDB). The survey period between April 27<sup>th</sup> and October 26<sup>th</sup> may not coincide with regular occurrence of this species in Connecticut. Additionally, fall migration is known to bring the state special concern Saw-whet Owl (*Aegolius acadicus*), and the state endangered Red-headed Woodpecker (*Melanerpes erythrocephalus*) to coastal locations such as the SGM, however the latter two species were not recorded on site.

### *Additional Species of Undetermined Status*

There are a number of secretive species that potentially could occur within the habitats of BDR. Little is known about their occurrence due to the elusive and very secretive nature of these species. Examples include King Rail, Common Moorhen, Least Bittern, and Barn Owl. Many are recorded as historical breeders within SGM, but no known recent breeding records occur for these species on BDR or adjacent systems except for the Barn Owl, which was recorded as nesting at nearby Pleasure Beach as recent as June 2008, and observed as recent as June 2012 by CAS personnel.

## 6.0 Impact Assessment

It is expected that there will be little temporary and no permanent impacts to avian species of conservation concern in the project area during and after the construction of the improvements to the runway. This is due to one or more of the following reasons:

- The proposed construction activity is planned for existing developed portions of the airport (e.g., existing runway footprints) or intensely managed or ruderal habitats (e.g., lawns and artificial fill areas) in both upland and wetland settings that are sparsely vegetated or vegetated with non-native and invasive plant species. These areas of the site were found to have little habitat value to avian species of conservation concern, compared to other areas of the airport property.
- The rehabilitation of Runway 6-24 would result in a net reduction of approximately 15 acres of paved surface area on the airport, thereby creating a net increase of open, vegetated land cover.
- The proposed project would result in impact to approximately 2 acres of tidal marsh habitat, as a conservative estimate (Refer to Wetland/Soil Scientist's Report) The anticipated impacts to wetlands, however, will be addressed via on-site mitigation/ enhancement efforts which will serve to generate substantially higher habitat value wetlands than those impacted by project activities.
- The majority of breeding avifaunal species of conservation concern were found to occur inside existing, high-value tidally influenced salt marsh habitats dominated by native flora. These areas lie outside of proposed impact zones.
- The limited potential temporary impacts to breeding species of conservation concern found to nesting proximal to work areas (e.g., Savanna Sparrow) can be avoided by construction sequencing / phasing.

There are other management opportunities, however, that can ensure the bird habitat is affected as little as practicable, and can help to further reduce the already limited and temporary potential impacts to species of conservation concern. These recommendations are provided in the following section of the report.

## 7.0 Recommendations

Recommendations to manage Bridgeport-Sikorsky Airport in such a way as to enhance the habitat for avifauna of conservation concern include the following:

- Reconstruct runway segments closest to documented breeding avifauna of conservation concern during non-breeding months, or initiate construction activities before breeding birds establish territories and begin nesting. For instance, reconstruct the southern end of runway 6/24 during winter months to avoid impact to species of conservation concern noted using the adjacent marshes during breeding season (e.g. Seaside and Saltmarsh Sparrows, egrets, etc.) Likewise, reconstruct middle segments of Runway 6/24 in winter months to avoid nesting Savanna Sparrows noted between Points 15 and 27.
- Implement Best Management Practices for erosion and sedimentation control during construction to protect down gradient wetlands from sedimentation and turbidity impacts.
- Adopt a conservation mowing regime for areas outside of the Federal Aviation Administration safety zone, especially along the edge of Zone 2 between Points 9 and 24. This may include setting mower decks higher, mowing less frequently (e.g. waiting until after the bird-breeding season or at longer intervals), or both. For instance, the frequent lawn mowing regime that the Sikorsky Airport maintains on the main grassy field to the west of the parking areas likely prevents Savannah Sparrows from nesting successfully on-site. Based on our observations, it is likely that Savannah Sparrows would breed here if the extensive open grasslands on the airport site were managed differently.
- Implement conservation mowing techniques in the field at the southern end of South Ramp (vicinity of Point No. 25).
- Allow a less frequently mowed swath to develop adjacent to the marsh between Points 17 and 23.
- Assess feasibility of restoring tidal flow to areas where *Phragmites* is encroaching upon the saltmarsh habitat (e.g., the vicinity of Points 32 and 33; west of Point 14) to enhance habitat for many species.
- Control non-native invasive plants within wooded Hammock at Point 14 (e.g., Common Mugwort, Tree of Heaven, Oriental Bittersweet, etc.), and in vicinity of the Route 113 reconstruction area at Marine Basin (e.g. Common Mugwort, Tree of Heaven, Pawlonia, Phragmites, Oriental Bittersweet, Japanese Knotweed, etc.).
- Create dense stands of cedars at invasive plant control sites to provide cover for roosting owls.
- Explore use of grass species within the runway safety zones that are un-palatable or have a higher stem tensile strength to discourage grazing Canada Geese.

- Periodically inspect derelict structures on site for nesting or roosting Barn owls, especially as part of any planned pre-demolition inspections.
- Select native plants for mitigation sites that have high value to avifauna.
- Install Barn Owl boxes in areas outside the safety area where suitable habitat exists, and manually cleaned on an annual basis.
- Install American Kestrel boxes in areas outside of safety areas where suitable habitat exists between Points 17 and 23.
- Install Purple Martin nest gourd array at a suitable location at the site outside of safety areas and within extensive open habitat adjacent to water.

The City of Bridgeport will be responsible for any long term maintenance / monitoring of any of the proposed mitigation efforts.

## 8.0 References and Literature Cited

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# Appendix A Resumes

## RESUME

### EDUCATION

B.S., 1987, Biology/Ecology,  
Eastern CT State University

M.S., 1996, Ecology/Environmental Science,  
University of New Haven

Regional Soil Science Certificate Program,  
2006, University of Massachusetts

### ADDITIONAL SPECIALIZED TRAINING COURSEWORK:

Refuge Comprehensive Conservation  
Planning - National Conservation  
Training Center

Ecological Risk Assessment: Practices and  
Protocols - Rutgers University

Wildlife Management - American Public  
University

Conservation Biology - American Public  
University

Short Course in River Processes - Yale  
University School of Forestry and Env.  
Studies

LEED 101: Green Building Basics and LEED  
– US Green Building Council

### REGISTRATIONS/CERTIFICATIONS

Certified Ecologist (Ecological Society of  
America)

Certified Soil Scientist (New England Land  
Grant Universities)

Certified Hazardous Materials Manager  
(Institute of Hazardous Materials  
Management)

OSHA 40-Hr. Hazardous Waste Operations  
and Emergency Response

Transportation Worker Identity Certification  
(TWIC)

### SUMMARY OF EXPERIENCE

Mr. Zemba has over 23 years of professional experience. Areas of expertise include environmental impact statements/ assessments; environmental permitting; fish and wildlife inventories and monitoring; fish and wildlife habitat assessments/characterizations, management, planning, and restoration; wetland functions and values assessments; conservation planning; property assessments for hazardous material impact, environmental compliance monitoring for hazardous and regulated materials handling. Currently, Mr. Zemba is working on a variety of projects involving rare species assessment, environmental permitting, conservation planning, and habitat enhancement/restoration. During his professional career, Mr. Zemba has gained experience in forest health issues (as a former employee with USDA Forest Service), natural resource management planning (as senior ecologist with a full service engineering firm), and NEPA policy (as adjunct professor at the University of New Haven Graduate Program in Environmental Science). Representative projects in which Mr. Zemba has been involved are provided below.

### AVIAN AND OTHER NATURAL RESOURCE SURVEYS

**Faunal Surveys at East Lyme Wellfield Nos. 2 and 3A – Bride Lake in East Lyme, CT:** Conducted Avian Surveys, Herpetofaunal Surveys, and Wildlife Habitat Characterizations for the Town of East Lyme Water and Sewer Department. Surveys were conducted in support of a the Town's Water Diversion Permit Renewal for the wellfields.

**Grassland Bird Survey – Barnes Airfield, Westfield, MA:** Provided monitoring services of a grassland bird community at this municipal airfield in western Massachusetts. Conducted surveys of rare grassland birds to document breeding areas within the 1,200 acre airfield property which contains breeding populations of State Endangered Upland Sandpiper and State Threatened Grasshopper Sparrow.

**Vesper Sparrow Survey – Hatfield, MA:** Conducted breeding survey for and successfully documented site usage of the threatened (Commonwealth of Massachusetts) Vesper Sparrow on a site being considered for conversion of land use from agriculture to alternative energy.

**Grassland Bird Survey and Habitat Restoration Services – Rentschler Field, East Hartford, CT:** Provided monitoring services of a grassland bird community at a private airfield in central Connecticut. Partial funding of the development project was provided by the state necessitating rare grassland bird habitat mitigation. Conducted annual surveys of rare grassland birds to document the post construction status of the bird community on 99 hectares (244 acres). Documented usage and distribution of Grasshopper Sparrow (CT Endangered), Upland Sandpiper (CT Endangered), and Savannah Sparrow, Brown Thrasher, and Eastern Meadowlark (CT Special Concern) on the site. Supervised habitat restoration and enhancement for 2006 breeding season.

**Monitoring and Feasibility Analysis for Grassland Bird Habitat Enhancement/Restoration Initiative – Wallingford, CT:** Assessed the feasibility of grassland bird habitat enhancement and restoration at five Town-owned Open Space or Farmland Lease Program lands. Determined habitat parameters and characterized existing environmental attributes/features, land use, evidence of disturbance, vegetation data and avian data (species present and evidence of breeding). Identified potential opportunities and constraints to grassland bird habitat enhancement, restoration, and preservation planning efforts.

**Avian Survey and Small Mammal Trapping at Fry Farm National Historic Site – East Greenwich, RI:** Provided seasonal point count avian surveys and small mammal trapping of five wetland habitats within a 40-acre farm to determine the impact of groundwater withdrawal associated with hazardous waste remediation efforts being proposed at an up-gradient site.

**Biological Surveys for EIS, Routes 82/85/11 – Salem to Waterford, CT:** Managed, coordinated, and conducted biological surveys along an 11-mile proposed highway corridor. Identified and negotiated appropriate survey protocols for target taxa and state and federal regulators (USEPA, USFWS, USACOE, FHWA, CTDEP). Organized and managed multidisciplinary team of scientists representing academia, government agencies, and private consultants to conduct multi-taxa surveys. Surveys included the following:

- Stream bioassessment surveys for aquatic invertebrates
- Seasonal (Spring, Summer, and Winter) avian transect surveys, point counts, wetland call-back surveys
- Herpetofauna surveys
- Seasonal (e.g., “vernal”) pool inventory and evaluation
- Winter and Spring animal track surveys
- Odonata survey, and
- New England Cottontail (*Sylvilagus transitionalis*) surveys.

## CONSERVATION PLANNING

**Identification of Biological Indicators of Diversity and Ecosystem Health (BIDEH) – Audubon (National Audubon Society):** Assisted Audubon Connecticut with the Identification of BIDEH at 10 separate units of the Stewart B. McKinney National Wildlife Refuge along the CT coast in support of the United States Fish and Wildlife Service’s (USFWS) Comprehensive Conservation Plan for the McKinney Refuge.

**Comprehensive Conservation Planning – Silvio Conte National Wildlife Refuge:** Assisted Connecticut Department of Energy and Environmental Protection and the USFWS to identify Conservation Focal Areas and Conservation Planning Areas in association with USFWS CCP planning efforts in the Connecticut portion of the Connecticut River Watershed.

**Important Bird Area (IBA) Conservation Planning – Audubon:** Provided conservation planning services for Audubon’s state office in Southbury, CT, and Audubon’s National Science Office in Ivyland, PA. Prepared IBA plans for the following CT IBAs:

- **Stamford, CT:** The plan documented the existing environment within the City’s Cove Island Park, and outlines a plan for the management and conservation of habitats and resources within the park which are important to migratory and resident avifauna.
- **Woodbury/Roxbury, CT:** The plan identified ways to reduce the impact of agricultural practices on nesting grassland birds at Good Hill Farm, a 170 acre Roxbury Land Trust preserve.
- **Westbrook, CT:** The plan identified special habitat attributes and addressed conservation measures associated with nine CT “listed” (i.e., CT Special Concern, Threatened, or Endangered) species of avifauna and other species of conservation concern. This site included federally-owned land that is part of the Stewart B. McKinney National Wildlife Refuge (Salt Meadow Unit).
- **Stratford, CT:** The plan identified special habitat attributes and addressed conservation measures associated with 11 CT “listed” species of avifauna, 5 CT listed plant species and other species of conservation concern. This site included federally-owned land that is part of the Stewart B. McKinney National Wildlife Refuge (Great Meadow Unit) and the Bridgeport Municipal (Sikorsky) Airport.

## SUMMARY OF EXPERIENCE

### RESUME

### EDUCATION

B.S., 2008, Biology/Ecology with  
Ornithology Concentration  
Cornell University, Ithaca, NY

### REGISTRATIONS/CERTIFICATIONS

Certified Bird Bander. (USGS Bird  
Banding Laboratory Pawtuxet, MD)  
2005 – Present

Official United States Fish and Wildlife  
Service Volunteer ID No. 11032

Certified Wildlife Rehabilitator

Licensed Realtor – NJ (Mercer County  
Association of Realtors) License  
Number: 0902308

Mr. Graesser's areas of expertise include entomological, avian, and herpetological studies, wildlife inventories and monitoring; wildlife habitat assessments/characterizations, conservation planning and environmental education. Currently, Mr. Graesser is working on a variety of conservation initiatives involving coastal waterbird stewardship, conservation planning for land trusts, a municipal utility, CTDEEP and USFWS. Sean has been actively banding birds in Central America and the eastern United States since 2005, and is an active contributor to the development of Banders Resource.com, an online resource for depicting molt limits and plumages of North American Birds. Sean is also currently working on a bird banders guide and manual for Panamanian and Central American Birds. Representative projects in which Mr. Graesser has contributed are provided below.

#### AVIAN AND OTHER NATURAL RESOURCE SURVEYS/ASSESSMENT

**Audubon Alliance for Coastal Waterbird Initiative (AAfCW):** Field Supervisor for upwards of 70 volunteers deployed in a beach stewardship program to monitor the nesting success and provide public outreach and education. Program covered various CT coastal communities from Greenwich to Groton that contain beach nesting birds of conservation concern. Located and recorded nests of rare coastal waterbirds, deployed predator exclosures and trained volunteers on how to properly erect structures. Documented total productivity of Piping Plover and Least Tern colonies. Identified site-specific threats to known nesting colonies. Data collected on behalf of CTDEEP and USFWS.

**Faunal Surveys at East Lyme Wellfield Nos. 2 and 3A – Bride Lake in East Lyme, CT:** Conducted Avian Surveys, Herpetofaunal Surveys, and Wildlife Habitat Characterizations for the Town of East Lyme Water and Sewer Department within four wetland systems. Surveys were conducted in support of a Town's Water Diversion Permit Renewal for the wellfields.

**Rapid Assessment of Hurricane Sandy Impacts to Coastal Waterbird Habitat:** For Manomet Center for Conservation Services, conducted a rapid assessment of habitat impacts to colonial waterbird nesting sites at six major coastal waterbird nesting sites in Connecticut.

**Herpetological Survey, Goshen, CT:** Conducted a herpetological survey of an un-named tributary to the Hall Meadow Brook drainage at the Connecticut Audubon Society's Richard Croft preserve. During the survey, discovered and documented new location for Northern Spring Salamander in Connecticut.

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**International Shorebird Surveys, Stratford and Milford, CT:** Conducted shorebird surveys of two barrier beach sites in Connecticut, Milford Point in Milford and Long Beach in Stratford.

**Purple Martin Monitoring:** Banded 200+ Purple Martins from established colonies at two separate coastal locations in CT.

**Smooth Green Snake Survey Volunteer (Various CT sites):** As volunteer naturalist to the CT DEEP Wildlife Division, conducted surveys to determine presence/not detected level surveys at various coastal grassland sites in CT.

#### CONSERVATION PLANNING

**Coastal Habitat Restoration Planning, Stratford, CT:** Assisted in the planning for upland habitat restoration and enhancement measures at former Lordship Gun Club at Stratford Point, Stratford, CT. Habitat restoration measures included a prescribed burn and implementation of conservation mowing measures to restore coastal grasslands, planting of upland shrubs, and planning for the creation and establishment of a dune system.

**Conservation and Management Plan for the Aspetuck Land Trust (ALT), Easton and Weston, CT:** Conducted entomological, avian, and herpetological surveys across the 1,000+ acre Trout Brook Valley Conservation Area for the ALT. Developed conservation measures to mitigate impact to CT ESA-listed species and other species of conservation concern.

**Conservation and Management Plan for Shorehaven Golf Course, East Norwalk, CT:** Conducted avian and entomological surveys of an active golf course in order to characterize faunal communities and assess alternatives for wildlife habitat improvement.

#### ENVIRONMENTAL EDUCATION

**Shorebird ID Workshop – Connecticut Audubon Coastal Center (CACC), Milford, CT.** Prepared for volunteers of the AAfCW and International Shorebird Survey (ISS) Conservation Initiatives. Topics included identification of CT Coastal Waterbirds of Conservation Concern and identification challenges of *Chalidris* sandpipers. Workshop included a field component as well for attendees to apply newly learned identification techniques in a natural setting.

**Tern ID Workshop (In Progress) – CACC, Milford, CT.** Prepared for AAfCW and ISS Conservation Initiatives volunteers. Topics include identification challenges of Connecticut's breeding, migrant, and vagrant tern species.

**Summer Camp Outing Councilor – CACC, Milford, CT:** In association with the Aspetuck Land Trust, led summer camp students on field excursions to observe native flora and fauna of the Trout Brook Valley Conservation Area in Easton-Weston, CT; and on salt marsh excursions through the Nell's Island and Wheeler Marsh Wildlife Management Area in Milford CT.

**Bander / Educator:** Annual banding research in Panama and Costa Rica. Co-founder of Nicoya Peninsula Avian Research Station (NPARS), Refugio Curu, Costa Rica. NPARS hosts field excursions of various academic institutions which visit the station to learn about Neotropical Ornithology and rainforest ecology in general.

**Bander's Resource.com** – Content, photo, and production contributor to the development of on-line resource that depicts the molt limits and plumage characteristics of North American Birds.



# Daniel A. Hageman, NHCWS, PSS

## Project Manager

### OVERVIEW

Mr. Hageman is a Principal Planner and Project Manager with over 17 years of professional experience in the environmental field related to a broad range of projects including infrastructure improvements, utility projects, transportation rehabilitation and construction, site development, dredging activities, airport improvements, and conservation projects. His responsibilities include project management, field investigations and document preparation as well as QA/QC of deliverables. His technical areas of expertise include environmental planning and permitting, wetland investigations, wildlife habitat assessment, conservation planning, vernal pool assessments, plant and animal monitoring and surveys, forest fragmentation analyses, and biological assessments for threatened and endangered species. He has been involved in a broad array of public participation in planning efforts including public information meetings and hearings, project charrettes, advisory committee meetings, and stakeholder meetings. This experience includes extensive regulatory agency coordination and interface with engineers in order to avoid, minimize, and mitigate project impacts using best management practices and low impact development methods, and mitigation design. The preparation of compensatory mitigation plans and construction specifications for wetland and wildlife mitigation are integral to this work.

### ECOLOGICAL STUDIES AND CONSERVATION MANAGEMENT

Mr. Hageman conducts wetland/habitat assessments, natural resource inventories, vernal pool assessments, essential fish habitat studies, plant and animal monitoring and surveys, forest fragmentation analyses, and biological assessments for threatened and endangered species. He also prepares conservation management plans, forest management plans and urban forest management plans for public parks and forests, and other open space and conservation lands.

### ENVIRONMENTAL PERMITTING & REGULATORY COMPLIANCE

Mr. Hageman specializes in environmental permitting and regulatory compliance related to a broad range of projects including infrastructure improvements, utility projects, transportation rehabilitation and construction, site development, dredging activities, and airport projects. He has undertaken environmental permitting pursuant to the Clean Water Act, Coastal Zone Management Act, National Pollutant Discharge Elimination System, National Historic Preservation Act, and state wetland protection acts, Mr. Hageman has become very familiar with environmental permitting and environmental mitigation requirements. This experience includes extensive regulatory agency coordination and interface with engineers in order to avoid, minimize, and mitigate project impacts using best management practices and low impact development methods. The preparation of compensatory mitigation plans and construction specifications for wetland creation, restoration and enhancement are integral to this work. His experience also includes delineation of wetlands under federal and state regulations, transect documentation using the federal method, and jurisdictional determinations.

### EDUCATION

- Bachelor of Science in Natural Resource Management and Engineering, University of Connecticut, 1993

### CERTIFICATIONS

- New Hampshire Certified Wetland Scientist No. 275, 2010
- OSHA 40-Hour HAZWOPER
- TWIC Security Card Holder

### PROFESSIONAL AFFILIATIONS

- Society of Soil Scientists of Southern New England
- Society of Wetland Scientists
- Soil Science Society of America

### TRAINING

- Amtrak Safety Trained
- Metro-North Safety Trained

### YEARS EXPERIENCE

- 3 Year with firm
- 20 Years in Industry



## **Representative Projects**

### **Ecological Studies and Conservation Management**

- Cove Island Park Important Bird Area (IBA) Conservation Plan, Stamford (CT)\*
- Salt Meadow Unit IBA Conservation Plan, Westbrook (CT)\*
- Good Hill Farm IBA Conservation Plan, Woodbury/Roxbury (CT)\*
- Rentschler Field Grassland Bird Monitoring, East Hartford (CT)\*
- Marine Corps Reserve Center Integrated Natural Resource Management Plan and EA, Syracuse (NY)\*
- Port Ivory Intermodal Transportation Facility - PANYNJ, Staten Island (NY)\*
- WASS Meadow Pumpfield Habitat Assessment, Leominster (MA)\*
- Biological Assessment for the Short-nose Sturgeon in the Connecticut River (CT/MA)\*
- White Mountain National Forest Monitoring Report, White Mountain National Forest (NH)\*
- Urban Forest Management Plan, Camp Rell, East Lyme (CT)\*
- Forest Management Plan, Stones Ranch Military Reservation, East Lyme (CT)\*
- New London Waterfront Revitalization Plan/Opisail 2000, New London (CT)\*
- Routes 82/85/11 DEIS/MIS & FEIS Biological Studies, Salem, Montville, East Lyme, and Waterford (CT)\*
- Naval Air Station Brunswick Hangar 6 EA Grassland Bird Surveys, Brunswick (ME)\*

### **Environmental Permitting & Regulatory Compliance**

- New Britain – Hartford Busway Permitting and Mitigation (CT)
- Route 113 Roadway Improvements Tidal Wetland Permits and Mitigation, Stratford (CT)
- Sikorsky Airport Tidal Gate and Driveway Improvement COP Permits, Stratford (CT)
- Franklin Avenue CSO Separation, MDC, Hartford (CT)
- Shelton WWTF upgrades Tidal Wetlands Permitting, Shelton (CT)\*
- Opisail Pier Reconstruction Tidal Wetland Permitting, New London (CT)\*
- Port Ivory Intermodal Trans. Facility Coastal Permitting, PANYNJ, Staten Island (NY)\*
- 8<sup>th</sup> Street Bridge Rehabilitation COP Permitting, Norwich (CT)\*
- Major Land and Water Coastal Zone Management Permit and Environmental Assessment Report (EAR) for Pier Nos. 2 and 8 Improvements at HOVENSA LLC, St. Croix, USVI\*
- Town of East Hampton CTDEP Diversion Permit Application, East Hampton (CT)\*
- CTARNG Geothermal Well Diversion Permit Application, East Lyme (CT)\*
- Town of East Lyme Well No. 5 CTDEP Diversion Permit Application, East Lyme (CT)\*
- Reservoir 1 Diversion Permit, Bristol (CT)\*
- Reconstruction of State Route 66, Middlefield (CT)\*
- Talredi Road Construction and Realignment, Plainfield (CT)\*
- CENTECH Park Industrial Road Environmental Permits, Shrewsbury (MA)\*
- Stones Ranch Military Reservation Phased Roadway Reconstruction, East Lyme (CT)\*

### **Environmental Documentation**

- Naval Base Cutler, Reuse Plan and EA, Cutler (ME)\*
- Goodspeed Opera House Environmental Impact Evaluation (EIE), , East Haddam (CT)\*
- Downtown Torrington Redevelopment EIE , Torrington (CT)\*
- Naval Air Station Brunswick New Air Traffic Control Tower Environmental Assessment (EA), Brunswick (ME)\*
- CENTECH Park Industrial Road, MEPA EIR, Shrewsbury (MA)\*
- Stones Ranch Military Reservation Master Plan Improvements EA, East Lyme (CT)\*
- Anguilla Wastewater Treatment Plant (WWTP) Improvements EA, St. Croix (USVI)\*
- East Haven Rifle Range Master Plan and EA, East Haven (CT)\*

\* Projects prior to joining FHI or supplemental to FHI

## **Appendix B    Natural Diversity Database Correspondence**



STATE OF CONNECTICUT  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



February 19, 2010

Jennifer M. Lutz  
URS Corporation  
4 North Park Drive, Suite 300  
Hunt Valley, Maryland 21030

Dear Ms. Lutz:

I am responding to your letter of January 19, 2010 to Robert Kaliszewski requesting comments on a reevaluation of the Final Environmental Impact Statement (FEIS) for various projects at Igor Sikorsky Memorial Airport in Stratford, including rehabilitation of Runway 6-24, Runway Safety Area (RSA) improvements at both runway ends and relocation of Main Street. I have circulated your request to various offices in the Department and this is a coordinated reply. Our comments outline some issues that can be considered during the reevaluation process as well as others that will require additional detail during subsequent permitting for the projects.

Overall, the development of a new preferred alternative, largely based on Alternative 1-G in the DEIS, avoids many of the most adverse impacts to coastal resources associated with the preferred alternative detailed in the FEIS. Our comments include some factors to consider in an effort to further minimize these impacts.

The length of the RSA for Runway 6 has been reduced to 100' but its width remains at 500'. Will grading the extreme ends of each side of the RSA, that encroach into tidal wetlands, provide an additional measure of safety? It seems that, if the intervening areas along the sides of the runway end are to remain unimproved, any plane excursion from the runway would have to traverse these areas to reach the outer side edge of the RSA. Similarly, one corner of the RSA for Runway 24 appears to encroach into tidal wetlands. Could this corner remain undisturbed without compromising safety, particularly since it is at the beginning of the RSA, nearest the runway end? In both of these cases, it appears that minor adjustments in the size of the RSA can be made and encroachment into tidal wetlands virtually eliminated.

Any activities that are proposed waterward of the high tide line or in tidal wetlands will require authorization from the Office of Long Island Sound Programs (OLISP) in accordance with the statutes governing structures, dredging and filling in tidal, coastal, and navigable waters [sections 22a-359 through 22a-363f of the Connecticut General Statutes (CGS)] and the Tidal Wetlands Act [sections 22a-28 through 22a-35 of the CGS], respectively. For further information, contact the office at 860-424-3034. Fact sheets regarding OLISP permit programs and permit application forms can be downloaded at:

[http://www.ct.gov/dep/cwp/view.asp?a=2709&q=324222&depNav\\_GID=1643#LongIslandSound](http://www.ct.gov/dep/cwp/view.asp?a=2709&q=324222&depNav_GID=1643#LongIslandSound).

It is strongly recommended that URS Corp. and the applicant(s) conduct a pre-application meeting with OLISP (and other DEP staff) as the project progresses. A pre-application site visit would also be useful in that the site could be walked and URS could guide all involved through the proposal. In general, it would be helpful if OLISP was provided with plans that show the overall construction limits along and at each runway end, or several plans which relate to each aspect of the work regulated by OLISP that shows the construction limits associated with each. OLISP would then be able to provide detailed guidance or recommendations. An assessment of impacts should also be provided, with specific amounts of temporary vs. permanent impacts to tidal wetlands to determine the amount/extent of mitigation to be required, which would likely be on-site

For the relocation of Main Street, it appears that a section of tidal wetlands will be impacted and that a new culvert/tide gate will be placed or the existing culvert modified. Specifically, several existing conditions plans and sections as well as a proposed conditions plans and sections should be provided. All sheets should clearly show all existing coastal resources, tidal elevations, etc. It would also be helpful if site photographs were provided.

The jurisdiction over inland wetlands depends on the nature of the applicant. For State departments, agencies or instrumentalities, any work or construction activity within the inland wetland areas or watercourses on-site will require a permit from the Inland Water Resources Division pursuant to section 22a-39(h) of the CGS. Therefore, if ConnDOT or other State entity is the applicant, a DEP permit will be required. Otherwise, inland wetlands are regulated by the Stratford Inland Wetlands & Watercourses Commission, pursuant to section 22a-42 of the CGS. The role of ConnDOT in the projects should be clarified.

In addition, State funding for projects within the 100-year flood zone must be certified by the sponsoring agency as being in compliance with flood and stormwater management standards specified in section 25-68d of the CGS and section 25-68h-1 through 25-68h-3 of the Regulations of Connecticut State Agencies (RCSA) and receive approval from the Department. Fact sheets regarding IWRD permit programs and permit application forms can be downloaded at:

[http://www.ct.gov/dep/cwp/view.asp?a=2709&q=324222&depNav\\_GID=1643#InlandWaterResources](http://www.ct.gov/dep/cwp/view.asp?a=2709&q=324222&depNav_GID=1643#InlandWaterResources).

The Natural Diversity Data Base, maintained by DEP, contains numerous records of populations of species listed by the State, pursuant to section 26-306 of the CGS, as endangered, threatened or special concern in vicinity of the project area. Given the amount of time that has elapsed since this project was last reviewed, a new search of the data base was performed. The attached species list enumerates these species (multiple listings of the same species indicates multiple records within the project vicinity) as well as significant natural communities within the project area vicinity. The potential to impact these species should be evaluated. The selection of a preferred alternative that minimizes encroachment into wetland areas, as noted above, tends to limit potential impacts to many of these species. However, it should be noted that some of these species do occur in upland areas of the airport.

This information is not the result of comprehensive or site-specific field investigations. 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. Also be advised that this is a preliminary review and not a final determination. A more detailed review will be conducted as part of subsequent environmental permit applications submitted to DEP for the proposed site.

The revised proposal encroaches on less Stratford Army Engine Plant (SAEP) land than earlier proposals; however, there are still environmental issues to address. Although no specific release location has been documented on that part of the SAEP site that is proposed for Main Street relocation, the SAEP has documented, through limited sampling, that the soils in the proposed relocation footprint are polluted above DEP remediation criteria. This is not unexpected for the site, which has numerous areas where the soils are contaminated without being related to a specific identifiable release, or are affected by asphaltic materials. The road construction project should include further characterization of the polluted soils to ensure that any disturbed soil is properly handled during construction.

In addition, the SAEP is currently subject to a RCRA Stewardship Permit (Permit Number: DEP/HWM/CS-134-00) issued by DEP, to perform closure, post-closure care and corrective action measures at the former hazardous waste storage, treatment and disposal facility. The permit requires that all areas of the site be brought into conformance with DEP's Remediation Standard Regulations (RSR) [sections 22a-133k-1 through 22a-133k-3 of the RCSA]. To the extent that additional characterization identifies soil areas that exceed criteria, actions to remove, treat, or render inaccessible the identified soils must be taken to achieve RSR compliance. Environmental Land Use Restrictions could be a part of such remedy. Any remedial actions must be within the framework of the Stewardship permit. Issues surrounding responsibility for achieving RSR compliance as it relates to transfer of the SAEP land for the relocation of the road will have to be resolved.

The new alignment for Main Street will also include work within or adjacent to a suspected Raymark waste disposal footprint. The drawing identifying proposed project elements does locate the area where EPA found disposed Raymark waste in the vicinity of proposed project item # 16. The actual area containing Raymark waste could be larger or smaller than the area represented in the drawing by irregular black-lined lobes on either side of the relocated Main Street, just southeast of the improved RSA.

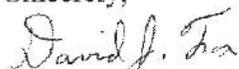
Given the potential for pollution in soils on both the SAEP and abutting properties, it is recommended that the construction project include provision for field oversight and screening by an environmental professional to ensure that any incompletely characterized polluted soils are recognized and appropriately handled should they be encountered during construction. The construction plan should also include contingencies for developing a contaminated soil management plan should such soil be encountered.

In addition, the SAEP has also identified that there is pollution above ecological screening levels in the sediment in the tidal ditch leading from their outfall location to the marine basin. If the tidal and culvert removal will modify this ditch flow, such that this sediment might be

mobilized prior to implementation of any necessary remedy by SAEP, this could increase ecological impact of the project.

Thank you for the opportunity to become involved with the FEIS reevaluation. In order to expedite Departmental review, please forward four copies of the document to this office when it has been prepared and I will circulate it to the relevant offices. If you have any questions concerning these comments, please contact me at 860-424-4111 or [david.fox@ct.gov](mailto:david.fox@ct.gov).

Sincerely,



David J. Fox  
Senior Environmental Analyst  
Office of Environmental Review

cc: Kristen Bellantuono, DEP/OLISP  
Ron Curran, DEP/RD  
Jenny Dickson, DEP/WD  
Ken Feathers, DEP/RD  
Robert Hannon, DEP/OPPD  
Lauren Kostiuk, DEP/WEED  
Mark Johnson, DEP/IFD  
Dawn McKay, DEP/WD  
Carol Szymanski, DEP/OLISP  
Steve Tessitore, DEP/IWRD

# Species List for Request Number

R17473

2/16/2010

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Protection Status</u>
<b>Animals</b>		
<i>Ammodramus caudacutus</i>	Saltmarsh Sharp-tailed Sparrow	SC
<i>Ammodramus maritimus</i>	Seaside Sparrow	SC
<i>Asio flammeus</i>	Short-eared Owl	T
<i>Bartramia longicauda</i>	Upland Sandpiper	E
<i>Botaurus lentiginosus</i>	American Bittern	E
<i>Charadrius melodus</i>	Piping Plover	T
<i>Circus cyaneus</i>	Northern Harrier	E
<i>Eremophila alpestris</i>	Horned Lark	E
<i>Eremophila alpestris</i>	Horned Lark	E
<i>Gallinula chloropus</i>	Common Moorhen	E
<i>Ixobrychus exilis</i>	Least Bittern	T
<i>Passerculus sandwichensis</i>	Savannah Sparrow	SC
<i>Passerculus sandwichensis princeps</i>	Ipswich Sparrow	SC
<i>Passerculus sandwichensis princeps</i>	Ipswich Sparrow	SC
<i>Podilymbus podiceps</i>	Pied-billed Grebe	E
<i>Rallus elegans</i>	King Rail	E
<i>Sterna antillarum</i>	Least Tern	T
<i>Sterna antillarum</i>	Least Tern	T
<i>Toxostoma rufum</i>	Brown Thrasher	SC
<i>Tyto alba</i>	Barn Owl	E
<b>Natural Communities</b>		
<i>Brackish intertidal marsh</i>		
<i>Coastal sand dunes</i>		
<i>Salt marsh</i>		
<i>Saltwater intertidal beaches and shores</i>		
<i>Saltwater intertidal flat</i>		
<b>Plants</b>		
<i>Aristida tuberculosa</i>	Beach Needlegrass	E
<i>Aristida tuberculosa</i>	Beach Needlegrass	E
<i>Atriplex glabriuscula</i>	Orache	SC
<i>Diplachne maritima</i>	Saltpond Grass	E
<i>Honckenya peploides</i>	Sea-beach Sandwort	SC
<i>Panicum amarum</i>	Panic Grass	T
<i>Platanthera ciliaris</i>	Yellow-fringe Orchid	T
<i>Scirpus cylindricus</i>	Salt-marsh Bulrush	SC
<i>Viola brittoniana</i>	Coast Violet	E
<i>Viola brittoniana</i>	Coast Violet	E
<i>Viola brittoniana</i>	Coast Violet	E

## **Appendix C    Avian Species Occurrences**



**State Listed Bird Observed Habitat Areas**

Listed Species:

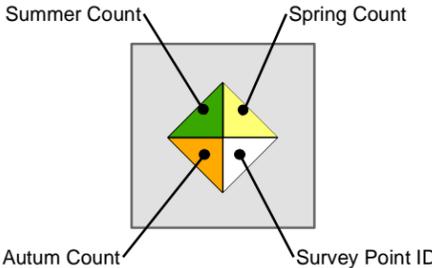
**American Bittern**  
*Botaurus lentiginosus*  
 CT Endangered

 Observed Feeding Area

 Observed Nesting Area

 Runway Safety Area

**Observed Listed Species Bird Counts**

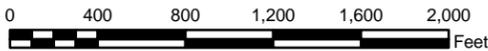


Map Title: Avian Survey

Project No. 15-336

Date: Feb. 2013

Project Title: Runway Safety Area Project  
 Igor I. Sikorsky Memorial Airport  
 Stratford, Connecticut



Town: Stratford, CT

Figure 1





**State Listed Bird Observed Habitat Areas**

Listed Species:

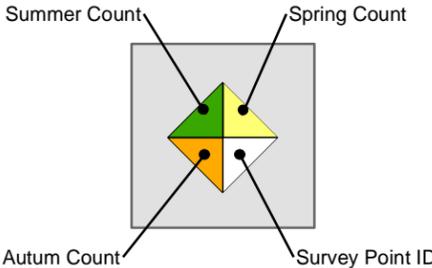
**Common Loon**  
*Gavia immer*  
CT Special Concern

 Observed Feeding Area

 Observed Nesting Area

 Runway Safety Area

**Observed Listed Species Bird Counts**

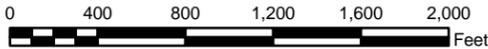


Map Title:  
Avian Survey

Project No.  
15-336

Date:  
Feb. 2013

Project Title:  
**Runway Safety Area Project**  
Igor I. Sikorsky Memorial Airport  
Stratford, Connecticut



Town:  
Stratford, CT

Figure 2



bing™

Image courtesy of USGS © 2013 Microsoft Corporation



**State Listed Bird Observed Habitat Areas**

Listed Species:

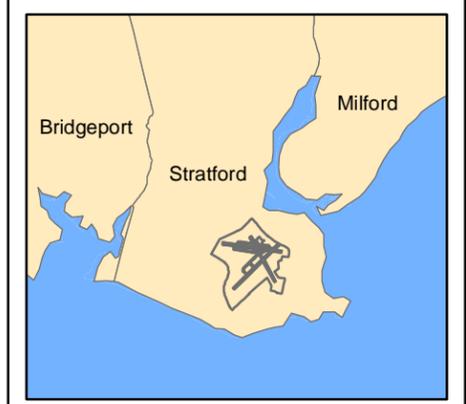
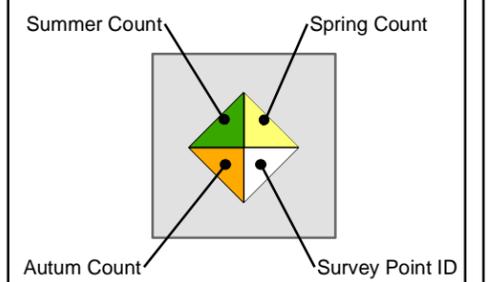
**Common Moorhen**  
*Gallinula chloropus*  
 CT Endangered

 Observed Feeding Area

 Observed Nesting Area

 Runway Safety Area

**Observed Listed Species Bird Counts**



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 Igor I. Sikorsky Memorial Airport  
 Stratford, Connecticut



Town: Stratford, CT  
 Figure 3





**State Listed Bird Observed Habitat Areas**

Listed Species:

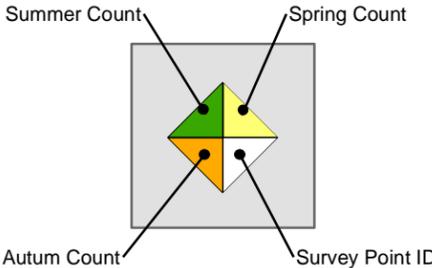
**Common Tern**  
*Sterna hirundo*  
 CT Special Concern

 Observed Feeding Area

 Observed Nesting Area

 Runway Safety Area

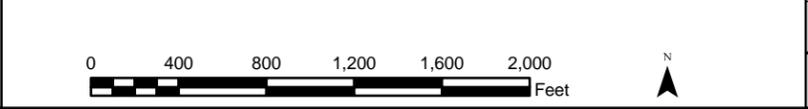
**Observed Listed Species Bird Counts**



Map Title:  
 Avian Survey

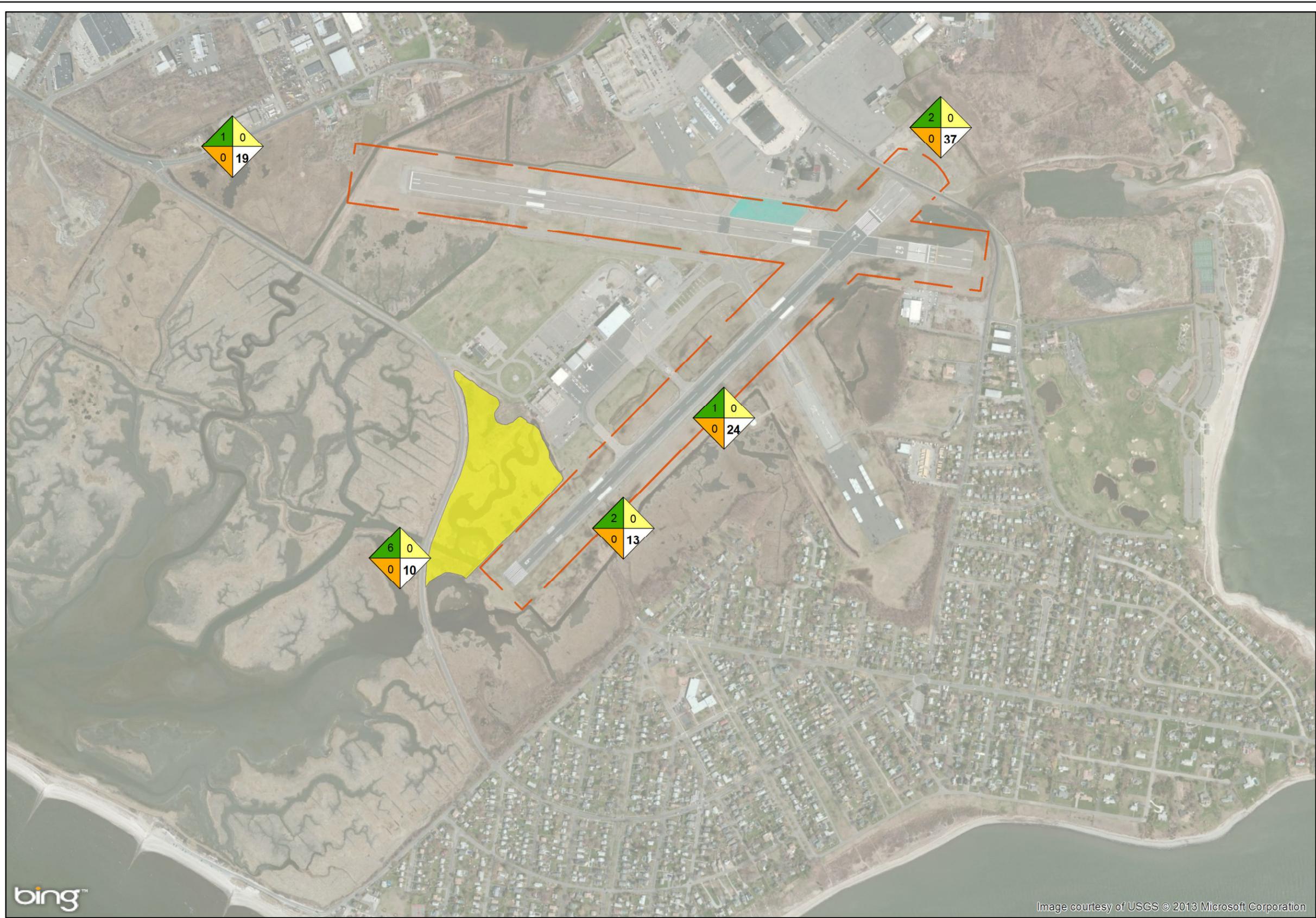
Project No.  
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 Date:  
 Feb. 2013

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Town:  
 Stratford, CT  
 Figure 4





**State Listed Bird Observed Habitat Areas**

Listed Species:

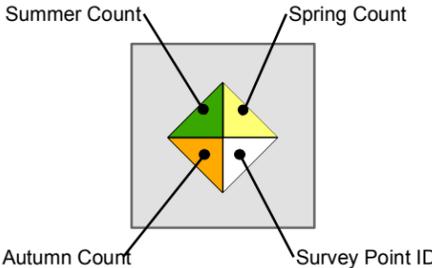
**Glossy Ibis**  
*Plegadis falcinellus*  
 CT Special Concern

 Observed Feeding Area

 Observed Nesting Area

 Runway Safety Area

**Observed Listed Species Bird Counts**



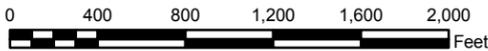
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 Avian Survey

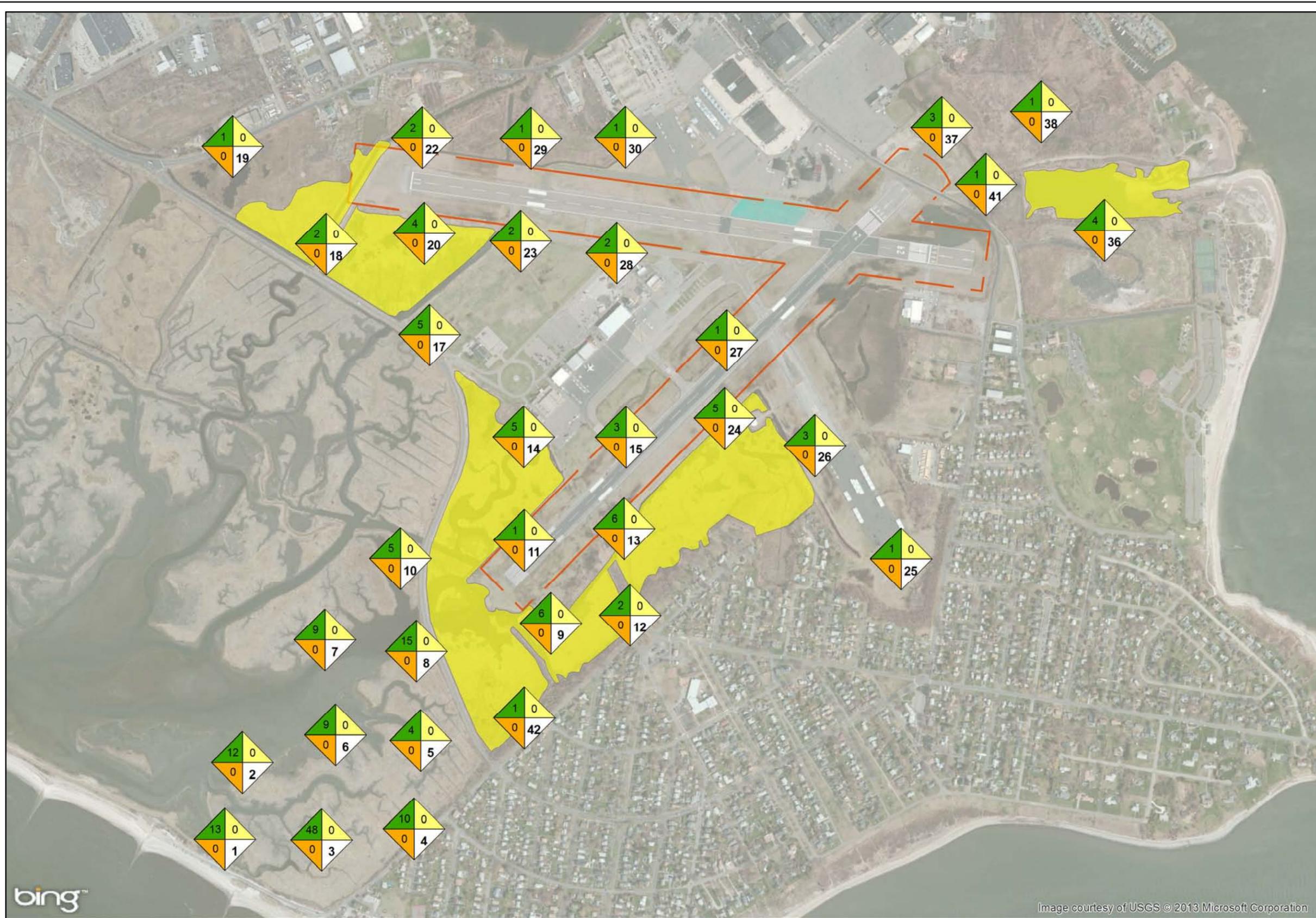
Project No.  
 15-336  
 Date:  
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 Stratford, Connecticut



Town:  
 Stratford, CT  
 Figure 5





**State Listed Bird Observed Habitat Areas**

Listed Species:

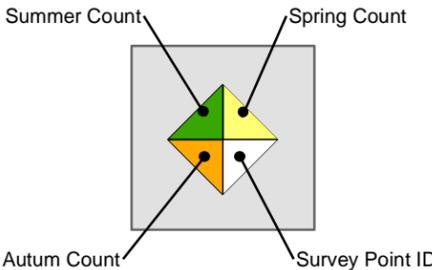
**Great Egret**  
*Ardea alba*  
CT Threatened

 Observed Feeding Area

 Observed Nesting Area

 Runway Safety Area

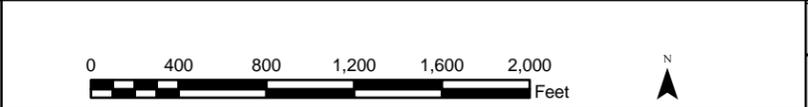
**Observed Listed Species Bird Counts**



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Stratford, Connecticut**



Town:  
**Stratford, CT**  
**Figure 6**





**State Listed Bird Observed Habitat Areas**

Listed Species:

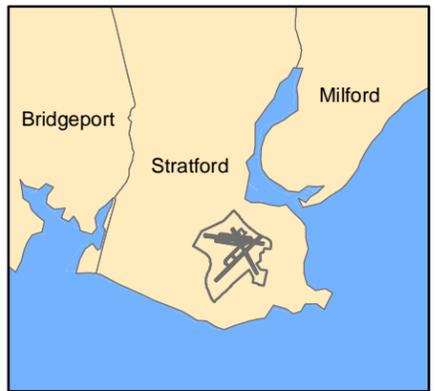
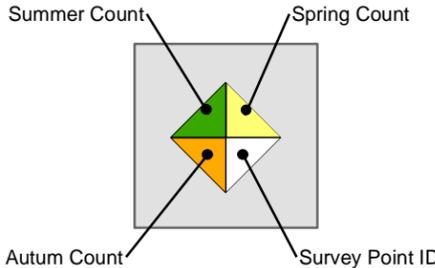
**Least Tern**  
*Sternula antillarum*  
 CT Threatened

 Observed Feeding Area

 Observed Nesting Area

 Runway Safety Area

**Observed Listed Species Bird Counts**



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Town:  
 Stratford, CT  
 Figure 7





**State Listed Bird Observed Habitat Areas**

Listed Species:

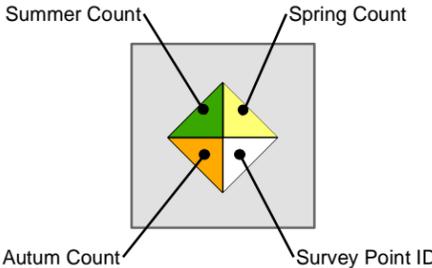
**Northern Harrier**  
*Circus cyaneus*  
 CT Endangered

 Observed Feeding Area

 Observed Nesting Area

 Runway Safety Area

**Observed Listed Species Bird Counts**



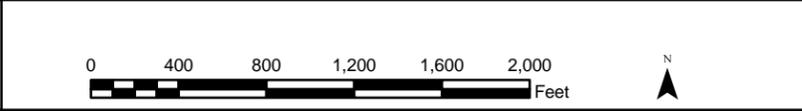
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Town:  
 Stratford, CT  
 Figure 8





**State Listed Bird Observed Habitat Areas**

Listed Species:

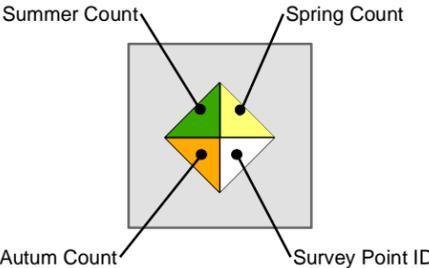
**Peregrine Falcon**  
*Falco peregrinis*  
 CT Threatened

 Observed Feeding Area

 Observed Nesting Area

 Runway Safety Area

**Observed Listed Species Bird Counts**

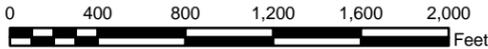


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 Stratford, Connecticut



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Figure 9



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**State Listed Bird Observed Habitat Areas**

Listed Species:

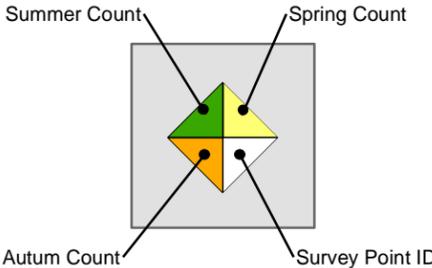
**Purple Martin**  
*Progne subis*  
CT Special Concern

 Observed Feeding Area

 Observed Nesting Area

 Runway Safety Area

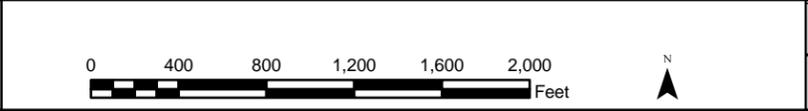
Observed Listed Species Bird Counts



Map Title:  
**Avian Survey**

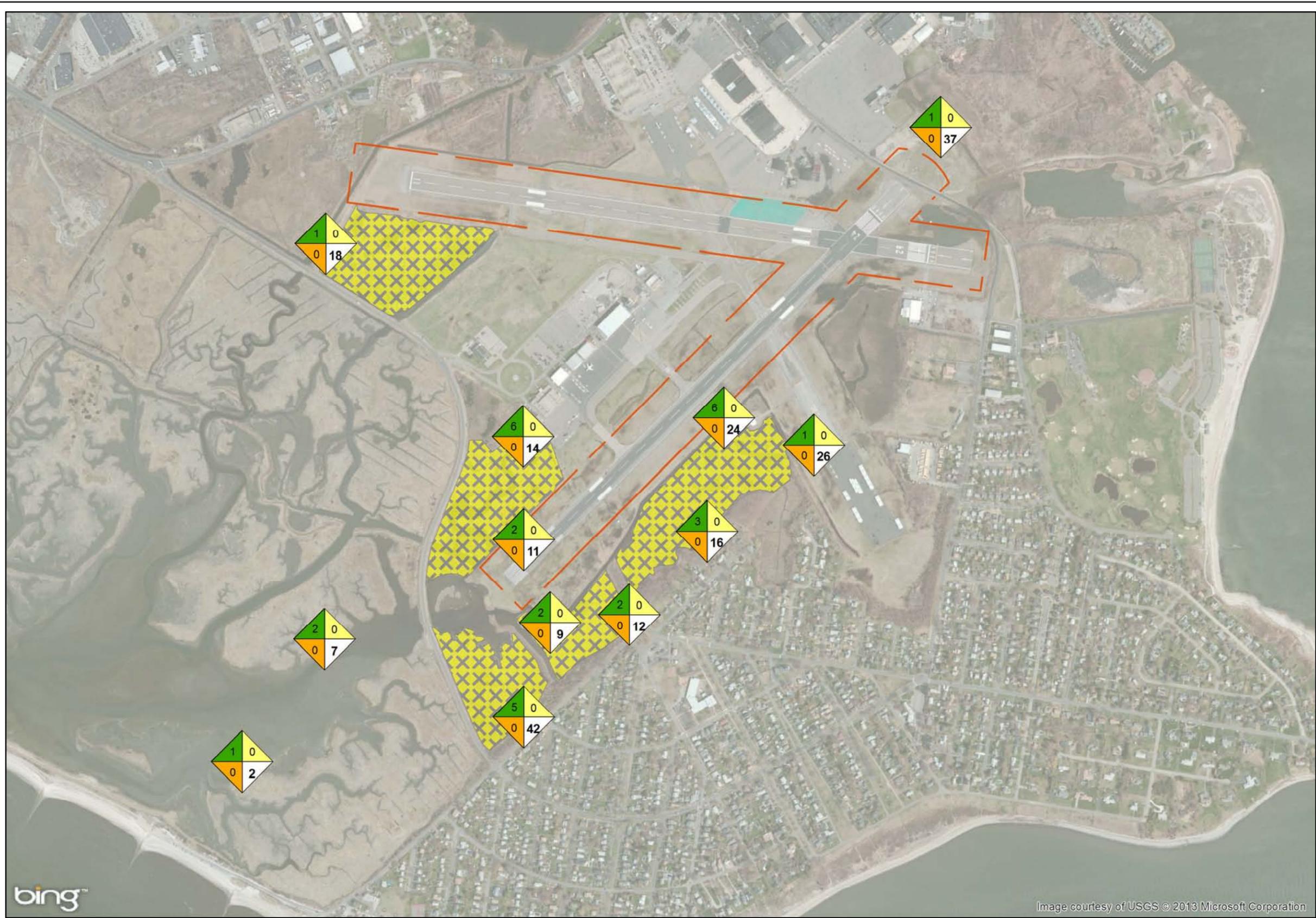
Project No.  
**15-336**  
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**Feb. 2013**

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**Runway Safety Area Project  
Igor I. Sikorsky Memorial Airport  
Stratford, Connecticut**



Town:  
**Stratford, CT**  
**Figure 10**





**State Listed Bird Observed Habitat Areas**

Listed Species:

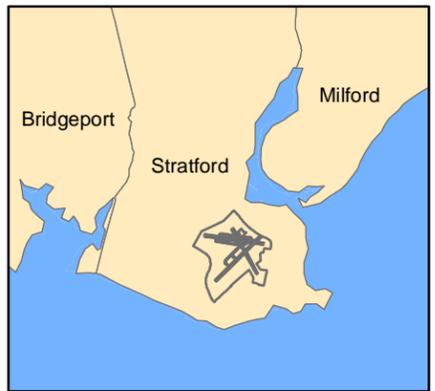
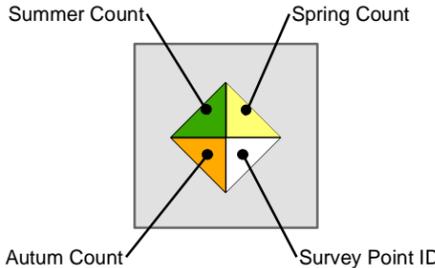
**Saltmarsh Sharp-tail Sparrow**  
*Ammodramus caudacutus*  
 CT Special Concern

Observed Feeding Area

Observed Nesting Area

Runway Safety Area

Observed Listed Species Bird Counts



Map Title:  
 Avian Survey

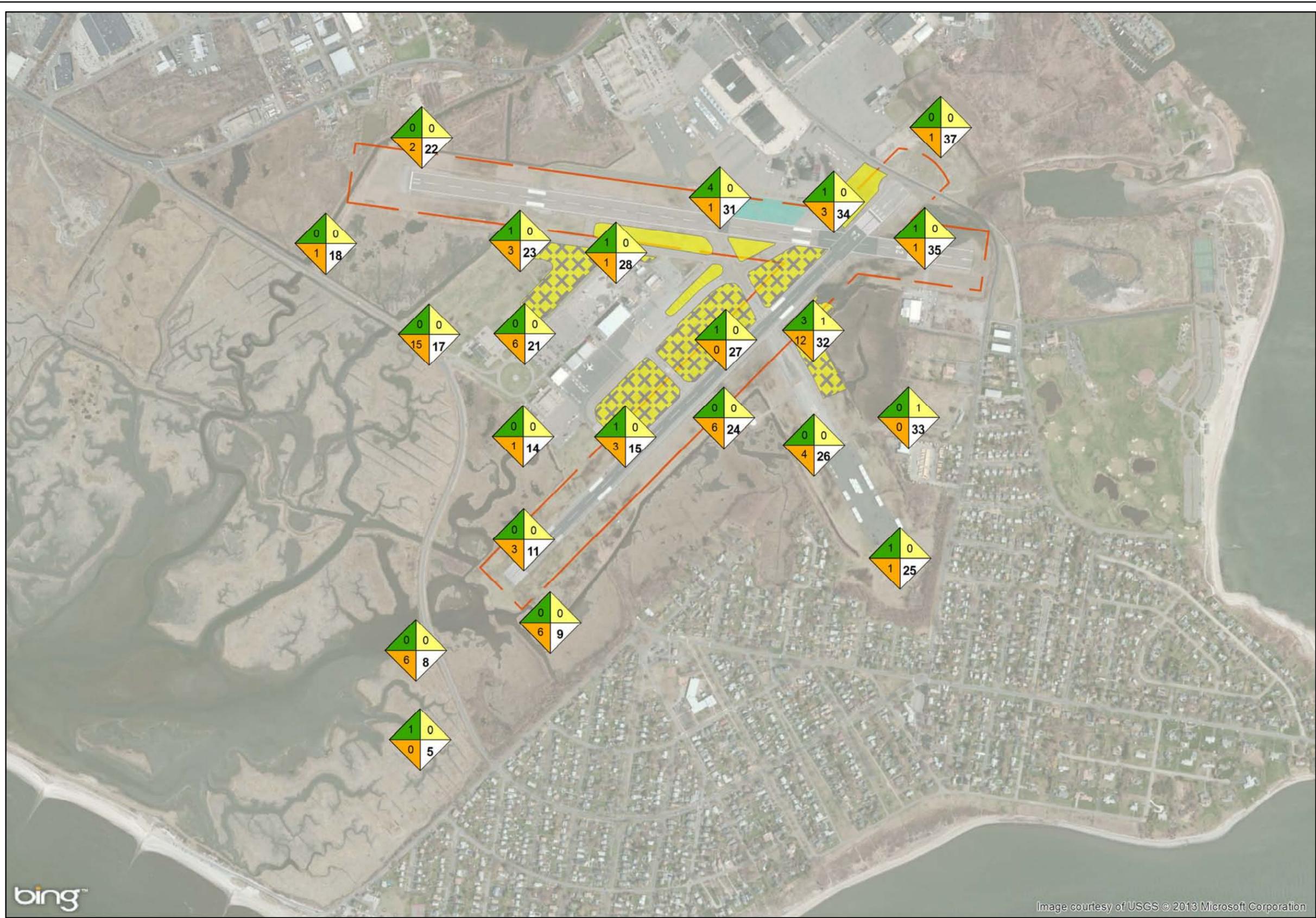
Project No.  
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 Stratford, Connecticut



Town:  
 Stratford, CT  
 Figure 11





**State Listed Bird  
Observed Habitat Areas**

Listed Species:

**Savannah Sparrow**

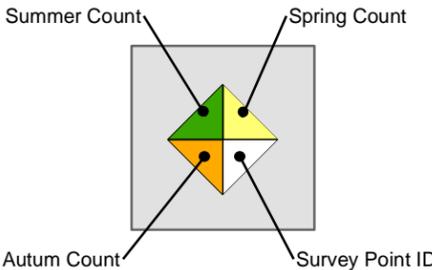
*Passerculus sandwichensis*  
CT Special Concern

 Observed Feeding Area

 Observed Nesting Area

 Runway Safety Area

**Observed Listed Species Bird Counts**



Map Title:  
**Avian Survey**

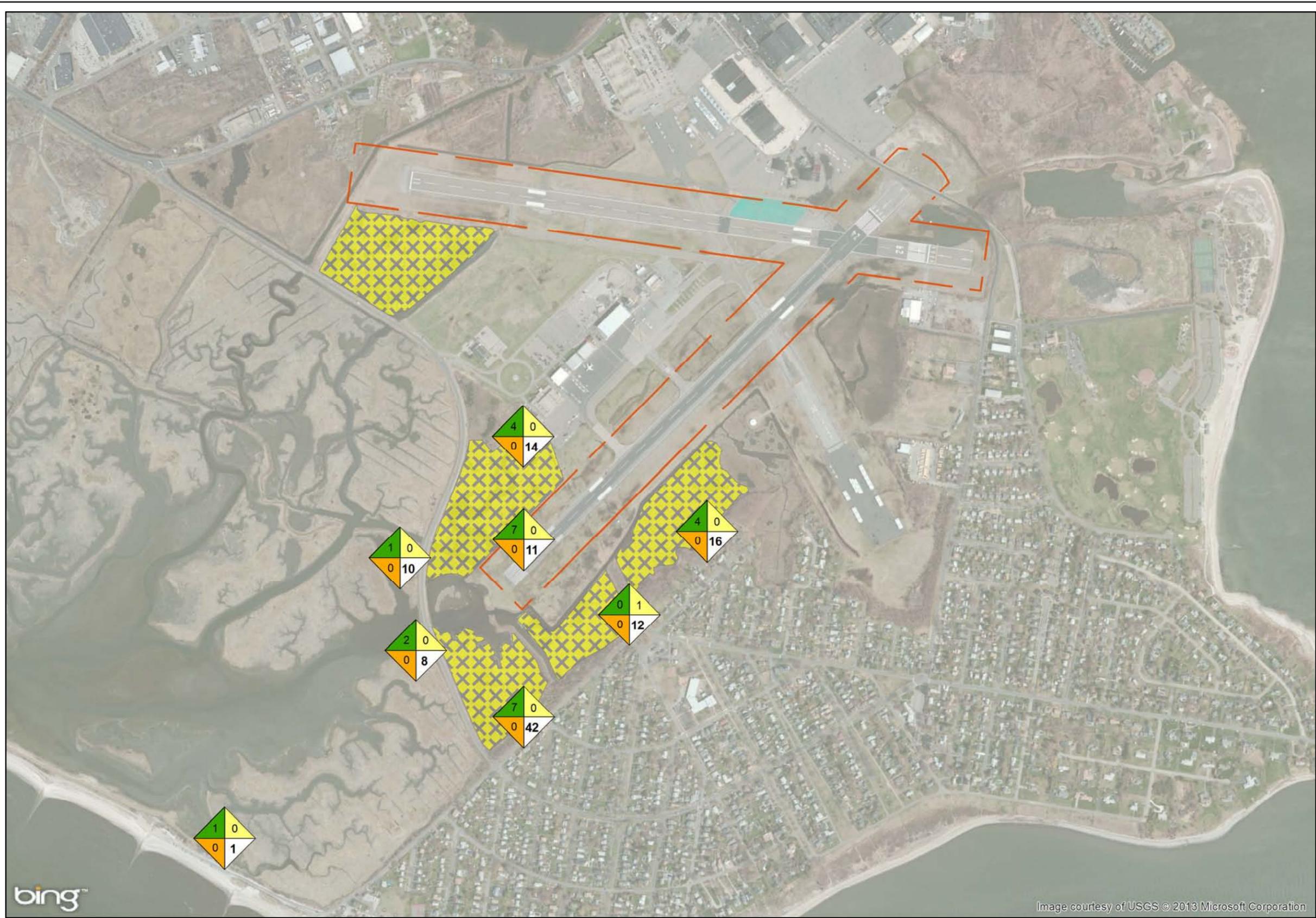
Project No.  
15-336  
Date:  
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**Runway Safety Area Project  
Igor I. Sikorsky Memorial Airport  
Stratford, Connecticut**



Town:  
Stratford, CT  
Figure 12





**State Listed Bird Observed Habitat Areas**

Listed Species:

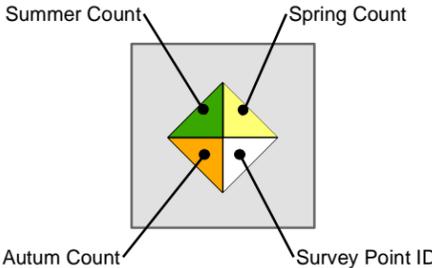
**Seaside Sparrow**  
*Ammodramus maritimus*  
 CT Threatened

 Observed Feeding Area

 Observed Nesting Area

 Runway Safety Area

**Observed Listed Species Bird Counts**

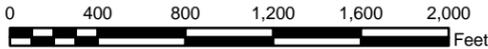


Map Title: Avian Survey

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Date: Feb. 2013

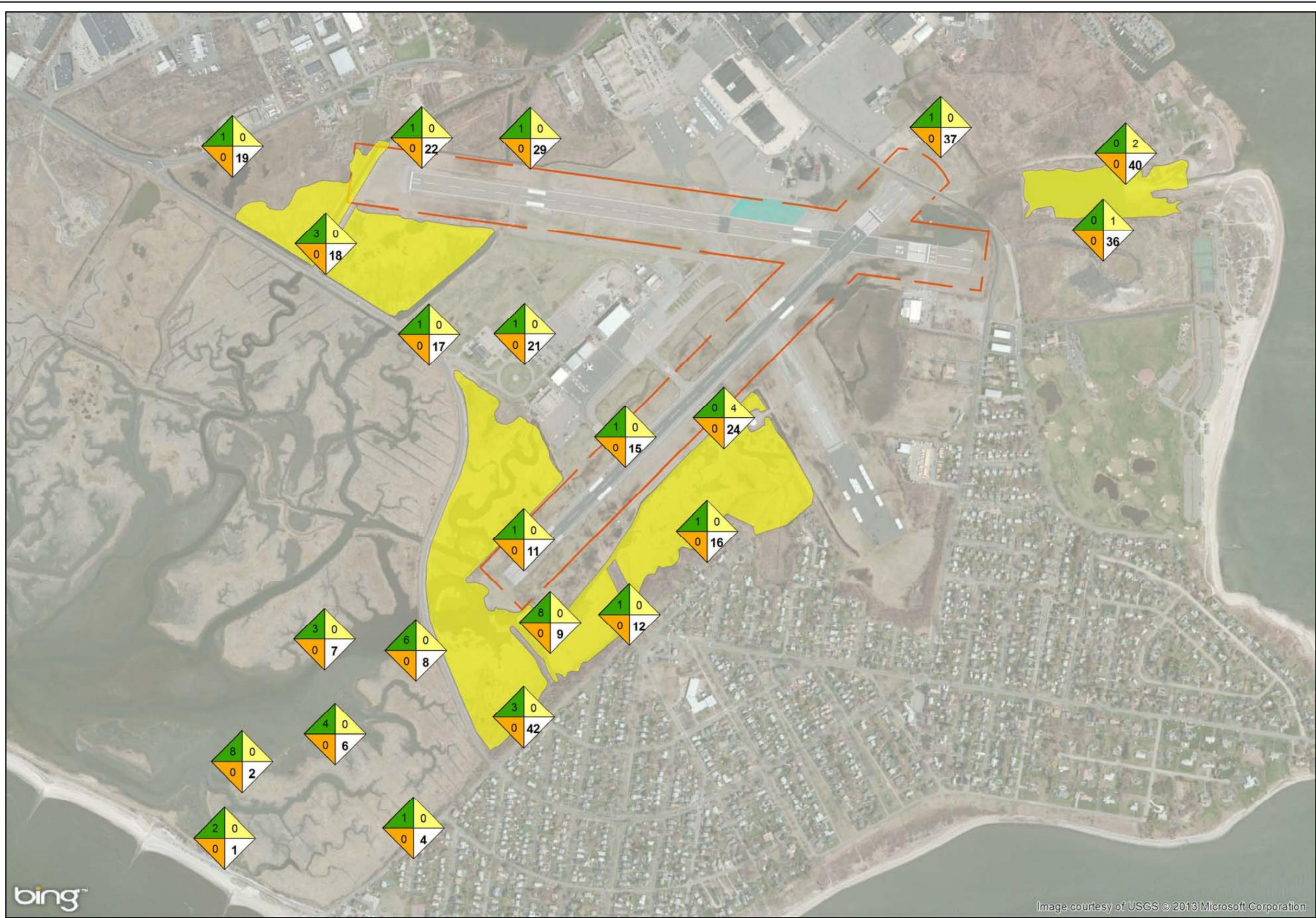
Project Title: Runway Safety Area Project  
 Igor I. Sikorsky Memorial Airport  
 Stratford, Connecticut



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Figure 13





**State Listed Bird Observed Habitat Areas**

Listed Species:

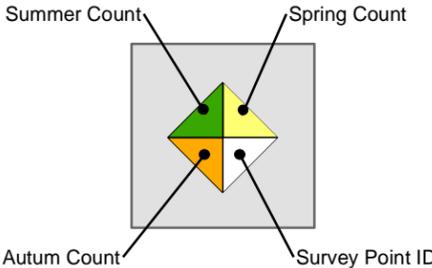
**Snowy Egret**  
*Egretta thula*  
CT Threatened

 Observed Feeding Area

 Observed Nesting Area

 Runway Safety Area

**Observed Listed Species Bird Counts**

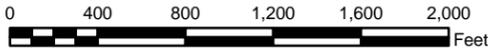


Map Title: Avian Survey

Project No. 15-336

Date: Feb. 2013

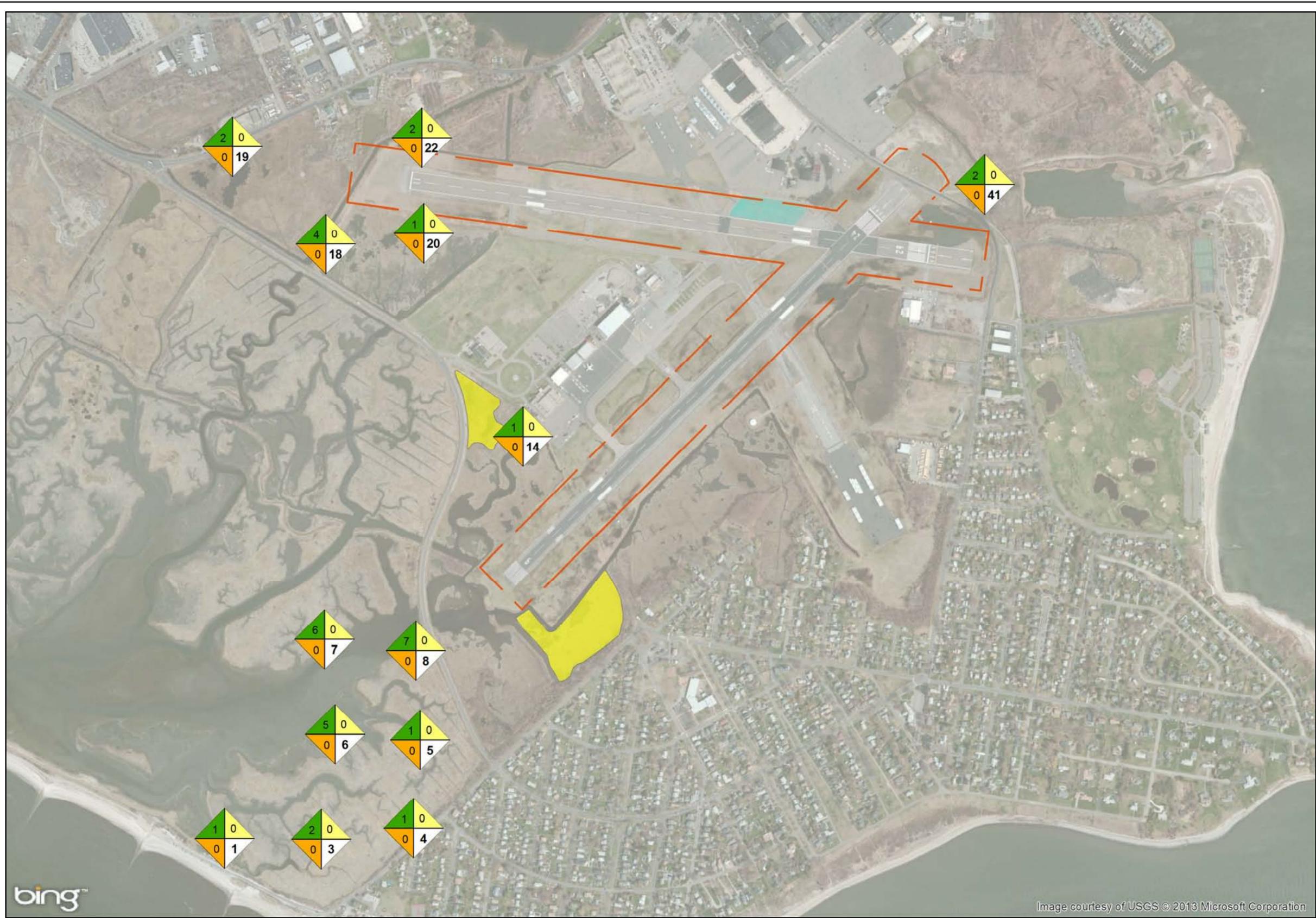
Project Title: Runway Safety Area Project  
Igor I. Sikorsky Memorial Airport  
Stratford, Connecticut



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Figure 14

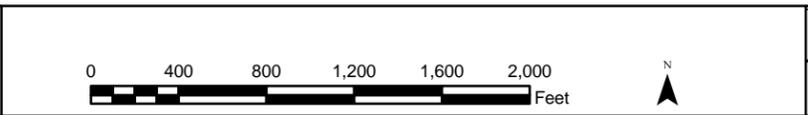




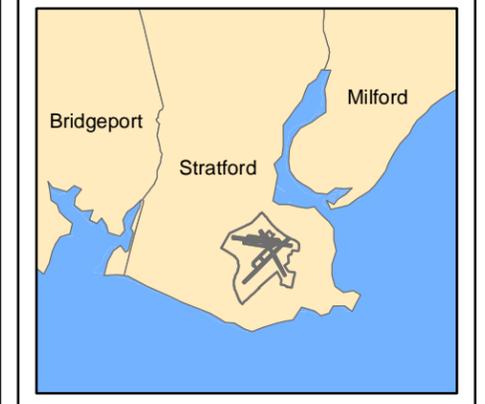
Map Title:  
 Avian Survey

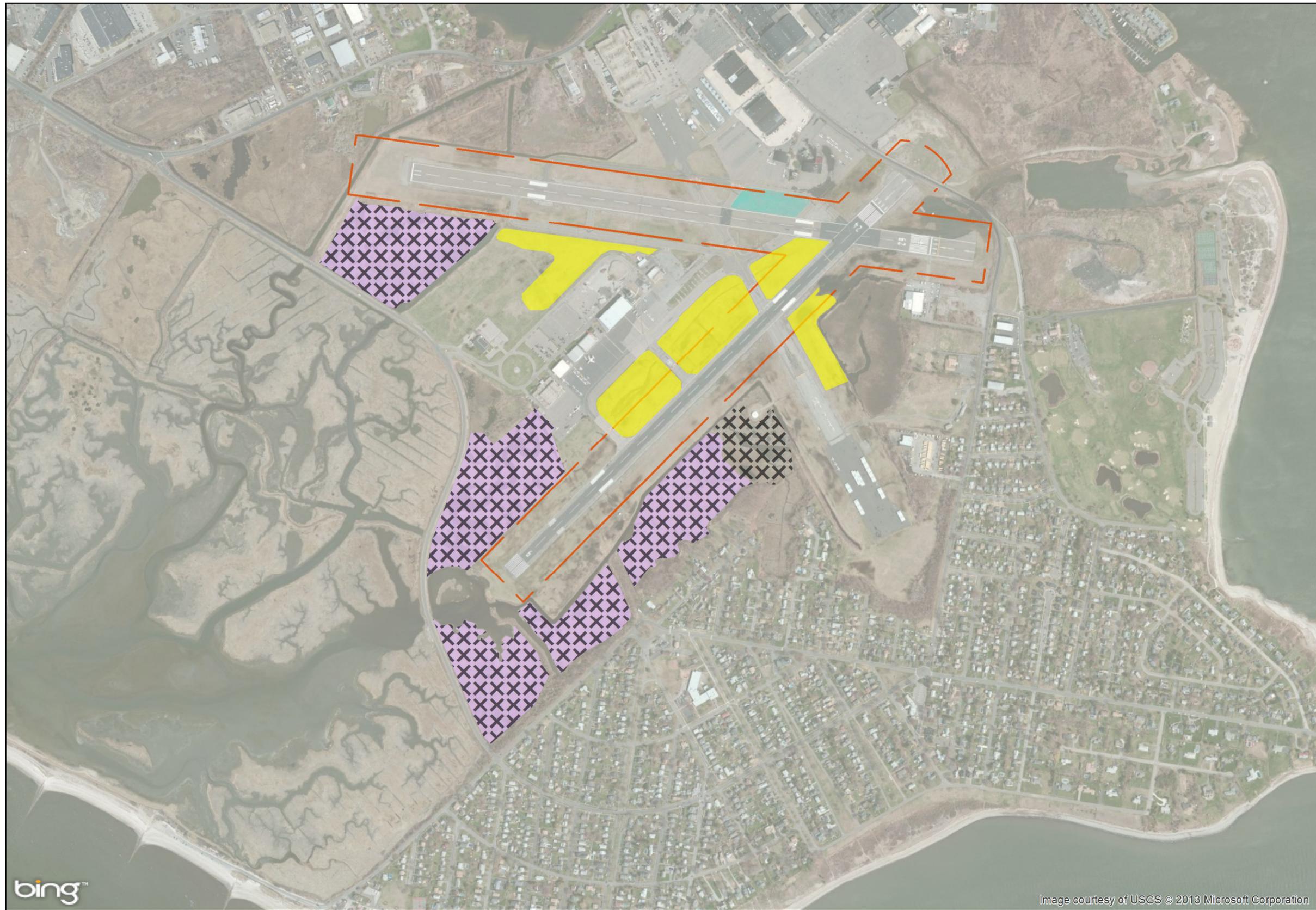
Project No.  
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 Stratford, Connecticut



Town:  
 Stratford, CT  
 Figure 15





**State Listed Bird  
Observed Nesting Areas**

Listed Species:

**Saltmarsh Sharp-tail Sparrow**

*Ammodramus caudacutus*  
CT Special Concern

XXXX Observed Nesting Area

**Savannah Sparrow**

*Passerculus sandwichensis*  
CT Special Concern

Observed Nesting Area

**Seaside Sparrow**

*Ammodramus maritimus*  
CT Threatened

Observed Nesting Area

Runway Safety Area



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Map Title:  
**Avian Survey  
Nesting Locations**

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Town:  
**Stratford, CT**  
**Figure 16**

