

FIRST AMENDMENT TO THE FEBRUARY 26, 2004
MEMORANDUM OF AGREEMENT
BETWEEN THE NEW JERSEY PINELANDS COMMISSION
AND THE SOUTH JERSEY TRANSPORTATION AUTHORITY

Dated: _____, 2019

WHEREAS, the New Jersey Pinelands Commission (the “Commission”) and the South Jersey Transportation Authority (“SJTA” or the “Authority”) (both of which are collectively referred to herein as the “Parties”) entered into a Memorandum of Agreement (“MOA”), dated February 26, 2004, which authorized the development of certain short-term development projects at the Atlantic City International Airport (“ACY”) located in Egg Harbor Township, Atlantic County, New Jersey; and

WHEREAS, the Authority is an instrumentality of the State of New Jersey exercising public and essential governmental functions and is the owner and operator of ACY; and

WHEREAS, the ACY property is comprised of approximately 2,100 acres, approximately 84 acres of which are owned by the SJTA and upon which the terminal building and associated airport support facilities are located; the other 2,000+ acres of which the Authority leases from the United States of America (the “Property”); and

WHEREAS, as an airport that services commercial air carriers, ACY is required to be certified under 49 U.S.C. 44706 as implemented by 14 C.F.R. Part 139; and

WHEREAS, as a Part 139 Certified Airport, ACY is subject to regulation by the Federal Aviation Administration (“FAA”); and

WHEREAS, the Property is located within a Pinelands Regional Growth Area and a Pinelands Military and Federal Installation Area; and

WHEREAS, the impetus for the February 26, 2004 MOA was the Authority’s “Comprehensive Land Use Plan for the Atlantic City International Airport”, dated September 2003, which consisted of both short and long term development projects for the airport; and

WHEREAS, as discussed in the FAA’s September 2003 Final Environmental Impact Statement (FEIS) prepared for the Property, the short-term projects identified in the “Comprehensive Land Use Plan for Atlantic City Airport” were capable of being implemented immediately or in the foreseeable future, subject to the conditions stated within the Record of Decision; and

WHEREAS, although the FEIS included long term projects for informational purposes and so the cumulative impacts of all projects contained within the “Comprehensive Land Use Plan for the Atlantic City International Airport” could be evaluated, the February 26, 2004 MOA did not address or authorize any of the long term projects and instead required the Authority to seek separate Commission authority before proceeding with any of the long term projects; and

WHEREAS, the short-term projects approved pursuant to the February 26, 2004 MOA included the following:

- 1) Terminal Area Development
 - a. Expansion of Terminal Building and Gates including relocation of the apron and Taxiway H
 - b. Public Parking Garage
 - c. Rental Car Maintenance Facility
 - d. Airline Cargo Warehouses
 - e. General Aviation Hangars
 - f. Deicing Apron

- 2) Auxiliary Area Development
 - a. Aircraft Maintenance Hangars
 - b. Air-Freight Warehouses
 - c. Full-length Parallel Taxiway west of Runway 4-22
 - d. Aircraft Parking Apron and Taxiway
 - f. Access Roadway and Parking

- 3) Hotel/Conference Center
 - a. One Three-story Building for 150 Suites
 - b. Lobby Area and Amenities
 - c. Swimming Pool and Outbuildings
 - d. Auto Parking

- 4) Runway 13-31 Instrument Landing System (ILS) Upgrades
 - a. Localizer Antenna
 - b. Glide Slope Antenna
 - c. Medium Intensity Approach Light System (MALSR)
 - d. Marker Beacons

- 5) Holding Aprons

- 6) Grassland Conservation and Management Area

WHEREAS, with the exception of the Airline Cargo Warehouses and the Deicing Apron, all of the short-term projects identified under (1) Terminal Area Development have been completed. The Authority has submitted an application to the Commission for development of the deicing apron. This application is currently pending and includes a development footprint for the apron substantially larger than what was approved by the Commission in the February 26, 2004 MOA. Consequently, in order to demonstrate compliance with the threatened and endangered wildlife standards at N.J.A.C. 7:50-6.33 of the Pinelands CMP, an additional 5 acre offset is required; and

WHEREAS, approximately 20 acres remains undeveloped within the area identified for Auxiliary Development. Notably, none of the projects identified under (2) Auxiliary Area Development have been constructed. Rather, the development of an Air Rescue Facility Building and a Solar Array in this area were approved by the Commission in accordance with the development application review requirements of the Pinelands CMP, thereby precluding future construction of most of the Auxiliary Area Development projects; and

WHEREAS, the Runway ILS Upgrade, Holding Aprons and the Grassland Conservation Management Area have all been constructed; and

WHEREAS, the Authority has not moved forward with the short-term projects identified under (3) Hotel/Conference Center. However, it recently attended a pre-application conference with Commission staff for the construction of a Hotel/Conference Center in a different location than proposed in the February 26, 2004 MOA and, as such, requires submission of a formal public development application to the Commission for its approval; and

WHEREAS, as part of its review process that resulted in the development and execution of the February 26, 2004 MOA, the Commission determined that in addition to adverse impacts to wetlands and wetland buffers, the construction of the short-term projects would result in adverse impacts to habitat that is critical to the survival of two local populations of grassland bird species, Grasshopper sparrow (*Ammodramus savannarum*), a State designated threatened species and Upland sandpiper (*Bartramia longicauda*), a State designated endangered species and a State designated threatened species of Lepidoptera, Frosted elfin butterfly (*Callophrys [Incisalia] iris*); and

WHEREAS, as part of the FEIS, the Authority had developed mitigation measures and environmental commitments to address the environmental impacts associated with its short-term development projects; and

WHEREAS, one of the mitigation measures was the development of a Grassland Conservation and Management Area; and

WHEREAS, as part of the measures included in the February 26, 2004 MOA, intended to provide an equivalent level of protection for the resources of the Pinelands, the Authority was required to create and enhance a 290 acre modified grass community, the Grassland Conservation and Management Area, located in the northwest quadrant of the airport (the Map Depicting the Location of the Grassland Conservation and Management Area is attached hereto as Exhibit A); and

WHEREAS, the Authority created the required Grassland Conservation and Management Area and has continued to manage it in accordance with Paragraph III.A.6.d of the February 26, 2004 MOA; and

WHEREAS, the environmental commitments included in the FEIS were also incorporated into the February 26, 2004 MOA by Paragraph III.A.5 and designated as Attachment 3 (attached hereto as Exhibit B); and

WHEREAS, Paragraph 23 of Attachment 3 of the February 26, 2004 MOA prohibits activities within the Grassland Conservation and Management Area from April 15 through August 15 in order to protect the Upland sandpiper and Grasshopper sparrow during their critical breeding and brooding period; and

WHEREAS, Paragraph 9 of Attachment 3 of the February 26, 2004 MOA also requires all grassland management activities to adhere to the approved mowing plan that restricts mowing in the Grassland Conservation and Management Area from April 15 through August 15, to reduce potential nest destruction and mortality of incubating adults or flightless chicks; and

WHEREAS, following the execution of the February 26, 2004 MOA, the FAA issued updated Advisory Circular FAA AC 150/5200-33B, which was originally published in 1997 and updated in 2004 and again

2007, and CertAlert 06-07 issued in 2006; Both the Advisory Circular FAA AC 150/5200-33B and CertAlert 06-07 relate to potential wildlife attractants and protection of state-listed species' habitat on airports. The most recent version of each document is attached hereto as Exhibit C); and

WHEREAS, as a result of these updates, the Authority contracted with the United States Department of Agriculture, Wildlife Services in 2009 to conduct a new Wildlife Hazard Assessment for ACY, which was completed and accepted by FAA in March 2011, and which contained a recommendation for the Authority to re-examine the impact of the February 26, 2004 MOA on airport safety (See section 4.0 of the Technical Memorandum, dated August 31, 2017, prepared by Dana Heffernan of AECOM attached hereto as Exhibit D); and

WHEREAS, upon completion of the Wildlife Hazard Assessment, the United States Department of Agriculture, Wildlife Services, worked with Authority staff at ACY to develop a new Wildlife Hazard Management Plan for and to implement wildlife hazard management activities at ACY; and

WHEREAS, the United States Department of Agriculture, Wildlife Services, provides ongoing coordination with airport staff to report wildlife strikes and conduct an annual review and update of ACY's Wildlife Hazard Management Plan; and

WHEREAS, ACY currently operates under an FAA approved Wildlife Hazard Management Plan, dated April 2017 (attached hereto as Exhibit E), that identifies the need for reevaluation of the February 26, 2004 MOA, specifically, the continued requirement to maintain the Grassland Conservation and Management Area on the ACY property, in order to allow for management provisions to protect health and safety and continuation of safe airport operations; and

WHEREAS, on or about December 2017, representatives of the Authority expressed an interest in pursuing an amendment of the February 26, 2004 MOA to a) relocate the Grassland Conservation and Management Area off the ACY property in order to b) allow the Authority to mow this area year-round without the existing seasonal restrictions contained with Attachment 3 of the February 26, 2004 MOA; and

WHEREAS, throughout 2018, representatives of the Authority and the Commission discussed the process required for the Authority to seek an amendment of the February 26, 2004 MOA and possible measures that could be proposed to replace the Grassland Conservation and Management Area as an offsetting measure for that agreement; and

WHEREAS, development of a replacement offset has been extremely challenging given the habitat requirements, of the Upland sandpiper, which, as discussed in Appendix E of the FEIS, is an area sensitive species that requires large, open expanses of habitat to breed (its minimum area of potential habitat is 25 hectares (62 acres), which equate to 15 hectares (37 acres)) of effective habitat when a 50 meter buffer from any structure or forest edge is applied, combined with the lack of available and suitable property in the vicinity of the airport; and

WHEREAS, the Authority has submitted documentation, including letters from the FAA, the USDA Wildlife Biologist working with the Authority to implement the Wildlife Hazard Management Plan at ACY, the Commander of the New Jersey Air National Guard stationed at ACY (Copies of which are attached hereto as Exhibit F), to the Commission to substantiate its need to mow the Grassland

Conservation and Management Area and maintain it a height of 5 to 10 inches after April 15, 2019 in order to address safety concerns related to its presence on the airport property; and

WHEREAS, the Pinelands CMP at N.J.A.C. 7:50-4.52(c)2 authorizes the Commission to enter into a Memorandum of Agreement with a governmental agency to authorize such agency to carry out specified development activities that may not be fully consistent with the provision of N.J.A.C. 7:50-5 and 6, provided such agency demonstrates and the Commission finds that variations from the standards of the Pinelands CMP are accompanied by measures that, at a minimum, afford an equivalent level of protection of the resources of the Pinelands than would be provided through strict application of the standards of the Pinelands CMP; and

WHEREAS, the removal of the Grassland Conservation and Management Area, through mowing the grasses to a height that is not consistent with the habitat requirements of local populations of the Upland sandpiper, Grasshopper sparrow and the Frosted elfin butterfly would itself constitute a deviation from the threatened and endangered wildlife standards of the Pinelands CMP at N.J.A.C. 7:50-6.33; and

WHEREAS, removal of the Grassland Conservation and Management Area also constitutes a change to one of the offset measures that was included in the February 26, 2004 MOA and was intended to afford, at a minimum, an equivalent level of protection of the resources of the Pinelands; and

WHEREAS, such measures were required pursuant to N.J.A.C. 7:50-4.52(c)2 in order for the Commission to permit the deviations from the standards of the Pinelands CMP that were authorized by the February 26, 2004 MOA; and

WHEREAS, the Authority has been working to identify new measures that will ameliorate the loss of the Grassland Conservation and Management Area and, thereby provide a replacement offset for the February 26, 2004 MOA; and

WHEREAS, the Authority has proposed to undertake the following offsetting measures:

- 1) Make an initial payment of \$500,000 to the Commission to be added to the Pinelands Conservation Fund (“PCF”) for land acquisition within the Pinelands Area in accordance with the priorities established by the Commission for that fund and, if available, contains habitat suitable for threatened or endangered grassland birds;
- 2) Make five additional annual payments of \$500,000 each which would also be added to the PCF and dedicated for land acquisition in the same manner as the initial \$500,000 payment;
- 3) Acquire land within the Pinelands for and creation and long term maintenance of a new Grassland Conservation and Management Area, of which at least 62 acres is already cleared and located at least 50 meters from any structure or forest edge; and
- 4) Enhance an approximately twelve (12) acre site located adjacent to the Forest Preservation Area in the northeast quadrant of the airport, for the frosted elfin butterfly through the planting of wild indigo (hereinafter collectively referred to as the “offsetting measures”); and

WHEREAS, these measures are being offered by the Authority to ameliorate for the loss of the Grassland Conservation and Management Area; and

WHEREAS, ACY contains substantial areas of critical habitat for threatened and endangered animal species, including, but not limited to the Upland sandpiper, the Grasshopper sparrow and the Frosted elfin butterfly; and

WHEREAS, the February 26, 2004 MOA provided a deviation from the threatened and endangered wildlife standards of the Pinelands CMP, N.J.A.C. 7:50-6.33, for construction of the short-term projects identified therein; and

WHEREAS, this Amendment and the February 26, 2004 MOA are limited to the short-term projects as discussed above and depicted in the FEIS. Any new development or a change in the size, scope and/or location of a short time project proposed at ACY will require submission of a formal public development application to the Commission; and

WHEREAS, in accordance with the requirements of the Pinelands CMP, N.J.A.C. 7:50-4.52(a) and -5.1(a), no development may be carried out in the Pinelands Area unless it conforms with the requirements of the Pinelands CMP; and

WHEREAS, in order to demonstrate continued compliance with the threatened and endangered species standards of the Pinelands CMP, N.J.A.C. 7:50-6.33, as a result of the elimination of the seasonal mowing restrictions and the construction of the short-term projects delineated in the February 26, 2004 MOA, the Authority has offered the offsetting measures delineated above; and

WHEREAS, as discussed in the FEIS, the short-term projects at ACY were expected to result in the loss of approximately 77 acres of critical habitat for the Upland sandpiper and 61.5 acres of critical habitat for the Grasshopper sparrow. The development of the parallel taxiway as part of Auxiliary Area Development and the ILS upgrades were expected to result in the loss of 4.007 acres of suitable habitat for the Frosted elfin butterfly; and

WHEREAS, the offsetting measures proposed by the Authority would result in the creation and maintenance of a new Grassland Conservation and Management Area comprised of a minimum of 62 cleared acres, located 50 meter from any structure or forest edge, thus assuring creation of viable habitat for the Upland sandpiper and Grasshopper sparrow; and

WHEREAS, the \$3 million payment to the PCF, over the course of six (6) years, which is based on a conservative estimate of the historic land acquisition costs for a site comparable in size to the existing Grassland Conservation and Management Area, would result in the preservation of land worth three times that amount within the Pinelands based on existing Commission guidelines for the PCF which provides a 1/3 match of fair market value for land preservation; and

WHEREAS, the enhancement of twelve (12) acres of land in the northeast quadrant of ACY, which is not only adjacent to a Forest Preservation Area but within 2,000 feet of an existing Frosted elfin butterfly colony, will offset the 4.007 acres of suitable Frosted elfin butterfly habitat that was estimated to be lost as a result of the development of the short-term development projects; and

WHEREAS, the Commission finds that the offsetting measures proposed by the Authority provides an equivalent level of protection for the resources of the Pinelands as would be provided through strict application of the threatened or endangered wildlife standards of the Pinelands CMP as required by N.J.A.C. 7:50-4.52(c), because it will result in:

- 1) Funding, creation and maintenance of a new Grassland Conservation and Management Area, consisting of viable habitat for the Upland sandpiper and the Grasshopper sparrow, on a site where these species are not susceptible to airstrike and, resultant mortality;
- 2) As a result of the \$3,000,000 payment to the PCF over the course of six (6) years, the acquisition and preservation of the equivalent of approximately \$9,000,000 worth of ecologically sensitive lands located within the Pinelands Area, including lands containing grassland bird habitat, if available; and
- 3) The enhancement and preservation of twelve (12) acres of land located within the northeast quadrant and outside of the airport's operation area for the Frosted elfin butterfly in the vicinity of an existing Frosted elfin butterfly colony.

WHEREAS, until the Authority 1) provides the initial payment of \$500,000 to the Commission and 2) provides a resolution from its Board committing to the remaining five annual payments of \$500,000 each and a timeframe for the acquisition and creation of the new Grassland Conservation and Management Area and the enhancement of habitat for the Frosted elfin butterfly, 1) no mowing of the Grassland Conservation and Management Area shall occur during the seasonal restriction period, i.e. April 15 through August 15, and 2) no Commission approvals for development at the ACY shall be granted; and

WHEREAS, once the Authority has provided the initial \$500,000 payment and Board Resolution containing the commitments identified above to the Commission, the Commission will resume processing development applications for ACY; and

NOW THEREFORE, in consideration of the mutual promises, covenants, terms, conditions, obligations and agreements contained herein, which the Parties acknowledge to be good and sufficient consideration to support this Amendments and to bind and obligate the Parties hereto, the Parties agree to amend the February 26, 2004 MOA as follows:

1. Unless expressly amended herein, all provisions of the February 26, 2004, MOA shall remain in full force and effect.
2. Notwithstanding the provisions of Paragraphs III.A.5 and III.A.6.d and Paragraph 23 of Attachment 3 of the February 26, 2004 MOA to the contrary, the parties agree that the Authority may mow the GCMA to a FAA recommended height of 5 to 10 inches and maintain the grasses within the Grassland Conservation and Management Area at this height year-round going forward.
3. The Authority agrees to make six (6) annual payments of \$500,000 each to the Commission. The initial \$500,000 payment shall be made no later than ten (10) days following execution of this Amendment by an authorized representative of the

Authority. All subsequent payments shall be made no later than January 5th of the subsequent year. These annual payments shall be added to the Pinelands Conservation Fund and dedicated to land acquisition with a priority given for lands that not only meet the priorities established by the Commission for that fund, but also contain habitat for threatened or endangered grassland birds, if available.

4. In addition to the annual payments to the Pinelands Conservation Fund delineated in Paragraph 3, the Authority agrees to acquire land within the Pinelands, of which at least 62 acres is already cleared and the cleared acreage is located at least 50 meters from any structure or forest edge, either on its own or with the assistance of Atlantic County, and to fund the creation, dedication and long term maintenance of a new Grassland Conservation and Management Area. The Authority further agrees to preserve the new Grassland Conservation and Maintenance Area in perpetuity through the execution and filing of a deed of conservation restriction within ninety (90) days of the land for the new Grassland Conservation and Management Area being acquired.
5. The Authority also agrees to fund the enhancement of an approximately twelve (12) acre site located adjacent to the Forest Preservation Area in the northeast quadrant of the airport for the Frosted elfin butterfly through the planting of wild indigo. The Authority further agrees to obtain FAA's approval to expand the area located in the northeastern portion of the airport and designated as a "Forest Preservation Area – to be Held in Reserve. No Development Shall Occur" to include not only the twelve (12) acres that comprise the area to be enhanced for the Frosted elfin butterfly, but also the area 2,000 feet away where the well-documented colony is located. Within thirty (30) days of the Authority's execution of this Amendment, it shall request written agreement from the FAA indicating that the FAA concurs with the expansion of the Forest Preservation Area to include the two frosted elfin butterfly areas discussed herein and agrees to include the expanded "Forest Preservation Area" on all subsequent layout plans for ACY. Additionally, the Authority shall provide a copy of the FAA's written agreement to the Commission within fifteen (15) days receipt of same, but no later than sixty (60) days following its execution of this Amendment and shall provide the Commission with a copy of the Amendment ALP no later than ninety (90) days following its execution of this Amendment.
6. The Authority shall provide a resolution from its Board to the Commission. This resolution shall acknowledge the Authority's obligation and commitment to undertake and complete the offsetting measures delineated in Paragraphs 3-5. Additionally, this resolution shall contain a time line for the acquisition and creation of the new Grassland Conservation and Management Area and the Frosted elfin butterfly enhancement project. Such time line shall require acquisition of a site for the new Grassland Conservation Area within one (1) year of execution of this Amendment by the Authority and the establishment of the new Grassland Conservation and Management Area within three (3) years of the Authority's execution of this Amendment. The time line shall also require completion of the Frosted elfin butterfly enhancement project within two (2) years of the Authority's execution of this Amendment.
7. No mowing of the Grassland Conservation and Management Area shall occur during the seasonal restriction period, i.e. April 15 through August 15, 2019 until the Authority

provides the initial \$500,000 annual payment and a Resolution of its Board conforming to the requirements of Paragraph 6 to the Commission for its approval and receives written authorization from the Commission's Executive Director advising it that mowing is permitted.

8. Forty five (45) days prior to commencing creation of the new Grassland Conservation and Management Area and the Frosted elfin butterfly habitat enhancement project, the Authority shall submit the following:
 - a) A copy of the detailed plans for the project, including, but not limited to wetlands mapping and, for the new Grassland Conservation and Management Area, the 50 meter buffer from any structure or forest edge;
 - b) Information demonstrating the project's compliance with the applicable Environmental Commitments of the FEIS, which was included as Attachments 3 to the February 26, 2004 MOA, is attached hereto as Exhibit B and incorporated herein by reference; and
 - c) Information demonstrating the project's compliance with all applicable land use and environmental standard (N.J.A.C. 7:50-5 and -6) of the Pinelands CMP.
9. The Authority shall not commence either creation of the new Grassland Conservation and Management Area or the Frosted elfin butterfly enhancement project until it has submitted the information required in paragraph 8 and received approval from the Executive Director, with the concurrence of the Commission, stating that the proposed project is consistent with the requirements of the Pinelands CMP.
10. The parties agree that no part of this Proposed Amendment shall release the Authority from its responsibility to obtain approvals from the FAA or other State or Federal entities, including but not limited to any additional approvals related to threatened or endangered species from the New Jersey Department of Environmental Protection and/or the United States Fish and Wildlife, and any approvals from the FAA, including but not limited to the National Environmental Policy Act, that may be required prior to mowing the Grassland Conservation and Management Area.
11. All development activities authorized by this Agreement or the February 26, 2004 MOA, including but not limited to the mowing of the Grassland Conservation and Management Area on the Property during the seasonal restriction period, shall immediately cease and these agreements shall be considered suspended in the event the Authority fails to make any of the annual payments required under the terms of this Amendment or fails to meet the time lines for either 1) the acquisition, creation and maintenance of the new off-airport Grassland Conservation and Management Area or 2) the enhancement and maintenance of the Frosted elfin butterfly habitat in the northeast quadrant of the Property.
12. In the event that Paragraph 11, above, is triggered, the Authority shall have thirty (30) days to seek reinstatement of this Amendment and the February 26, 2004 MOA by providing either 1) the delinquent annual payment or 2) a written agreement itemizing

the steps the Authority will take to bring the new Grassland Conservation and Management area or Frosted elfin butterfly enhancement project back into conformance with the Board resolution time lines required pursuant to Paragraph 6. If the Executive Director finds the written agreement acceptable, following concurrence by the Commission Chair, s/he shall issue a letter to the Authority reinstating the terms of this Amendment and the February 26, 2004 MOA. Failure of the Authority to comply with a written agreement submitted pursuant to the terms of this Paragraph or a subsequent failure to perform the required offsetting measures may result in reinstatement of the suspension or issuance of a subsequent suspension of this Amendment and the February 26, 2004 MOA.

13. During a period of suspension pursuant to Paragraph 11, the Authority shall be permitted to complete development projects for which an approval from the Commission has been received and which is either under construction at the time of the suspension or for which the Authority has already entered into a contract for construction. All other development shall require submission of a formal Public Development Application to the Commission in accordance with N.J.A.C. 7:50-4.52(b) and shall include a demonstration as to the proposed development's compliance with the applicable standards of the Pinelands CMP, including but not limited to the threatened and endangered wildlife standards set forth at N.J.A.C. 7:50-6.33, and said development shall not commence until such application has been approved by the Commission. The Authority acknowledges that the Commission will not be able to approve any development that does not comply with all required provisions of the Pinelands CMP.
14. The Authority shall provide monthly written status reports to the Commission commencing three (3) months following its execution of the Amendment. Such report shall delineate all steps taken by the Authority to implement the offsetting measures required by Paragraphs 4 and 5 herein. Following acquisition of a site for the new Grassland Conservation and Management Area, the duration for submission of monthly written reports by the Authority may be modified by written authorization of the Executive Director, with the concurrence of the Commission's Policy and Implementation Committee.
15. The Authority shall attend meetings of the Commission's Policy and Implementation Committee as requested by the Committee. At such meetings, the Authority shall provide the Committee with an update on its efforts to fulfill the offsetting measures required by this agreement.
16. This Proposed Amendment shall take effect upon approval and signature by the authorized representatives of all parties and following the conclusion of the Governor's review in accordance with N.J.S.A. 13:18A-5(h).
17. This Proposed Amendment to the February 26, 2004 MOA shall remain in effect unless amended or terminated by written consent of both parties.

18. All the promises, covenants, terms, conditions, obligations and agreements contained herein shall be applicable to and binding upon the Parties, and any successors or assigns.
19. This Proposed Amendment, along with the February 26, 2004 MOA, constitutes the entire agreement of the parties, and supersedes all previous understandings and agreements between the parties, whether oral or written. The parties hereby acknowledge and represent that said parties have not relied on any representation, assertion, guarantee, warranty, collateral contract, or other assurance, except those set out in this Proposed Amendment, made by or on behalf of any other party or any other person or entity whatsoever, prior to the execution of this Proposed Amendment.
20. This MOA may be executed in counterparts. All such counterparts shall constitute an original and all of which together shall constitute one and the same agreement, binding upon the parties. Faxed and electronic signatures shall constitute original signatures.

IN WITNESS WHEREOF, the parties have caused their duly authorized representatives to execute this Proposed Amendment on and as of the day and year written below. This Proposed Amendment shall be executed in at least three original copies of which one is to be delivered to the South Jersey Transportation Authority, and two of which are to be delivered to the New Jersey Pinelands Commission.

THE SOUTH JERSEY TRANSPORTATION AUTHORITY Witnessed:

By: _____
 Stephen F. Dougherty, Executive Director
 Date: _____

By: _____
 Name: _____
 Title: _____

NEW JERSEY PINELANDS COMMISSION Witnessed:

By: _____
 Nancy Wittenberg, Executive Director
 Date: _____

By: _____
 Name: _____
 Title: _____

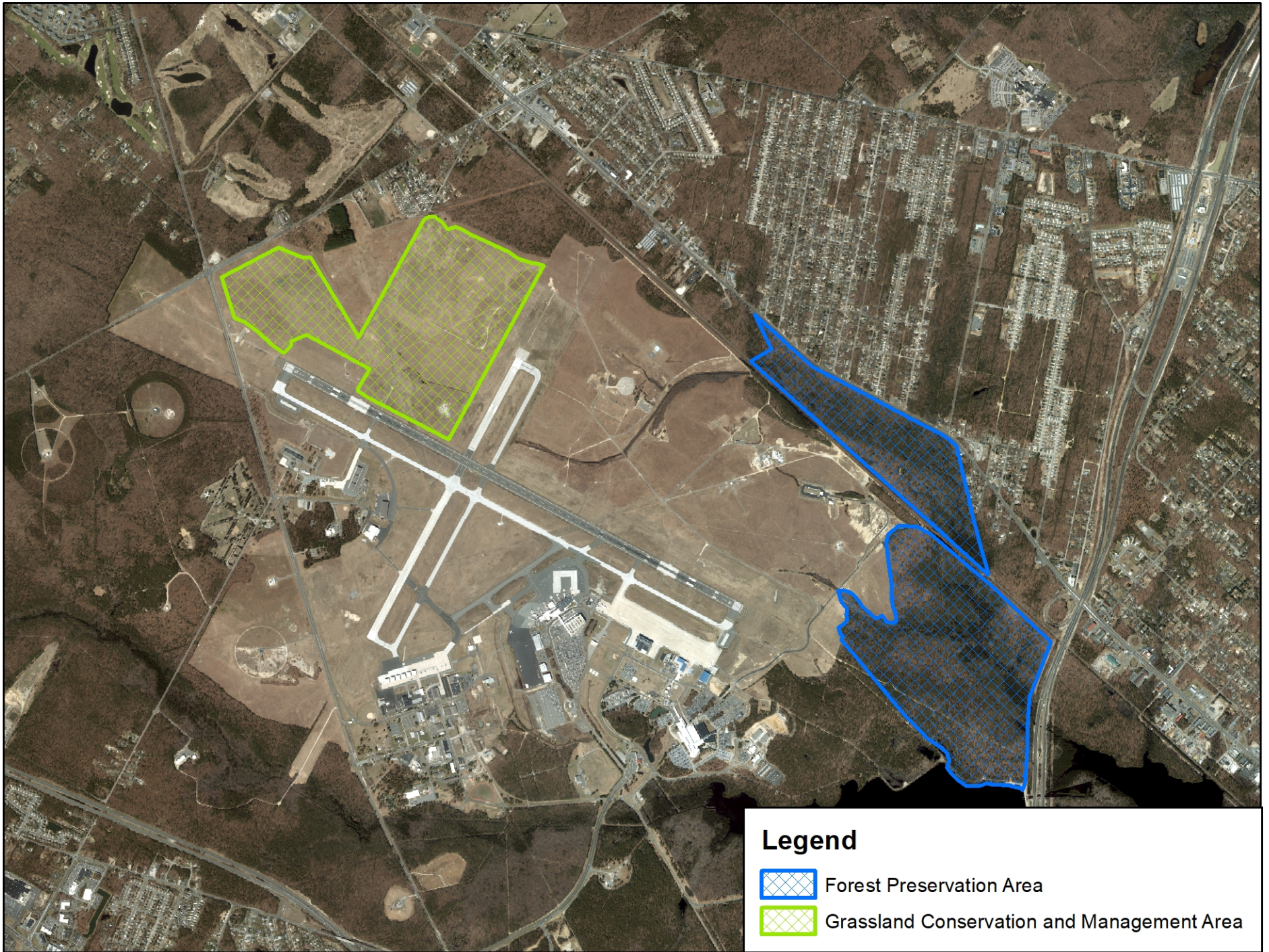
Approved as to form by:

By: _____
Kristina Miles, Deputy Attorney General

Date: _____

DRAFT

Exhibit A



Legend



-  Forest Preservation Area
-  Grassland Conservation and Management Area

Exhibit B

**SOUTH JERSEY TRANSPORTATION AUTHORITY
ATLANTIC CITY INTERNATIONAL AIRPORT**

Environmental Commitments

GENERAL REQUIREMENTS

1. All land clearing and grading activities for near-term development projects are subject to prior approval by the Commission or the New Jersey Department of Environmental Protection (NJDEP) in accordance with the Freshwater Wetlands Protection Act Rules at N.J.A.C. 7:7A. Wetlands will be delineated and boundaries will be verified by the Pinelands Commission.
2. All land clearing and grading activities will be confined within approved near-term development areas and grassland conservation areas.
3. All clearing and grading activities within forest, grassland, wetlands and wetland buffers will be minimized to the maximum extent practicable. All wetlands in the vicinity of the near-term projects or within the Grassland Conservation and Management Area that are not scheduled to be disturbed will be protected with fencing.
4. All grassland temporarily disturbed during construction activities will be restored using native species of local genotypes upon completion of final grading to the maximum extent practicable.
5. The limit of any land disturbance within near-term projects and the Grassland Conservation and Management Area will be fenced prior to commencement of any land disturbance activities.
6. Construction equipment, material and soil stockpile areas, and all woody debris will not be stored or disposed of within forest, grassland, wetlands or wetland buffer areas.
7. Vehicular access within grassland will be restricted to existing roads or as directed by United States Department of Agriculture ("USDA") Wildlife Services.

GRASSLAND CONSERVATION AND MANAGEMENT REQUIREMENTS

8. All grassland management activities will be performed with the advice of an Advisory Committee. The Advisory Committee shall consist of representatives from the Commission, NJ Department of Environmental Protection Endangered and Non-game Species Program, US Fish and Wildlife Service, US Department of Agriculture Wildlife Services, FAA Technical Center, and the Authority, and shall meet at a location and frequency that is mutually agreeable.
9. All grassland management activities shall adhere to a mowing plan as currently approved, or as may be periodically revised based on the recommendation of the Advisory Committee. Appropriate airport maintenance and operation staff responsible for mowing the airfield will be required to attend an annual training program to be held prior to commencement of the winter mowing season.
10. Prior to commencement of land clearing or grading activities for construction of any near-term development project, adequate grassland creation and/or enhancement will be achieved to compensate for losses to grassland habitat from proposed development.

11. A 290-acre Grassland Conservation and Management Area will be established and managed in a manner that is conducive to the long-term conservation of the Upland Sandpiper. No development, grading or clearing activities, other than those activities associated with the establishment or maintenance of the Grassland Conservation and Management Area, shall be permitted within the Grassland Conservation and Management Area without prior authorization of the Pinelands Commission.

12. The 290-acre Grassland Conservation and Management Area will be made up of 165 acres of grassland creation and 125 acres of grassland enhancement within the area designated as Grassland Conservation and Management Area as follows:

- a. Creation of grassland habitat within pavement removal areas (15 acres), Existing barren land (7 acres), existing shrub areas (143 acres)
- b. Enhancement of existing grassland habitat (125 acres)
- c. Removal of additional 15 acres of pavement associated with reduction in Width of Runway 13-31 to 150 feet and creation of grassland habitat.

13. Within three (3) years of commencement of grassland creation and enhancement activities the following vegetation characteristics, or as amended by the Advisory Committee, shall be achieved:

a.	Grass Cover	Min 60%	Max 80%
b.	Forb Cover	Min 10%	Max 30%
c.	Total Herbaceous Cover	Min 70%	Max 80%
d.	Shrub Cover	Min 0%	Max 10%
e.	Nuisance Species *	Min 0%	Max 10%
f.	Bare Ground	Min 20%	Max 30%
g.	Vegetation Height		

Mid May through Mid June	Min 10"	Max 16"
June through August	Min 10"	Max 16"

**"Nuisance" species to be mutually agreed upon by the Advisory Committee and the Authority*

14. Within the Grassland Conservation and Management Area, the Authority will create a minimum of 25 frosted elfin ovipositing plots of 0.25 acres each. The plots would include variable density coverage of wild indigo as follows: 15 plots at 10% (250 plants each); 5 plots at 20% (500 plants each); and 5 plots at 40% (1,000 plants each). The plots would include 2% low bush blueberry container-grown plants to provide additional opportunities for frosted elfin nectaring. Each plot should be located between 50 and 88 meters of the forest edge. Wild indigo seed for the "plugs" would be obtained from on-site sources so that the local genotype would be replanted. Seed will be collected from the tallest phenotype wild indigo plants.

15. Grassland habitat will be created within the 0.8 acre forest clearing resulting from 31-end ILS project to provide a minimum aerial coverage of 10% wild indigo (*Baptisia tinctoria*) and 2% low bush blueberry (*Vaccinium vacillans*). A total of 50 Staggerbush (*Lyonia mariana*) will also be planted at intervals along the forest edge.

16. All seeding and planting within the Grassland Conservation and Management Area shall consist of a seed mix and/or species composition that has been approved by the USDA Wildlife Services, NJDEP Endangered and Non-Game Species Program and the Commission. Seed mix may include depending on availability:

- a. Grasses: little bluestem (*Andropogon scoparius*), side oats grama (*Bouteloua curtipendula*), broomsedge (*Andropogon virginicus*), poverty grass (*Danthonia spicata*), purple top (*Tridens flavus*), switchgrass (*Panicum virgatum*) and deertongue (*Dicanthelium clandestinum*). Oats (*Avena sativa*) are recommended as a nurse crop.
- b. Forbs: grass-leaved blazing star (*Liatris graminifolia*), wild indigo (*Baptisia tinctoria*), butterfly weed (*Asclepias tuberosa*), wild bergamot (*Monarda fistulosa*), black-eyed susan (*Rudbeckia hirta*), partridge pea (*Cassia fasciculata*), common milkweed (*Asclepias syriaca*), Indian hemp (*Apocynum cannabinum*), narrow-leaved mountain mint (*Pycnanthemum tenuifolium*), calico aster (*Aster lateriflorus*), heath aster (*Aster pilosus*). Blazing star (*Liatris spicata*) will be selectively seeded into areas of the Grassland Conservation and Management Area that include the wetter soils.

17. All grassland creation, enhancement and restoration activities will be performed by and/or under the supervision of a firm with demonstrated experience in habitat restoration.

18. Frosted elfin (*Callophrys irus*) habitat within 50 meters of the forest edge will be preserved and maintained according to a mowing and management plan approved by NJDEP Endangered and Non-game Species Program and the Commission.

19. Prior to the commencement of land clearing or grading activities within the Grassland Conservation and Management Area, a pre-construction field survey for the frosted elfin (*Callophrys irus*) will be conducted by a qualified entomologist between May 1 and July 15 to identify areas of wild indigo (*Baptisia tinctoria*) that are used for ovipositing. All areas within 20-meters of indigo found to support ovipositing frosted elfin will be fenced prior to commencement of land disturbance. No mechanized shrub removal will be permitted within the fenced area. Shrub removal within the fenced area will be performed manually so as not to disturb indigo plants and ericaceous shrubs (specifically, lowbush blueberry, *Vaccinium vacillans* and staggerbush, *Lyonia mariana*) and dewberry (*Rubus spp.*) to the extent practicable. Ericaceous shrubs and Dewberry patches within 20 meters of protected indigo patches identified during the pre-construction field survey for frosted elfin will be retained up to a maximum of 10% coverage. Manual removal will allow for the use of small equipment such as a small backhoe for the removal of individual shrubs.

20. All grassland creation and enhancement activities will minimize disturbance to soils and retain desirable vegetation to the maximum extent possible.

21. All woody debris, including stumps, roots and shoots will be removed from grassland creation and enhancement areas.

SEASONAL RESTRICTIONS

22. All Grassland creation and enhancement activities will be performed between the period of October 1 through April 15. Shrub removal within the Grassland Conservation and Management Area will only be performed between November 1 and March 31.

23. No construction activities within grassland disturbed by near-term development projects shall commence between April 15 and August 15. All construction areas shall be fenced prior to any land disturbance or grading activities. All grass within fenced construction sites shall be maintained at no more than five (5) inches in height for the duration of construction.

24. Clearing activities within the forest is prohibited from March 1 through September 1.

MONITORING REQUIREMENTS

25. A qualified ecologist/wildlife biologist will be retained to oversee and monitor all construction and grassland creation, enhancement, restoration, management and monitoring activities to ensure adherence to these environmental commitments. The ecologist/wildlife biologist will oversee manual shrub removal to minimize disturbance to soils and vegetation. Within manual shrub removal areas, indigo plants disturbed during shrub removal will be replanted in place to the maximum extent practicable. Disturbance to Dewberry (*Rubus* spp.) within manual shrub removal areas will also be minimized to the maximum extent practicable.

26. Vegetation within grassland creation, enhancement and restoration areas will be monitored for a period of no less than five (5) years. Regular reports on the status of grassland management activities, including recommendation for corrective action if needed, shall be provided to the Advisory Committee and the FAA.

27. All development activities will be monitored for the period of construction. Regular reports on the status of construction activities, adherence with terms and conditions of approvals, including recommendations for corrective action as necessary, will be provided to the Advisory Committee and the FAA.

28. An annual grassland breeding bird species survey will be performed, including the upland sandpiper (*Bartamia longicauda*), and frosted elfin (*Callophrys irus*) surveys within the Grassland Conservation and Management Area extending for a minimum of three (3) years beyond achieving appropriate vegetation characteristics in accordance with item 13 above. Survey methodology/protocol will be developed in consultation with the Advisory Committee. The results of the surveys, including recommendations for corrective action as necessary, shall be provided in an annual report to the Advisory Committee and the FAA.

29. In consultation with USDA Wildlife Services, a program will be implemented within the Grassland Conservation and Management Area and land development areas to deter use by hazardous bird species.

FOREST PRESERVATION AREA

30. A 283-acre and 124-acre Forest Preservation Areas will be established and managed in a manner that is conducive to the long-term conservation of wetlands associated with the North Branch of Absecon Creek. No development, grading or clearing activities shall be permitted within the Forest Preservation Area without prior authorization of the Pinelands Commission. All forest management activities conducted within the Forest Preservation Area will be performed with the advice of an Advisory Committee. The Advisory Committee shall consist of representatives from the Commission, NJ Department of Environmental Protection Endangered and Non-game Species Program, US Fish and Wildlife Service, US Department of Agriculture Wildlife Services, FAA Technical Center, and the Authority, and shall meet at a location and frequency that is mutually agreeable.

Exhibit C



U.S. Department
of Transportation

**Federal Aviation
Administration**

Advisory Circular

**Subject: HAZARDOUS WILDLIFE
ATTRACTANTS ON OR NEAR
AIRPORTS**

Date: 8/28/2007

AC No: 150/5200-33B

Initiated by: AAS-300

Change:

- 1. PURPOSE.** This Advisory Circular (AC) provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports. It also discusses airport development projects (including airport construction, expansion, and renovation) affecting aircraft movement near hazardous wildlife attractants. Appendix 1 provides definitions of terms used in this AC.
- 2. APPLICABILITY.** The Federal Aviation Administration (FAA) recommends that public-use airport operators implement the standards and practices contained in this AC. The holders of Airport Operating Certificates issued under Title 14, Code of Federal Regulations (CFR), Part 139, Certification of Airports, Subpart D (Part 139), may use the standards, practices, and recommendations contained in this AC to comply with the wildlife hazard management requirements of Part 139. Airports that have received Federal grant-in-aid assistance must use these standards. The FAA also recommends the guidance in this AC for land-use planners, operators of non-certificated airports, and developers of projects, facilities, and activities on or near airports.
- 3. CANCELLATION.** This AC cancels AC 150/5200-33A, *Hazardous Wildlife Attractants on or near Airports*, dated July 27, 2004.
- 4. PRINCIPAL CHANGES.** This AC contains the following major changes, which are marked with vertical bars in the margin:

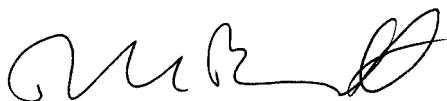
 - a. Technical changes to paragraph references.
 - b. Wording on storm water detention ponds.
 - c. Deleted paragraph 4-3.b, *Additional Coordination*.
- 5. BACKGROUND.** Information about the risks posed to aircraft by certain wildlife species has increased a great deal in recent years. Improved reporting, studies, documentation, and statistics clearly show that aircraft collisions with birds and other wildlife are a serious economic and public safety problem. While many species of wildlife can pose a threat to aircraft safety, they are not equally hazardous. Table 1

ranks the wildlife groups commonly involved in damaging strikes in the United States according to their relative hazard to aircraft. The ranking is based on the 47,212 records in the FAA National Wildlife Strike Database for the years 1990 through 2003. These hazard rankings, in conjunction with site-specific Wildlife Hazards Assessments (WHA), will help airport operators determine the relative abundance and use patterns of wildlife species and help focus hazardous wildlife management efforts on those species most likely to cause problems at an airport.

Most public-use airports have large tracts of open, undeveloped land that provide added margins of safety and noise mitigation. These areas can also present potential hazards to aviation if they encourage wildlife to enter an airport's approach or departure airspace or air operations area (AOA). Constructed or natural areas—such as poorly drained locations, detention/retention ponds, roosting habitats on buildings, landscaping, odor-causing rotting organic matter (putrescible waste) disposal operations, wastewater treatment plants, agricultural or aquaculture activities, surface mining, or wetlands—can provide wildlife with ideal locations for feeding, loafing, reproduction, and escape. Even small facilities, such as fast food restaurants, taxicab staging areas, rental car facilities, aircraft viewing areas, and public parks, can produce substantial attractions for hazardous wildlife.

During the past century, wildlife-aircraft strikes have resulted in the loss of hundreds of lives worldwide, as well as billions of dollars in aircraft damage. Hazardous wildlife attractants on and near airports can jeopardize future airport expansion, making proper community land-use planning essential. This AC provides airport operators and those parties with whom they cooperate with the guidance they need to assess and address potentially hazardous wildlife attractants when locating new facilities and implementing certain land-use practices on or near public-use airports.

6. MEMORANDUM OF AGREEMENT BETWEEN FEDERAL RESOURCE AGENCIES. The FAA, the U.S. Air Force, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the U.S. Department of Agriculture - Wildlife Services signed a Memorandum of Agreement (MOA) in July 2003 to acknowledge their respective missions in protecting aviation from wildlife hazards. Through the MOA, the agencies established procedures necessary to coordinate their missions to address more effectively existing and future environmental conditions contributing to collisions between wildlife and aircraft (wildlife strikes) throughout the United States. These efforts are intended to minimize wildlife risks to aviation and human safety while protecting the Nation's valuable environmental resources.



DAVID L. BENNETT
Director, Office of Airport Safety
and Standards

Table 1. Ranking of 25 species groups as to relative hazard to aircraft (1=most hazardous) based on three criteria (damage, major damage, and effect-on-flight), a composite ranking based on all three rankings, and a relative hazard score. Data were derived from the FAA National Wildlife Strike Database, January 1990–April 2003.¹

Species group	Ranking by criteria			Composite ranking ²	Relative hazard score ³
	Damage ⁴	Major damage ⁵	Effect on flight ⁶		
Deer	1	1	1	1	100
Vultures	2	2	2	2	64
Geese	3	3	6	3	55
Cormorants/pelicans	4	5	3	4	54
Cranes	7	6	4	5	47
Eagles	6	9	7	6	41
Ducks	5	8	10	7	39
Osprey	8	4	8	8	39
Turkey/pheasants	9	7	11	9	33
Hérons	11	14	9	10	27
Hawks (buteos)	10	12	12	11	25
Gulls	12	11	13	12	24
Rock pigeon	13	10	14	13	23
Owls	14	13	20	14	23
H. lark/s. bunting	18	15	15	15	17
Crows/ravens	15	16	16	16	16
Coyote	16	19	5	17	14
Mourning dove	17	17	17	18	14
Shorebirds	19	21	18	19	10
Blackbirds/starling	20	22	19	20	10
American kestrel	21	18	21	21	9
Meadowlarks	22	20	22	22	7
Swallows	24	23	24	23	4
Sparrows	25	24	23	24	4
Nighthawks	23	25	25	25	1

¹ Excerpted from the *Special Report for the FAA, "Ranking the Hazard Level of Wildlife Species to Civil Aviation in the USA: Update #1, July 2, 2003"*. Refer to this report for additional explanations of criteria and method of ranking.

² Relative rank of each species group was compared with every other group for the three variables, placing the species group with the greatest hazard rank for ≥ 2 of the 3 variables above the next highest ranked group, then proceeding down the list.

³ Percentage values, from Tables 3 and 4 in Footnote 1 of the *Special Report*, for the three criteria were summed and scaled down from 100, with 100 as the score for the species group with the maximum summed values and the greatest potential hazard to aircraft.

⁴ Aircraft incurred at least some damage (destroyed, substantial, minor, or unknown) from strike.

⁵ Aircraft incurred damage or structural failure, which adversely affected the structure strength, performance, or flight characteristics, and which would normally require major repair or replacement of the affected component, or the damage sustained makes it inadvisable to restore aircraft to airworthy condition.

⁶ Aborted takeoff, engine shutdown, precautionary landing, or other.

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SECTION 1.

GENERAL SEPARATION CRITERIA FOR HAZARDOUS WILDLIFE ATTRACTANTS ON OR NEAR AIRPORTS.

1-1. INTRODUCTION. When considering proposed land uses, airport operators, local planners, and developers must take into account whether the proposed land uses, including new development projects, will increase wildlife hazards. Land-use practices that attract or sustain hazardous wildlife populations on or near airports can significantly increase the potential for wildlife strikes.

The FAA recommends the minimum separation criteria outlined below for land-use practices that attract hazardous wildlife to the vicinity of airports. Please note that FAA criteria include land uses that cause movement of hazardous wildlife onto, into, or across the airport's approach or departure airspace or air operations area (AOA). (See the discussion of the synergistic effects of surrounding land uses in Section 2-8 of this AC.)

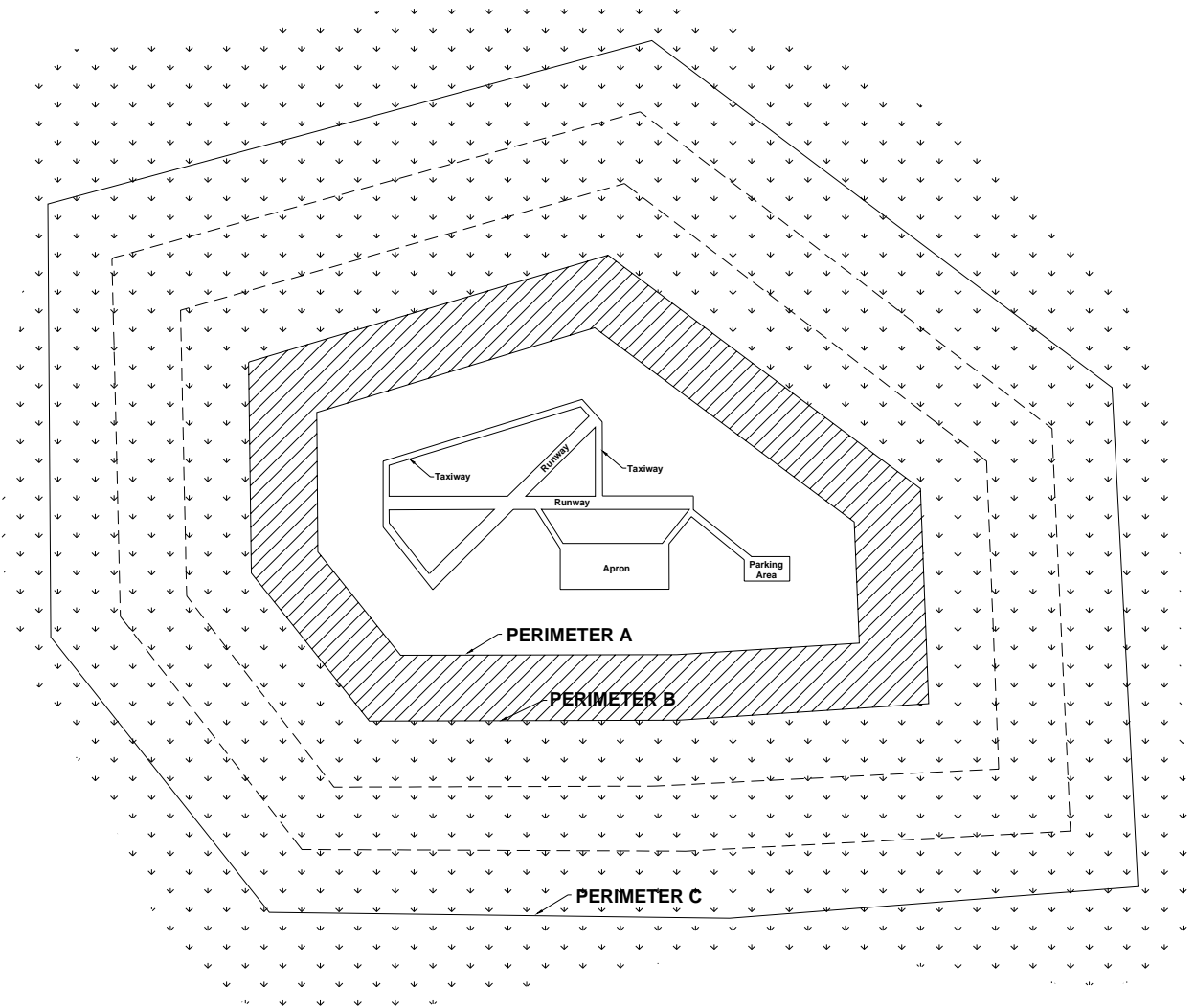
The basis for the separation criteria contained in this section can be found in existing FAA regulations. The separation distances are based on (1) flight patterns of piston-powered aircraft and turbine-powered aircraft, (2) the altitude at which most strikes happen (78 percent occur under 1,000 feet and 90 percent occur under 3,000 feet above ground level), and (3) National Transportation Safety Board (NTSB) recommendations.

1-2. AIRPORTS SERVING PISTON-POWERED AIRCRAFT. Airports that do not sell Jet-A fuel normally serve piston-powered aircraft. Notwithstanding more stringent requirements for specific land uses, the FAA recommends a separation distance of 5,000 feet at these airports for any of the hazardous wildlife attractants mentioned in Section 2 or for new airport development projects meant to accommodate aircraft movement. This distance is to be maintained between an airport's AOA and the hazardous wildlife attractant. Figure 1 depicts this separation distance measured from the nearest aircraft operations areas.

1-3. AIRPORTS SERVING TURBINE-POWERED AIRCRAFT. Airports selling Jet-A fuel normally serve turbine-powered aircraft. Notwithstanding more stringent requirements for specific land uses, the FAA recommends a separation distance of 10,000 feet at these airports for any of the hazardous wildlife attractants mentioned in Section 2 or for new airport development projects meant to accommodate aircraft movement. This distance is to be maintained between an airport's AOA and the hazardous wildlife attractant. Figure 1 depicts this separation distance from the nearest aircraft movement areas.

1-4. PROTECTION OF APPROACH, DEPARTURE, AND CIRCLING AIRSPACE. For all airports, the FAA recommends a distance of 5 statute miles between the farthest edge of the airport's AOA and the hazardous wildlife attractant if the attractant could cause hazardous wildlife movement into or across the approach or departure airspace.

Figure 1. Separation distances within which hazardous wildlife attractants should be avoided, eliminated, or mitigated.



PERIMETER A: For airports serving piston-powered aircraft, hazardous wildlife attractants must be 5,000 feet from the nearest air operations area.

PERIMETER B: For airports serving turbine-powered aircraft, hazardous wildlife attractants must be 10,000 feet from the nearest air operations area.

PERIMETER C: 5-mile range to protect approach, departure and circling airspace.

SECTION 2.

LAND-USE PRACTICES ON OR NEAR AIRPORTS THAT POTENTIALLY ATTRACT HAZARDOUS WILDLIFE.

2-1. GENERAL. The wildlife species and the size of the populations attracted to the airport environment vary considerably, depending on several factors, including land-use practices on or near the airport. This section discusses land-use practices having the potential to attract hazardous wildlife and threaten aviation safety. In addition to the specific considerations outlined below, airport operators should refer to *Wildlife Hazard Management at Airports*, prepared by FAA and U.S. Department of Agriculture (USDA) staff. (This manual is available in English, Spanish, and French. It can be viewed and downloaded free of charge from the FAA's wildlife hazard mitigation web site: <http://wildlife-mitigation.tc.FAA.gov>.) And, *Prevention and Control of Wildlife Damage*, compiled by the University of Nebraska Cooperative Extension Division. (This manual is available online in a periodically updated version at: ianrwww.unl.edu/wildlife/solutions/handbook/.)

2-2. WASTE DISPOSAL OPERATIONS. Municipal solid waste landfills (MSWLF) are known to attract large numbers of hazardous wildlife, particularly birds. Because of this, these operations, when located within the separations identified in the siting criteria in Sections 1-2 through 1-4, are considered incompatible with safe airport operations.

a. Siting for new municipal solid waste landfills subject to AIR 21. Section 503 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (Public Law 106-181) (AIR 21) prohibits the construction or establishment of a new MSWLF within 6 statute miles of certain public-use airports. Before these prohibitions apply, both the airport and the landfill must meet the very specific conditions described below. These restrictions do not apply to airports or landfills located within the state of Alaska.

The airport must (1) have received a Federal grant(s) under 49 U.S.C. § 47101, et. seq.; (2) be under control of a public agency; (3) serve some scheduled air carrier operations conducted in aircraft with less than 60 seats; and (4) have total annual enplanements consisting of at least 51 percent of scheduled air carrier enplanements conducted in aircraft with less than 60 passenger seats.

The proposed MSWLF must (1) be within 6 miles of the airport, as measured from airport property line to MSWLF property line, and (2) have started construction or establishment on or after April 5, 2001. Public Law 106-181 only limits the construction or establishment of some new MSWLF. It does not limit the expansion, either vertical or horizontal, of existing landfills.

NOTE: Consult the most recent version of AC 150/5200-34, *Construction or Establishment of Landfills Near Public Airports*, for a more detailed discussion of these restrictions.

- b. Siting for new MSWLF not subject to AIR 21.** If an airport and MSWLF do not meet the restrictions of Public Law 106-181, the FAA recommends against locating MSWLF within the separation distances identified in Sections 1-2 through 1-4. The separation distances should be measured from the closest point of the airport's AOA to the closest planned MSWLF cell.
- c. Considerations for existing waste disposal facilities within the limits of separation criteria.** The FAA recommends against airport development projects that would increase the number of aircraft operations or accommodate larger or faster aircraft near MSWLF operations located within the separations identified in Sections 1-2 through 1-4. In addition, in accordance with 40 CFR 258.10, owners or operators of existing MSWLF units that are located within the separations listed in Sections 1-2 through 1-4 must demonstrate that the unit is designed and operated so it does not pose a bird hazard to aircraft. (See Section 4-2(b) of this AC for a discussion of this demonstration requirement.)
- d. Enclosed trash transfer stations.** Enclosed waste-handling facilities that receive garbage behind closed doors; process it via compaction, incineration, or similar manner; and remove all residue by enclosed vehicles generally are compatible with safe airport operations, provided they are not located on airport property or within the Runway Protection Zone (RPZ). These facilities should not handle or store putrescible waste outside or in a partially enclosed structure accessible to hazardous wildlife. Trash transfer facilities that are open on one or more sides; that store uncovered quantities of municipal solid waste outside, even if only for a short time; that use semi-trailers that leak or have trash clinging to the outside; or that do not control odors by ventilation and filtration systems (odor masking is not acceptable) do not meet the FAA's definition of fully enclosed trash transfer stations. The FAA considers these facilities incompatible with safe airport operations if they are located closer than the separation distances specified in Sections 1-2 through 1-4.
- e. Composting operations on or near airport property.** Composting operations that accept only yard waste (e.g., leaves, lawn clippings, or branches) generally do not attract hazardous wildlife. Sewage sludge, woodchips, and similar material are not municipal solid wastes and may be used as compost bulking agents. The compost, however, must never include food or other municipal solid waste. Composting operations should not be located on airport property. Off-airport property composting operations should be located no closer than the greater of the following distances: 1,200 feet from any AOA or the distance called for by airport design requirements (see AC 150/5300-13, *Airport Design*). This spacing should prevent material, personnel, or equipment from penetrating any Object Free Area (OFA), Obstacle Free Zone (OFZ), Threshold Siting Surface (TSS), or Clearway. Airport operators should monitor composting operations located in proximity to the airport to ensure that steam or thermal rise does not adversely affect air traffic. On-airport disposal of compost by-products should not be conducted for the reasons stated in 2-3f.

- f. **Underwater waste discharges.** The FAA recommends against the underwater discharge of any food waste (e.g., fish processing offal) within the separations identified in Sections 1-2 through 1-4 because it could attract scavenging hazardous wildlife.
- g. **Recycling centers.** Recycling centers that accept previously sorted non-food items, such as glass, newspaper, cardboard, or aluminum, are, in most cases, not attractive to hazardous wildlife and are acceptable.
- h. **Construction and demolition (C&D) debris facilities.** C&D landfills do not generally attract hazardous wildlife and are acceptable if maintained in an orderly manner, admit no putrescible waste, and are not co-located with other waste disposal operations. However, C&D landfills have similar visual and operational characteristics to putrescible waste disposal sites. When co-located with putrescible waste disposal operations, C&D landfills are more likely to attract hazardous wildlife because of the similarities between these disposal facilities. Therefore, a C&D landfill co-located with another waste disposal operation should be located outside of the separations identified in Sections 1-2 through 1-4.
- i. **Fly ash disposal.** The incinerated residue from resource recovery power/heat-generating facilities that are fired by municipal solid waste, coal, or wood is generally not a wildlife attractant because it no longer contains putrescible matter. Landfills accepting only fly ash are generally not considered to be wildlife attractants and are acceptable as long as they are maintained in an orderly manner, admit no putrescible waste of any kind, and are not co-located with other disposal operations that attract hazardous wildlife.

Since varying degrees of waste consumption are associated with general incineration (not resource recovery power/heat-generating facilities), the FAA considers the ash from general incinerators a regular waste disposal by-product and, therefore, a hazardous wildlife attractant if disposed of within the separation criteria outlined in Sections 1-2 through 1-4.

2-3. WATER MANAGEMENT FACILITIES. Drinking water intake and treatment facilities, storm water and wastewater treatment facilities, associated retention and settling ponds, ponds built for recreational use, and ponds that result from mining activities often attract large numbers of potentially hazardous wildlife. To prevent wildlife hazards, land-use developers and airport operators may need to develop management plans, in compliance with local and state regulations, to support the operation of storm water management facilities on or near all public-use airports to ensure a safe airport environment.

- a. **Existing storm water management facilities.** On-airport storm water management facilities allow the quick removal of surface water, including discharges related to aircraft deicing, from impervious surfaces, such as pavement and terminal/hangar building roofs. Existing on-airport detention ponds collect storm water, protect water quality, and control runoff. Because they slowly release water

after storms, they create standing bodies of water that can attract hazardous wildlife. Where the airport has developed a Wildlife Hazard Management Plan (WHMP) in accordance with Part 139, the FAA requires immediate correction of any wildlife hazards arising from existing storm water facilities located on or near airports, using appropriate wildlife hazard mitigation techniques. Airport operators should develop measures to minimize hazardous wildlife attraction in consultation with a wildlife damage management biologist.

Where possible, airport operators should modify storm water detention ponds to allow a maximum 48-hour detention period for the design storm. The FAA recommends that airport operators avoid or remove retention ponds and detention ponds featuring dead storage to eliminate standing water. Detention basins should remain totally dry between rainfalls. Where constant flow of water is anticipated through the basin, or where any portion of the basin bottom may remain wet, the detention facility should include a concrete or paved pad and/or ditch/swale in the bottom to prevent vegetation that may provide nesting habitat.

When it is not possible to drain a large detention pond completely, airport operators may use physical barriers, such as bird balls, wires grids, pillows, or netting, to deter birds and other hazardous wildlife. When physical barriers are used, airport operators must evaluate their use and ensure they will not adversely affect water rescue. Before installing any physical barriers over detention ponds on Part 139 airports, airport operators must get approval from the appropriate FAA Regional Airports Division Office.

The FAA recommends that airport operators encourage off-airport storm water treatment facility operators to incorporate appropriate wildlife hazard mitigation techniques into storm water treatment facility operating practices when their facility is located within the separation criteria specified in Sections 1-2 through 1-4.

- b. New storm water management facilities.** The FAA strongly recommends that off-airport storm water management systems located within the separations identified in Sections 1-2 through 1-4 be designed and operated so as not to create above-ground standing water. Stormwater detention ponds should be designed, engineered, constructed, and maintained for a maximum 48-hour detention period after the design storm and remain completely dry between storms. To facilitate the control of hazardous wildlife, the FAA recommends the use of steep-sided, rip-rap lined, narrow, linearly shaped water detention basins. When it is not possible to place these ponds away from an airport's AOA, airport operators should use physical barriers, such as bird balls, wires grids, pillows, or netting, to prevent access of hazardous wildlife to open water and minimize aircraft-wildlife interactions. When physical barriers are used, airport operators must evaluate their use and ensure they will not adversely affect water rescue. Before installing any physical barriers over detention ponds on Part 139 airports, airport operators must get approval from the appropriate FAA Regional Airports Division Office. All vegetation in or around detention basins that provide food or cover for hazardous wildlife should be eliminated. If soil conditions and other requirements allow, the FAA encourages

the use of underground storm water infiltration systems, such as French drains or buried rock fields, because they are less attractive to wildlife.

- c. Existing wastewater treatment facilities.** The FAA strongly recommends that airport operators immediately correct any wildlife hazards arising from existing wastewater treatment facilities located on or near the airport. Where required, a WHMP developed in accordance with Part 139 will outline appropriate wildlife hazard mitigation techniques. Accordingly, airport operators should encourage wastewater treatment facility operators to incorporate measures, developed in consultation with a wildlife damage management biologist, to minimize hazardous wildlife attractants. Airport operators should also encourage those wastewater treatment facility operators to incorporate these mitigation techniques into their standard operating practices. In addition, airport operators should consider the existence of wastewater treatment facilities when evaluating proposed sites for new airport development projects and avoid such sites when practicable.
- d. New wastewater treatment facilities.** The FAA strongly recommends against the construction of new wastewater treatment facilities or associated settling ponds within the separations identified in Sections 1-2 through 1-4. Appendix 1 defines wastewater treatment facility as “any devices and/or systems used to store, treat, recycle, or reclaim municipal sewage or liquid industrial wastes.” The definition includes any pretreatment involving the reduction of the amount of pollutants or the elimination of pollutants prior to introducing such pollutants into a publicly owned treatment works (wastewater treatment facility). During the site-location analysis for wastewater treatment facilities, developers should consider the potential to attract hazardous wildlife if an airport is in the vicinity of the proposed site, and airport operators should voice their opposition to such facilities if they are in proximity to the airport.
- e. Artificial marshes.** In warmer climates, wastewater treatment facilities sometimes employ artificial marshes and use submergent and emergent aquatic vegetation as natural filters. These artificial marshes may be used by some species of flocking birds, such as blackbirds and waterfowl, for breeding or roosting activities. The FAA strongly recommends against establishing artificial marshes within the separations identified in Sections 1-2 through 1-4.
- f. Wastewater discharge and sludge disposal.** The FAA recommends against the discharge of wastewater or sludge on airport property because it may improve soil moisture and quality on unpaved areas and lead to improved turf growth that can be an attractive food source for many species of animals. Also, the turf requires more frequent mowing, which in turn may mutilate or flush insects or small animals and produce straw, both of which can attract hazardous wildlife. In addition, the improved turf may attract grazing wildlife, such as deer and geese. Problems may also occur when discharges saturate unpaved airport areas. The resultant soft, muddy conditions can severely restrict or prevent emergency vehicles from reaching accident sites in a timely manner.

2-4. WETLANDS. Wetlands provide a variety of functions and can be regulated by local, state, and Federal laws. Normally, wetlands are attractive to many types of wildlife, including many which rank high on the list of hazardous wildlife species (Table 1).

NOTE: If questions exist as to whether an area qualifies as a wetland, contact the local division of the U.S. Army Corps of Engineers, the Natural Resources Conservation Service, or a wetland consultant qualified to delineate wetlands.

- a. Existing wetlands on or near airport property.** If wetlands are located on or near airport property, airport operators should be alert to any wildlife use or habitat changes in these areas that could affect safe aircraft operations. At public-use airports, the FAA recommends immediately correcting, in cooperation with local, state, and Federal regulatory agencies, any wildlife hazards arising from existing wetlands located on or near airports. Where required, a WHMP will outline appropriate wildlife hazard mitigation techniques. Accordingly, airport operators should develop measures to minimize hazardous wildlife attraction in consultation with a wildlife damage management biologist.
- b. New airport development.** Whenever possible, the FAA recommends locating new airports using the separations from wetlands identified in Sections 1-2 through 1-4. Where alternative sites are not practicable, or when airport operators are expanding an existing airport into or near wetlands, a wildlife damage management biologist, in consultation with the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and the state wildlife management agency should evaluate the wildlife hazards and prepare a WHMP that indicates methods of minimizing the hazards.
- c. Mitigation for wetland impacts from airport projects.** Wetland mitigation may be necessary when unavoidable wetland disturbances result from new airport development projects or projects required to correct wildlife hazards from wetlands. Wetland mitigation must be designed so it does not create a wildlife hazard. The FAA recommends that wetland mitigation projects that may attract hazardous wildlife be sited outside of the separations identified in Sections 1-2 through 1-4.

(1) Onsite mitigation of wetland functions. The FAA may consider exceptions to locating mitigation activities outside the separations identified in Sections 1-2 through 1-4 if the affected wetlands provide unique ecological functions, such as critical habitat for threatened or endangered species or ground water recharge, which cannot be replicated when moved to a different location. Using existing airport property is sometimes the only feasible way to achieve the mitigation ratios mandated in regulatory orders and/or settlement agreements with the resource agencies. Conservation easements are an additional means of providing mitigation for project impacts. Typically the airport operator continues to own the property, and an easement is created stipulating that the property will be maintained as habitat for state or Federally listed species.

Mitigation must not inhibit the airport operator's ability to effectively control hazardous wildlife on or near the mitigation site or effectively maintain other aspects of safe airport operations. Enhancing such mitigation areas to attract hazardous wildlife must be avoided. The FAA will review any onsite mitigation proposals to determine compatibility with safe airport operations. A wildlife damage management biologist should evaluate any wetland mitigation projects that are needed to protect unique wetland functions and that must be located in the separation criteria in Sections 1-2 through 1-4 before the mitigation is implemented. A WHMP should be developed to reduce the wildlife hazards.

(2) Offsite mitigation of wetland functions. The FAA recommends that wetland mitigation projects that may attract hazardous wildlife be sited outside of the separations identified in Sections 1-2 through 1-4 unless they provide unique functions that must remain onsite (see 2-4c(1)). Agencies that regulate impacts to or around wetlands recognize that it may be necessary to split wetland functions in mitigation schemes. Therefore, regulatory agencies may, under certain circumstances, allow portions of mitigation to take place in different locations.

(3) Mitigation banking. Wetland mitigation banking is the creation or restoration of wetlands in order to provide mitigation credits that can be used to offset permitted wetland losses. Mitigation banking benefits wetland resources by providing advance replacement for permitted wetland losses; consolidating small projects into larger, better-designed and managed units; and encouraging integration of wetland mitigation projects with watershed planning. This last benefit is most helpful for airport projects, as wetland impacts mitigated outside of the separations identified in Sections 1-2 through 1-4 can still be located within the same watershed. Wetland mitigation banks meeting the separation criteria offer an ecologically sound approach to mitigation in these situations. Airport operators should work with local watershed management agencies or organizations to develop mitigation banking for wetland impacts on airport property.

2-5. DREDGE SPOIL CONTAINMENT AREAS. The FAA recommends against locating dredge spoil containment areas (also known as Confined Disposal Facilities) within the separations identified in Sections 1-2 through 1-4 if the containment area or the spoils contain material that would attract hazardous wildlife.

2-6. AGRICULTURAL ACTIVITIES. Because most, if not all, agricultural crops can attract hazardous wildlife during some phase of production, the FAA recommends against the used of airport property for agricultural production, including hay crops, within the separations identified in Sections 1-2 through 1-4. . If the airport has no financial alternative to agricultural crops to produce income necessary to maintain the viability of the airport, then the airport shall follow the crop distance guidelines listed in the table titled "Minimum Distances between Certain Airport Features and Any On-Airport Agricultural Crops" found in AC 150/5300-13, *Airport Design*, Appendix 17. The cost of wildlife control and potential accidents should be weighed against the income produced by the on-airport crops when deciding whether to allow crops on the airport.

- a. Livestock production.** Confined livestock operations (i.e., feedlots, dairy operations, hog or chicken production facilities, or egg laying operations) often attract flocking birds, such as starlings, that pose a hazard to aviation. Therefore, The FAA recommends against such facilities within the separations identified in Sections 1-2 through 1-4. Any livestock operation within these separations should have a program developed to reduce the attractiveness of the site to species that are hazardous to aviation safety. Free-ranging livestock must not be grazed on airport property because the animals may wander onto the AOA. Furthermore, livestock feed, water, and manure may attract birds.
- b. Aquaculture.** Aquaculture activities (i.e. catfish or trout production) conducted outside of fully enclosed buildings are inherently attractive to a wide variety of birds. Existing aquaculture facilities/activities within the separations listed in Sections 1-2 through 1-4 must have a program developed to reduce the attractiveness of the sites to species that are hazardous to aviation safety. Airport operators should also oppose the establishment of new aquaculture facilities/activities within the separations listed in Sections 1-2 through 1-4.
- c. Alternative uses of agricultural land.** Some airports are surrounded by vast areas of farmed land within the distances specified in Sections 1-2 through 1-4. Seasonal uses of agricultural land for activities such as hunting can create a hazardous wildlife situation. In some areas, farmers will rent their land for hunting purposes. Rice farmers, for example, flood their land during waterfowl hunting season and obtain additional revenue by renting out duck blinds. The duck hunters then use decoys and call in hundreds, if not thousands, of birds, creating a tremendous threat to aircraft safety. A wildlife damage management biologist should review, in coordination with local farmers and producers, these types of seasonal land uses and incorporate them into the WHMP.

2-7. GOLF COURSES, LANDSCAPING AND OTHER LAND-USE CONSIDERATIONS.

- a. Golf courses.** The large grassy areas and open water found on most golf courses are attractive to hazardous wildlife, particularly Canada geese and some species of gulls. These species can pose a threat to aviation safety. The FAA recommends against construction of new golf courses within the separations identified in Sections 1-2 through 1-4. Existing golf courses located within these separations must develop a program to reduce the attractiveness of the sites to species that are hazardous to aviation safety. Airport operators should ensure these golf courses are monitored on a continuing basis for the presence of hazardous wildlife. If hazardous wildlife is detected, corrective actions should be immediately implemented.
- b. Landscaping and landscape maintenance.** Depending on its geographic location, landscaping can attract hazardous wildlife. The FAA recommends that airport operators approach landscaping with caution and confine it to airport areas not associated with aircraft movements. A wildlife damage management biologist should review all landscaping plans. Airport operators should also monitor all landscaped areas on a continuing basis for the presence of hazardous wildlife. If

hazardous wildlife is detected, corrective actions should be immediately implemented.

Turf grass areas can be highly attractive to a variety of hazardous wildlife species. Research conducted by the USDA Wildlife Services' National Wildlife Research Center has shown that no one grass management regime will deter all species of hazardous wildlife in all situations. In cooperation with wildlife damage management biologist, airport operators should develop airport turf grass management plans on a prescription basis, depending on the airport's geographic locations and the type of hazardous wildlife likely to frequent the airport

Airport operators should ensure that plant varieties attractive to hazardous wildlife are not used on the airport. Disturbed areas or areas in need of re-vegetating should not be planted with seed mixtures containing millet or any other large-seed producing grass. For airport property already planted with seed mixtures containing millet, rye grass, or other large-seed producing grasses, the FAA recommends disking, plowing, or another suitable agricultural practice to prevent plant maturation and seed head production. Plantings should follow the specific recommendations for grass management and seed and plant selection made by the State University Cooperative Extension Service, the local office of Wildlife Services, or a qualified wildlife damage management biologist. Airport operators should also consider developing and implementing a preferred/prohibited plant species list, reviewed by a wildlife damage management biologist, which has been designed for the geographic location to reduce the attractiveness to hazardous wildlife for landscaping airport property.

- c. Airports surrounded by wildlife habitat.** The FAA recommends that operators of airports surrounded by woodlands, water, or wetlands refer to Section 2.4 of this AC. Operators of such airports should provide for a Wildlife Hazard Assessment (WHA) conducted by a wildlife damage management biologist. This WHA is the first step in preparing a WHMP, where required.
- d. Other hazardous wildlife attractants.** Other specific land uses or activities (e.g., sport or commercial fishing, shellfish harvesting, etc.), perhaps unique to certain regions of the country, have the potential to attract hazardous wildlife. Regardless of the source of the attraction, when hazardous wildlife is noted on a public-use airport, airport operators must take prompt remedial action(s) to protect aviation safety.

2-8. SYNERGISTIC EFFECTS OF SURROUNDING LAND USES. There may be circumstances where two (or more) different land uses that would not, by themselves, be considered hazardous wildlife attractants or that are located outside of the separations identified in Sections 1-2 through 1-4 that are in such an alignment with the airport as to create a wildlife corridor directly through the airport and/or surrounding airspace. An example of this situation may involve a lake located outside of the separation criteria on the east side of an airport and a large hayfield on the west side of an airport, land uses that together could create a flyway for Canada geese directly across the airspace of the airport. There are numerous examples of such situations;

therefore, airport operators and the wildlife damage management biologist must consider the entire surrounding landscape and community when developing the WHMP.

SECTION 3.

PROCEDURES FOR WILDLIFE HAZARD MANAGEMENT BY OPERATORS OF PUBLIC-USE AIRPORTS.

3.1. INTRODUCTION. In recognition of the increased risk of serious aircraft damage or the loss of human life that can result from a wildlife strike, the FAA may require the development of a Wildlife Hazard Management Plan (WHMP) when specific triggering events occur on or near the airport. Part 139.337 discusses the specific events that trigger a Wildlife Hazard Assessment (WHA) and the specific issues that a WHMP must address for FAA approval and inclusion in an Airport Certification Manual.

3.2. COORDINATION WITH USDA WILDLIFE SERVICES OR OTHER QUALIFIED WILDLIFE DAMAGE MANAGEMENT BIOLOGISTS. The FAA will use the Wildlife Hazard Assessment (WHA) conducted in accordance with Part 139 to determine if the airport needs a WHMP. Therefore, persons having the education, training, and expertise necessary to assess wildlife hazards must conduct the WHA. The airport operator may look to Wildlife Services or to qualified private consultants to conduct the WHA. When the services of a wildlife damage management biologist are required, the FAA recommends that land-use developers or airport operators contact a consultant specializing in wildlife damage management or the appropriate state director of Wildlife Services.

NOTE: Telephone numbers for the respective USDA Wildlife Services state offices can be obtained by contacting USDA Wildlife Services Operational Support Staff, 4700 River Road, Unit 87, Riverdale, MD, 20737-1234, Telephone (301) 734-7921, Fax (301) 734-5157 (<http://www.aphis.usda.gov/ws/>).

3-3. WILDLIFE HAZARD MANAGEMENT AT AIRPORTS: A MANUAL FOR AIRPORT PERSONNEL. This manual, prepared by FAA and USDA Wildlife Services staff, contains a compilation of information to assist airport personnel in the development, implementation, and evaluation of WHMPs at airports. The manual includes specific information on the nature of wildlife strikes, legal authority, regulations, wildlife management techniques, WHAs, WHMPs, and sources of help and information. The manual is available in three languages: English, Spanish, and French. It can be viewed and downloaded free of charge from the FAA's wildlife hazard mitigation web site: <http://wildlife-mitigation.tc.FAA.gov/>. This manual only provides a starting point for addressing wildlife hazard issues at airports. Hazardous wildlife management is a complex discipline and conditions vary widely across the United States. Therefore, qualified wildlife damage management biologists must direct the development of a WHMP and the implementation of management actions by airport personnel.

There are many other resources complementary to this manual for use in developing and implementing WHMPs. Several are listed in the manual's bibliography.

3-4. WILDLIFE HAZARD ASSESSMENTS, TITLE 14, CODE OF FEDERAL REGULATIONS, PART 139. Part 139.337(b) requires airport operators to conduct a Wildlife Hazard Assessment (WHA) when certain events occur on or near the airport.

Part 139.337 (c) provides specific guidance as to what facts must be addressed in a WHA.

3-5. WILDLIFE HAZARD MANAGEMENT PLAN (WHMP). The FAA will consider the results of the WHA, along with the aeronautical activity at the airport and the views of the airport operator and airport users, in determining whether a formal WHMP is needed, in accordance with Part 139.337. If the FAA determines that a WHMP is needed, the airport operator must formulate and implement a WHMP, using the WHA as the basis for the plan.

The goal of an airport's Wildlife Hazard Management Plan is to minimize the risk to aviation safety, airport structures or equipment, or human health posed by populations of hazardous wildlife on and around the airport.

The WHMP must identify hazardous wildlife attractants on or near the airport and the appropriate wildlife damage management techniques to minimize the wildlife hazard. It must also prioritize the management measures.

3-6. LOCAL COORDINATION. The establishment of a Wildlife Hazards Working Group (WHWG) will facilitate the communication, cooperation, and coordination of the airport and its surrounding community necessary to ensure the effectiveness of the WHMP. The cooperation of the airport community is also necessary when new projects are considered. Whether on or off the airport, the input from all involved parties must be considered when a potentially hazardous wildlife attractant is being proposed. Airport operators should also incorporate public education activities with the local coordination efforts because some activities in the vicinity of your airport, while harmless under normal leisure conditions, can attract wildlife and present a danger to aircraft. For example, if public trails are planned near wetlands or in parks adjoining airport property, the public should know that feeding birds and other wildlife in the area may pose a risk to aircraft.

Airport operators should work with local and regional planning and zoning boards so as to be aware of proposed land-use changes, or modification of existing land uses, that could create hazardous wildlife attractants within the separations identified in Sections 1-2 through 1-4. Pay particular attention to proposed land uses involving creation or expansion of waste water treatment facilities, development of wetland mitigation sites, or development or expansion of dredge spoil containment areas. At the very least, airport operators must ensure they are on the notification list of the local planning board or equivalent review entity for all communities located within 5 miles of the airport, so they will receive notification of any proposed project and have the opportunity to review it for attractiveness to hazardous wildlife.

3-7 COORDINATION/NOTIFICATION OF AIRMEN OF WILDLIFE HAZARDS. If an existing land-use practice creates a wildlife hazard and the land-use practice or wildlife hazard cannot be immediately eliminated, airport operators must issue a Notice to Airmen (NOTAM) and encourage the land-owner or manager to take steps to control the wildlife hazard and minimize further attraction.

SECTION 4.

FAA NOTIFICATION AND REVIEW OF PROPOSED LAND-USE PRACTICE CHANGES IN THE VICINITY OF PUBLIC-USE AIRPORTS

4-1. FAA REVIEW OF PROPOSED LAND-USE PRACTICE CHANGES IN THE VICINITY OF PUBLIC-USE AIRPORTS.

- a. The FAA discourages the development of waste disposal and other facilities, discussed in Section 2, located within the 5,000/10,000-foot criteria specified in Sections 1-2 through 1-4.
- b. For projects that are located outside the 5,000/10,000-foot criteria but within 5 statute miles of the airport's AOA, the FAA may review development plans, proposed land-use changes, operational changes, or wetland mitigation plans to determine if such changes present potential wildlife hazards to aircraft operations. The FAA considers sensitive airport areas as those that lie under or next to approach or departure airspace. This brief examination should indicate if further investigation is warranted.
- c. Where a wildlife damage management biologist has conducted a further study to evaluate a site's compatibility with airport operations, the FAA may use the study results to make a determination.

4-2. WASTE MANAGEMENT FACILITIES.

- a. **Notification of new/expanded project proposal.** Section 503 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (Public Law 106-181) limits the construction or establishment of new MSWLF within 6 statute miles of certain public-use airports, when both the airport and the landfill meet very specific conditions. See Section 2-2 of this AC and AC 150/5200-34 for a more detailed discussion of these restrictions.

The Environmental Protection Agency (EPA) requires any MSWLF operator proposing a new or expanded waste disposal operation within 5 statute miles of a runway end to notify the appropriate FAA Regional Airports Division Office and the airport operator of the proposal (40 CFR 258, *Criteria for Municipal Solid Waste Landfills*, Section 258.10, *Airport Safety*). The EPA also requires owners or operators of new MSWLF units, or lateral expansions of existing MSWLF units, that are located within 10,000 feet of any airport runway end used by turbojet aircraft, or within 5,000 feet of any airport runway end used only by piston-type aircraft, to demonstrate successfully that such units are not hazards to aircraft. (See 4-2.b below.)

When new or expanded MSWLF are being proposed near airports, MSWLF operators must notify the airport operator and the FAA of the proposal as early as possible pursuant to 40 CFR 258.

- b. Waste handling facilities within separations identified in Sections 1-2 through 1-4.** To claim successfully that a waste-handling facility sited within the separations identified in Sections 1-2 through 1-4 does not attract hazardous wildlife and does not threaten aviation, the developer must establish convincingly that the facility will not handle putrescible material other than that as outlined in 2-2.d. The FAA strongly recommends against any facility other than that as outlined in 2-2.d (enclosed transfer stations). The FAA will use this information to determine if the facility will be a hazard to aviation.
- c. Putrescible-Waste Facilities.** In their effort to satisfy the EPA requirement, some putrescible-waste facility proponents may offer to undertake experimental measures to demonstrate that their proposed facility will not be a hazard to aircraft. To date, no such facility has been able to demonstrate an ability to reduce and sustain hazardous wildlife to levels that existed before the putrescible-waste landfill began operating. For this reason, demonstrations of experimental wildlife control measures may not be conducted within the separation identified in Sections 1-2 through 1-4.

4-3. OTHER LAND-USE PRACTICE CHANGES. As a matter of policy, the FAA encourages operators of public-use airports who become aware of proposed land use practice changes that may attract hazardous wildlife within 5 statute miles of their airports to promptly notify the FAA. The FAA also encourages proponents of such land use changes to notify the FAA as early in the planning process as possible. Advanced notice affords the FAA an opportunity (1) to evaluate the effect of a particular land-use change on aviation safety and (2) to support efforts by the airport sponsor to restrict the use of land next to or near the airport to uses that are compatible with the airport.

The airport operator, project proponent, or land-use operator may use FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, or other suitable documents similar to FAA Form 7460-1 to notify the appropriate FAA Regional Airports Division Office. Project proponents can contact the appropriate FAA Regional Airports Division Office for assistance with the notification process.

It is helpful if the notification includes a 15-minute quadrangle map of the area identifying the location of the proposed activity. The land-use operator or project proponent should also forward specific details of the proposed land-use change or operational change or expansion. In the case of solid waste landfills, the information should include the type of waste to be handled, how the waste will be processed, and final disposal methods.

- a. Airports that have received Federal grant-in-aid assistance.** Airports that have received Federal grant-in-aid assistance are required by their grant assurances to take appropriate actions to restrict the use of land next to or near the airport to uses that are compatible with normal airport operations. The FAA recommends that airport operators to the extent practicable oppose off-airport land-use changes or practices within the separations identified in Sections 1-2 through 1-4 that may attract hazardous wildlife. Failure to do so may lead to noncompliance with applicable grant assurances. The FAA will not approve the placement of airport

development projects pertaining to aircraft movement in the vicinity of hazardous wildlife attractants without appropriate mitigating measures. Increasing the intensity of wildlife control efforts is not a substitute for eliminating or reducing a proposed wildlife hazard. Airport operators should identify hazardous wildlife attractants and any associated wildlife hazards during any planning process for new airport development projects.

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APPENDIX 1. DEFINITIONS OF TERMS USED IN THIS ADVISORY CIRCULAR.

1. **GENERAL.** This appendix provides definitions of terms used throughout this AC.

1. **Air operations area.** Any area of an airport used or intended to be used for landing, takeoff, or surface maneuvering of aircraft. An air operations area includes such paved areas or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiways, or apron.
2. **Airport operator.** The operator (private or public) or sponsor of a public-use airport.
3. **Approach or departure airspace.** The airspace, within 5 statute miles of an airport, through which aircraft move during landing or takeoff.
4. **Bird balls.** High-density plastic floating balls that can be used to cover ponds and prevent birds from using the sites.
5. **Certificate holder.** The holder of an Airport Operating Certificate issued under Title 14, Code of Federal Regulations, Part 139.
6. **Construct a new MSWLF.** To begin to excavate, grade land, or raise structures to prepare a municipal solid waste landfill as permitted by the appropriate regulatory or permitting agency.
7. **Detention ponds.** Storm water management ponds that hold storm water for short periods of time, a few hours to a few days.
8. **Establish a new MSWLF.** When the first load of putrescible waste is received on-site for placement in a prepared municipal solid waste landfill.
9. **Fly ash.** The fine, sand-like residue resulting from the complete incineration of an organic fuel source. Fly ash typically results from the combustion of coal or waste used to operate a power generating plant.
10. **General aviation aircraft.** Any civil aviation aircraft not operating under 14 CFR Part 119, Certification: Air Carriers and Commercial Operators.
11. **Hazardous wildlife.** Species of wildlife (birds, mammals, reptiles), including feral animals and domesticated animals not under control, that are associated with aircraft strike problems, are capable of causing structural damage to airport facilities, or act as attractants to other wildlife that pose a strike hazard
12. **Municipal Solid Waste Landfill (MSWLF).** A publicly or privately owned discrete area of land or an excavation that receives household waste and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 CFR § 257.2. An MSWLF may receive

other types wastes, such as commercial solid waste, non-hazardous sludge, small-quantity generator waste, and industrial solid waste, as defined under 40 CFR § 258.2. An MSWLF can consist of either a stand alone unit or several cells that receive household waste.

13. **New MSWLF.** A municipal solid waste landfill that was established or constructed after April 5, 2001.
14. **Piston-powered aircraft.** Fixed-wing aircraft powered by piston engines.
15. **Piston-use airport.** Any airport that does not sell Jet-A fuel for fixed-wing turbine-powered aircraft, and primarily serves fixed-wing, piston-powered aircraft. Incidental use of the airport by turbine-powered, fixed-wing aircraft would not affect this designation. However, such aircraft should not be based at the airport.
16. **Public agency.** A State or political subdivision of a State, a tax-supported organization, or an Indian tribe or pueblo (49 U.S.C. § 47102(19)).
17. **Public airport.** An airport used or intended to be used for public purposes that is under the control of a public agency; and of which the area used or intended to be used for landing, taking off, or surface maneuvering of aircraft is publicly owned (49 U.S.C. § 47102(20)).
18. **Public-use airport.** An airport used or intended to be used for public purposes, and of which the area used or intended to be used for landing, taking off, or surface maneuvering of aircraft may be under the control of a public agency or privately owned and used for public purposes (49 U.S.C. § 47102(21)).
19. **Putrescible waste.** Solid waste that contains organic matter capable of being decomposed by micro-organisms and of such a character and proportion as to be capable of attracting or providing food for birds (40 CFR §257.3-8).
20. **Putrescible-waste disposal operation.** Landfills, garbage dumps, underwater waste discharges, or similar facilities where activities include processing, burying, storing, or otherwise disposing of putrescible material, trash, and refuse.
21. **Retention ponds.** Storm water management ponds that hold water for several months.
22. **Runway protection zone (RPZ).** An area off the runway end to enhance the protection of people and property on the ground (see AC 150/5300-13). The dimensions of this zone vary with the airport design, aircraft, type of operation, and visibility minimum.
23. **Scheduled air carrier operation.** Any common carriage passenger-carrying operation for compensation or hire conducted by an air carrier or commercial

operator for which the air carrier, commercial operator, or their representative offers in advance the departure location, departure time, and arrival location. It does not include any operation that is conducted as a supplemental operation under 14 CFR Part 119 or as a public charter operation under 14 CFR Part 380 (14 CFR § 119.3).

- 24. Sewage sludge.** Any solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works. (40 CFR 257.2)
- 25. Sludge.** Any solid, semi-solid, or liquid waste generated from a municipal, commercial or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effect. (40 CFR 257.2)
- 26. Solid waste.** Any garbage, refuse, sludge, from a waste treatment plant, water supply treatment plant or air pollution control facility and other discarded material, including, solid liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage, or solid or dissolved material in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, special nuclear, or by product material as defined by the Atomic Energy Act of 1954, as amended, (68 Stat. 923). (40 CFR 257.2)
- 27. Turbine-powered aircraft.** Aircraft powered by turbine engines including turbojets and turboprops but excluding turbo-shaft rotary-wing aircraft.
- 28. Turbine-use airport.** Any airport that sells Jet-A fuel for fixed-wing turbine-powered aircraft.
- 29. Wastewater treatment facility.** Any devices and/or systems used to store, treat, recycle, or reclaim municipal sewage or liquid industrial wastes, including Publicly Owned Treatment Works (POTW), as defined by Section 212 of the Federal Water Pollution Control Act (P.L. 92-500) as amended by the Clean Water Act of 1977 (P.L. 95-576) and the Water Quality Act of 1987 (P.L. 100-4). This definition includes any pretreatment involving the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW. (See 40 CFR Section 403.3 (q), (r), & (s)).

- 30. Wildlife.** Any wild animal, including without limitation any wild mammal, bird, reptile, fish, amphibian, mollusk, crustacean, arthropod, coelenterate, or other invertebrate, including any part, product, egg, or offspring thereof (50 CFR 10.12, *Taking, Possession, Transportation, Sale, Purchase, Barter, Exportation, and Importation of Wildlife and Plants*). As used in this AC, wildlife includes feral animals and domestic animals out of the control of their owners (14 CFR Part 139, Certification of Airports).
- 31. Wildlife attractants.** Any human-made structure, land-use practice, or human-made or natural geographic feature that can attract or sustain hazardous wildlife within the landing or departure airspace or the airport's AOA. These attractants can include architectural features, landscaping, waste disposal sites, wastewater treatment facilities, agricultural or aquaculture activities, surface mining, or wetlands.
- 32. Wildlife hazard.** A potential for a damaging aircraft collision with wildlife on or near an airport.
- 33. Wildlife strike.** A wildlife strike is deemed to have occurred when:
- a. A pilot reports striking 1 or more birds or other wildlife;
 - b. Aircraft maintenance personnel identify aircraft damage as having been caused by a wildlife strike;
 - c. Personnel on the ground report seeing an aircraft strike 1 or more birds or other wildlife;
 - d. Bird or other wildlife remains, whether in whole or in part, are found within 200 feet of a runway centerline, unless another reason for the animal's death is identified;
 - e. The animal's presence on the airport had a significant negative effect on a flight (i.e., aborted takeoff, aborted landing, high-speed emergency stop, aircraft left pavement area to avoid collision with animal) (Transport Canada, Airports Group, *Wildlife Control Procedures Manual*, Technical Publication 11500E, 1994).

2. RESERVED.

CERTALERT

ADVISORY CAUTIONARY NON-DIRECTIVE
AIRPORT SAFETY AND OPERATIONS DIVISION AAS-300

FOR INFORMATION, CONTACT Ed Cleary, AAS-300, (202) 267-3389

Date: 11/21/2006 **No. 06-07**
To: Airport Operators, FAA Airport Certification Safety Inspectors
Topic: Requests by State Wildlife Agencies to Facilitate and Encourage Habitat for State-Listed Threatened and Endangered Species and Species of Special Concern on Airports

PURPOSE:

This Certalert describes procedures for responding to requests by state wildlife agencies to facilitate and encourage habitats for state-listed threatened and endangered species or species of special concern that occur on airports and may pose a threat to aviation safety. This Certalert does not apply to federally listed threatened and endangered species. Federal Aviation Administration (FAA) guidance on dealing with federally listed threatened and endangered species can be found in FAA Order 1050.1E, *Environmental Impacts - Policies and Procedures*, Appendix A, Section 8.

BACKGROUND:

An airport's air operations area (AOA) is an artificial environment that has been created and maintained for aircraft operations. Because an AOA can be markedly different from the surrounding native landscapes, it may attract wildlife species that do not normally occur, or that occur only in low numbers in the area. Some of the grassland species attracted to an airport's AOA are at the edge of their natural ranges, but are attracted to habitat features found in the airport environment. Also, some wildlife species may occur on the airport in higher numbers than occur naturally in the region because the airport offers habitat features the species prefer. Some of these wildlife species are state-listed threatened and endangered species or have been designated by state resource agencies as species of special concern.

Many state wildlife agencies have requested that airport operators facilitate and encourage habitat on airports for state-listed threatened and endangered species or species of special concern. Airport operators should exercise great caution in adopting new management techniques; new techniques may increase wildlife hazards and be inconsistent with safe airport operations. Managing the on-airport environment to facilitate or encourage the presence of hazardous wildlife species can create conditions that are incompatible with, or pose a threat to, aviation safety.

DISCUSSION:

Hazardous wildlife are those species of wildlife (50 CFR 10.12), including feral animals and domesticated animals not under control (14 CFR 139.5, Definitions), that are associated with aircraft strike problems, are capable of causing structural damage to airport facilities, or act as attractants to other wildlife that pose a strike hazard. (FAA Advisory Circular 150/5200-33A, *Hazardous Wildlife Attractants on or Near Airports*, July 27, 2004.) Not all state-listed threatened and endangered species or species of concern pose a direct threat to aviation safety. However, these species may pose an indirect threat and be hazardous because they attract other wildlife species or support prey species attractive to other species that are directly hazardous. Also, the habitat management practices that benefit these state-listed threatened and endangered species and species of special concern may attract other hazardous wildlife species. For example, the grassland habitat preferred by grasshopper sparrows, which are listed as threatened in New York¹, also supports a wide variety of insects and small mammals. These insects and small mammals are an indirect threat to aviation safety because they are very attractive to hawks, owls, gulls and other birds. It is these large birds that can pose a direct threat to aviation safety. On-airport habitat and wildlife management practices designed to benefit wildlife that directly or indirectly create safety hazard where none existed before are incompatible with safe airport operations.

Airport operators must decline to adopt habitat management techniques that jeopardize aviation safety. Adopting such techniques could place them in violation of their obligations and subject to an FAA enforcement action and possible civil penalties under 49 U.S.C. §44706, as implemented by 14 CFR § 139.337. In particular, an airport operator that has received federal grant-in-aid assistance is obligated through its grant assurances to maintain compatible land uses. Failure to do so may lead to noncompliance with its grant obligations. Further, airports that serve commercial air carriers are required to be certificated under 49 U.S.C. §44706, as implemented by 14 CFR Part 139. Title 14 CFR § 139.337(a) requires airport operators holding a Part 139 certificate to “take immediate action to alleviate wildlife hazards whenever they are detected.” Accordingly, Part 139-certificated airport operators should make state wildlife agencies aware of the airport’s FAA-approved Wildlife Hazard Management Plan (WHMP), AC 150/5200-33A, and the joint FAA-Wildlife Services manual, *Wildlife Hazard Management at Airports* (6/05) (joint FAA/WS manual). Before making any changes in land management practices, the airport operator should carefully review the above documents to assure that any changes are consistent with its obligations under federal law to control wildlife hazards and attractants in the AOA. For ease of reference, the key land management practices bearing upon aviation safety are summarized and highlighted below:

RECOMMENDATIONS:

1. Adhere to the turf, landscaping, and habitat management practices described in the airport’s WHMP, AC 150/5200-33A, and the joint FAA/WS manual. Do not change these practices specifically to encourage the presence of, or to attract hazardous wildlife species even if the species are state-listed or of special concern.
 - a. Do not deliberately preserve or develop on-airport wildlife habitats such as wetlands, forest, brush, or native grasslands having characteristics that attract

¹ Those species listed by states as threatened, endangered, or species of special concern vary from state to state. For information on state listed species, contact the appropriate state wildlife management Agency.

hazardous wildlife (See the airport's WHMP, AC 150/5200-33A, and the joint FAA/WS Manual.)

- b. Manage the airport's AOA vegetation as recommended in the airport's WHMP, AC 150/5200-33A, and the joint FAA/WS manual.
2. Adhere to the wildlife harassment and repellent techniques described in the airport's WHMP, AC 150/5200-33A, and the joint FAA/WS manual to prevent hazardous wildlife species from becoming established and complicating the ability to adhere to prescribed habitat management practices.
3. Do not allow hazardous state-listed threatened and endangered species or species of special concern to remain on the airport if it requires managing the airport environment contrary to FAA recommendations.
4. Reevaluate existing and evaluate future agreements with federal, state, or local wildlife agencies where the terms of the agreements are or may be contrary to federal obligations concerning hazardous wildlife on or near public-use airports and aviation safety.
5. Whenever practicable, wetland mitigation for state-listed threatened and endangered species or species of special concern should be sited off-airport (see AC 150/5200-33A, §2-4.c (1)).

OSB

11/21/2006

Ben Castellano, Manager
Airport Safety & Operations Division

Date

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Exhibit D

Technical Memorandum

Project: Atlantic City International Airport – Grassland Conservation and Management Area

Date: August 31, 2017

Route to: Dana Heffernan, P.E. AECOM

Subject: Wildlife Hazard Attractant and Management Review

Environmental Resource Solutions, Inc. (ERS) has prepared this memorandum to provide AECOM with a review of the current wildlife hazard management concerns related to the Grassland Conservation and Management Area (GCMA) at Atlantic City International Airport (ACY). Recommendations in this memorandum related to the GCMA have been developed by a Qualified Airport Wildlife Biologist (QAWB).¹

1.0 Introduction

ACY is a public use, commercial service airport located in Egg Harbor Township, New Jersey. The airport property is owned by the Federal Aviation Administration (FAA) and the commercial service airport is leased/operated by the South Jersey Transportation Authority (SJTA). SJTA is responsible for the oversight and implementation of the airport's wildlife hazard management program. SJTA entered into a Cooperative Service Agreement with the U.S. Department of Agriculture Animal and Plant Health Inspection Services (USDA APHIS) Wildlife Services (WS) to conduct a Wildlife Hazard Assessment (WHA), develop a Wildlife Hazard Management Plan (WHMP), and currently, there is a full-time USDA WS wildlife biologist on-site to conduct wildlife control activities.²

The SJTA is required to manage 290 acres of the northwest corner of the airport operations area (AOA) as a conservation area for state-listed bird species established in a Memorandum of Agreement (MOA) with The New Jersey Pinelands Commission associated with the 2003 Final Environmental Impact Statement (FEIS) for the airport's short-term development plans.³ Exhibit A provides the location of the GCMA. The conservation area was established to provide mitigation for potential impacts to state-listed species including the upland sandpiper (*Bartramia longicauda*) and grasshopper sparrow (*Ammodramus savannarum*). The MOA specifically states: "A 290-acre Grasslands Conservation and Management Area will be established and managed in a manner that is conducive to the long-term conservation of the upland sandpiper." Current management of this area primarily consists of implementing a "no-mowing" policy from April 15 – August 15 which corresponds to the upland sandpiper nesting season. Per the MOA, the GCMA vegetation height should be managed 10-16 inches from May-August and provide a grass, forb, and herbaceous mix of cover with no less than 20% bare ground. When established, portions of the GCMA were also planted with wild

¹ Sarah Brammell with ERS, Inc has conducted a site visit at ACY and prepared this technical memorandum. Ms. Brammell meets the Federal Aviation Administration's (FAA) requirements of a QAWB as stated in FAA Advisory Circular 150/5200-33A (01/31/2012).

² USDA WS is currently contracted and joint funded by SJTA and the Air National Guard.

³ U.S. Department of Transportation, Federal Aviation Administration (2003). Final Environmental Impact Statement: Atlantic City International Airport: Airport Layout Plan Approval; Jamaica, New York, Eastern Region Airports Division FAA.

indigo (*Baptisia spp.*) and bush blueberry (*Vaccinium spp.*) to provide the state-listed frosted elfin butterfly (*Callophrys irus*) host plants for ovipositing (laying eggs).

Since the MOA was implemented, almost 15 years ago, FAA has released new guidance regarding state-listed species at airports, 15 years of wildlife strike reports have been documented in the FAA National Wildlife Strike Database, and concerns have been raised over the potential wildlife attractant created by the GCMA on the airfield. Even though the GCMA was specifically established to attract upland sandpipers during their nesting season, there has been an observed decline in nesting sandpipers at ACY over the past 15 years. In addition, since the establishment of the GCMA there has been an increase in aircraft/bird strikes involving upland sandpipers and grasshopper sparrows (both state-listed species) as well as other species, potentially attracted to the GCMA habitat, presenting a higher risk of damaging strikes. As a result, the MOA conservation measures and environmental commitment associated with the GCMA and management for state-listed species on the airfield should be re-examined. Reviewers should also consider the original intent of the conservation easement for long-term management (including promoting nesting) of state-listed species. Since the establishment of the GCMA, at least 20 grasshopper sparrows and 8 upland sandpipers have been killed due to wildlife/aircraft strikes at ACY. Placing state-listed species in an unsafe wildlife environment, such as the airfield, directly contradicts the intent and efficacy of the initial conservation goal. This technical memorandum summarizes the information reviewed by the QAWB specific to the GCMA and outlines proposed recommendations to help reduce the threat of wildlife strikes to aviation.

2.0 Regional and Airport Setting

Regional Setting

ACY is located in southern New Jersey approximately 5 miles from Absecon Bay (intracoastal waterways) and 10 miles from Atlantic City Beach along the Atlantic Ocean. While the airport is surrounded by developed, densely populated areas near Atlantic City, there are large tracts of undeveloped lands (including wildlife management areas) west of the airport. There are several parks, conservation areas, and National Wildlife Refuges along the intracoastal waterways east of the airport. The southern portion of the Edwin B. Forsythe National Wildlife Refuge, which totals 47,000 acres along a 50-mile section of the New Jersey shoreline is located approximately 5 miles east of the airport. Cape May National Wildlife Refuge, well-known for its large flocks of migratory shorebirds and waterfowl, is located approximately 20 miles southwest of the airport. In regards to regional wildlife influences, ACY is situated along the Atlantic Flyway for migratory birds. Waterfowl, raptors, shorebirds, wading birds, and flocking passerines all use this flyway during spring and fall migration.

Airport Setting

The airport property is comprised of approximately 5,500 acres. **Exhibit B** provides an overview of the airport's property and facilities. The central portion of the property is cleared for aviation use while the majority of undeveloped land is forested. The FAA William J. Hughes Technical Center (Tech Center) laboratory, office buildings and testing grounds are located along the southern boundary of the airport property. Additional airport tenants include the New Jersey Air National Guard 177th Fighter Wing (NJ ANG 177 FW), U.S. Coast Guard, Department of Homeland Security, cargo operators, general aviation fixed-base operator (FBO), corporate clients and other aviation related businesses. The commercial service terminal, ramp, and associated infrastructure is located in the southeast quadrant of the airfield. The Atlantic City Reservoir is also located in the southeast corner of the airport property.

Airfield infrastructure includes an intersecting runway system with two runways. The primary use runway, Runway 13-31, is 10,000 feet and the crosswind runway, Runway 4-22, is 6,144 feet. Runway 13-31 has precision instrument approaches and is equipped with an Instrument Landing System (ILS). Runway 4-22 has non-precision approaches with PAPI (Runway 4) and VASI (Runway 22) approach lighting. Both runways have full-length taxiways with multiple taxiway connectors. The AOA is completely fenced and include portions that were built specifically to exclude wildlife. The wildlife exclusion fence is 11 feet tall with a 3-strand barbed wire outrigger to deter white-tailed deer and coyotes.

ACY has approximately 70,000 annual aircraft operations. **Table 1** provides the 2016 Air Traffic Data System report for ACY. Military operations account for approximately 50% of all operations at ACY.

Table 1. ACY 2016 Annual Air Operations								
Itinerant					Local			Total Operations
Air Carrier	Air Taxi	General Aviation	Military	Total Itinerant	Civil	Military	Total Local	
7,836	5,525	17,057	19,074	49,492	5,067	15,888	20,955	70,447
Sources: Air Traffic Activity System (ATADS) https://aspm.faa.gov/opsnet/sys/Main.asp								

In regard to wildlife hazards and risk posed to aviation, it is important to understand the types of aircraft using the airfield and their flight profile. A variety of aircraft operate at ACY including:

- Spirit (commercial service) aircraft fleet includes Airbus A319, A320, and A321
- Air Taxi aircraft include turbo prop jets, piston powered aircraft, and assorted business jets.
- General Aviation aircraft range from single engine light airplanes to business jets and helicopters.
- Military – The NJ ANG 177 FW currently operates F-16 Fighting Falcons (single engine supersonic fighter aircraft). The U.S. Coast Guard Air Station Atlantic City operates HH-65D and MHD helicopters. Additional transient military aircraft operate at ACY and include C-130 airlift aircraft, KC-135 and KC-10 air refueling aircraft, and C-17 air cargo aircraft.

3.0 FAA Regulation and Guidance Overview

Specific to wildlife hazard management, FAA regulates commercial service airports under Title 14 Code of Federal Regulation Part 139 Certification of Airports (14 CFR Part 139). Wildlife hazard management requirements are detailed therein and include a requirement for certificated airport to take immediate actions to alleviate wildlife hazards whenever detected, conduct WHAs when a triggering event occurs, and develop WHMPs when determined necessary by the FAA Administrator. **Exhibit C** provides a copy of 14 CFR Part 139.337. In addition to these regulations, FAA issues Advisory Circulars (AC) and CertAlerts that provide topic-specific guidance for airport operators to achieve compliance with FAA regulations. Airport's that receive federal grant-in-aid must abide by the guidance in FAA ACs. FAA CertAlerts are developed by the FAA Airports Safety and Operations Division. **Table 2** provides a list of wildlife hazard management specific ACs and CertAlerts.

Table 2. FAA Wildlife Hazard Specific AC and CertAlerts	
FAA Advisory Circulars	
FAA AC 150/5200-18	Airport Safety Self-Inspection
FAA AC 150/5200-32	Reporting Wildlife Aircraft Strikes
FAA AC 150/5200-33	Hazardous Wildlife Attractions on or Near Airports
FAA AC 150/5200-34	Construction or Establishment of Landfills Near Public Airports
FAA AC 150/5200-36	Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports
FAA AC 150/5220-25	Airport Avian Radar Systems
FAA AC 70-1	Outdoor Laser Operations
FAA Office of Safety and Standards CertAlerts	
CertAlert 98-05	Grasses Attractive to Hazardous Wildlife
CertAlert 04-09	Relationship Between FAA and WS
CertAlert 16-03	Recommended Wildlife Exclusion Fencing
CertAlert 06-07	Requests by State Wildlife Agencies to Facilitate and Encourage Habitat for State-listed Threatened and Endangered Species and Species of Special Concern on Airports
CertAlert SO-12-3	Documenting the Review of your Wildlife Hazard Management Plan (WHMP)
CertAlert 13-01	Federal and State Depredation Permit Assistance
CertAlert 14-01	Seasonal Mitigation of Hazardous Species at Airports: Attention to Snowy Owls
source: https://www.faa.gov/airports/airport_safety/wildlife/resources/	

FAA AC 150/5200-33 and CertAlert 06-07 provide guidance related to wildlife hazard attractants on and near the airport and address state-listed species. Since they directly relate to the review of the GCMA at ACY, they will be discussed in detail below.

FAA AC 150/5200-33B “Hazardous Wildlife Attractions on or Near Airports”

This AC was originally published in 1997 and was updated in 2004 and 2007 (see **Exhibit D** for the most recent approved version). However, when the 2003 FEIS was completed and the MOA was established, the 1997 version of the AC was in place. The current AC describes potential wildlife attractants, provides a ranking of the 25 species groups with the highest relative risk to aircraft, recommends separation distances between aircraft operations and identified attractants, lists best management practices associated with specific attractants, and provides guidance for conducting coordination with off-airport landowners and agencies.

The GCMA “no-mow” area was specifically created to attract nesting upland sandpipers. However, this habitat is attractive to a variety of avian, mammal, and insect species that serve as a prey-base attractant for larger species such as raptors and coyotes that pose a high-risk to aviation. AC 150/5200-33B describes the minimum separation distances between the airport's AOA and identified hazardous wildlife attractants.

ACY has both piston powered and turbine powered aircraft. The minimum separation distance for piston powered aircraft is 5,000-feet from the AOA and 10,000-feet for turbine powered aircraft. According to the MOA, the restricted mowing area is approximately as 30 feet from adjacent taxiway and aircraft ramps and 250 feet from adjacent runway centerlines. The GCMA is within the AOA and within the minimum separation distance for both turbine and piston powered aircraft (see Exhibit D for further details on separation distances). SJTA implements their FAA approved WHMP and works with USDA/WS to actively manage the wildlife on the airport to reduce risks to aviation. However, the creation and continued management of the GCMA and the restricted mowing areas on airfield (as close as 30 feet from active aircraft) and within the FAA minimum separation distances is counterproductive to wildlife hazard management objectives and practices put in place to provide a safe environment for aircraft operations.

CertAlert 06-07 "Requests by State Wildlife Agencies to Facilitate and Encourage Habitat for State-listed Threatened and Endangered Species and Species of Special Concern on Airports"

Cert Alert 06-07 was issued in 2006 to provide guidance to airport operators when state wildlife agencies requested the protection of state-listed species' habitat on airports when those species may directly or indirectly pose a threat to aviation (see **Exhibit E**). The CertAlert specifically highlights issues with grassland species in fringe areas of their known geographic distribution (which is the case of the upland sandpiper in New Jersey). The upland sandpiper is not listed federally by the U.S. Fish and Wildlife Service (USFWS) and the International Union for Conservation (IUCN) lists this species conservation status as "least concern." In 2012, it was estimated that the North American population of upland sandpipers was approximately 750,000 birds. The primary geographic range for this species is in North America is in the Great Plains. The upland sandpipers' presence in northeastern U.S, including New Jersey, is primarily due to anthropogenic land use alterations creating pasture, agriculture, and prairie-like land uses (airfields included).⁴

CertAlert states 06-07:

"An airport's air operations area (AOA) is an artificial environment that has been created and maintained for aircraft operations. Because an AOA can be markedly different from the surrounding native landscapes, it may attract wildlife species that do not normally occur, or that occur only in low numbers in the area. Some of the grassland species attracted to an airport's AOA are at the edge of their natural ranges, but are attracted to habitat features found in the airport environment. Also, some wildlife species may occur on the airport in higher numbers than occur naturally in the region because the airport offers habitat features the species prefer. Some of these wildlife species are state-listed threatened and endangered species or have been designated by state resource agencies as species of special concern.

Many state wildlife agencies have requested that airport operators facilitate and encourage habitat on airports for state-listed threatened and endangered species or species of special concern. Airport operators should exercise great caution in adopting new management techniques; new techniques may increase wildlife hazards and be inconsistent with safe airport operations. Managing the on-

⁴ https://www.allaboutbirds.org/guide/Upland_Sandpiper/lifehistory

airport environment to facilitate or encourage the presence of hazardous wildlife species can create conditions that are incompatible with, or pose a threat to, aviation safety.”

Regarding the FAA's enforcement mechanism (compliance requirement) associated with Cert Alert 06-07, the document states:

“Airport operators must decline to adopt habitat management techniques that jeopardize aviation safety. Adopting such techniques could place them in violation of their obligations and subject to an FAA enforcement action and possible civil penalties under 49 U.S.C. §44706, as implemented by 14 CFR § 139.337. In particular, an airport operator that has received federal grant-in-aid assistance is obligated through its grant assurances to maintain compatible land uses. Failure to do so may lead to noncompliance with its grant obligations. Further, airports that serve commercial air carriers are required to be certificated under 49 U.S.C. §44706, as implemented by 14 CFR Part 139. Title 14 CFR § 139.337(a) requires airport operators holding a Part 139 certificate to “take immediate action to alleviate wildlife hazards whenever they are detected.”

As mentioned above, FAA CertAlert 06-07 was issued in 2006, 3 years after the FEIS that required the establishment of the GCMA was published. While SJTA currently operates under an FAA Approved WHMP to help reduce the risk of wildlife strikes, the continued management of the GCMA creates a wildlife hazard attractant on the airfield. In addition, during no-mow periods, vegetation heights reduce the ability for airport staff or wildlife biologists to detect wildlife that could pose a threat to aviation.

Recommendations listed in FAA CertAlert 06-07 state:

1. Adhere to the turf, landscaping, and habitat management practices described in the airport's WHMP, AC 150/5200-33A, and the joint FAA/WS manual. Do not change these practices specifically to encourage the presence of, or to attract hazardous wildlife species even if the species are state-listed or of special concern.
 - a. Do not deliberately preserve or develop on-airport wildlife habitats such as wetlands, forest, brush, or native grasslands having characteristics that attract hazardous wildlife (See the airport's WHMP, AC 150/5200-33A, and the joint FAA/WS Manual.)
 - b. Manage the airport's AOA vegetation as recommended in the airport's WHMP, AC 150/5200-33A, and the joint FAA/WS manual.
2. Adhere to the wildlife harassment and repellent techniques described in the airport's WHMP, AC 150/5200-33A, and the joint FAA/WS manual to prevent hazardous wildlife species from becoming established and complicating the ability to adhere to prescribed habitat management practices.
3. Do not allow hazardous state-listed threatened and endangered species or species of special concern to remain on the airport if it requires managing the airport environment contrary to FAA recommendations.
4. Reevaluate existing and evaluate future agreements with federal, state, or local wildlife agencies where the terms of the agreements are or may be contrary to federal obligations concerning hazardous wildlife on or near public-use airports and aviation safety.

5. Whenever practicable, wetland mitigation for state-listed threatened and endangered species or species of special concern should be sited off-airport (see AC 150/5200-33A, §2-4.c (1)).”

The CertAlert recommendations encourage airports to reevaluate current agreements such as the SJTA MOA with The New Jersey Pinelands Commission and to provide mitigation for state-listed species off-airport. Initial coordination between SJTA and the FAA regarding CertAlert 06-07 occurred in January 2007 (see letter correspondence in Exhibit F). In this letter, the SJTA specifically stated:

“it is apparent that our existing FAA Record of Decision and Memorandum of Agreement (MOA) with the New Jersey Pinelands Commission to create, manage, and maintain native grassland habitat at Atlantic City International Airport (ACY) are in direct conflict with the recommendations outlined in this new regulation.”

The FAA response to the SJTA concerns in September 2008 (almost 20 months later) stated that both the MOA and the airports WHMP should be reviewed and “depending on the findings resulting in this review, there may or may not be a need to adjust any current agreement.” The FAA's response further states that the ACY Wildlife Hazard Working Group meetings may convene at any time and should “include the expertise of the USDA in your review to determine if the GMCA has in any way increased wildlife attractant at ACY.” In addition, the FAA response noted that the CertAlert is advisory in nature (non-directive guidance).

4.0 ACY Wildlife Hazard Management Overview

The FAA contracted USDA WS to conduct a WHA in 1989 which was finalized in 1997. The SJTA also contracted USDA WS to conduct a new 12-month WHA in 2009 which was finalized in 2011. Upon completion of the WHA, the USDA WS worked with airport staff to develop a new WHMP. Currently, USDA WS has a full-time wildlife biologist and a part-time technician at ACY to implement wildlife hazard management activities including harassment, trap and release, lethal control. In addition, USDA WS provides ongoing coordination with airport staff to report wildlife strikes, conduct the annual WHMP review/update, and complete required annual training.⁵ ACY currently operates under an FAA approved WHMP (April 2017) which is on file with ACY (available by request).

2017 ACY WHMP Recommendations

Table 1 of the 2017 WHMP provides a list of wildlife management projects (addressing recommendations from the 2011 WHA), the responsible entities, and target dates for completion. **Table 3**, below provides excerpts from the WHMP that are specific to the GCMA or grass management.

Table 3. Excerpts from the 2017 WHMP Table 1 A. Wildlife Management Projects		
South Jersey Transportation Authority - ACY	TARGET DATE	DATE COMPLETED
SJTA will continue to discourage grassland bird use of sites within the runway safety areas and runway protection zones through aggressive habitat management (mowing during summer months), exclusion of perch sites, active harassment and lethal removal as necessary.	N/A	Ongoing

Table 3. Excerpts from the 2017 WHMP Table 1 A. Wildlife Management Projects		
South Jersey Transportation Authority - ACY	TARGET DATE	DATE COMPLETED
The current approved mowing plan should continue as prescribed (implemented in 1993, revisions made in 1995, 2000, 2002, and 2007). Any changes will be discussed and approved by the Airport Wildlife Coordinator before action is taken.	Evaluate Annually	Ongoing
The Memorandum of Agreement (MOA) with The New Jersey Pinelands Commission (NJ Pinelands) will be reevaluated to allow for management provisions to protect human health and safety and continuation of safe airport operations, as well as for the grass seed mixed used for construction projects near active areas.	Under Review: After review this is considered not feasible for the foreseeable future.	
source: ACY WHMP (2017)		

Airfield Mowing Plan

Exhibit G provides a copy of the 2017 WHMP Appendix B Airfield Mowing Plan (AMP). Under this plan, the 290-acre GMCA cannot be mowed from April 15 to August 15. Mowing instructions from the AMP are outlined below.

"April 15-August 15: All areas No Mowing, except for the following:

- Maintain taxiway and ramp edges at 7-10 inches. 30 feet wide or as appropriate for visibility. Scalp (1-2 inches) edge of pavement, around edge lighting and visual aids 2 - 3 feet wide.
- Runway 13/31: Maintain edges at 7-10 inches. 250 feet wide from centerline (North side) and 500 feet from centerline (South side). Maintain visibility to PAPI lighting systems at each approach end of runway.
- Runway 4/22: Maintain edges at 7-10 inches. 250 feet wide from centerline (West side) and 500 feet wide from centerline (East side).
- Maintain visibility to runway 22 VASI and runway 4 PAPI lighting systems at each approach end of runway. Maintain required areas for FAATC experimental lighting/ILS equipment, as needed."

Additional details are provided in Exhibit G (Appendix B of the 2017 ACY WHMP) for access roads, airfield equipment, and areas not reviewed under the scope of this technical memorandum.

Active Management – Grassland Birds

Active Management of Grassland birds is addressed in Section 6 of the WHMP, Wildlife Control Procedures, Wildlife Control Species Specific Procedure for "Grassland Bird Management" which states:

"Hazards presented by grassland bird species present at ACY will be managed primarily through habitat management and the AMP. In 2007-8 the AMP (Appendix B) was modified to deter grassland bird use of the runway safety areas and associated infields. However, if grassland birds are observed near active aircraft surfaces immediate harassment (pyrotechnics, sirens, vehicles, etc.) will be implemented by Operations Coordinators and/or WS Biologists."

Section 4 - Wildlife Control Permits of the 2017 ACY WHMP also provides a list of all wildlife control permits utilized to implement the wildlife hazard management program. ACY maintains a Federal Migratory Bird Depredation Permit authorized by the USFWS. ACY also maintains a New Jersey Depredation Control Permit and a Special Wildlife Management Permit – Airport Safety issued by the New Jersey Department of Environmental Protection Division of Fish & Wildlife. These permits allow the harassment and lethal control of species not protected by other federal regulations such as the U.S. Endangered Species Act (ESA) and the Bald and Golden Eagle Protection Act (BGEPA).

NJ ANG - 177 FW BASH Plan

U.S Air Force regulations require the 177 FW to have an established Bird/Aircraft Strike Hazard (BASH) Plan that is reviewed annually. The current BASH Plan encourages the airport to maintain an airfield grass height of 7-14 inches (as mandated for aircraft movement areas on U.S. Airforce installations by U.S. Airforce Instruction 91-202 "The US Airforce Mishap Prevention Program," 2017). The Plan also encourages the prompt mowing of the "no-mow" areas being managed for state-listed species to prevent taller vegetation on the airfield.

5.0 Wildlife Strike Data Summary

FAA

The FAA National Wildlife Strike Database provides strike records since January 1, 1990. Wildlife strike reporting is voluntary for civilian airport/aircraft operators. Wildlife strikes are typically reported by airport personnel, pilots, air traffic control (ATC), airlines, and other stakeholders. The database is open to the public at the following website: <http://wildlife.faa.gov>. During the development of this document (July 2017), the database was updated with strike reports through April 30, 2016. Through coordination with USDA/WS, strike records that were reported by either ACY airport staff or the on-site USDA/WS biologist from May 1, 2016 through July 11, 2017 are also included as part of the data summary. Additional strike records from other stakeholders may exist from May 1, 2016 to July 11, 2017 but are not included in this review.

The data summary prepared for this technical memorandum has been created to provide reviewers a general overview of wildlife strike information including:

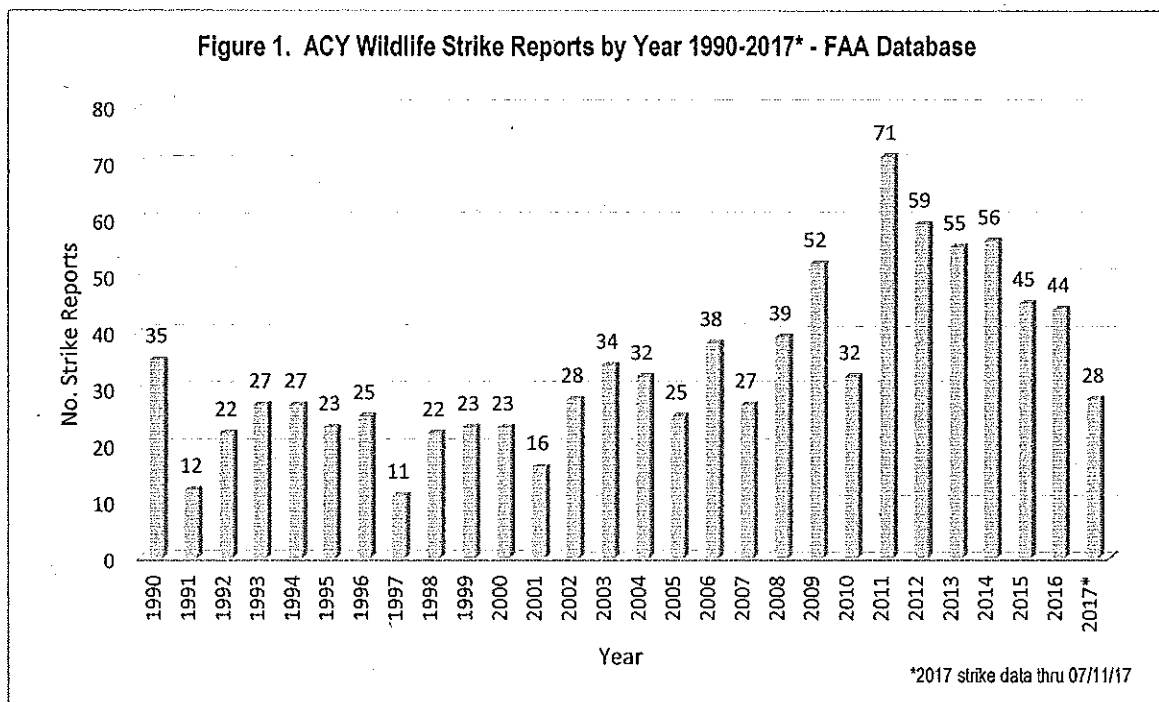
- Frequency of wildlife strikes;
- Time of year strikes occur;
- Species involved in strikes;
- Overview of damaging strikes; and
- A cursory comparison of the species types reported struck pre- and post-implementation of the SJTA MOA with The New Jersey Pinelands Commission.

The airport operations (number and types of aircraft), regional wildlife populations and movements, and on-airport species types and populations are dynamic in nature and cannot be directly compared from year to year. This data summary provides an overview and highlights species that may use the GCMA habitat either for cover, nesting, foraging or hunting for prey (animals or insects) with specific attention to the upland sandpiper and grasshopper sparrow. This review is specific to concerns related to the 290-acre GCMA

habitat and evaluation of the entire airport environment, airport, or surrounding areas. This review is not a risk analysis of the full wildlife strike data set aimed at making recommendations for the program as a whole.

Strike Frequency – Strike by Year

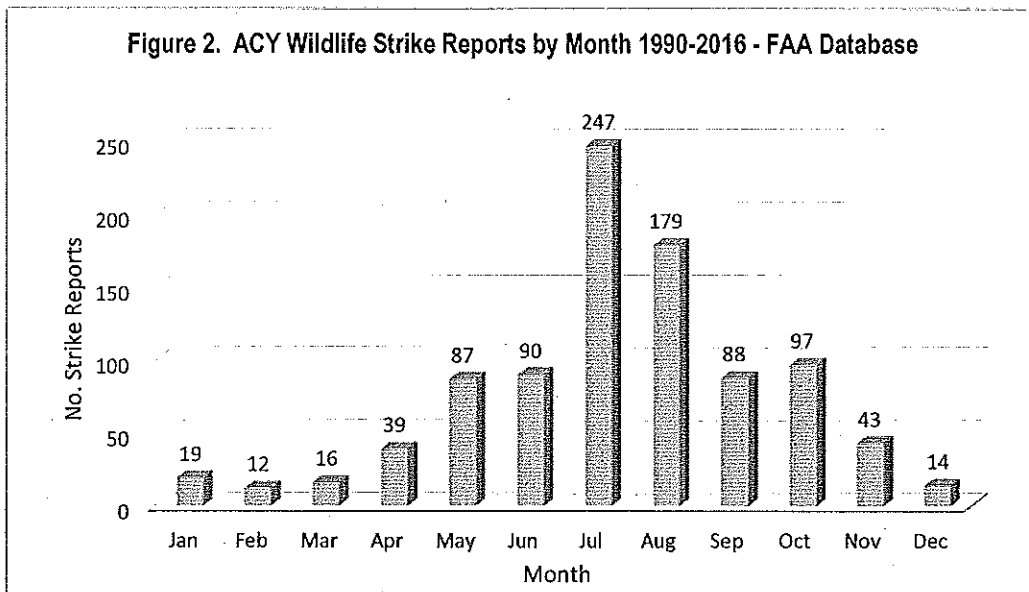
From 1990 - April 30, 2016, the FAA National Wildlife Strike Database has 863 wildlife strikes report at ACY. From May 1, 2016 – July 11, 2017 and additional 68 reports have been submitted to the FAA by the on-site USDA/WS biologist. Figure 1 provides the number of strike reports each year from 1990-July 2017 (931 total strike reports). From 1990-2016, there were, on average, 33 strike reports filed per year at ACY. Since 1990, there has been an overall increase in the number of annual reported strikes, with 2011 having the highest number of reports (71).⁶ There are a variety of reasons why strike report frequencies are increasing at ACY including: more aircraft operations, increased wildlife populations in the area, and better reporting from stakeholders. The FAA strike database includes commercial service, general aviation, business, cargo, and military operators. Strike reports with “unknown” reported operators (type of aircraft, i.e. military, commercial, business) are indicative of a strike reported for a carcass found on the airfield. Of the top 90% of the strikes reported from 1990-2016, the operators reported were: 58% unknown, 14% military, 12% commercial service (Spirit), and 5% business. A separate section is provided below to discuss strike data specific to the NJ ANG 117 FW strikes reported at ACY but some strikes are reported to both the FAA and US Air Force (who has a separate wildlife strike reporting database).



⁶ Further analysis of this information including number of operations and types of aircraft may be useful to develop a strike rate per year at ACY.

Seasonal Strike Frequency – Strikes by Month

Wildlife strike data from January 1, 1990 – December 31, 2016 was sorted by the month the strike occurred (see **Figure 2**). Strikes reported in July (247) and August (179) make up over 47% off the total strikes for the 27-year time period. Overall, summer and fall seasons had the highest number of strikes. This could be attributed to an increase in wildlife on or near the airport during these time periods, insectivores foraging over the airfield during summer insect hatches, fledglings in late summer, and the on-set of fall migration. In addition, due to the winter conditions, many bird species migrate south from New Jersey and are not present on or near the airfield during colder months. December through February have the lowest number of strike reports which may be influenced by the winter conditions on the airfield.⁴



Species Reported Struck

When a wildlife strike report is filed, species information (species or species group) can be entered in the FAA Wildlife Strike Report.⁷ From January 1, 1990 – July 11, 2017, 159 of the total 931 strike records stated that the species or species group was “unknown” (17 % unknown). **Table 4** provides a list of all species or species groups reported struck at ACY. The top three most frequently report struck species at ACY were: Eastern Meadowlark (*Stumella magna*) (144 reports), barn swallows (*Hirundo rustica*) (76 reports), and mourning dove (*Zenaida macroura*) (66 reports). Grasshopper sparrows (highlighted in red in Table 4) were reported as the species struck in 20 reports. Upland sandpipers (highlighted in red in Table 4) were reported struck in 10 reports. The majority of the grasshopper sparrow and upland sandpiper strike reports were reported as “carcass found” on the runways, taxiways, or airfield. FAA recommends that all carcasses of birds found within 250 feet of the runway centerline, 1,000 feet from the end of a runway, on a taxiway, or up

⁷ FAA Form 5200-7

to 1 mile on approach or departure from a runway be reported to the FAA National Wildlife Strike Database (FAA AC 150/5200-32B "Wildlife Strike Reporting" 2013).

For all species struck it is assumed they were fatally injured and are considered mortalities. Multiple animals could have been struck for a strike report. This analysis only reported the species type reported struck, not the number of animals struck.⁸ The number of strikes and associated species involved is likely under-represented in the FAA database to some degree since civilian strike reporting is voluntary. It is likely that some strikes at ACY have not been reported or species have been struck and carcasses may not have been recovered or reported. However, due to the long-standing wildlife hazard management program (initiated in the late 1980s), it is anticipated that a high percentage of strikes and carcasses found on the airfield are reported to the FAA.

Species/Species Group	No. Strike Reports	Species/Species Group	No. Strike Reports
Eastern meadowlark	144	White-throated sparrow	2
Barn swallow	76	Bats	2
Mourning dove	66	Osprey	2
Laughing gull	55	Red fox	2
Killdeer	49	Red-tailed hawk	2
American kestrel	41	Song sparrow	2
Tree swallow	36	American black duck	1
Horned lark	30	American bittern	1
Purple martin	21	American crow	1
Gulls	20	American goldfinch	1
Grasshopper sparrow	20	Bald eagle	1
Red-winged blackbird	12	Baltimore oriole	1
Savannah sparrow	12	Big brown bat	1
European starling	10	Blackpoll warbler	1
Upland sandpiper	10	Brown-headed cowbird	1
Herring gull	9	Chipping sparrow	1
Microbats	9	Cooper's hawk	1
Sparrows	9	Double-crested cormorant	1
Striped skunk	9	Ducks	1
American robin	8	Eastern kingbird	1
Ring-billed gull	8	Field sparrow	1
Canada goose	5	Finch, cardinal, bunting, sparrow	1

⁸ FAA Form 5200-7 groups the number of animals struck into "bins" or "ranges" (for example 2-10 and 11-100). For the purposes of this data review, only the type of species struck was counted, not the number struck or range of number struck.

Table 4. Species Reported Struck at ACY 1990-2017* - FAA Database			
Species/Species Group	No. Strike Reports	Species/Species Group	No. Strike Reports
Great black-backed gull	4	Gray catbird	1
Little brown bat	4	Great blue heron	1
Short-eared owl	4	Hermit thrush	1
Black-bellied plover	3	Mallard	1
Hawks	3	Merlin	1
Peregrine falcon	3	Mourning warbler	1
Snow bunting	3	Northern harrier	1
Swallows	3	Northern saw-whet owl	1
White-tailed deer	3	Owls	1
Yellow-rumped warbler	3	Palm warbler	1
American woodcock	2	Red bat	1
Black-and-white warbler	2	Semipalmated sandpiper	1
Coyote	2	Silver-haired bat	1
Great horned owl	2	Snow goose	1
Gulls, terns, kittiwakes	2	Snowy owl	1
Hoary bat	2	Turkey vulture	1
Least sandpiper	2	Wood duck	1
Little Brown Bat	2	Wood warblers	1
Pine warbler	2	Woodpeckers	1
Rock pigeon	2	Yellow-bellied sapsucker	1
Sandpiper, curlew, phalarope	2		
*Strike data from May 1, 2016- July 11, 2017 obtained by USDA/WS			
source: http://wildlife.faa.gov , ERS 2017			

Strike Reports – Damage

FAA's Wildlife Strike Form collects information on the amount of damage that was sustained resulting from the wildlife strike. For the 27-year period from January 1, 1990 – December 31, 2016, 15 civilian wildlife strike reports documented some level of damage: 1 substantial, 8 minor, and 6 uncertain damage levels were reported. The substantial damage strike was reported on August 8, 1994 when a Learjet - 35 reported striking an American kestrel (*Falco sparverius*) during take-off causing engine shut down but the pilot could not abort take-off. The pilot safely ditched the aircraft further down the runway. The 8 minor damage incidents reported striking the following species: yellow-bellied sapsucker (*Sphyrapicus varius*), American crow (*Corvus brachyrhynchos*), Canada goose (*Branta canadensis*) (2 reports), American bittern (*Botaurus lentiginosus*), Cooper's hawk (*Accipiter cooperii*), snow goose (*Chen caerulescens*), and laughing gull (*Leucophaeus atricilla*). The 6 uncertain damage incidents reported striking the following species: Canada goose, gulls, killdeer, and an unknown bird-medium.

Of the species reported above to have caused damage, the Cooper's hawk stands out as the most likely species attracted to the GCMA habitat due to the expected prey-base in this area. This damaging strike occurred on October 2, 2008 when an A-319 struck the hawk during take-off run (0 feet AGL altitude). Raptors are often attracted to airfields for foraging and this bird could have been utilizing other portions of the airfield. However, if prey species have higher populations and are more readily available for predators in a specific area, it is reasonable to expect predators to be more attracted to these habitats.⁹

Strike Reports Pre- and Post-Establishment of GCMA

As stated above, the number of strikes reported at ACY increased on an annual basis from 1990-2016. Increases in strike reporting can be attributed to multiple factors such as increased aircraft activity, increased wildlife populations, and better reporting.¹⁰ For the purposes of this review of strike data, the number of strike reports and average annual strike reports for each time period were calculated.

- Pre-establishment of the GCMA (1990-2003) there were a total of 328 strikes reported to the FAA database. There was an annual average of 25 reports submitted over the 13-year period.
- Post-establishment of the GCMA (2004-July 17, 2017) there were 603 strikes reported to the FAA database. From 2004-2016 (535 reports), there was an annual average of 42 reports submitted over the 13-year period.

The number of strike reports involving upland sandpiper and grasshopper sparrow pre- and post-establishment of the GCMA were counted:¹¹

- Pre-establishment of the GCMA (1990-2003)
 - 2 upland sandpipers
 - 0 grasshopper sparrows
- Post-establishment of the GCMA (2004-July 17, 2017)
 - 8 upland sandpipers
 - 20 grasshopper sparrows

Table 5 provides a general comparison of the majority of species¹² reported struck pre- and post-establishment of the GCMA. The bulleted list below the table summarizes the general comparison of the two time periods.

⁹ While prey-base studies on the airfield may be useful to document populations of species currently present, these studies may be time and cost prohibitive and, in some instances, can create an additional wildlife hazard attractant on the airfield (trapping, carcasses, baiting, etc.). Population and density numbers (above and beyond presence-absence data) may not provide significant information for the purposes of identifying a wildlife hazard attractant. In addition, many prey species have cyclical population dynamics that may differ vastly from year to year. A common-sense approach is to provide reasonable assumptions of prey species (presence or absence) associated with habitat types.

¹⁰ When comparing strike data pre- and post-establishment of the GCMA, it should be noted that aircraft operations (aircraft types, number of operations, and flight profiles) may have changed from year to year. This comparison is general in nature and should not be used to make statements related to the overall risk of wildlife strikes at the airport.

¹¹ Please note, due to the FAA's voluntary civilian reporting system, it is likely that a percentage of strikes and or carcasses found were not reported. The actual strikes numbers may be higher.

¹² For this data analysis, the top 86% of strikes for each time period were included.

Table 5. Comparison of Species Reported Struck Pre- and Post-Establishment of the GCMA (top 86% of species struck for each time period) - FAA			
1990-2003 Species Reported Struck		2004-2017* Species Reported Struck	
Species/Species Group	No. Strike Reports	Species/Species Group	No. Strike Reports
Unknown bird - medium	59	<i>Eastern meadowlark</i>	117
<i>Eastern meadowlark</i>	36	<i>Barn swallow</i>	63
Mourning dove	24	Mourning dove	42
Unknown bird - small	24	Unknown bird - medium	38
<i>American kestrel</i>	23	Killdeer	38
Laughing gull	22	Laughing gull	33
Gulls	19	<i>Tree swallow</i>	25
<i>Barn swallow</i>	13	<i>Purple martin</i>	21
<i>Horned lark</i>	11	<i>Grasshopper sparrow</i>	20
Killdeer	11	Unknown bird - small	19
<i>Tree swallow</i>	11	<i>Horned lark</i>	19
<i>Sparrows</i>	8	<i>American kestrel</i>	18
Herring gull	6	Unknown bird	12
Ring-billed gull	6	<i>Savannah sparrow</i>	12
European starling	4	Red-winged blackbird	11
Great black-backed gull	4	Microbats	8
		<i>Upland sandpiper</i>	8
		American robin	7
		Striped skunk	7
Orange (italicized text) = species anticipated to use or be attracted to the GCMA habitat Blue text = gulls			
source: http://wikilife.faa.gov , ERS 2017			

A comparison of known versus unknown species reported is provided below:

- Pre-establishment of the GCMA (1990-2003):
 - Unknown species were document in 25% of strike reports.
- Post-establishment of the GCMA (2004-July 17, 2017):
 - Unknown species were document in 12% of strike reports.

The increase of known species during the latter time period may be attributed to increase awareness, better strike reporting by airport staff, USDA/WS, and stakeholders at ACY, and the ability for the Smithsonian Institution to implement DNA identification of wildlife strike remains (SNARGE). Species data provides critical information for wildlife biologists, aircraft engineers, airport decision makers, and regulators when addressing wildlife hazard management concerns at an airport. This information is necessary to address habitat or

species-specific reviews. The increase in the percentage of known species reported struck is beneficial to this analysis.

Birds that may use the GCMA habitat for cover, nesting, foraging, or hunting prey were highlighted orange in Table 5 for discussion purposes. While these species will use other habitat on and near the airport, it is reasonable to assume these species may use the GCMA habitat. A higher percentage of species with potential to be attracted to the GCMA were reported struck after the establishment of the conservation area and associated no-mowing restrictions were implemented on the airfield.

- Pre-establishment of the GCMA (1990-2003):
 - Species with the potential to be attracted to the GCMA were document in 36% of the most frequently struck species
- Post-establishment of the GCMA (2004-July 17, 2017):
 - Species with the potential to be attracted to the GCMA were document in 58% of the most frequently struck species

In review of the two time period's most frequently reported struck species, it was also evident that there was a shift from gulls being the one of the dominant struck species group pre-establishment of the GCMA to species more attracted to a prairie habitat being struck post-establishment of the GCMA.

- Pre-establishment of the GCMA (1990-2003)
 - Gulls were documented in 20% of the most frequently struck species
- Post-establishment of the GCMA (2004-July 17, 2017)
 - Gulls were document in 6% of the most frequently struck species

It was documented in the 2017 ACY WHMP that gulls were the initial concern at the airport in the late 1980s and an emphasis was placed on managing gulls and their attractant on the airport and at a nearby landfill facility.

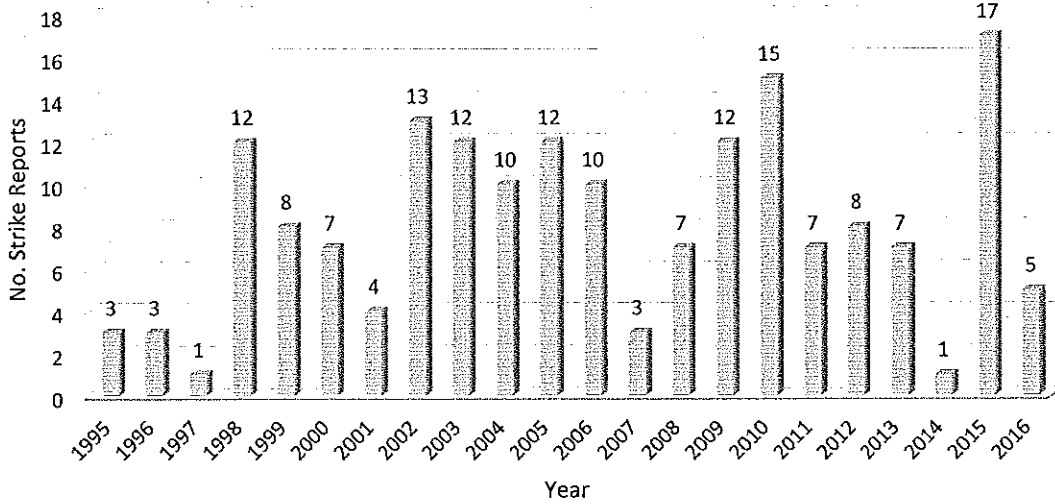
NJ ANG 117 FW Strike Data

U.S. Air Force (USAF) has implemented mandatory strike reporting since the early 1980s. Wildlife strikes are submitted to the Air Force Safety Automated System (AFSAS). A general review of the AFSAS wildlife strike data for the NJANG 117 FW was completed as part of this review. The NJ ANG 117 FW currently operates the F-16 Fighting Falcon which is a single engine air-to-air or air-to-ground supersonic fighter aircraft. However, the strike data discussed in this memo consists of all USAF strikes that reported the nearest airfield as ACY. This data set includes strike reports from airlift aircraft (C-130 and C-5), refueling aircraft (KC-10 and KC-135) and a variety of military passenger jets (C-20, C-21, and C-35).

Strike Frequency – Strike by Year

There was a total of 177 strike reports from 1995-2016 (see **Figure 3**). Over the 22-year period, on average, 8 wildlife strikes were reported per year. As stated above, in the FAA strike data summary, some of the military wildlife strike data is included in the FAA dataset.

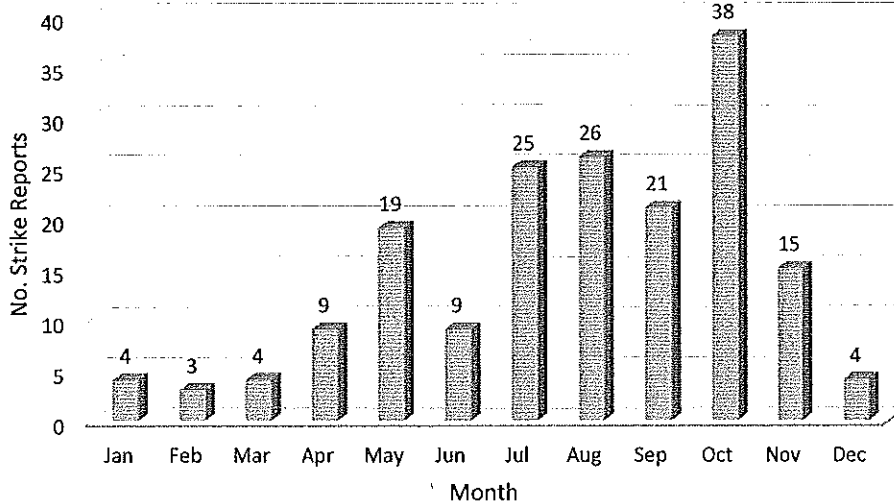
Figure 3. AFSAS Strike Data for the 117 FW by Year (1995-2016)



Seasonal Strike Frequency – Strikes by Month

The AFSAS strike data from 1995-2016 was sorted by the month the strike occurred (see Figure 4). Similar to the FAA strike data by month, there was an increase in strike in the summer and early fall. However, October had the highest frequency of strikes reported (38 strike reports). December through March had the lowest number of strike reports which may be influenced by the winter conditions on the airfield.

Figure 4. AFSAS Strike Data for the 117 FW by Month (1995-2016)



Species Reported Struck

Similar species were reported struck in the AFSAS database and the FAA database (some strikes were reported in both databases). **Table 6** provides the 83 strike reports with known species in AFSAS at ACY. The most commonly reported struck species was the barn swallow, followed by the horned lark (*Eremophila alpestris*), the American robin (*Turdus migratorius*), and the mourning dove. While the FAA provides a ranking of the 25 species groups with the highest relative risk to aircraft in FAA AC 150/5200-33B, this does not directly correlate to a species' relative risk to military aircraft and operations, especially when the aircraft are single engine supersonic jets that fly faster than civilian aircraft and at lower altitudes.¹³ While not all of these species in Table 6 are high risk species for larger aircraft, the single engine F-16 aircraft may be more susceptible to damage from smaller mass birds and small flocking birds (such as larks, and European starlings, and swallows). While not listed as struck, the upland sandpiper (weighing 3.4-8 oz.) could cause a damaging strike with an F-16. As a comparison, a horned lark (weighing 1-1.7 oz.) was reported to cause damage in an F-16 wildlife strike at ACY on June 25, 2016.

Table 6. Species Reported Struck at ACY 1995-2017 - AFAS Database			
Species/Species Group	No. Strike Reports	Species/Species Group	No. Strike Reports
Barn Swallow/Swallow	7	Hairy-tailed Bats	1
Horned Lark	7	Hawks, Eagles, Kites, etc.	1
American Robin	5	Hoary Bat	1
Mourning Dove	5	Indigo Bunting	1
Tree Swallow	5	Insect	1
Eastern Meadowlark	4	Merlin	1
Laughing Gull	4	Mourning Warbler	1
Savannah Sparrow	4	Northern Saw-whet Owl	1
Gulls and Kittiwakes	3	Peregrine Falcon	1
Gray Catbird	2	Red-eyed Vireo	1
Red Bat	2	Red-tailed Hawk	1
Red-winged Blackbird	2	Ring-billed Gull	1
Silver-haired Bat	2	Ruby-throated Hummingbird	1
Yellow-rumped Warbler	2	Sandpipers, Snipes, Stints, etc.	1
American Kestrel	1	Snow Goose	1
Bats (Mammals)	1	Sora	1
Big Brown Bat	1	Swallows and Martins	1
Canada Goose	1	Thrushes and Forktails	1

¹³ The velocity of an aircraft at impact is a significant factor in the amount of damage sustained from a wildlife strike. To calculate the energy (E) created by a wildlife strike, ½ of the mass of the animal (m) is multiplied by the velocity (v) of the aircraft, squared (E=1/2mv²). Therefore, a smaller mass bird can have a high energy impact that caused damage when the impact velocity increases.

Table 6. Species Reported Struck at ACY 1995-2017 - AFAS Database			
Species/Species Group	No. Strike Reports	Species/Species Group	No. Strike Reports
Dark-eyed Junco	1	Tufted Titmouse	1
Double-crested Cormorant	1	White-throated Sparrow	1
Golden-crowned Kinglet	1	Wood Duck	1
source: USAF AFSAS 2017 - USAF BASH Safety Center Data Request			

Strike Reports – Damage¹⁴

Damaging strikes in AFSAS at ACY included one Class C mishap in 2013 which involved an C-5 conducting a touch and go ingesting a peregrine falcon (*Falco peregrinus*). Damage costs were reported to be \$124,591. Three (3) Class D mishaps were reported in the AFSAS data. Two reports involved C-10 aircraft striking laughing gulls on a low-level rout and a mourning dove while in the traffic pattern around ACY. The third Class D mishap involved an F-16 on take-off (species information was not available). The remaining of the strikes were categorized as E mishaps that range from 0 to <\$20,000 in damage.

Strike Reports Pre- and Post-Establishment of GCMA

For the purposes of this review of strike data, the frequency and average annual strike reports were counted pre- and post-establishment of the GCMA. As stated in the FAA strike discussion, the number of strikes reported can be influenced by multiple factors such as increased aircraft activity, increased wildlife populations, and better reporting.¹⁰

- Pre-establishment of the GCMA (1995-2003) there were 63 strikes reported to the AFSAS database. There was an annual average of 7 reports submitted over the 9-year period.
- Post-establishment of the GCMA (2004 -2016) there were 114 strikes reported to the AFSAS database. There was an annual average of 9 reports submitted over the 13-year period.

Table 7 provides a general comparison of the majority of species¹⁵ reported struck pre- and post-establishment of the GCMA. The bulleted list below the table summarizes the general comparison of the two time periods.

¹⁴ USAF mishap classification (for cost of damage): Class A >\$2M or complete loss of aircraft, Class B \$500,000 - \$2M, Class C \$50,000-<\$500,000, Class D \$20,000-<\$50,000, and Class E <\$20,000.

¹⁵ For this data analysis, species with more than one strike report for each time period were included.

Table 7. Comparison of Species Reported Struck Pre- and Post-Establishment of the GCMA (species than more than 1 strike report for the time period) - AFSAS			
1995-2003 Species Reported Struck		2004-2016 Species Reported Struck	
Species/Species Group	No.	Species/Species Group	No.
Unknown	41	Unknown	44
Gulls and Kittiwakes	3	Perching Birds	7
<i>Barn Swallow/Swallow</i>	2	American Robin	5
<i>Horned Lark</i>	2	<i>Barn Swallow/Swallow</i>	5
Mourning Dove	2	<i>Horned Lark</i>	5
Perching Birds	2	<i>Tree Swallow</i>	5
		<i>Savannah Sparrow</i>	4
		<i>Eastern Meadowlark</i>	3
		Laughing Gull	3
		Mourning Dove	3
		Red Bat	2
		Red-winged Blackbird	2
		Silver-haired Bat	2
		Yellow-rumped Warbler	2
Orange italicized text = species anticipated to use the GCMA habitat			
source: http://wildlife.faa.gov , ERS 2017			

Similar to the discussion in the FAA strike database, birds that may use the GCMA for cover, nesting, foraging, or hunting prey were highlighted orange in Table 7. While these species will use other habitat on and near the airport, it is reasonable to assume these species may use the GCMA habitat. A higher percentage of species with potential to be attracted to the GCMA were reported struck after the establishment of the conservation area and associated no-mowing restrictions were implemented on the airfield.

- Pre-establishment of the GCMA (1995-2003):
 - Species with the potential to be attracted to the GCMA were document in 7% of the most frequently struck species
- Post-establishment of the GCMA (2004-2016):
 - Species with the potential to be attracted to the GCMA were document in 24% of the most frequently struck species

F-16 Strike Records – Overview USAF AFSAS

As noted above, the F-16 is a single engine, supersonic fighter aircraft equipped with high tech sensors, specialized equipment, and, at times, weapons systems. The cost of damage associated with a wildlife strike to an F-16 can quickly escalate due to the cost of the equipment/weapons on the aircraft and the fact that if a wildlife strike caused damage to the single engine, the aircraft may lose power or shut down, have an emergency landing, or force the pilot to eject from the aircraft. In order to demonstrate the potential risk of

damage to an F-16 in comparison to the size (weight or body mass) of reported bird species struck, a review of all F-16 wildlife strike records in the AFSAS database from Fiscal Year 1995 through July 2017 was conducted. The USAF Safety Center BASH Team provided the AFSAS data for this review. In total, there were 5,398 incidents reported involving a wildlife strike with an F-16.¹⁶ The damage costs for these mishaps were over \$155 Million. **Table 8** provides the number of strike records by mishap classification (not all records indicated mishap class or cost).

Mishap Class	Cost Description	Count
A	>\$2M or complete loss of aircraft	12
B	\$500,000 - \$2M	18
C	\$50,000-<\$500,000	132
D	\$20,000-<\$50,000	26
E	<\$20,000	406

source: USAF BASH Team AFSAS data, ERS 2017

In regard to the GMCA being specifically managed to attract upland sandpipers and grasshopper sparrows, the body mass of these two species was compared to the size of the smallest body mass of a bird that caused Class A and B mishaps with F-16s from Fiscal Year 2005-July 2017. **Exhibit H** provides a full list of species reported by mishap class for this time period. Upland sandpipers weigh between 3.4-8.0 ounces (oz.). Grasshopper sparrows weigh between 0.5-0.7 oz. As documented in the AFSAS data, the smallest body mass/lightest bird to cause a Class A mishap (>\$2M in damage costs or complete loss of aircraft) was the barn swallow which weighs between 0.6-0.7 oz.¹⁷ The grasshopper sparrow is similar in weight to the barn swallow and the upland sandpiper weighs approximately five times more than the barn swallow. This does not imply that every time an aircraft hits a barn swallow sized bird or larger that there will be damage but it does demonstrate that there is the potential for small birds to cause significant damage to an F-16. Additional species reported in Class A mishaps included:

- American white pelican
- Double-crested cormorant
- Mourning dove
- Pigeons and dove
- Ring-necked pheasant
- Spot-billed duck
- Swainson's Hawk
- Turkey Vulture

For Class B mishaps (\$500,000 - \$2M in damage costs), the mourning dove had the smallest body mass of species reported struck. The mourning dove weighs between 3.0-6.0 oz. The grasshopper sparrow (0.5-0.7

¹⁶ A total of 5,540 records were included. However, multiple entries for the same aircraft were recorded if there was more than one impact point.

¹⁷ Bird species weight information source: <https://www.allaboutbirds.org> (The Cornell Lab of Ornithology)

oz.) is smaller than the mourning dove but the upland sandpiper (3.4-8.0 oz.) can weigh more than the mourning dove. Additional species reported in Class B mishaps included:

- Black vulture
- Canada goose
- Common loon
- Cranes
- Dabbling duck
- Northern pintail
- Northern shoveler
- Sandhill crane
- Turkey vulture

Species that are potentially attracted to the GMCA habitat for cover, nesting, foraging, or hunting prey and were reported struck in the wildlife strike data for ACY (FAA database) and the 177 FW (AFSAS database) are highlighted in Tables 5 and 7 above. Of these species, the following were listed as species causing damage to an F-16 from Fiscal Year 2005 to July 2017:

- Barn swallow
- American kestrel
- Eastern Meadowlark
- Honed Lark
- Sparrow (multiple species)

Higher body mass (heavier) species, specifically raptors, that may be attracted to the GMCA habitat for hunting prey would be considered high risk species at ACY. Raptors species reported struck at ACY in the FAA and the 177 FW AFSAS strike records were reviewed. A full list of species reported struck in the FAA database and 177 FW at ACY are included in Tables 4 and 6 above. Raptor species struck at ACY that were also documented to cause damage to an F-16 in AFSAS (all locations) from Fiscal Year 2005-July 2017 are listed below:

- Peregrine falcon
- Red-tailed hawk
- Cooper's hawk
- Great horned owl

It can be demonstrated through these strike records that birds of similar size to the grasshopper sparrow and upland sandpiper have caused damage to F-16 aircraft. In addition, many of the bird species that have the potential to be attracted to the GMCA habitat for cover, nesting, foraging, or hunting prey have also been documented to cause damage to F-16 aircraft. As previously described, the GMCA area is in close proximity to the active runways, taxiways and other aircraft operating surfaces at ACY. If the removal of the GMCA habitat reduces the number of birds attracted to the GMCA area and/or decreases the number of high risk species attracted to the GMCA area (i.e., raptors) than the potential for damaging strikes involving these species would be reduced. The removal of the GMCA habitat would not eliminate the strike risk or the potential attractiveness of the entire airfield. However, it is typically accepted that having airfield turf managed as a monoculture and at a uniform height is less attractive than having a diversity of plant species

at varying heights that could create additional rodent (prey base) cover and obscure the observations of wildlife, preventing staff from observing, harassing, or removing wildlife that pose a risk to aviation.

6.0 GCMA – Attractant and Potential Risks

While the FAA has no required grass height for airfield turf, they defer to the FAA approved WHMP for site specific airfield turf management strategies and techniques. For temperate climate regions (including New Jersey), it is typically recommended that airfield turf grass be managed between 6-12 inches with a dense monoculture of grass/fescue devoid of broad leaf species (weeds, herbs, forbs) and bare ground patches. This dense monoculture is less attractive to smaller flocking birds than a mix of plant species with sparse vegetation. The currently ACY WHMP stipulates grass heights be managed 7-10 inches close to the operating surfaces, and when mowing is permitted in conservation areas, they management the vegetation height 7-10 inches or 5-10 inches.

With the exception of Canada geese, birds commonly observed in the vicinity of ACY do not feed on grass. Typically, birds will forage in pasture or prairie habitats (similar to an airfield) on insects, seeds, broad leaf plants (weeds, herbs, forbs), and small vertebrates. Bare areas and less dense vegetation allow birds to move through this habitat easily. Shorter grass heights (less than 5-6 inches or depending on target species to be controlled) allow small to medium size birds, such as, European starlings and grackles, to maintain visual contact with their flock to enable predator avoidance through inter-flock communication. Grass heights taller than the birds eye height disrupts visual contact making these areas less favorable to foraging or resting. Grass in excess of 12-14 inches creates a habitat conducive to higher prey species populations (such as mice, rats, rabbits, snakes, insects, and other small animals) and provide cover areas for birds and larger animals (such as upland sandpipers, larks, sparrows, foxes, white-tailed deer, and coyotes). Taller vegetation also reduces the ability of wildlife hazard management staff to readily observe wildlife on the airfield that could pose a threat to aviation. As a point of reference 14 CFR Part 139.337 (a) states "In accordance with Airport Certification Manual and the requirements of this section, each certificate holder must take immediate action to alleviate wildlife hazard whenever they are detected. A conservation agreement and vegetation management strategy on the airfield that impedes an airport's ability to detect (observe) wildlife hazards is a conflict with the requirements of 14 CFR Part 139.337.

After review of the information summarized in this technical memorandum, it is evident that the 290-acre GCMA is a hazardous wildlife attractant based on the following:

1. The area is being managed to specifically attract nesting upland sandpipers and grasshopper sparrows. Both species have been involved in wildlife strikes at ACY (See Section 5.0 for additional strike information). The upland sandpiper has been documented as the species struck in damaging strikes to aircraft in the FAA National Wildlife Strike Database (locations other than ACY). In addition, while the upland sandpiper is a grassland species, it is still categorized as a "shorebird." Shorebirds are listed as 19th out of 25 species/species groups in relative hazard to aviation per FAA AC 150/5200-33B (see Exhibit D).
2. SJTA is prohibited from mowing the GCMA from April 15-August 15. During this period vegetation grows taller than the typically recommended 12-14-inch maximum height and taller than the airfield height approved in the 2017 ACY WHMP for non-GCMA turf (7-10 inches). Taller vegetation reduces the ability of airport staff or biologists from observing wildlife that potentially pose a risk to aviation.

3. The GCMA is specifically managed, and in some areas planted, with a variety of species and allows bare areas to attract upland sandpipers. This variety of plants and intermittent bare areas, not the recommended monoculture devoid of bare areas, is attractive to numerous species of birds, mammals, reptiles, and invertebrates. In addition, the un-mowed GCMA habitat provides more shelter, travel corridors, and foraging opportunities for rodents and other small mammals. While these smaller species are not considered a high-risk to aviation, the larger species that prey on these animals (such as red-tailed hawk, bald eagle, Cooper's hawk, peregrine falcons, and coyotes) are significant hazards. Eagles are listed as 6th, hawks (buteos) are list 11th, and coyotes are listed 17th out of 25 species/species groups in relative hazard to aviation per FAA AC 150/5200-33B (see Exhibit D).
4. The current mowing plan establishes a "no mow" area ranging from 30 to 350 feet from aircraft operating surfaces. The grass turf between the GCMA and the active taxiways and runways is managed year-round at an intermediate height (7-10 inches per Airfield Mowing Plan in the FAA approved WHMP). The synergistic effects of these adjacent habitats create a wildlife hazard attractant. In addition, the edge effect created between the two habitats is attractive to many species. Birds, especially taller species such as the upland sandpiper, and small mammals can forage in the intermediate height grass habitat and seek shelter or nest in the taller GCMA habitat. The presence and location of the GCMA habitat inadvertently increases the attractiveness of the intermediate grass habitat which is closer to aircraft operations (within runway and taxiway safety areas).

7.0 Recommendations

1. The 2003 SJTA MOA with The New Jersey Pinelands Commission should be re-evaluated as stated in FAA CertAlert 06-07.
 - SJTA should not encourage state-listed species or the protection of their associated habitats on the airport if the species or species attracted to the habitat poses a risk to aviation.
 - Wildlife agencies involved in the establishment of the GCMA on the airport should reconsider their goal to attract and promote nesting areas that are unsafe environments for avian species. Attracting these species to an airfield where they have been documented to be struck by aircraft (killed by direct or indirect impact) contradicts the state-listed species conservation goals.
2. The GCMA should be eliminated from the airfield. If necessary, the SJTA should evaluate off-airport options to mitigate potential state-listed species or habitat impacts (see FAA Cert Alert 06-07 and FAA AC 150/5200-33B).
3. The entire airfield at ACY should be managed 7-10 inches. All broadleaf or non-turf grass species should be reduced or eliminated to promote a thick monoculture of turf. All bare areas should be eliminated through active seeding of grass species approved by the USDA/WS biologist.
4. If the GCMA remains on the airport and is purposefully managed to attract wildlife, allow tall vegetation heights that may obstruct observation of potentially high-risk species to aviation, and indirectly attract raptors and other predators due to potentially increased prey populations, SJTA should develop a formal notification regarding the acceptance of risk/liability of wildlife strikes at ACY

associated with species attracted to the GCMA habitat. Acceptance of risk would include costs associated with direct damage to aircraft, indirect costs due to loss of use of the aircraft, and liability associated with human injuries or death. This acceptance of risk/liability notification should be sent to The New Jersey Pinelands Commission and any regulatory entity that requires SJTA to maintain and promote an identified wildlife hazard attractant on the airfield in close proximity to civilian and military aircraft operations.

5. Until such time that the GCMA is eliminated from the airfield, SJTA staff and the contracted USDA wildlife biologist should conduct observations of the GCMA on a routine basis (twice a day) and take immediate action to alleviate wildlife risks to aviation. This includes harassment, trap and release, lethal control, insect control, and prey population reduction as determined necessary by a wildlife biologist. If wildlife risks associated GCMA vegetation heights greater than 10 inches cannot be mitigated below acceptable levels or if vegetation heights obstruct the ability of staff to view potential high-risk species to aviation, the GCMA should be mowed immediately to 7-10 inches as an emergency action to address safety concerns on the airfield. If emergency mowing actions are taken that are contrary to the current 2017 ACY WHMP Airfield Mowing Plan, SJTA should notify The Pinelands Conservation Commission within 24 hours. The Airfield Mowing Plan should be revised to provide an emergency mowing provision.

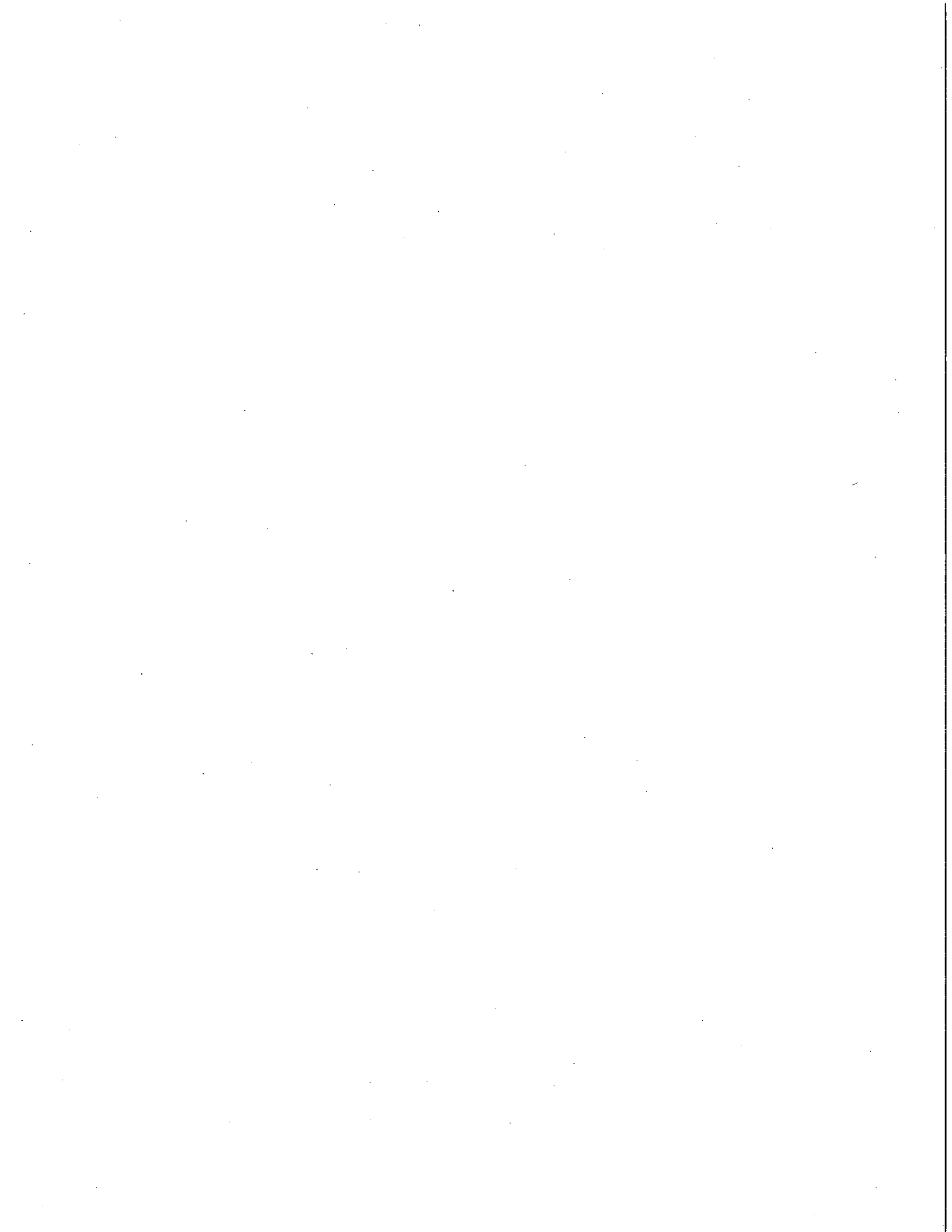


Exhibit E

**ATLANTIC CITY INTERNATIONAL AIRPORT (ACY)
WILDLIFE HAZARD MANAGEMENT PLAN**

Developed by:

**U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Wildlife Services
Suite 106, Atlantic City International Airport
Egg Harbor Township, NJ 08234**

In Cooperation with:

**South Jersey Transportation Authority
And
TBI Airport Management Inc.
Suite 106, Atlantic City International Airport
Egg Harbor Township, NJ 08234**

April 2017

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1 - INTRODUCTION

Pursuant to CFR Title 14 FAR part 139.337(e), the South Jersey Transportation Authority (SJTA), Atlantic City International Airport (ACY) developed this Wildlife Hazard Management Plan (WHMP) in cooperation with the U.S. Department of Agriculture's Wildlife Services (WS) program to replace the earlier Wildlife Hazard Management Plan, which had been in place and approved by the Federal Aviation Administration (FAA). This plan will be in place and incorporated into the Airport Certification Manual (ACM) until changes are warranted.

In 1989, the Federal Aviation Administration (FAA) Technical Center, the owner/operator of ACY, requested WS to conduct a Wildlife Hazard Assessment (WHA). This was due to an increasing number of birds present at the airport and the number of strikes involving laughing gulls. The total number of strikes increased from 18 in 1989 to 37 in 1990. During this period, strikes involving gulls rose from 6 in 1989 to 27 in 1990, a 350% increase. The airport was also forced to close runways on 11 different occasions for a total of 78.3 hours in 1990 due to bird activity. The original WHA was completed in 1995 and finalized in 1997.

In 2009, the SJTA requested WS to conduct a new WHA to reflect the current conditions at ACY and surrounding areas within the five mile radius. The WHA began in September 2009, was completed and submitted to FAA in March 2011, and approved as final in June 2011. This updated plan incorporates the findings and recommendations of the recent WHA. It places emphasis on identification and abatement of wildlife hazards within the airport environment. Additional wildlife attractants (e.g., lakes, ponds, landfills, etc.) as identified in the WHA within 5 miles of the airfield are also addressed, since they could potentially attract wildlife in a manner that could jeopardize safety of air traffic operating into and out of ACY. This plan is intended to address the findings of the WHA finalized in 2011 and the current conditions at ACY.

This plan outlines steps for monitoring, documenting, reporting wildlife hazards as well as wildlife strikes to aircraft. ACY will take immediate measures to identify and mitigate wildlife hazards whenever they are detected or reported. Protocols for responding to hazardous wildlife situations are presented, including roles and responsibilities of airport personnel. In addition, wildlife control procedures for birds and mammals are also discussed.

Habitat on and around the airfield will be managed, to the best extent possible and in a manner that is non-conducive to hazardous wildlife. This plan outlines priorities for habitat management, including target dates for completion. Most wildlife is afforded some type of protection under state or federal regulations; therefore, special permits may be required for their control. ACY maintains the appropriate New Jersey and federal permits for the take of hazardous wildlife species. The permit status for each wildlife species is presented in tabular format. Copies of the federal and state migratory bird depredation permits and the permit for mammals (deer, coyote) are included in the Airport Certification Manual.

ACY will maintain an adequate supply of resources for dispersing and controlling wildlife, including frightening devices (e.g., pyrotechnics, distress call players), wildlife restraint

equipment (e.g., traps, catch poles), and firearms (WS only). ACY personnel will receive annual training as required by the FAA. This training will include instruction on wildlife identification, wildlife deterrent equipment and best practices for safe and efficient operations.

PURPOSE AND SCOPE

Enhancing safe air carrier operations is a primary objective of the South Jersey Transportation Authority (SJTA) and the entire staff at ACY. Accomplishing this objective entails the careful monitoring of all aspects of arriving and departing aircraft in the vicinity of ACY and potential wildlife hazards on and around the airport. As part of its safety efforts, ACY intends to maintain a WHMP according to CFR Title 14 FAR part 139.337(f). The WHMP will be used to address wildlife hazards at ACY and surrounding area within 5 miles with a particular emphasis on hazards within 2 miles of the airfield.

It is important to note that Part 139.337(f) underscores the need for a flexible plan that can be quickly adapted to changing circumstances. Circumstances not addressed in this plan may arise and immediate action may be necessary to ensure the safety of airport patrons. These cases would be rare, but this plan provides ACY with the discretion and capability to respond to these situations, while providing guidance for compliance with applicable federal, state, and municipal laws or regulations. The latitude afforded ACY management when administering this plan is discussed in CFR 14 - Part 139.113.

This plan will be valid until ACY management or FAA determines updates are necessary to adapt to a change of conditions or a new need for action. The plan will be reviewed annually to ensure its pertinence to conditions at the time of review. It may also be revisited more frequently if situations arise or hazards are identified that merit evaluation.

2 - AUTHORITY AND RESPONSIBILITY

FAR 139.337(f)(1) A list of the individuals having authority and responsibility for implementing each aspect of the plan.

The SJTA, the owner of ACY, has contracted with TBI Airport Management Inc. to manage the airport on their behalf. The Operations Manager has the authority and responsibility of designating a Wildlife Coordinator to implement the WHMP. Each department and associated agencies have responsibilities outlined in the WHMP and must incorporate them into their programs. Clear communication among airport personnel is essential for the WHMP to succeed.

Personnel working at the airport will communicate resource needs, recommendations, and progress to the designated Wildlife Coordinator. The Operations Manager will ensure that the WHMP and amendments comply with federal, state and local laws and regulations.

Additionally, the Operations Manager will submit the WHMP to the FAA annually for their approval.

WILDLIFE HAZARD WORKING GROUP (WHWG)

The Wildlife Hazard Working Group is responsible for reviewing the WHMP, as it relates to each member's respective departmental duties. In addition, the group will monitor activities, status, and make recommendations to the Wildlife Coordinator, who will in-turn review and grant approval if satisfied with the progress of the WHMP. The working group will meet once a year, with intermittent meetings when necessary.

The Wildlife Hazard Working Group will be represented by:

- Wildlife Coordinator/USDA Wildlife Services Biologist
- ACY Airport Operations & Security Manager
- ACY Airport General Manager
- ACY Airport Operations Manager
- ACY Maintenance Manager
- NJ Air National Guard, 177th Fighter Wing Safety (NJANG)
- NJANG Base Operations
- FAA Air Traffic Control (ATC)
- W.J. Hughes FAA Technical Center (FAATC)

PERSONS RESPONSIBLE FOR IMPLEMENTING THE PLAN

- Operations Manager
- Airport Operations Department
- USDA- Wildlife Services / Wildlife Coordinator

3 - HABITAT MANAGEMENT

FAR 139.337(f)(2) A list prioritizing the following actions identified in the wildlife hazard assessment and target dates for their initiation and completion.

Habitat management provides the most effective long term remedial measure for reducing wildlife hazards on, or near, airports. Habitat management includes the physical removal, exclusion, or manipulation of areas that are attractive to wildlife. The ultimate goal is to make the environment fairly uniform and unattractive to the species that are considered the greatest hazard to aviation. The recommendations of the 2011 WHA are incorporated and addressed in this section. Habitat modifications are continually monitored to ensure that they reduce wildlife hazards and do not create new attractions for different wildlife. Changes to management practices and/or introduction of new techniques will be made as necessary to ensure aviation safety. Table 1 is divided into Sections (A), (B), and (C) to separate and address responsibilities of individual airport stakeholders. Each section contains a prioritized list of both habitat and non-habitat based action items, with target dates for completion.

Table 1 (A), (B), (C). Management priorities for projects to reduce wildlife hazards at ACY are listed, along with the target dates for completion and date that each project was completed. Note that some of the projects may have already been implemented or completed, but because they require a continued effort (e.g., long grass management); they are listed as “ongoing”.

Table 1 A. WILDLIFE MANAGEMENT PROJECTS: South Jersey Transportation Authority - ACY	TARGET DATE	DATE COMPLETED
Perform repairs to deer fence at NJANG drainage ditch.	December 2015	November 2015
SJTA will continue to discourage grassland bird use of sites within the runway safety areas and runway protection zones through aggressive habitat management (mowing during summer months), exclusion of perch sites, active harassment and lethal removal as necessary.	N/A	Ongoing
The old Air Traffic Control Tower ramp taxiways, Delta and Echo will be graded and paved to prevent ponding after heavy rains (WHA Figure 8B). <i>This project has been incorporated into the construction plans for the new ARFF facility – scheduled completion April 2013.</i>	April 2013	April 2013
All shrubs, trees and other vegetation growing through the perimeter fence/deer fence will be removed. Once vegetation is removed from the fence, a maintenance plan will be developed and implemented to prevent return growth along the fence. <i>Initiated June 2011.</i>	Initial Clearing Complete April 2014	April 2015
Annual maintenance for the North branch of Absecon creek on the North side of Runway 13/31 will be conducted on SJTA (WHA Figure 8C) controlled lands. Once trees are initially removed from along the creek, a maintenance plan will be implemented to maintain the area on an annual basis to prevent return growth.	N/A	November 2010 / Ongoing

The electricians' shop (Building 161) has gaps in the roof that provides nesting habitat for European starlings and should be excluded or permanently sealed (WHA Figure 8B).	N/A	March 2011
The trees by the electrician's shop (Building 161) (WHA Figure 8B) will be removed.	N/A	May 2011
SJTA will work with FAA Airways Facility Management to exclude the ILS and approach lighting on Runway 13/31 to eliminate roosting and perching by birds on this equipment. <i>(ILS Pending Operational Approval)</i>	March 2014	April 2015
SJTA will work with FAATC to exclude the experimental ILS and approach lighting on Runway 4/22 to eliminate roosting and perching by birds on this equipment. <i>(ILS Pending Operational Approval)</i>	May 2016 (Approval granted March 2016)	April 2017
Skirting or rip rock should be applied to areas to upgrade the AOA perimeter fencing from Tilton Road to Amelia Earhart Boulevard (WHA Figure 8F), as needed, to keep wildlife (i.e. deer and coyotes) from gaining access to the AOA.	Initiate 2012 As Needed / Identified	Ongoing
Any gaps found under the concrete slab foundations of ILS buildings should be filled in with rock to prevent wildlife such as groundhogs or skunks from finding cover underneath the buildings, and possibly undermining the structure.	As Needed / Identified	Ongoing
Identified bird nesting sites in building and structures should be excluded as soon as possible. Possible bird nesting sites should also be excluded as needed. Obsolete equipment, signs, and structures should be removed as necessary.	As Needed / Identified	Ongoing
The roof of the Snow Equipment Building (SEB) (Building 500) has gaps in the roof at each of the four corners, providing nesting habitat for European starlings. These gaps will be closed to prevent continued nesting (WHA Figure 8B).	N/A	June 2011
The current approved mowing plan should continue as prescribed (implemented in 1993, revisions made in 1995, 2000, 2002, and 2007). Any changes will be discussed and approved by the Airport Wildlife Coordinator before action is taken.	Evaluate Annually	Ongoing
Trees close to active aircraft areas and dead trees within the AOA will be removed to reduce nesting, roosting and perching habitat for birds.	As Needed / Identified	Ongoing
Areas of bare ground whether resultant from vehicle tire ruts, construction activities, snow removal, or erosion that are found adjacent to active aircraft surfaces should have topsoil added and be seeded with an appropriate approved grass seed mix.	March 2011	Ongoing
Areas of unused and obsolete broken pavement are an attractive feature for several species of hazardous birds at ACY for nesting and or grit collection. Old taxiways, edges of ramps, concrete project pads should be removed or repaired. If removed entirely the area will be covered with adequate soil to prevent ponding and seeded with an appropriate approved grass seed mix.	In combination with Projects underway (ARFF) / others pending funding	Ongoing until resolved
SJTA will ensure that the "No Feeding Policy" is sent to all tenants annually and enforced.	Initiated June 2011	Annually

SJTA will develop education signs about the “No Feeding Policy” to post for all employees and passengers, to create awareness of the potential hazard of wildlife on and off the airport.	June 2012	April 2013
A zero tolerance policy toward Canada geese should continue to be maintained. Geese seen within the AOA should be immediately harassed. If the geese are persistent, the Airport Wildlife Coordinator should be contacted.	N/A	Ongoing
The Memorandum of Agreement (MOA) with The New Jersey Pinelands Commission (NJ Pinelands) will be reevaluated to allow for management provisions to protect human health and safety and continuation of safe airport operations, as well as for the grass seed mixed used for construction projects near active areas.	Under Review: After review this is considered not feasible for the foreseeable future.	
Conduct monitoring surveys of wildlife abundance at ACY and on the surrounding properties within the 5 mile radius of the airport. (see Section 9)	Initiated 2006	Ongoing
Conduct Canada goose management to reduce/stabilize the local population on non-airport properties within the airport environment (5 mile radius) / funding dependent	Spring/Summer Annually	Ongoing
SJTA will continue to enhance outreach to surrounding municipalities and large landholders (i.e. malls, shopping centers, housing developments) to promote airport safety and good land-use practices (i.e. No Feeding Policies, 48 hours draining retention basins, early input on construction).	N/A	Ongoing
SJTA will continue the working relationships with the Atlantic County Utilities Authority Landfill (ACUA), continue to have input at the quarterly meetings and the ACUA should continue to be monitored for bird activity.	Monthly Surveys conducted	Ongoing
Areas on the North side of Runway 13/31, adjacent to the North portion of Taxiway Charlie of the airfield may flood, though infrequently, after series of substantial storm events. This area should be monitored after severe storms, for increased wildlife activity while flooded.	September 2011	Ongoing
Airport Operations will continue to perform daily inspections of the perimeter fence/deer fence to ensure that gates are closed and there are no holes or gaps found in or under the fence. Gaps that are found will be reported and immediately fixed. Airport Operations will check that gaps and holes are fixed in a suitable way to exclude large mammals. Daily inspection routes will include the fence along the FAATC/USCG ramp up to AOA gate 5, (WHA Figure 8E).	November 2010	Ongoing
Airport Operations will continue to perform wildlife checks on the airfield, with increased frequency at time of rain, high winds, or periods of increased wildlife activity.	N/A	Ongoing
Airport Operations will continue to inform the Airport Wildlife Coordinator of any large mammal sightings (i.e. coyotes, deer, and fox) or any gates that are left open immediately.	N/A	Ongoing

Airport Operations will continue active harassment of wildlife through the use of pyrotechnics and their vehicles. All harassment activity will continue to be recorded in their Wildlife Observation and Harassment log.	N/A	Ongoing
Attractive vegetation located landside of the terminal and hangar areas will be removed, as practical, and replaced with less attractive vegetation	January 2014	August 2014
A list of acceptable vegetation will be developed for inclusion in the Wildlife Hazard Management Plan (WHMP).	December 2013	January 2014- Modified as need
Large trees that are landside that are within close proximity of the AOA will be removed to eliminate potential nesting, roosting and perching habitat of hazardous bird species.	Initial Removal August 2011	Ongoing
Holes in the structure of the terminal are used by English house sparrows, European starlings and other hazardous species. All holes will be excluded by being permanently sealed with the appropriate material or excluded by wire mesh or netting.	Initiated June 2011 As Needed / Identified	Ongoing
Bird exclusion will be implemented on the roof of the terminal using anti-perching devices, such as bird spikes or shock strips. This will prevent bird species from having access to the roof and defecating on employees' cars, passengers and on aircraft.	December 2013	October 2013
Gaps found in the jet bridges provide nesting habitat for European starlings. All gaps, to the extent possible, should be closed or excluded, while still maintaining the normal operation of the jet bridge. Material such as netting or rubber flashing can be used to close the gaps.	December 2012	Ongoing
Lamp posts surrounding the terminal provide perching sites for blackbirds and other hazardous bird species. These lamp posts should be excluded by anti-perching devices, such as bird spikes. <i>(Investigating options – spikes not applicable)</i>	December 2013	April 2015
Monitor the parking garage for bird habitation or use (i.e. rock doves) and employ appropriate measures of exclusion or bird removal as needed.	Initiated September 2011	Ongoing
Ensure proper review of all SJTA, NJANG, FAATC, and airport tenant construction project design plans by a qualified airport biologist or wildlife damage management biologist to ensure that no new wildlife hazard attractants are created and that existing conditions are not exacerbated. The Wildlife Coordinator should be notified of all construction projects that may have the potential to impact airport safety.	N/A	Ongoing
SJTA will ensure that all future construction projects design plans include specific constraints to limit standing water.	March 2010	Ongoing
Areas that have been reseeded and have a new drainage system due to construction may have drains with silt covers in place. These covers may fill with sediment, causing flooding during major storm events. These areas must be monitored to ensure proper drainage is occurring (WHA Figure 8E).	January 2011	Ongoing

SJTA will make capital investments in new tractors, mowing decks, wood chippers, and brush cutting equipment to ensure habitat management projects can be done when necessary and as needed.	Initiated August 2011/ 3 year target for replacement 2014	April 2014 – replace as needed
SJTA should invest in a new trash compacting facility to ensure all waste from the terminal area and airport tenants is contained appropriately. Continuing education or instruction for all compactor users in the correct operation of equipment and requirements of waste handling should continue as needed.	Plan for the facility currently under development (no target date)	
SJTA will continue to research new methods of bird abatement (i.e. Bird Detection Radar, harassment). SJTA should continue to research new methods of insect control (i.e. Japanese beetles, grasshopper species) for use on the airfield. Control measures should be targeted to areas of high insect presence and Runway Safety Areas.	N/A	Ongoing
Fencing along the FAATC and United States Coast Guard (USCG) ramp (WHA Figure 8E) will be monitored and gaps / breaches reported to FAATC for repair / exclusion. <i>(Responsibility for this section of fence has been assumed by FAATC)</i>	January 2013	January 2013 - Monitoring for gaps Ongoing

Table 1 B. WILDLIFE MANAGEMENT PROJECTS: W.J. Hughes FAA Technical Center (FAATC)	TARGET DATE	DATE COMPLETED
The deer (cattle) grate (WHA Figure 8F) will be cleared of all vegetation, silt and debris. The deer grate is effective at keeping deer from accessing the airfield by the deer being able to see through the road surface grate. As the swale beneath the deer grate fills with debris and vegetation begins to grow through the grate, the deer grate will lose its effectiveness. <i>(This item has been moved from SJTA responsibility to FAATC)</i>	December 2013	<i>In Progress</i> – Initial herbicide application completed August 2014, follow up with annual applications
Remove obsolete utility poles by the end of Runway 13 behind the electricians' shop (Building 161) (WHA Figure 8B) to remove roosting and perching areas for raptors, blackbirds, doves and other hazardous species.	N/A	January 2012
Remove the video landing trailer by the approach end of Runway 13 (WHA Figure 8C). To remove perching, roosting, and nesting habitat for hazardous bird species.	June 2012	March 2012
Completely seal or demolish Building 178 (WHA Figure 8C) to prevent bird nesting and roosting.	Plan under development / Pending Funding	
Remove trees from the North branch of Absecon creek on the North side of Runway 13/31 (WHA Figure 8D) on FAATC controlled lands and implement an maintenance program for vegetation management to maintain the area on an annual basis to prevent return growth.	December 2011	Initial removal December 2011

Remove overgrowth of shrubs and fruit producing trees from and around Superfund Area 41 (WHA Figure 8A). Implement an annual removal or mowing program to reduce the attractiveness of this area to songbirds, blackbirds, doves, raptors and mammals. <i>This area is currently under investigation for possible surface soil contaminants – once the results of the investigation are complete the appropriate action will be taken.</i>	Investigation ongoing - target end date TBD	Approximately 50% complete Nov 2015. Remainder TBD
The old Air Traffic Control Tower and associated building (150 and 150A) will be completely demolished and removed from airport property (WHA Figure 8B). <i>PENDING FUNDING FOR ASBESTOS REMEDIATION AND STRUCTURE REMOVAL</i>	Pending Funding	
Reinstitute hunting or a sharp shooting program (or combination) in FAATC Hunting Zone F (WHA Figure 8F) to remove all deer within this area. The deer population within this area is enclosed between the perimeter and deer resistant fences.	Winter 2011-12	Initial removal January 2012. Ongoing as needed
The deer hunting program helps maintain the population of deer outside the deer fence on airport property. To enhance this program, deer hunters should be encouraged to take does. This should especially be encouraged in hunting zones adjacent to the AOA (FAATC Hunting Zones B and F).	Evaluate Annually	Ongoing
Close or exclude all access points (holes, open compartments) and perch sites, to the extent possible, on the Federal Air Marshal Training aircraft located on the FAATC ramp (WHA Figure 8E) to prevent bird nesting, perching and roosting. <i>Responsibility of DHS FAM – contact in progress</i>	Two aircraft to be removed, date TBD – Winter 2013-2014	January 2014
Install exclusion devices at the overhead doors to prevent nesting by European starlings in FAATC Utility Building (Building 312) (WHA Figure 8E).	Pending Funding	
Close or exclude all access points (holes, open compartments), to the extent possible, in Research aircraft located at the FAATC test burn facility within the AOA (WHA Figure 8D) to prevent bird nesting and roosting.	Pending Response R&D	December 2012 to extent possible
American kestrels have nested over the past several years at the FAATC hangar (Building 301). This area should be excluded to prevent kestrels from returning to nest by either netting, barrier or other form of exclusion. <i>Investigation has revealed that exclusion methods would impede the operation of the doors. Kestrels will be removed through trapping and translocation or euthanization if relocation is not possible.</i>	March 2012	Exclusion netting repaired / March 2012
FAATC will allow a program by USDA WS for control of Canada geese, rock doves (pigeons), wild turkey, and killdeer on FAATC property outside of, and surrounding the AOA.	Spring 2012	Ongoing
Existing water bodies currently on FAATC property should continue to be monitored for hazardous wildlife species use and habituation (i.e. Canada geese).	N/A	Ongoing
The current approved annual airport mowing plan should be implemented as prescribed. Any changes in the prescribed mowing plan that will occur within the AOA should be discussed with the Airport Wildlife Coordinator.	N/A	Ongoing

Drainage after a storm event should be underground on airport property whenever possible, or made to drain within 48 hours, remaining completely dry between rain events. No new water bodies should be created anywhere on airport property.	N/A	Ongoing
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Table 1 C. WILDLIFE MANAGEMENT PROJECTS: NJ ANG 177th FW	TARGET DATE	DATE COMPLETED
Vegetation along the ditch by the NJANG Firehouse (WHA Figure 8A) should be removed and a plan should be initiated for annual maintenance along the ditch.	June 2012	Initiated April 2012 - Ongoing
The “Wildlife Area” that is behind the ACY commercial ramp (WHA Figure 8A) should be mowed annually to reduce the abundance of shrubs and revert the area back to a grassland.	June 2012	Initiated April 2012 - Ongoing
Vegetation growing near the old well house should be removed, to reduce perching and nesting areas for songbirds and blackbirds (WHA Figure 8A).	June 2012	April 2012
The old well house between the firehouse and ACY commercial ramp should be removed, to eliminate nesting habitat and perching sites. (WHA Figure 8A)	June 2012	October 2013
Continue removal of dead trees and removal of brush, in an effort to create a more park like environment and remove nesting habitat for birds and cover for mammals.	January 2010	Ongoing
The NJANG storage/salvage yard below the Air Traffic Control Tower contains a large amount of unused equipment that is being used by starlings for nesting activities. The unused or stored equipment should be properly covered or have appropriate exclusion measures implemented to reduce bird nesting habitat. **<i>(Clearing initiated in May 2012. Project on hold until contaminated aircraft wreckage (hazardous chemicals) can be safely remediated.)</i>	June 2012 (New date TBD)**	August 2014
Office trailers that are positioned on a more permanent basis should be equipped with metal skirting, to exclude mammals (i.e. cats, groundhog, and rabbits).	As Needed / Identified	Ongoing
Structures that are being undermined by groundhogs should be reported to the Airport Wildlife Coordinator when damage is found.	As Needed / Identified	Ongoing
Exclude all bird nesting sites in buildings and structures as identified and as needed.	As Needed / Identified	Ongoing
The fish pond found within the munitions storage area should be monitored for bird use. During the WHA this small pond was observed being utilized by wading birds (i.e. great blue herons). Since the WHA the practice of introducing goldfish to the pond has ceased and hazardous bird use has been eliminated.	April 2011	Ongoing
While conducting rounds, NJANG Security forces could also check areas of the deer fence and deer fence gates periodically and report any open gates or breeches in the deer fence. Any open gates or breeches in the fence should be reported to Airport	January 2012	Ongoing

The NJANG should continue to report all bird nesting activities on NJANG property to the Airport Wildlife Coordinator.	April 2011	Ongoing
The NJANG should continue to inform the Airport Wildlife Coordinator of all wildlife strikes involving military aircraft.	N/A	Ongoing
The NJANG should inform the Airport Wildlife Coordinator of any wildlife issues or unusual wildlife activity immediately so management actions can be implemented.	N/A	Ongoing

WILDLIFE ATTRACTANTS

The “Airport Environment” (AE) as described in the WHA for ACY is defined as the area within a five-mile radius of aircraft movement areas. Wildlife attractants in this area could potentially impact air traffic safety operating out of ACY, particularly those attractants that lie within the approach and departure corridors. The objective of this plan is to actively reduce attractive wildlife habitat on property under the control of the SJTA, while working cooperatively with adjacent property owners to discourage land-use practices that might increase wildlife hazards.

The area within a 10,000-foot radius of the airport is delineated by FAA as the *Critical Zone*. Control efforts will be primarily concentrated within this area because arriving and departing aircraft are typically operating at or below 500 feet AGL, an altitude that also corresponds with the most bird activity. Approximately 75% of all civil bird-aircraft strikes occur within 10,000 feet of the airfield from which they depart or arrive. Specific management activities within the AOA are discussed in the following sections.

Airport Construction Projects

The Wildlife Coordinator and/or Biologist will participate in the initial and early phases of all airport building projects to avoid any inadvertent increase in wildlife hazards resulting from architectural or landscape changes. The participation will be especially important during construction of the planned airport improvement projects (i.e. ramp and terminal expansion, taxiway construction), when the ACY airfield environment will be extremely dynamic. Thus, additional effort will be required to ensure that new projects and construction activities are designed in a manner that minimizes wildlife attractants.

Non-airport Attractants

Some of the most prominent attractants within the Airport Environment and Critical Zone include the Atlantic City Municipal Utilities Authority’s (ACMUA) reservoirs, the Atlantic County Utilities Authority’s (ACUA) Landfill/Transfer Station, multiple shopping centers, housing developments, and several golf courses. WS personnel monitor these sites through a standardized route survey conducted on monthly basis throughout the year. The survey route and protocol are described in Section 9. If a hazardous situation or attractant is identified, ACY will contact the property owner and attempt to work cooperatively to reduce the wildlife hazard to the extent possible. Several sites where large concentrations of breeding Canada geese were

observed have been contacted and have allowed WS Biologists to conduct management activities on their properties (see Canada Goose Management – Section 6).

Atlantic County Utilities Authority (ACUA) Landfill

The ACUA operates a landfill and transfer station which is located approximately 2 miles beyond the threshold of runway 31. ACY, the FAA Eastern Region, NJ Department of Environmental Protection (NJDEP), NJANG, and WS currently work cooperatively with ACUA in the monitoring of associated wildlife hazards. Those parties are members of a working group for the landfill which meets on a quarterly basis to discuss bird activity and control measures at the site.

A failsafe landfill shutdown procedure and airport notification phone tree (Appendix A) is in place if bird numbers at the site were to increase dramatically. The shutdown procedure is included as part of the ACUA's operations and maintenance manual, and operating permit issued by the NJDEP.

FAR 139.337(f)(2)(i) Wildlife population management;

BIRD HAZARD MANAGEMENT

Several species of birds are present at or near ACY throughout the year (gulls, vultures, geese) and represent the most significant potential for causing damaging strikes. ACY is located 12 miles inland from the coast and in the middle of the Atlantic Flyway, making migratory species, especially in the fall, a great concern. Juvenile birds may also constitute an unusual wildlife hazard because of their general unfamiliarity with the airport environment at ACY. The initial response for most species will be to haze them with frightening devices to clear critical zones of the airfield. This may need to be supplemented by lethal control or capture and relocation (raptors only) to improve the effectiveness of the hazing techniques or to remove the hazardous species from the area. The "Prevention and Control of Wildlife Damage" manual, and WS's species specific damage management leaflets describe effective and practical methods that may be used to haze birds from the airport. As previously stated, an integration of multiple methods, or Integrated Wildlife Damage Management (IWDM) strategy, should be employed for maximum effectiveness. If properly applied, the techniques discussed in these documents and the FAA/USDA manual should reduce most hazards involving species of concern at ACY. Species specific bird management procedures can be found in Section 6 – Wildlife Control Procedures.

MAMMAL HAZARD MANAGEMENT

Hazards from the majority of mammal species at ACY have been reduced through habitat modifications and the construction of fencing and other exclusionary devices. In 1997, a wildlife resistant fence was completed around much of the airfield. White-tailed deer that remained inside the fenced area at that time were removed. In subsequent years deer have occasionally entered into the AOA, usually through improperly closed gates. In 2002, the portions of the

remaining old fence were also replaced. Species specific mammal management procedures can be found in Section 6 – Wildlife Control Procedures.

FAR 139.337(f)(2)(ii) Habitat modification; and

FOOD/PREY-BASE MANAGEMENT

Rodents, rabbits, insects, earthworms, and other invertebrates are highly attractive to many species of birds and mammals and will be controlled where feasible. Handouts, trash, and scattered debris also provide food for wildlife. The modification or management of a wide variety of habitats such as wildlife-attracting vegetation and removal of abandoned structures will reduce populations of potentially hazardous wildlife by limiting shelter, food, and prey availability.

Rodents

Mice and voles at ACY appear to be the primary attractants of raptors and other predators. Even though the rodent population at ACY has been relatively low, WS will continue to monitor populations (See Section 9) and will implement a control program if rodent abundance increases to a level that induces additional wildlife activity.

Insects and Other Invertebrates

Insects and other invertebrates (e.g., earthworms, beetles, grasshoppers, etc.) may attract many species of wildlife at ACY, particularly gulls and crows. Insect populations have been monitored periodically by WS to determine if they are present in sufficient numbers to attract wildlife.

In 1991, FAATC conducted an analysis and produced an Environmental Assessment which concluded that the wide spread application of pesticides was not feasible due to watershed issues. Subsequently, a biological agent, Milky Spore Disease (*Bacillus popillae*) was applied to grass areas to control Japanese beetles, the primary attractant for laughing gulls to ACY. The Milky Spore treatment was somewhat effective, but failed to reduce beetle populations at ACY.

In 2007, Japanese beetle traps were deployed at various locations throughout the airfield in an attempt to determine areas of beetle concentrations for possible treatment with a biological nematode agent. Although, treatments with the biological nematode proved fiscally unviable given the extent of acreage necessary for adequate treatment the trap deployment captured large numbers of Japanese beetles. It is assumed that the traps do provide some benefit in removing large numbers of beetles prior to egg laying and may have a beneficial effect over time. WS Biologists will continue to deploy Japanese beetle traps at prioritized locations each summer until a long term solution can be implemented (Appendix D). New methods of insect control will be explored as they become available.

Earthworms can become a powerful attractant after heavy rains when they are forced out of the ground and onto runways and taxiways. Currently, there is no vermicide registered in the United States for the control of earthworms. When earthworms are observed in large numbers on paved surfaces, sweepers will be used to remove them from the affected areas.

Trash, Debris, and Handouts

Trash and debris are often responsible for attracting species such as gulls, crows, and blackbirds. ACY will continue to conduct trash and FOD (foreign object debris/damage) collection sweeps on the airfield. Guidance to airport employees and airport tenants for the proper disposal of trash and recyclables is provided in ACY Airport Standard Instruction (ASI) 750-03 (Current Edition). The public or airport employees are not allowed to feed birds or mammals at the airport. A strict No Feeding policy is in place at ACY (Appendix C). No feeding signs are posted to discourage the general public from feeding wildlife. If people are observed feeding birds, ACY staff will discuss with them the harms associated with their behavior.

VEGETATION MANAGEMENT

Management of vegetative communities is necessary to produce habitat that is less suitable for hazardous wildlife species. ACY contains diverse vegetation types, some of which are highly attractive to wildlife. The most effective approach to reducing this attraction in the AMA is to remove all unnecessary trees, shrubs, weeds and plants, and establish non-seeding or small-seeded grass, especially within the runway safety areas (250 from centerline). The ACY Wildlife Coordinator/WS Biologist will review all plantings on ACY property and exclude those species that produce edible fruits, nuts or berries if these plants create an attraction to hazardous wildlife.

Grass Management

The primary component of vegetation management at ACY is a regimented Airfield Mowing Plan (AMP) (Appendix B). Long grass management was implemented in 1993 to deter laughing gulls from utilizing the large expanses of short grass areas for feeding and loafing. The original plan was modified in 1995, 2000, 2002, and again in 2007 to reflect changes in habitat and species management.

Grass Type

The type of grass used within runway safety areas will produce small or no seeds, but still be able to generate new growth or re-seed itself to provide a thick, monotypic stand and prevent erosion. The selected ground cover should withstand drought, flooding, and other normal climatic conditions. It should also be somewhat unpalatable to hazardous wildlife species. Whenever it can be demonstrated that seed mixtures pose no significant wildlife attraction, grass mixtures indigenous to the local area will be used for replanting areas under construction and mitigation projects. ACY will work with the NJ Pinelands Commission (NJPC) to ensure selected grasses

meet erosion control standards and mitigation objectives. Two approved grass seed mixes are currently available. A grassland enhancement seed mix listed in the “Environmental Commitments” section of the SJTA 2003 EIS and a Construction Area Seed Mix approved in 2012. These mixes incorporate native Pinelands species and have been reviewed to exclude inappropriate species. These approved species may be modified depending on project need.

Edge Removal

Edges are places where different habitats meet. These areas are often most attractive to wildlife because the animal’s biological needs can be met in a relatively small area. Much of the “edge” at ACY consists of a forest-grassland/brush-shrub transition that has been maintained at least 500 feet from the runway by ACY maintenance. This policy will continue.

Streamside Vegetation

Herbaceous vegetation growing on the edge of a stream or other wetland may provide preferred habitat for species considered most hazardous to aircraft. The vegetation that grows alongside ditches and streams within the AOA on the SJTA leased property will be removed or maintained so that habitat is not provided for waterfowl, herons, blackbirds, rabbits, and other wildlife that could present a direct or indirect hazard to aviation. If hazardous conditions occur that are related to the streams under control of the FAATC, proper coordination for management actions will be initiated.

Ornamental Landscaping

Landscaping at the airport can affect tourism, business, and the overall impression of the airport. Therefore, landscaping must be maintained in a manner that visitors in the vicinity of ACY find aesthetically pleasing. However, landscaping must not compromise the airport’s more important responsibility of air safety. Trees and bushes offering hunting perches, roosting and loafing sites, nesting cover, food for birds and other wildlife will be removed. Ornamental trees and bushes used to enhance airport aesthetics will be kept to a minimum, and varieties that are unattractive to wildlife will be selected. Species which produce edible fruits, nuts, or berries that may attract hazardous wildlife will not be used on ACY property. The Wildlife Coordinator/WS Biologist will work with SJTA Engineering to identify inappropriate vegetation in landscaping plans for new construction projects. ACY will monitor ornamental trees to prevent communal roosting by starlings and crows, and the trees will be thinned, topped, or removed if necessary. A draft “Approved Vegetation Plan” has been developed for use as a guideline in future planting projects.

WATER MANAGEMENT

ACY has several small identified wetlands and a forested stream within the AOA. Several small ponds and a reservoir are located on W.J. Hughes FAA Technical Center (FAATC) adjacent to airport property. Open storm water retention basins on ACY have been strongly discouraged.

Storm water management currently utilizes underground storage/infiltration units. Temporary open water areas will be monitored by the ACY Airport Operations and WS and will be graded / covered, or removed if deemed necessary. Water sources outside of airport property, but within the AE of ACY, will be monitored (See Section 9). If wildlife associated with any of these water bodies becomes hazardous to airport operations, ACY and /or WS will work cooperatively with the adjacent property owners to deter and/or remove the problem animals that threaten aircraft safety.

Ephemeral (Temporary Standing) Waters and Ditches

Ephemeral water bodies are shallow depressions that temporarily collect and hold water. These water sources are especially attractive to a variety of bird species (dabbling ducks, geese, and gulls) for drinking and bathing. Small depressions and areas of damaged pavement which hold water can be repaired to improve drainage. Additionally, during the wetter winter and spring months, small depressions (tire ruts) created by vehicles operating within the infield areas fill up with water for short periods of time. ACY discourages driving on the infield during periods of high precipitation to avoid ruts in the soil. Where ruts are found, ACY maintenance will fill and/or grade the damaged area. Wet grass areas that are not classified as wetlands which contain temporary water will be eliminated by filling and grading to improve drainage.

Ditches will be appropriately sloped and cleared of debris so that water does not pool and leaves the airfield in a reasonably short amount of time. Ditches that pool and attract hazardous wildlife may be covered, in whole or part, using a wire grid system or other barrier (e.g., polyester netting).

STRUCTURE MANAGEMENT

Structures provide cover and hunting perches for wildlife. Costly control measures can be avoided, if wildlife is considered when a building is being designed. Buildings should not provide nesting, perching, or roosting sites for birds. Likewise, buildings should be constructed so that access by mammals such as rodents and cats is inhibited.

Airfield Structures

Airfield structures such as runway lights, runway and taxiway signs, ILS towers, and light poles are used as hunting and loafing perches for birds such as hawks and gulls. Lights attract insects at night, and in turn, bats and nighthawks. Structures found to routinely attract birds in a hazardous manner will be fitted with Anti-Perching Devices (APD) (e.g., CatClaw).

Abandoned Structures

Structures not pertinent to air operations and no longer in use will be removed, including abandoned buildings, sheds, machinery, and light poles. Such structures are attractive to rodents, small birds, and rabbits and, in turn, attract hawks, owls, and other predators that can become a significant aircraft hazard. When immediate removal is impractical due to mitigating issues

(Areas of Concern/HAZMAT, asbestos, cost) the appropriate exclusion techniques will be applied until a permanent solution can be implemented.

FAR 139.337(f)(2)(iii) Land use changes.

Non-airport Land-use Projects

Whenever possible, the Airport Director or Airport Manager will actively participate in land-use decisions and landscape changes to avoid inadvertent creation of wildlife hazards to aircraft within the AE. Proposed projects that will likely increase the presence of birds within flight zones will adamantly be discouraged, or mitigated to a safe level. Incompatible land uses may include developments such as new water reservoirs, parks with artificial ponds, wetlands, waste handling facilities, and wildlife refuges/sanctuaries. These types of land-use changes will be monitored for compatibility by working with the local planning authorities and land developers to mitigate any adverse conditions. ACY currently receives notifications from local townships and the Atlantic County planning offices regarding new development.

4 – WILDLIFE CONTROL PERMITS

FAR 139.337(f)(3) Requirements for and, where applicable, copies of local, State, and Federal wildlife control permits.

Federal, state and local governments administer laws and regulations that manage wildlife and their habitat. A number of laws affect wildlife control at ACY, and wildlife control personnel must understand and comply with these regulations. In general, the taking of most types of wildlife is regulated through a permit process, overseen by federal or state agencies. Permits are necessary for a successful control program and will be obtained on a regular basis, or as required, by the Wildlife Coordinator. Copies of all required and current wildlife depredation permits are appended to the Airport Certification Manual and Appendix E of the WHMP when renewed or received.

FEDERAL REGULATIONS

Several federal regulations, including the Migratory Bird Treaty Act (MBTA), the Lacey Act, the Endangered Species Act, the Bald and Golden Eagle Protection Act, the National Environmental Policy Act, and the Federal Insecticide, Fungicide, and Rodenticide Act regulate various aspects of ACY's wildlife management activities. Additional regulations that may affect wildlife control activities at ACY are found in the Code of Federal Regulations (CFR), and several Federal agencies may be responsible for their implementation. Federal wildlife laws are typically administered by the U.S. Fish and Wildlife Service (USFWS) and involve primarily migratory birds and threatened and endangered species.

FEDERAL MIGRATORY BIRD DEPREDATION PERMIT (CFR 50, Part 13)

ACY maintains a current Federal permit to take migratory birds. The NJ Division of Fish and Wildlife (NJDFW) allows the take of these species under the Federal permit and requires an additional state permit for the non-game species. The Wildlife Coordinator/WS Biologist is responsible for the required annual renewal of the depredation permits, and will submit a report to the USFWS and NJDFW as required.

NEW JERSEY WILDLIFE REGULATIONS

Several New Jersey State government agencies have regulations that affect wildlife control at airports. New Jersey wildlife laws involving birds, mammals, reptiles, and amphibians, as well as state threatened and endangered species are administered by the NJ Division of Fish and Wildlife (NJDFW).

ACY also falls entirely within the area known as the Pinelands National Reserve, established in 1978 by Congress. In 1979, the NJ Pinelands Commission (NJPC) was created to preserve and protect the area from development pressures. The NJPC regulates land use and impacts to threatened and endangered species within the preserve area.

New Jersey Migratory Nongame Bird Permit

Migratory nongame birds are regulated under Federal law by the USFWS. These regulations allow harassment of migratory birds when the birds are damaging property and endangering human health and safety, but a permit is required for lethal take. In New Jersey, the NJDFW Office of Permit Management (Exotic and Nongame Wildlife Permits Office) typically issues separate permits for migratory nongame birds such as vultures and gulls. ACY possesses a Federal permit for migratory game and nongame birds that is cosigned by the NJDFW, as well as a NJ Depredation Control Permit. Management of migratory nongame birds (such as gulls) in NJ is the responsibility of the USFWS in partnership with the NJDFW's Endangered and Nongame Species Program.

New Jersey Special Wildlife Management Permit - Airport Safety

Game mammals are defined primarily as those species that are hunted for sport, recreation, or meat. Deer, cottontail rabbits, woodchucks, coyotes, red and grey fox, squirrels, opossum, and raccoons are game mammals. ACY maintains a state issued "Special Wildlife Management Permit - Airport Safety" for the removal of hazardous mammal and resident game bird species within the AOA.

WILDLIFE PERMIT CATEGORIES

Federal (CFR Title 50), and state NJSA Title 23 (Fish and Game, Wild Birds and Animals) and NJAC Section 7 (Fish and Game Code) laws define the categories of wildlife and regulations related to their management. Wildlife categories (Table 2) include migratory and resident, game and non-game, and threatened and endangered species.

Table 2. Wildlife Categories in New Jersey, and permits necessary for lethal control as required by Federal and state wildlife agencies. The table also shows whether ACY has current Federal or state permits for each category.

Category	Example Species	State Permit Required	State Permit Obtained	Federal Permit Required	Federal Permit Obtained
Resident Game Birds	Bobwhite quail, ring-necked pheasant, grouse, wild turkey	Yes	Yes (wild turkey)	No	N/A
Birds that are exempt from Federal/State Protection	European starlings, house sparrows, pigeons (rock doves)	Yes	Yes (WS Statewide)	No	N/A
Migratory Game Birds	Canada geese, ducks	Yes	Yes (cosign Federal permit)	Yes	Yes
Migratory Non-game Birds	Vultures, hawks, gulls, herons, egrets, kestrels	Yes	Yes	Yes	Yes

Category	Example Species	State Permit Required	State Permit Obtained	Federal Permit Required	Federal Permit Obtained
Depredation Order Birds ¹	Crows, grackles, blackbirds, and cowbirds	No	N/A	No	N/A
Game Mammals	White-tailed deer, eastern cottontail, woodchuck, coyote, red fox, gray fox, gray squirrel, opossum, raccoon, skunk.	Yes (deer, rabbits,) No (woodchuck, coyote, red fox, grey fox, gray squirrel, opossum, raccoon, skunk)	Yes	No	N/A

¹ May be taken without permits “when concentrated in such numbers and manner as to constitute a health hazard or other nuisance” (50 CFR §21.43).

PESTICIDE APPLICATOR LICENSE

The application of restricted-use pesticides for the removal of hazardous wildlife (e.g., blackbirds, starlings) or prey species (rodents, rabbits, insects, earthworms, and weeds) can only be conducted by Certified Pesticide Applicators, or persons under their direct supervision. To obtain the necessary license to apply restricted-use pesticides, a person must pass an exam administered by the NJDEP Pesticide Control Program (PCP). All ACY personnel that use restricted-use chemicals must first obtain a pesticide applicator's license, or be under the direct supervision of an applicator. Use of all pesticides will adhere to the product label and will follow NJDEP PCP and other guidelines. WS Biologists are required to maintain a current pesticide applicators license for the State of New Jersey. General pesticide applications for insects and rodents at or around buildings are contracted out to private pest control companies.

5 – RESOURCES

FAR 139.337(f)(4) Identification of resources that the certificate holder will provide to implement the plan.

Habitat Management and wildlife control supplies can be purchased from several companies. An adequate supply of equipment will be kept on hand at ACY for use by trained personnel.

AIRPORT SUPPLIES

Supplies that will normally be stocked at the airport include:

- 15 mm pyrotechnic pistol launchers
- Adequate supply of 15mm Pyrotechnics (Bird bombs/bangers and screamers)
- 12 gauge break action shotgun (12g shot-tell/cracker shells) (WS Only)
- Adequate supply of 12 gauge Pyrotechnics (WS Only)
- 12 gauge shotgun for bird/mammal control (WS Only)
- Adequate supply of ammunition (WS Only)
- Cleaning kits for all firearms
- Bird distress call player
- Field guide for local bird identification
- Mylar tape
- Snare/catch pole
- Neck snares (coyote, fox)
- Cage trap for dogs
- Cage trap for cats/opossums/raccoons, etc.
- Live traps for pigeons/starlings/house sparrows
- Live traps for raptors
- Large capture nets
- Binoculars
- Pellet rifle and pellets
- Latex gloves
- Garbage bags
- Freezer to preserve bird carcasses found on runways (at Snow Equipment Building)

AIRPORT OPERATIONS VEHICLES

The Airport Operations vehicles will be stocked with the supplies listed below to facilitate an immediate response to wildlife hazards. Airport Operations is responsible for responding to emergency calls from the ACY Air Traffic Control Tower (ATCT) to disperse animals from the runways. They will maintain radio communications with the tower if there is a situation within the AOA and the patrols must operate within the air movement areas according to FAA guidelines. At a minimum, supplies to be maintained in their vehicles and stocked on a weekly basis will include at least:

15 mm pyrotechnic pistol launcher(s)
An adequate supply of 15 mm pyrotechnics (bangers/screamers)
An adequate supply of .22 caliber blank caps
Bird identification field guide
Binoculars
Latex gloves
Plastic bags for bird strike collection/ Snarge kits
ACY grid map
Hearing Protection

6 - WILDLIFE CONTROL PROCEDURES

FAR 139.337(f)(5) Procedures to be followed during air carrier operations that at a minimum includes-

139.337(f)(5)(i) Designation of personnel responsible for implementing the procedures;

ACY is a designated Class 1 airport and is open for air carrier and military operations on a 24 hour / 7 day a week basis. The primary responsibility for conducting wildlife management operations and inspections lies with the Airport Operations staff (Operations Coordinators), who are on site 24 hours per day. WS Biologists supplement and assist the Operations Coordinators during daily activities, periods of increased wildlife activity, and are on call during non-duty hours to respond for emergencies. Other airport departments and individuals are designated with responsibilities to assist in the implementation of the overall plan, but do not participate in direct control operations. The designated responsibilities for each individual or department are outlined in this section.

OPERATIONS MANAGER

- Appoint a Wildlife Coordinator.
- Final authority to approve or disapprove any program(s) relating to the WHMP.
- Review designs of new structures/facilities with the Wildlife Coordinator/WS Biologist and Airport Manager during the planning stages for input on designs that are unattractive to wildlife.
- Involve a WS Biologist with land use planning and mitigation efforts.
- Coordinate landscape changes in the planning stages with the Wildlife Coordinator/WS Biologist to ensure wildlife attractants are prevented.

AIRPORT OPERATIONS DEPARTMENT

- Alleviate all hazards deemed an imminent hazard and, if necessary, coordinate a runway closure to remedy wildlife hazards. If conditions persist or are beyond the control capability of the Operations Coordinators on site the Operations office will contact the WS biologists for assistance.
- Make inspections of critical areas for wildlife activity and maintain a record of action taken, even if no wildlife was present.
- Coordinate the issuance of Notices to Airmen (NOTAM) for any unusual concentrations or unresolved wildlife hazards that may occur, per FAR 139.339(7) and procedures in ACY ASI 600-01 (Current Edition): NOTAM Distribution Accountability. In addition, have the Air Traffic Control Tower (ATCT) advise pilots on Automated Terminal Information Service (ATIS).
- Record all wildlife activity or wildlife dispersed in the Wildlife Observation Log following procedures outlined in ACY ASI 300-01(Current Edition).
- Haze wildlife from critical areas when appropriate.

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- Pick up all trash and FOD on the airfield.
 - Report heightened wildlife activity and/or unusual sightings to the Airport Operations Manager and Wildlife Coordinator/WS Biologist.
 - Advise the air traffic control tower and pilots of known wildlife hazards.
 - Log all known wildlife strikes on form FAA 5200-7E (on-line), following procedures outlined in ACY ASI 300-02 (Current Edition).
 - Preserve recovered carcasses from wildlife strikes in the chest freezer inside the Snow Equipment Building for further identification. Attach a copy of the strike report to the bag.
 - Conducts patrols of the perimeter fence a minimum of 3 times daily. Conducts a patrol of the deer fence located in the NJANG area once daily. If fence breaches are found Airport Operations personnel will immediately notify the Operations Manager and Maintenance Manager. If visual evidence of white-tailed deer intrusion into the AOA has resulted from the breach the WS Biologist will also be notified.
 - Ensure wildlife attractants are reduced through habitat modifications. Works with the Wildlife Coordinator/WS Biologist and Airport Maintenance to alter wildlife habitat as needed.

USDA-WILDLIFE SERVICES/WILDLIFE COORDINATOR

ACY currently has a Cooperative Service Agreement with Wildlife Services to have a qualified airport biologist stationed at the airport. The biologist will assist with all aspects of wildlife harassment, removal activities, and to provide technical assistance on wildlife issues. Some supplies such as starling traps, vertebrate pesticides and chemical capturing agents are available through Wildlife Services for conducting specific control operations. The use of some control methods, such as lethal removal with firearms, raptor and mammal trapping, and starling trapping, are restricted to certified Wildlife Services personnel at this time. The Wildlife Services biologist is on call to respond to any wildlife hazards reported by Airport Operations or ATCT. Presently WS personnel are on call for wildlife control on a seven day a week basis.

- Maintain the Wildlife Hazard Working Group (WHWG) for ACY.
- Disseminate information and assignments through the WHWG.
- Supervise, coordinate, and monitor wildlife control activities as outlined in the WHMP.
- Update the WHMP as necessary.
- Pursuant to a cooperative agreement, assists ACY personnel in monitoring the airport environment for wildlife hazards, taking corrective action if necessary, and record and submit all findings to the Airport Manager. (See Section 9 - Monitoring Activities)
- Inform and advise the Airport Manager of wildlife management activities, habitat modification needs, and imminent wildlife hazards that require the issuance of a NOTAM or runway closure.
- Train airport personnel annually per the requirements in FAR 139.303(c) and (e)(5) and course material per AC 150/5200-36A (or Current Edition), in the safe handling and proper use of wildlife dispersal methods and equipment, habitat management procedures, and compliance with pertinent wildlife laws and regulations. (See Section 8 – Training)

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- Coordinate wildlife control activities with State and Federal wildlife agencies and law enforcement as necessary.
 - Obtain depredation permits to control migratory birds and mammals, from Federal or State wildlife agencies.
 - Assist ACY in reviewing proposed land use changes, construction plans, and mitigation projects for potential wildlife hazards to aircraft.
 - Provide operational assistance to ACY to control/remove wildlife deemed hazardous by ACY and WS.
 - Provide, though coordination with SJTA, public relations support for wildlife control activities at ACY.

139.337(f)(5)(ii) Provisions to conduct physical inspections of the aircraft movement areas and other areas critical to successfully manage known wildlife hazards before air carrier operations begin;

The Airport Operations Coordinators will frequently conduct physical inspections of movement areas and other areas critical to wildlife hazard management as part of the daily self inspection protocol and during Wildlife Patrols. The Airport Operations Coordinators will document all observed wildlife and control actions taken by recording incidents in the Wildlife Observation Log per procedures outlined in ACY ASI 300-01 (Current Edition). In cases where wildlife species are not observed, a record indicating that an inspection was conducted and that no animals were observed will be made. The Wildlife Observation Log database will be maintained by the Operations Coordinators in the Operations office. At the end of each month the database file is emailed to the Wildlife Coordinator/WS Biologist for review. Unusual sightings or intense wildlife activity will be reported immediately to the Operations Manager and WS Biologist. The WS Biologists, when on site, will also conduct physical inspections of critical areas and report wildlife activity on an Airport Observation Sheet (WS Form 121R). During periods of exceptionally heavy wildlife activity (e.g., migratory periods, outbreaks of insects etc.), Operations Coordinators will work with the Wildlife Coordinator/WS Biologist and ATCT to issue a Notice to Airmen (NOTAM).

139.337(f)(5)(iii) Wildlife hazard control measures; and

Airport personnel are trained to identify hazardous wildlife at ACY, and will select dispersal methods that are appropriate to the type of animal creating the hazard.

WILDLIFE PATROL

ACY's wildlife patrol consists of the Airport Operations Coordinators and WS Biologists. The patrols will monitor and respond to wildlife hazards on the airfield. They will also coordinate their activities through the Wildlife Coordinator/WS Biologist. Operations personnel are trained in wildlife identification, proper control techniques, and safe operations as outlined in Section 8.

All wildlife control personnel will have a radio-equipped vehicle and adequate wildlife control supplies (Section 5). The patrol will maintain clear communications with the ATCT, in

accordance with FAA radio protocols. Personnel will report all observations of wildlife activity or control actions (e.g., notable hazards, animals killed or dispersed, unusual wildlife behavior, etc.) in the Wildlife Observation Log, or on an Airport Observation Sheet. Routine airfield sweeps will be conducted at least twice per day by WS Biologists, when onsite, and by Operations Coordinators a minimum of two times per shift / three shifts per day. Wildlife sweeps may be conducted more frequently, as conditions merit.

The presence of any dead animals found from strikes or suspected strikes will be recorded on FAA Form 5200-7E (electronically) per procedures outlined in ACY ASI 300-02 (Current Edition) Airport Wildlife / Bird Strike Report Submittal. A printout of the strike report must be retained on file in the Airport Operations office. .

All dead birds or mammals found on runways and taxiways, or within 250 feet of the runway centerline, will be considered the result of a strike unless the death was obviously due to some other cause (see AC 150/5200-32A, or additional Circulars/Amendments). Any bird or mammal remains found will be bagged, labeled (e.g., time and date found, location on runway, person who found remains, etc.), and placed in the freezer located at the Snow Equipment Building (SEB) for later inspection and identification by the WS Biologist. In addition to carcasses found on the airport, wildlife strikes will also include: 1. A strike between wildlife and aircraft was witnessed; 2. evidence or damage from a wildlife strike has been identified on an aircraft, and 3. the presence of birds or other wildlife on or off the airport had a significant negative effect on a flight (see AC 5200/150-33A, or additional Circulars/Amendments).

WILDLIFE CONTROL – GENERAL PROCEDURES

Each wildlife hazard that develops will be analyzed by wildlife control personnel to determine a practical solution. The initial response for most species will be to haze them with frightening devices (e.g. pyrotechnics, sirens), followed by population control methods when necessary. During wildlife patrols conducted by Operations Coordinators, if persistent wildlife is present and cannot be dispersed from the area, the WS Biologists will be immediately contacted to provide assistance. Techniques will be applied based on safety, effectiveness, practicality and environmental social considerations. Most control techniques retain their effectiveness when used judiciously and in conjunction with other methods. Some methods such as pesticides or snares are only effective and legal for certain species and situations. Therefore, the methods chosen will depend largely on the situation and the species involved.

The wildlife hazard management program at ACY will be conducted by the following guidelines:

1. A zero tolerance policy towards hazardous wildlife on the airport is strictly enforced.
2. Wildlife will be harassed immediately and consistently.
3. Reproduction of hazardous wildlife at the airport will be reduced or eliminated.
4. Persistent hazardous wildlife will be removed.
5. All laws, regulations, policies, permits and licenses will be adhered to.

WILDLIFE CONTROL – SPECIES SPECIFIC PROCEDURES

CANADA GOOSE MANAGEMENT

The following procedures will be used to reduce/eliminate hazards involving Canada geese at ACY and the surrounding area:

AOA

1. A zero tolerance policy for Canada geese for all areas within the AOA is in place.
2. Through the routine patrols by Operations Coordinators or WS Biologists, or when advised by ATC, wildlife control personnel will conduct the immediate harassment of geese throughout the year when present on the airfield, within the AOA, or other critical areas.
3. Persistent geese, or when deemed necessary to protect airport safety, will be removed by shooting by WS Biologists. Carcasses will be immediately collected for subsequent burial.

W.J. Hughes FAA Technical Center (FAATC)

1. Monitor for Canada goose presence at FAATC throughout the year.
2. Eliminate all nesting of Canada geese through nest searches and treatment/destruction of nests and eggs throughout the nesting season (March-May).
3. Continual harassment of geese throughout the year when observed in critical/safety areas. If necessary, aggressive and persistent harassment shall be applied during May-June, to cause geese to leave FAATC prior to the post-nuptial molt, which typically occurs in NJ by the third week of June.
4. Removal of geese through shooting by shotgun or rifle, as deemed to be safe and effective by WS Biologists. Carcasses will be immediately collected for subsequent burial. Lethal removal will only be conducted on weekend days when FAATC staff is at a minimum, per previous agreement with FAATC.
5. Removal of geese through trapping and euthanasia if geese are observed on FAATC during the molting period (typically, late June through early July).

The Airport Environment (AE) – within a five mile Radius

1. WS Biologists will monitor selected properties within a five mile radius through surveys for Canada goose and other hazardous wildlife presence. If concentrations of Canada geese are present, the property owner will be contacted and a request will be made to perform the appropriate control activities.
2. If observed, request the property owner eliminate the feeding of geese or other wildlife, or if possible work to remove the food source/habitat.
3. On cooperating properties WS will eliminate/reduce nesting of Canada geese through nest searches and treatment/destruction of nests and eggs throughout the nesting season (March-May).
4. Removal of geese through trapping and euthanasia will be considered on a case-by-case basis during the molting period (typically, late June through early July).

5. Removal of adult geese, nests, and eggs from off airport properties will be performed by WS Biologists under the USDA WS state-wide USFWS Depredation permit. Records of these activities will be maintained by the WS and reported to the Airport Manager on an annual basis.

MANAGEMENT OF BLACKBIRDS AND STARLINGS

The “blackbird” group consists of red-winged blackbirds, brown-headed cowbirds, European starlings, and others. Although these species are not large birds, their flocking behaviors, local abundance and habits render them hazardous to aircraft at ACY. Aggressive and persistent harassment implemented by Operations Coordinators and WS Biologists (pyrotechnics, distress calls, etc.) and/or population reduction (WS ONLY, via shooting, trapping, or use of toxicants) will be employed to reduce seasonal blackbird and starling abundance and hazards. Grass management pursuant to ACY’s Airfield Mowing Plan (AMP) can be used as an effective management tool in minimizing the production of seed heads during late summer and early fall. Where nesting of these species is identified on the airport, nests will be destroyed and habitat manipulation will be conducted if/where possible to deter future nesting.

Direct Management Activities - Blackbirds

1. Continual harassment of blackbirds throughout the year when observed in critical/safety areas.
2. Blackbird traps will be placed in appropriate areas of the airfield during the winter months by WS Biologists to reduce the European starling population at ACY.
3. European starling nest box traps will be deployed by WS Biologists in the spring to areas where starlings are known to nest and exclusion cannot be implemented (e.g. near jet bridges).

Additional blackbird damage management procedures and techniques, described in USDA/WS Leaflets and other documents (FAA’s Wildlife Hazard Management at Airports Manual, Prevention and Control of Wildlife Damage Manual) will be employed as necessary and appropriate.

GULL MANAGEMENT

The primary hazardous gull species at ACY is the laughing gull, which is present in NJ during the summer months. Laughing gulls come to ACY during June and July to forage on insects, primarily Japanese beetles.

Other species of gulls are present in ACY’s AE throughout the year. The two most important characteristics of gull habitat management are to ensure that food and water is not available. At ACY gulls may obtain food from garbage, food waste, handouts, or invertebrates such as earthworms. ACY will ensure that food handouts to gulls and all birds will be controlled or eliminated through enforcement of a strict No Feeding policy (Appendix C). Earthworms present on runways and taxiways after heavy rains are a strong attractant. When earthworms are observed in large numbers on paved surfaces sweepers will be used to remove worms from the affected areas. Harassment with pyrotechnics, distress calls, and other methods will be employed as

needed by Operations Coordinators and WS Biologists. Shooting of gulls will be implemented by WS Biologists pursuant to permits and safety precautions.

Direct Management Activities – Laughing gulls

1. Adhere to the AMP (Appendix B) to deter laughing gull loafing/feeding in short grass areas.
2. Continue Japanese beetle management as described later in this Section.
3. Continue to enforce the No Feeding Policy (Appendix C).
4. Aggressive and persistent harassment shall be applied in June-July.
5. Persistent gulls, or when deemed necessary to protect airport safety, will be removed by shooting by WS Biologists. Carcasses will be immediately collected for subsequent burial.

Atlantic County Utilities Authority (ACUA) Landfill

The ACUA operates a landfill and transfer station which is located approximately 2 miles beyond the threshold of runway 31 as previously discussed in Section 3. The ACUA is continually monitored by landfill staff and routinely by WS Biologists. If a dramatic increase in hazardous bird activity is observed on or near the site the airport will be notified via an airport notification phone tree (Appendix A). WS monitoring of the site is discussed in Section 9.

Raptor Management

Raptor management at ACY will consist of monitoring prey populations, habitat management, harassment, and population control according to an IWDM Strategy. Operations Coordinators and WS Biologists will primarily use harassment of raptors with pyrotechnics to direct birds away from the airport. Unnecessary structures that are used as perch sites for raptors will be removed. Anti-perching devices will be installed to deter perching on essential structures (runway markers, taxiway signs, lighting, etc.). If persistent individuals or an abundance of raptors is present on the airfield, they will be trapped and relocated off property by WS Biologists. ACY currently maintains authority under the USFWS Migratory Bird Depredation Permit to trap and relocate, or alternately euthanize, red-tailed hawks, American kestrels, rough legged hawks, and Northern harrier.

Grassland Bird Management

Hazards presented by grassland bird species present at ACY will be managed primarily through habitat management and the AMP. In 2007-8 the AMP (Appendix B) was modified to deter grassland bird use of the runway safety areas and associated infields. However, if grassland birds are observed near active aircraft surfaces immediate harassment (pyrotechnics, sirens, vehicles, etc.) will be implemented by Operations Coordinators and/or WS Biologists.

Management of Hazardous Species within the Grassland Conservation and Management Area (GCMA)

The GCMA will be continually monitored for the presence of hazardous wildlife species (See Section 9) through standardized surveys and incidental observations. Management of hazardous species within the GCMA will primarily focus on direct management (e.g. trapping/ relocating /euthanizing, shooting, and harassment) of problem species (e.g. blackbirds, mourning doves, wild turkey, etc.) since habitat modifications will not be possible in most cases. Noted hazards and management actions may be presented to the Grassland Advisory Committee at a regular meeting or through email notification by the Wildlife Coordinator/WS Biologist.

Management of Other Bird Species

In addition to the previously mentioned species, the following bird species groups have been observed or involved in strikes at ACY: grassland birds, doves, shorebirds, and others. The initial response for most bird species will be to haze them with frightening devices to clear critical zones of the airfield. If persistent problems develop management of these species will depend on the nature and extent of the hazard. As future hazards are identified the appropriate methods will be implemented with guidance from the Wildlife Coordinator/WS Biologist.

White-tailed deer

ACY has a zero tolerance policy for deer on the airport. If deer are observed by Operations Coordinators the initial action will be to harass the animal from critical areas. Notification will then be made to the WS Biologists. Deer that enter into the “deer free zone” inside the wildlife resistant fence will be removed by WS biologists as soon as possible after detection. Deer will be removed from the AOA pursuant to the “Special Wildlife Management Permit – Airport Safety” issued by NJDFW.

Coyotes and other mammals

Species such as coyotes, fox, woodchucks, etc. will also be removed as needed to maintain airport safety. The primary removal techniques for these mammal species will be trapping. Smaller mammals still exist on the airfield in low to moderate densities, and can provide an attraction to larger predators and raptors. These rodent and rabbit populations will be monitored by the WS Biologist.

TOWNSHIP ANIMAL CONTROL ASSISTANCE

The Egg Harbor Township Animal Control may be available to help with free-ranging dogs and cats. If the animal poses an immediate threat to aviation, WS Biologists will be contacted and attempt to catch, disperse, or lethally remove it.

INJURED / ORPHANED WILDLIFE

If an injured or orphaned wildlife species is encountered the WS Biologist should be contacted to provide guidance or instruction on the safe handling and / or care of the wildlife species. In cases where the Biologist cannot be reached within a reasonable amount of time, the Cedar Run Wildlife Refuge may be contacted for guidance.

Woodford Cedar Run Wildlife Refuge (For Information and Advice)
4 Saw Mill Road, Medford, NJ 08055
Wildlife Hospital Phone: (856) 983-3329 X106
Public Hours: Monday-Saturday 10AM-4PM5PM / Sunday 12PM-4PM

<http://www.cedarrun.org/content/rehabilitation/rehabilitation.asp>

139.337(f)(5)(iv) Ways to communicate effectively between personnel conducting wildlife control or observing wildlife hazards and the air traffic control tower.

All personnel involved in wildlife control operations will be equipped with radios meeting all the requirements of FAR 139.329, and are required to have undergone movement and safety area training, prior to, and on an annual basis per the requirements of the ACM and FAR 139.303.

ACY has a current Letter of Agreement (LOA) with the Atlantic City ATCT identifying responsibilities for condition assessment and reporting for Breaking Action, Bird/Wildlife Hazards, and FOD Inspection/Assessment. The agreement specifies the following responsibilities under Bird/Wildlife Hazard:

- a. The Airport Operations Coordinator (AOC) or Wildlife Hazard specialist shall advise the Tower when wildlife dispersal pyrotechnics are expected to be used on the airfield.*
- b. The Tower shall inform Airport Ops of any wildlife observed on a movement area or other part of the airfield that may be a hazard to flight operations. The Tower will allow immediate access by the AOC or Wildlife Hazard specialist to the movement area to ensure the wildlife hazard is removed.*

Although the ATCT cannot be expected to monitor all wildlife hazards on the airfield and still direct air traffic, tower personnel should notify Airport Operations immediately if pilots report hazards or any such hazards are observed from the tower.

Airport Operations will immediately respond to any report from the ATCT or pilot regarding Bird/Wildlife activity or a suspected wildlife strike. Assistance by WS Biologists will be requested as necessary.

Wildlife control personnel will coordinate with the ATCT, and if necessary, request to detain arriving or departing air traffic if an immediate hazard exists that might compromise the safety of air traffic at ACY. In extreme cases, the runway may need to be closed temporarily at the

discretion of the Airport Operation Coordinator on duty or Operations Manager until hazards are eliminated.

The Airport Operations Coordinator or Operations Manager will issue a NOTAM for any unusual concentrations or unresolved wildlife hazards that may occur, per FAR 139.339(7) and procedures in ACY ASI 600-01 (Current Edition): NOTAM Distribution Accountability. In addition, request that ATCT advise pilots on departure and/or arrival of any increased wildlife activity, as well as on ATIS.

7 - EVALUATION

FAR 139.337(f)(6) Procedures to review and evaluate the wildlife hazard management plan every 12 consecutive months or following an event described in paragraphs (b)(1), (b)(2), and (b)(3) of this section, including:

The WHMP will be reviewed and evaluated, following a significant wildlife strike event, or at minimum annually by the Wildlife Hazard Working Group to determine the effectiveness of the WHMP at reducing wildlife strikes at ACY. The results of that review including any significant findings, recommendations for changes to the Plan, status of current wildlife hazard management projects, new procedures, or practices will be documented on acceptable forms such as the “Wildlife Hazard Management Plan Review Checklist”. This documentation will be submitted to the FAA, as requested, or during the annual certification inspection.

WILDLIFE HAZARD WORKING GROUP MEETINGS

The Wildlife Hazard Working Group will meet at least once per year, but the group may convene more regularly if situations warrant, as determined by the Wildlife Coordinator or upon request of any of the Working Group Members.

WILDLIFE STRIKE DATABASE / WILDLIFE OBSERVATION DATA

The Wildlife Coordinator will maintain a database of wildlife strikes, control actions by WS, control actions by the Operations Coordinators, and wildlife surveys of the airfield to include the surrounding areas. The wildlife monitoring surveys of on-airport and off-airport attractants and hazards are described in Section 9 – Monitoring of Wildlife Hazards. Information compiled in this database will be used to identify trends, and to monitor any increases in wildlife hazards on or near ACY and will be presented to the Working Group at regular meetings. If unacceptable increases in wildlife populations are observed, the cause should be determined and the WHMP modified to address the problem. The records will be entered monthly into a computerized database by the Wildlife Coordinator/WS Biologists.

8 – TRAINING

FAR 139.337(f)(7) A training program conducted by a qualified wildlife damage management biologist to provide airport personnel with the knowledge and skills needed to successfully carry out the wildlife hazard management plan required by paragraph (d) of this section.

Training is essential for personnel involved in the WHMP. The Airport Operations Manager and Wildlife Coordinator will ensure that all personnel that might be working in a wildlife deterrence capacity are trained in the proper selection and application of control methods as well as wildlife species identification. Airport communications and driving training is provided by Airport Operations and is given to all employees involved in wildlife control operations that may require them to operate on the AOA.

ANNUAL – RECURRENT WILDLIFE HAZARD MANAGEMENT TRAINING

Wildlife control personnel will receive initial and recurrent training annually in mitigating wildlife hazards at airports, including an overview of laws associated with wildlife control, habitat management, techniques used for prey-base reductions, and wildlife identification and dispersal techniques from a qualified airport wildlife biologist. Airport Operations Coordinators who are responsible for using pyrotechnic launchers will receive training on the safe and effective use of pyrotechnics (including live fire training) from a qualified individual. Training will meet the curriculum requirements of FAA Advisory Circular 150/5200-36A (or additional Circulars/Amendments) which provide guidance to Airport Operators for initial and recurrent training for personnel actively involved in implementing an FAA approved WHMP. Classes will be held in May and November annually, or more often if necessary to train new personnel.

9 - MONITORING OF WILDLIFE HAZARDS

Monitoring for wildlife hazards at ACY and at off airport sites is a key component of an Integrated Wildlife Management strategy. The surveys listed in this section allow WS Biologists to have an adaptive management program with the WHMP.

MONITORING FOR WILDLIFE HAZARDS – ON AIRPORT

In 2003 the FAA and SJTA completed an Environmental Impact Statement (EIS) and published that Record of Decision (ROD) and Finding of No Significant Impact (FONSI) for the Airport Layout Plan Approval. The EIS assessed potential environmental impacts associated with airport development that would provide capacity, facilities, and safety enhancements at ACY. In the ROD/FONSI it was determined that critical habitat for two bird species, namely the upland sandpiper (*Bartramia longicauda*) (SE), and grasshopper sparrow (*Ammodramus savannarum*) (ST), which breed in the grasslands of ACY and are present within the AOA, would be impacted from airport development. As a result, the Grassland Conservation and Management Area (GCMA) was established in the Northwest corner of the AOA for grassland bird habitat mitigation. Although the GCMA is located outside of all runway and taxiway safety areas the potential for the area to attract and harbor hazardous wildlife species exists.

Pursuant to a Memorandum of Agreement (MOA) between the SJTA and NJPC and Environmental Commitment Number 29 contained therein, “In consultation with USDA Wildlife Services, a program will be implemented within the Grassland Conservation and Management Area and land development areas to deter use by hazardous bird species.” This section details specific monitoring procedures for wildlife hazards within the GCMA so that appropriate management actions can be implemented as needed. General management procedures are outlined in Sections 3 and 6.

Bird Hazard Survey

Bird hazard surveys are conducted by WS Biologists to monitor bird populations and species usage of the habitats at ACY. The survey consists of observation points within the AOA and three spot check locations at the upper reservoir and Area 20A basin. These locations are used to observe waterfowl and wading birds that may be attracted to the area.

In order to quantify wildlife abundance and seasonal occurrence, Standardized Surveys, modeled after the U.S. Fish and Wildlife Service’s Breeding Bird Survey (Robbins et al. 1986), are conducted four times per month (2 Dawn and 2 Evening surveys). Wildlife data is collected from the 22 established observation points (Appendix D) along a survey route that covers the majority of the AOA. The observation points were selectively chosen based on their ability to represent key habitats throughout the airfield (especially runways and approach and departure paths) and the GCMA. Additionally, site selection ensured that more than 50% of the airport’s runway surface area would be observed. During each survey, an observer monitors these observation points for three minutes and in a 360 degree radius. Binoculars were used for

identification of species and to count the number of birds.

The following information will be recorded for each Survey/Observation Point:

- Date / Time
- Site Location
- Species
- Activity (feeding, nesting, flight direction, etc.)
- Cover Type (grass, trees, pond, building, etc.)
- Number of Animals
- Weather Conditions (at start and end of the Survey)

Data Analysis

Data will be examined and presented to the WHWG during the annual meeting. Results may also be presented to the Grassland Advisory Committee during a regular committee meeting or at the discretion of the Wildlife Coordinator, if conditions merit. The Wildlife Coordinator/WS Biologist, in consultation with the group, will determine a course of action for specific hazards or trends that are identified. The appropriate changes will then be made to the WHMP. If however, hazardous wildlife is detected during any survey, and presents a clear hazard to aviation safety, immediate action to alleviate the hazardous condition will be taken.

SMALL MAMMAL POPULATION MONITORING

Several species of small non-game mammals (mice, voles, etc.) are present at ACY, currently at low numbers, but may need to be controlled in the future. WS maintains a scientific collecting permit to monitor the population levels of these species. If populations of these prey species are observed increasing over time, additional permits would be required to implement control measures. Surveys, depending on conditions, may be conducted annually in the spring and fall.

Small Mammal Survey Protocol

Three trap lines of 65 (50 on a census line, 15 on an assessment line running diagonally through the census line) snap traps each will be set out and run for three consecutive nights, for a total of 780 trap nights during two weeks of monitoring. Two of the trap lines will be located adjacent to the GCMA to obtain data on small mammal presence in the associated habitat. One trap line will be placed, as a control, in an established grassland habitat located elsewhere on airport property.

MONITORING OFFSITE ATTRACTANTS

Offsite surveys are conducted by WS Biologists at the ACUA Landfill and at other selected sites within the five mile radius of ACY on a monthly basis (Appendix D). Data will be collected through formal surveys and incidental observations for the identified sites and the presence of hazardous wildlife will be recorded. Data from this survey depicts what hazardous species are surrounding the airport at local shopping centers, golf courses, housing developments and

schools. When large congregations of geese or other hazardous birds are present, WS Biologists will approach the property owner to request to perform control activities at the site or suggest appropriate habitat alteration to reduce the hazard.

The following sites have been identified either in the WHA or through other procedures as attracting or having the potential to attract hazardous wildlife. New sites may be added as identified or developed.

- English Creek Shopping Center
- Hamilton Mall
- Hamilton Township Athletic Complex (Leipzig Ave.)
- Consumer Square
- Blue Heron Pines
- Stockton University
- Evergreen at Timberglen
- Galloway Municipal Center
- Heritage Park (Absecon)
- Bel Aire Lakes (Beezer Homes)
- ACUA Landfill/Environmental Park

The primary target species for these sites will include the following:

- Canada geese
- Vultures
- Blackbirds
- Pigeons (rock doves)
- Gull species

Other species of special interest or that may potentially create hazardous situations by nature of their flight characteristics, size, or large numbers will also be noted.

Surveys will be conducted from a vehicle. The following information will be recorded for each site:

- Date / Time
- Site Location
- Species
- Activity (feeding, nesting, flight direction, etc.)
- Cover Type (grass, trees, pond, building, etc.)
- Number of Animals
- Weather Conditions

Data Analysis

Data will be examined and presented to the WHWG during the annual meeting. The Wildlife Coordinator/WS Biologist, in consultation with the group, will determine a course of action for specific sites. If hazardous wildlife is detected during any survey, and presents a clear hazard to aviation safety, ACY will take immediate action to notify the landowner and work to reduce wildlife presence on the site.

Exhibit F



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

Eastern Region, Airports Division

1 Aviation Plaza, Room 516
Jamaica, NY 11434-4809

T: (718) 553-3330
F: (718) 995-5615

March 14, 2018

EIR: 2018EA800035

Tim Kroll
SJTA Director
Atlantic City International Airport
100 Atlantic City International Airport
Suite 100
Egg Harbor Township, NJ 08234-9590

609-573-4705

Re: ACY – Atlantic City International Airport – Atlantic City New Jersey
Compliance Letter - FY2017

Dear Mr. Kroll:

From March 12, to March 14, 2018, the Federal Aviation Administration inspected your airport's organization, systems, facilities, and procedures for compliance with 14 C.F.R. Part 139 for FY2018. At the end of that inspection, we advised you of the following findings:

1. 139.309(b)(4) – Safety Areas

The Runway 13, 200' approach light base is in excess of three inches above grade to the fragility point of the approach light fixtures and must be regraded.

Planned Correction Date: March 31, 2018

Date Corrected: _____

Initial: _____



2. 139.311(d) – Runway Lighting

- a. One of the runway edge lights on Runway 13 is misaligned and must be realigned at the five thousand foot distance remaining sign.
- b. The in-pavement edge light on Runway 13 at Taxiway H has a yellow lens in the fixture and the correct color should be white.

Note: Both items were repaired during the inspection.

3. 139.313(b)(2) – Snow Removal

At the intersection of Runway 4-22 and Taxiway B there are piles of snow that do not meet the taxiway snow profile contour as laid out in the Snow and Ice Control Plan, page #24, in your ACM. Positioning snow off the movement area surfaces so all air carrier aircraft propellers, engine pods, rotors, and wing tips will clear any snowdrift and snowbank as the aircraft's landing gear traverses any portion of the movement area.

Note: The item was addressed during the inspection.



We have given consideration to all available facts and concluded this matter does not warrant legal enforcement action. In lieu of such action, we are issuing this letter, which will be made a matter of record. Please advise the Inspector of Record (Frank Loprano) at the FAA Eastern Region Regional Office and return this letter when the discrepancies are corrected no later than 15 days after the correction date. If you are unable to meet these dates, please send a written request for an extension including the new correction date and reason, at least 15 calendar days before the original due date.

If you should have any questions, you may contact me at (718) 553-2543 or via e-mail to frank.loprano@faa.gov any time.

Sincerely,

A handwritten signature in blue ink that reads "Frank J. Loprano". The signature is written in a cursive, flowing style with a large initial "F".

Frank J. Loprano
Airport Certification Safety Inspector
Safety & Standards Branch
Airports Division

RECOMMENDATIONS / COMMENTS
Atlantic City International Airport
3/12/18 – 3/15/18

The following recommendations/comments are provided as a result of the Airport Certification Inspection:

1. I strongly agree with the airport to find an off airport habitat for the protected species, the Upland Sandpiper. Advisory Circular 150/5200-33B states: “For airports serving turbine-powered aircraft, hazardous wildlife attractants must be 10,000 feet from the nearest air operations area”. By hazardous wildlife attractants I mean the habitat for the Upland Sandpipers at the airport is detrimental to their survival. Logically it makes more sense to have a habitat for the endangered species located farther away for the airport and aircraft for their own protection. Over the years there has been a decline in the population of Upland Sandpipers at the habitat at the airport and that can be directly attributes to bird strikes by aircraft. The airport should continue talks with the Pinelands Commission to create suitable habitats for the Upland Sandpipers.

2. As a reminder, on Runway 13-31 the distance between the runway end and the start of the Threshold Markings are not standard. Please refer to Advisory Circular 150/5340-1L section 2.5, which states: The runway threshold marking starts 20 feet (6 m) from the actual start point of the runway threshold as shown in Figure A-1 and Figure A-2. This value remains the same even though a 10-foot (3-m) white threshold bar is introduced, such as for displaced thresholds or the addition of a blast pad or stopway, as shown in Figure A-9. Previously, when a displaced threshold was painted or a blast pad or stopway added, the 20-foot (6-m) dimension was increased to 30 feet (9 m) to accommodate the requirement for painting the runway threshold bar. When any runway threshold or displaced threshold is remarked with threshold bar markings, or when a blast pad or stopway is added, the separation is 10 feet (3 m) as shown in Figure A-8. The next time the Runway 13-31 markings are repainted the correct separation for the Threshold Markings must be maintained.

cc: Cert Files
Day Files
HARADO



United States
Department of
Agriculture

Animal and
Plant Health
Inspection
Service

Wildlife Services

Suite 106
Atlantic City Int'l Airport
Egg Harbor Twp., NJ
08234

(609) 641-8147
(609) 641-8157 Fax

Tim Kroll, Deputy Airport Director
South Jersey Transportation Authority
Atlantic City International Airport, Suite 106
Egg Harbor Township, NJ 08234

October 27, 2017

Re: Grassland habitat management / Grassland Conservation and Management Area
at the Atlantic City International Airport (ACY)

This letter is to provide further recommendations for the reevaluation of the Memorandum of Agreement (MOA) between the South Jersey Transportation Authority (SJTA) and the New Jersey Pinelands Commission (NJPC). The MOA, established in 2004, provides for the creation and long term management of the Grassland Conservation and Management Area (GCMA) located in the Northwest quadrant of the Airport Operations Area (AOA), as well as constrains the SJTA to adhere to a restrictive mowing regime of long grass management adjacent to active airport surfaces. These practices have been implemented to provide nesting habitat and to mitigate for impacts to habitat for two state-listed threatened and endangered species. The upland sandpiper (*Bartramia longicauda*), is listed as endangered and the grasshopper sparrow (*Ammodramus savannarum*), is considered threatened during the breeding season.

Since the initiation of the MOA the Federal Aviation Administration (FAA) has issued new guidance to airports regarding the establishment or management of state-listed endangered and threatened species on airports in the form of FAA CertAlert 06-07. In the CertAlert it is discussed as to how these species may not be inherently hazardous to aviation safety by themselves, but the associated habitat set aside for their use may attract hazardous species to the airport. This is the case at ACY where other species of birds (raptors, gulls, wild turkey and other grassland species) and mammal species (fox, coyote) utilize the habitat provided for species of concern and pose a direct risk to safe airport operations and human health and safety. The tall grass on the airfield is especially problematic in reducing the ability to detect and manage hazardous mammal species and wild turkey.

Additionally, a Wildlife Hazard Assessment (WHA) conducted by our office for ACY was completed and accepted by the FAA in March of 2011. One of the recommendations of this study was for the SJTA to re-examine the impact of the MOA on airport safety. The recommendation, in part, from the WHA is as follows:

“The Memorandum of Agreement (MOA) with The New Jersey Pinelands Commission (NJ Pinelands) will be reevaluated to allow for management provisions



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1-800-877-8339

to protect human health and safety and continuation of safe airport operations, as well as for the grass seed mixed used for construction projects near active areas.”

Furthermore, the allowed presence and continued management for species of concern within a dynamic and inherently hazardous environment such as an airport, does not align itself with the conservation goals of resource agencies charged with the protection of said species as they are often struck and killed by aircraft. According to the FAA wildlife strike database, since the initiation of the MOA in 2004, there have been 8 upland sandpiper involved in bird aircraft strikes at ACY. Observations conducted by our biologists have noted the continued decline in upland sandpiper breeding pairs utilizing ACY. During the 2017 nesting season there was only one confirmed pair observed on the property. Although there is a documented overall decline of the population in the Northeastern United States, one probable cause of the steep decline of the upland sandpiper at ACY can be attributed to the number of individuals struck and killed by aircraft.

The current habitat management practices conflict with FAA guidance and have not served to protect the species of concern they have been implemented to protect. Therefore, I would recommend that the continued participation by SJTA in the MOA with the NJPC be re-examined. The current strategies for the perpetual management of the GCMA on airport property and the restrictions to maintain grassland areas for the propagation of species of concern should cease.

The following general habitat management recommendations are provided to enhance airport safety. This is not an exhaustive list but should be considered a starting point to allow for a more adaptive management strategy. They should be incorporated into the existing integrated wildlife hazard management program and are based on extensive knowledge of the wildlife presence and associated habitat at the site.

Implement habitat changes in phases and continually assess progress as potential unknown problems may arise.

1. Actively mow all airfield grassland areas located south of Runway 13/31 to 7-10 inches throughout the growing season to prevent grassland bird nesting and habitation. Additionally, mow areas to the north of runway 13/31 to 7-10 inches, at a minimum, out to 500 feet from the runway centerline or the SJTA lease boundaries.
2. Research appropriate insect management techniques with an emphasis on biological controls due to concerns for watershed contamination. Parasitic nematodes have shown good success in controlling a wide range of white grub species, including the Japanese beetle, oriental beetle, and several species of June beetle, all of which have been documented as food attractants for laughing gulls at ACY. However, where biologic controls are not viable for a

particular insect species the limited use of traditional insecticides should be implemented.

3. Identify areas of sparse grass growth or barren areas and seed with a type of grass that is not attractive to wildlife species and will provide good cover in possibly nutrient poor soils.
4. Target shrub species that are interspersed in grass areas for herbicide treatment. These species provide food sources for a variety of insect and beetle species.
5. During the summer season monitoring and wildlife patrols should be increased to ensure that habitat management practices are achieving the desired effect in the reduction of hazards.

If you have questions regarding this letter please do not hesitate to contact me.

Sincerely,



Christopher Boggs, Wildlife Biologist

cc:

John Weller, Wildlife Biologist, FAA HQ
Mahendra Raghubeer, FAA Eastern Region
Lori Pagnanelli, FAA ADO Harrisburg
Colonel John Didonna, NJANG 177th FW
Colonel Bradford Everman, NJANG 177th FW
Aaron Guikema, WS State Director, Pittstown, NJ



NEW JERSEY AIR NATIONAL GUARD
HEADQUARTERS 177TH FIGHTER WING
EGG HARBOR TOWNSHIP



17 November 2017

MEMORANDUM FOR RECORD

FROM: 177 FW/CC

SUBJECT: Airfield Grass Management at Atlantic City International Airport

1. This memorandum serves as a recommendation for the reevaluation of the Memorandum of Agreement between the South Jersey Transportation Authority and the New Jersey Pinelands Commission.
2. The US Air Force recommends that airfield grass be maintained between 7-14 inches to deter hazardous bird species. The current management practices are not fully in agreement with Air Force recommendations. Our current Bird Aircraft Strike Hazard (BASH) Plan recommends “a more uniform turf, elimination of bare areas, and management of grass heights between 7-14 inches (6-12 inches per FAA guidance) where possible.”
3. We have reviewed the recommendations provided by the USDA Wildlife Services and we support the efforts of the South Jersey Transportation Authority to change the airfield grass management strategy to enhance safety in support of our mission.
4. If you have any questions, please contact the 177 Fighter Wing Commander at 609-761-6012.

JOHN R. DIDONNA JR., Colonel, NJANG
Commander