WILDLIFE HAZARD SITE VISIT

REDFIELD MUNICIPAL AIRPORT

Redfield, South Dakota

May, 2016

Prepared for:
City of Redfield
626 Main Street
Redfield, SD 57469

Prepared by Tim Pugh
Qualified Airport Wildlife Biologist
Midwest Wildlife Services

Table of Contents

I. Introduction

Midwest Wildlife Services (MWS) conducted a wildlife hazard site visit at the Redfield Municipal Airport (1D8) on April 18th, 19th and 20th, 2016. The site visit was conducted by Timothy Pugh, a Qualified Airport Wildlife Biologist meeting the requirements of FAA Aircraft Circular 150/5200-36A (Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments).

A site visit is a brief analysis of the wildlife activity at an airport. It attempts to identify potential wildlife hazards so that the airport can expedite the mitigation of those hazards. Wildlife activity can be highly variable throughout the seasons of the year, and from one year to another. A biologist with sound knowledge of area wildlife, along with an understanding of wildlife life history and behavior, should be able to make fairly accurate predictions of how wildlife will utilize various airport habitats through the different seasons of the year. Since habitat is the key to wildlife activity, habitat is the primary focus of a site visit. The biologist attempts to identify the airfield habitats, predict how wildlife are likely to use these habitats, and provide recommendations on how to best minimize the hazards that they create. The biologist also considers any anecdotal information gathered from airport personnel, pilots or others who may have first-hand knowledge of airport wildlife activity throughout all seasons of the year.

During a site visit, an attempt is made to identify all airfield wildlife attractants and potential hazards, regardless of their level of significance. Some attractants may pose critical threats to aircraft safety, while others may have a minimal influence. All are important to be aware of and should be addressed as funding and resources are available. Hopefully, with the information gained from a site visit, an airport will have the information needed to prioritize and address all potential wildlife threats.

During this site visit, the City Finance Officer, the City Maintenance Superintendent and the Airport Manager were able to provide information and insight into the current management of the airfield and the wildlife activity of the area. A search of the FAA National Wildlife Strike Database did not indicate any reported wildlife strikes at 1D8. The City Finance Officer, Maintenance Superintendent and the Airport Manager were also not aware of any strikes.

A. Background

The City of Redfield is planning to make improvements to 1D8 which include the construction of a new Runway 17/35, the removal of Runways 13/31 and 1/19, the elimination/filling of on airport wetlands and the eventual construction of a ten foot wildlife perimeter fence. An Environmental Assessment (EA) has been completed for the construction of the new Runway 17/35, the purchase of the Runway Protection Zones (RPZs) and Departure Surfaces to the end of the RPZ limits, and to reduce and/or eliminate hazardous wildlife attractants at the airport.

A Wetland Delineation in 2015 identified and delineated eleven wetlands on current and future airport property. While wetlands at airports can be attractive to wildlife species hazardous to aircraft, their removal and mitigation can be difficult and costly. Therefore, in addition to a standard wildlife hazard site visit, the purpose of this site visit is to investigate the level of wildlife attraction of each wetland in order to aid in the decision as to which wetlands must/will be filled and mitigated off-site and which ones do not. To help reduce the cost of the project, the City of Redfield will evaluate other alternatives such as leaving some wetlands alone and /or simply modifying the wetlands to drain, implementing

underground storage (HDPE, Concrete, etc.), and off-site storage. Additionally, the City has rented property northeast of the airport and that tenant has shown interest in planting a row of trees. The possibility of the proposed trees becoming a hazardous wildlife attraction will also be investigated. Furthermore, this WHSV will be the basis of a WHMP developed for the City of Redfield.

B. Site Description

Redfield Municipal Airport is a general aviation airport, owned and operated by the City of Redfield, South Dakota. It is approximately 180 acres in size and is located on the southwest side of Redfield, in Spink County, South Dakota. The airport currently has two runways. Runway 13/31 (3300' x 60') is an asphalt runway while Runway 1/19 (2500' x 250') has a turf surface. In addition to the safety areas that are maintained as short grass, the airport also contains hay land and some small wetland habitats. Most of the airport is surrounded by a barbed wire or woven wire fence that stands approximately four foot in height. Additionally, the planned runway removal and the addition of Runway 17/35 will require that the City purchase an additional 83 acres, most of which consists of cropland, agricultural land registered in the Conservation Reserve Program (CRP) and wetlands.

For the twelve month period ending February 2, 2016, 1D8 supported an average of 77 operations per week. All of these consisted of local and transient general aviation (AirNav.com).

The climate of the Redfield area is characterized by having warm pleasant summers and long cold winters. Monthly average high temperatures range from 24°F in January to 85°F in July, while low temperatures range from 3°F in January to 60°F in July. Snowfall occurs mostly in light to moderate amounts during the winter, with an annual average total of 37 inches. Average rainfall is 21.8 inches annually and is concentrated in the warmer months (USClimatedata.com).

USDA Soil Surveys indicate that the 1D8 airfield consists mainly of fine sandy loam soil types, primarily Woonsocket-Whitelake fine sandy loam (57%), Henkin-Blendon fine sandy loams (21%) and Forestburg-Elsmere loamy sands (14%). These soil types are moderate to very deep and are moderate to well-drained. The 1D8 soils are classified as prime farmland, especially if irrigated.

C. Objectives

The primary goal of this site visit was to identify the potential wildlife hazards associated with 1D8. The seven primary objectives were:

1. Identify species of concern and their daily/seasonal patterns.
2. Identify current wildlife population parameters such as species composition, abundance, activity and habitat use.
3. Identify current wildlife hazards to airport operations.
4. Identify features and activities on or near 1D8 that potentially contribute to wildlife hazards to aircraft using the 1D8 airfield.
5. Provide management recommendations for reducing wildlife hazards at 1D8, which will serve as a framework for developing a wildlife hazard management plan.
6. Evaluate the level of wildlife attractiveness of eleven airfield wetlands.
7. Evaluate the potential wildlife hazard influence that a proposed tree planting may have on safe aircraft operations.

Additionally, the site visit considered the planned airport improvements that are expected to be implemented in the next twelve to twenty-four months at 1D8. These improvements primarily include the removal of the current runways and the construction of a new 17/35 runway, including the purchase of additional property and easements.

D. Wildlife Strike History

An aircraft wildlife strike is considered to have occurred if any of the following occur:

1. A pilot reports a strike
2. Aircraft maintenance personnel identifies damage as having been caused by a bird or mammal strike
3. Personnel on the ground report seeing an aircraft strike one or more birds or mammals
4. Bird or mammal remains, in whole or part, are found on any air side pavement area or within 250 feet of a runway, unless another reason for the bird's or mammal's death is identified.

No wildlife strikes have been reported to the FAA National Strike Database at 1D8 between 1990 and the present. Discussions and interviews with 1D8 personnel did not indicate any known strikes.

E. Current Wildlife Hazard Management

While there are no full time employees at the airport, the City Finance Officer, Maintenance Supervisor and Airport Manager are responsible for the day to day maintenance at the airport. Most wildlife management at 1D8 is conducted through habitat manipulation, primarily mowing. Safety areas are mowed short. Other areas are cut for hay, typically twice each year. There have been attempts to control the pocket gopher activity on the airfield through poisoning. Hazardous species such as gulls and waterfowl on the airport are not hazed or removed due to the understanding that these species are protected. Most wildlife threats on the airfield are addressed through NOTAMs.

II. Site Visit

A. Study Methods

During the site visit, wildlife surveys were conducted on the 1D8 airfield three times per day (morning, mid-day & evening) over a two day period. Each survey consisted of eleven survey points on the airfield, which were selected to best sample all airfield habitats. At each survey point, observations were made for a five minute period. With the aid of 10X40 binoculars, all wildlife observed from each survey point was recorded.

In addition to airfield point counts, any notable wildlife observed while traveling between survey stations or at other times during the site visit was also recorded. All habitats on the airfield were walked and explored in an effort to find any sign (tracks, scat, burrows, etc.) that would indicate the presence of wildlife species or their use of the airfield.

The following discussions, conclusions and recommendations are based on several items including: the

observations made during this site visit, the 2010/2011 Phase II Environmental Assessment Wildlife Study, the 2015 Wetland Delineation Report, personal communications with City of Redfield personnel, and the biologist's general knowledge of local and regional wildlife populations and their predicted movements and behavior.

B. Birds

a. Waterfowl and Gulls

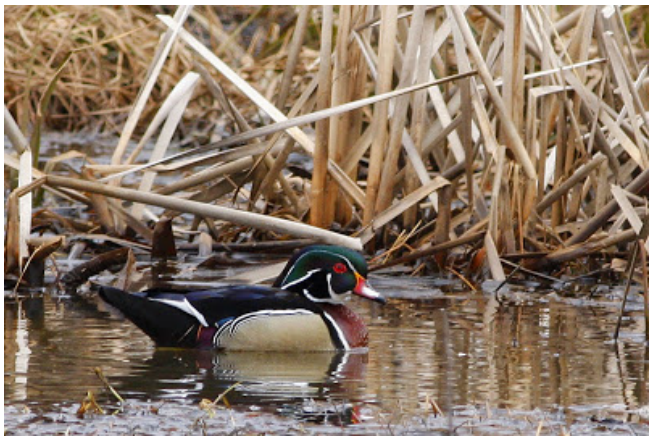
Ducks and geese are the main waterfowl types in the Redfield area. Both waterfowl and gull activity at 1D8 appears to be influenced primarily by the large open water wetland (Wetland 4 Appendix A) on the south side of the airport and the several smaller pothole wetlands on and adjacent to the airfield. While Lake Redfield, Turtle Creek and the unnamed creek to the west and north attract gulls and waterfowl to the area, the presence of wetlands on and adjacent to the airfield are the primary attraction of these large bodied flocking birds to the immediate 1D8 vicinity.

Geese. Because of their large size and flocking behavior, geese are one of the most hazardous birds to aircraft. Geese are common in the Redfield area, especially during the migratory seasons in the spring and fall. Additionally, Giant Canada goose numbers have increased over the last few decades so many of these larger geese remain through the summer and nest in the Redfield area.

During the site visit, three pairs of Giant Canada geese were consistently observed on the 1D8 airfield. While no nests were located, these geese were obviously preparing to nest on Wetlands 2 and 4 (Appendix A). It appears Wetland 4 could attract larger numbers of geese, especially during the spring and fall migrations. However, during the 2011 Wildlife Study only one pair of geese nested on the airfield and the only other geese noted at 1D8 were flying over and did not utilize the airport.

The combination of suitable wetlands and grass habitat are the primary reasons nesting geese are attracted to the 1D8 airfield. Removing wetlands and proper habitat management are the most effective ways to keep nesting, loafing or feeding geese off of the airport. Although geese are highly attracted to croplands in the spring and fall, they are primarily grazers and will seek out grass areas to feed during most seasons of the year. They prefer short grass where their view of oncoming predators is unobstructed, and are likely to be attracted to the short grass of the 1D8 turf runway and runway safety areas. To discourage geese from the airfield, vegetation height should be maintained at 6 inches or higher wherever possible. Whenever geese are

present on the airfield they should be hazed. Any persistent geese that cannot be easily dissuaded, especially nesting pairs that remain on the airfield, should be lethally removed. 1D8 should maintain an absolute "no tolerance" policy on geese at the airport, and NOTAMS should be issued when necessary to warn pilots of the extreme hazard these birds pose. Unless taken by legal hunters during hunting seasons, lethal control of geese will require that the City obtain a permit from the U.S. Fish and Wildlife Service (USFWS).



Ducks. Although ducks do not pose the same threat to aircraft that geese do, their large size and flocking characteristics make them a highly hazardous bird to aircraft as well. During the site visit, over one hundred ducks, grebes and coots were observed using the open water area of Wetland 4. The abundance of open water lined with cattails and other wetland vegetation is attractive to nesting ducks as well as loafing and feeding ducks throughout the year. Additionally, paired ducks were typically seen wherever there was open water, including permanent wetlands or areas with temporary standing water. Ducks were seen on all the wetlands identified in the 2015 Wetland Delineation, except those that did not hold open water. As is typical in the spring, pairs of ducks were also observed in open grass areas where no water was present, including several areas on the airfield. Wetlands 1 & 2 typically held one or two pairs of ducks. However, Wetland 11, which was a small pothole in the cornfield, attracted as many as 35 ducks at a time. Ducks were also common in the cropland south of the current airport site, wherever standing water was present. Similar to the results of the 2010/2011 Wildlife Study, ducks appear to be the most hazardous bird species at 1D8 and are the primary species of concern at 1D8.

To minimize the hazards posed by ducks, 1D8 should keep open water on the airfield to a minimum. Whenever ducks utilize the airfield, as with geese, they too should be hazed and lethal control used when necessary.

Gulls. Due to their large size and flocking characteristics, gulls pose a high threat to aircraft. Wetland 4 has the potential to attract and hold gulls in the 1D8 area throughout the non-winter months. It is likely gulls are present to some degree during the spring and fall months. Gulls were present during the site visit, with up to thirty individuals seen on a continued basis. Gulls not only utilized Wetland 4, but were consistently loafing on the asphalt runway where they create a highly hazardous condition.

The open water part of wetland 4 is the primary reason gulls are attracted to 1D8. The elimination of wetland 4 would likely reduce or eliminate gull activity at 1D8. However, gulls are notorious for utilizing runways for loafing. They provide an open area with good visibility for loafing and watching for predators. They may provide warmth on a cool morning or worms after a heavy rain. For these reasons, 1D8 may always attract at least a few gulls. Gulls often follow farm machinery in cropland or haying equipment as they feed on exposed rodents or insects. Gulls can be fairly easy to scare away. However, if they become more persistent, a hazing program involving pyrotechnics and lethal control should be employed.

Although habitat management techniques will discourage ducks, geese, and gulls, these species are likely to continue to utilize the 1D8 airfield at some level during parts of the year and should be managed. This is best accomplished with an effective harassment program. A successful harassment program will involve the use of non-lethal scare techniques that include a variety of visual and auditory tools to frighten birds away from the airfield In addition to hazing, lethal control is usually an integral part of a harassment program and necessary to reinforce the non-lethal tools. Since securing the proper permits for lethal control can take several weeks, it is best to have them in place before they are needed. 1D8 should secure permits from the USFWS for the control of Canada geese, mallards and the three common gulls of the Redfield area (ring-billed gull, Franklin's gull and herring gull). These can be obtained at no cost and should be renewed annually. Information on the procedures to obtain the proper permits is provided below in the State and Federal Species Status section (Section III). The wildlife hazard management plan (WHMP) should include further information on conducting an effective hazing program, the harassment tools available for bird control and the training requirements for their use.

b. Blackbirds and Starlings

Blackbirds and starlings are common and abundant flocking species that can pose a threat to aircraft when in large numbers. Blackbirds are highly attracted to cattail marshes for nesting and roosting. In the spring and fall, several hundred blackbirds may roost in a large wetland. Blackbirds often feed in cropland, especially sunflower and ripening corn. Flocks of blackbirds and starlings will also feed in short grass, rooting through the vegetation in search of small insects.

The site visit was conducted in mid-April, at the peak of the spring blackbird migration. A flock of about five thousand red-winged blackbirds that roosted at night in the western marsh area of Wetland 4 was the only large migratory flock observed. As expected, all of the area cattails had a few nesting red-winged blackbirds. Additionally, the abundance of residential trees just south and west of the airport attracted hundreds of mixed blackbirds. Throughout the daylight hours, common grackles, cowbirds and red-winged blackbirds were constantly moving back and forth between these trees that provided roosting habitat and the cornfield to the south of the airport, which was a preferred feeding area.

Red-winged blackbirds are the most abundant bird species in North America and they will nest in many areas. All wetlands or drainage ditches that contain cattails and standing water will attract nesting or roosting blackbirds. Tall grass and alfalfa will also often attract nesting blackbirds. Eliminating crops, controlling cattails, and managing airport vegetation as recommended in the grass management section below will help to keep threats from blackbirds to a minimum.

Starlings were present on the airfield in small numbers. They were mainly attracted to the older hangars which provided perch sites as well as an abundance of cavities for nesting. They would also feed in the grass areas where they could find seeds and insects. Although difficult, eliminating any holes or cavities that could be used for nesting will likely reduce any starling attraction to the airport buildings. Maintaining recommended grass height will discourage their activity on the airfield and help to prevent attracting large flocks.

c. Hawks

Due to their large size and their potential for damaging aircraft, the presence of hawks, owls and other large birds of prey at an airport should always be noted as a high risk situation. A Swainson's hawk, a red-tailed hawk and a northern harrier were observed on and around 1D8 during the site visit. With the abundance of grass and rodents on the airfield, hawks are likely to be common at 1D8 throughout the year. Hawks are typically attracted to airports to prey on small rodents and rabbits. Suitable perch sites such as fence posts, trees or other structures will facilitate this activity. 1D8 did not have any suitable trees or perch sites on the airfield, except for the posts along the relatively short perimeter fence. To best minimize hawk activity at 1D8, prey species should be kept to a minimum. This will be best accomplished through proper vegetation management as described below in the section on grass management. Rodent control to reduce thirteen-lined ground squirrels and other small mammals may also be warranted.

d. **Game Birds**

Ring-necked pheasants are the most common game bird species of the Redfield area and are likely to utilize the 1D8 airfield throughout the year. These large upland birds can do considerable damage when struck by small planes or ingested into an engine. During the site visit, pheasants were regularly seen on several parts of the airport. The most common areas pheasants were observed were near the wetlands that contained cattails for cover and the southwest end of the turf runway where the short grass, tall grass, CRP and wetlands provided several of their habitat requirements. Groups of five or six individuals were common in this area. Although there is little the airport can do to keep these species off of the airfield, avoiding crops and keeping all vegetation height at twelve inches or less should minimize their airfield activity.

e. Pigeons and Doves

Pigeons and doves are powerful fliers with robust bodies, small heads and short beaks. Pigeons are non-native birds that commonly roost and nest in airport structures. Mourning doves are migratory and nest in trees near crops and grasslands. The flocking behavior of these species give them the potential to cause a multiple strike incident. Although they are not as large as many other species considered detrimental to air safety (e.g., waterfowl, gulls, and hawks), they are typically a concern because of their overall abundance, dense body structure and movements around the airfield. Both of these species were common at 1D8 during the site visit, but neither were seen in significant numbers.

Proper vegetation management and keeping seed production to a minimum should keep mourning dove activity at 1D8 to a minimum. Pigeons were not found to be nesting in airport hangars or buildings. If they do begin to use buildings, hangar doors can be kept closed and any entrance holes should be plugged.

f. Killdeer and Small Perching Birds

There are several small birds that are commonly attracted to the paved surfaces and short grass areas along airport runways. Killdeer, horned larks and meadowlarks are the three most common, all of which were observed at 1D8 during the site visit. These birds are typically attracted to these areas for the feeding opportunities that they provide, mainly windblown seeds and insects. Also, pavement provides warmth and a snow free area on cold wintery days. Maintaining grass habitat at greater than six inches where possible, preventing seed production and minimizing weeds will reduce these species populations as much as possible.

g. Crows

Crows are very social, boisterous birds of exceptional intelligence. They are larger blackbirds and will feed on a wide variety of foods including fruits, nuts, small animals, insects, and carrion. Activities such as plowing and mowing are very attractive to crows because of the insects that are exposed. Crows can also be attracted to trash and other refuse. They are medium to large-sized birds and can inflict severe damage to aircraft if struck.

A small number of crows were observed on occasion at 1D8 during the site visit, utilizing grass habitat adjacent to the marsh area on the south side. The presence of crows at 1D8 is likely an occasional occurrence that is dependent upon grass height, insect and rodent populations and mowing activities. Maintaining grass height at greater than six inches where possible will be effective in keeping crow activity at 1D8 to a minimum. Crows can easily be hazed using pyrotechnics and visual repellents, but soon habituate to these devices if not supplemented with lethal shooting.

h. Swallows

Swallows are slender aerialists with long, pointed wings. They feed on insects by flying in an erratic manner with their mouths gaping. Barn swallows build mud nests under eaves and bridges, whereas, the other swallows nest in banks, trees, and cavities of rocks. Only one barn swallow was observed at 1D8 during the site visit. However, as spring progresses, more swallows will likely move into the area and utilize the 1D8 airfield. If there is available mud in wet areas and there are suitable nest sites, swallows will likely attempt to nest at 1D8. Additionally, wetlands and vegetation that support a strong insect population are also likely to attract feeding swallows.

Swallows are commonly involved in collisions with aircraft because of their erratic flight behavior while foraging for insects. Fortunately these collisions seldom result in damage because these are small birds. Control of swallows can be fairly difficult because their presence is closely tied to their feeding source. Proper vegetation management and removing wet areas is generally the most effective method of dispersing them from the airfield. If nesting occurs, persistent removal of mud nests with a high pressure sprayer may temporarily discourage swallows from using structures in some instances. Treating surfaces with plastic sheeting or slippery substances that mud will not adhere to may be beneficial.

C. Mammals

a. Large Mammals

Because of their large size, deer are considered to be the most hazardous wildlife species to aircraft. White-tailed deer are common in the Redfield area and were seen on occasion in the tall CRP and wetland areas immediately south of the southwest end of the turf runway. While deer were not observed on the airfield, their fresh tracks and abundant droppings were clear indication that deer do frequently utilize the airport. Excluding deer from the airfield with adequate fencing is the only effective way to minimize the threat they pose to aircraft. A perimeter fence must be a minimum of ten feet in height to effectively exclude deer. The fence should be kept tight to the ground. The fence should not require an attached apron. However, any large openings under the fence should be filled to prevent deer from crawling under. If holes under the fence cannot be kept closed, then an apron should be attached to the bottom of those portions of the fence that cannot be maintained.

b. Medium Sized Mammals

Coyote, raccoon, skunk and badger sign was the only medium sized mammal activity observed on the 1D8 airfield during the site visit. Coyote and raccoon feces was found in several places. Skunk activity was found near the large overgrown mound to the south of the hangars and a freshly dug badger den was located on a high area near the end of the turf runway. Other species such as fox or domestic dogs and cats may also access the airfield. All of these species can be a hazard to small aircraft. In addition to a direct strike, these species can distract a pilot, cause a pilot to veer off a runway or overcompensate in attempting to avoid a strike. Their activity on the airfield can be minimized by avoiding outdoor storage or junk piles, removing hay bales from the airfield immediately after

baling, and following the recommended airfield vegetation management described below in the section on grass management. When these species become frequent on the airfield, they should be removed through trapping, shooting or other control methods.

c. Rodents and Rabbits

The main issue with rodents and rabbits on an airfield is that they attract predators such as coyote, fox, badgers and hawks. Rodents are attracted to many habitats on an airfield but become especially abundant when associated with agricultural crops or alfalfa. Small areas of pocket gopher activity was evident throughout the airfield. Recent poisoning of the pocket gophers was conducted by the City. However, during the site visit, with the recent heavy rains it was difficult to evaluate how effective that effort was. Additionally, thirteen-lined ground squirrels were fairly abundant on the airfield. Unlike pocket gophers that create dirt mounds, thirteen lined ground squirrels typically have open burrows without any dirt brought to the surface. The high numbers of ground squirrels may be due in part to the abundant burrow system the pocket gophers have created. Pocket gophers at 1D8 should be controlled. The application of toxic baits, fumigation and or trapping are effective ways to control gophers. Eliminating pocket gophers may help to reduce ground squirrels. However, if thirteen lined ground squirrels remain abundant, they too should be controlled. Ground squirrels are typically best controlled with toxic grain baits.

Jackrabbit sign was present at 1D8, but their population appeared to be minimal. However, jackrabbits are at the very low point of their approximate ten year population cycle and will likely rebound in the coming years. To keep rodent and rabbit numbers to a minimum, the vegetation recommendations discussed below should be followed. If necessary, jackrabbits can be controlled with traps or by spotlighting and shooting.

D. Airfield Habitats

All wildlife are dependent upon habitat (food, water and cover). All habitats are an attractant to wildlife at some point in time. At an airport, we try to manage and manipulate habitats so they are least attractive to those species that are most hazardous to aircraft. Wildlife are typically dependent upon several habitat types to meet their needs for survival. Therefore, the more habitat types there are on an airfield, the more likely wildlife will be present. Another habitat consideration is “edge”. “Edge” is referred to the area where two habitat types meet. Wildlife typically are more abundant in these areas because they provide two or more of an animals required habitat needs in close proximity to each other. Therefore, the goal of an airport should be to work towards a single habitat type that is not attractive to wildlife, and has minimal edge areas.

This site visit addresses the habitats and structures on the airport property owned by the City of Redfield. It also includes the habitats within 5 miles of the airport that are expected to influence wildlife activity near 1D8. Each of these habitats are discussed in detail below and recommendations to minimize their attractiveness to wildlife are provided.

a. Asphalt Runway and Paved Surfaces

Paved surfaces attract a wide variety of birds for a variety of reasons. Some birds will loaf on runways or warm themselves on the pavement on a cool day. Others may feed on worms, insects or windblown seeds that may be present. Perching birds often use runway lights and other instruments. Gull feces was present on Runway 13/31 as gulls were consistently loafing on the runway during the site visit. Otherwise, all paved taxiways and aprons appeared clean and did not have any noticeable indications of use by birds. Whenever hazardous birds or flocking birds (geese, gulls, swallows) do use the runways, they should be hazed away or lethally removed.

b. Turf Runway

The turf runway also has a potential to attract birds since it is more likely to harbor seeds, insects, and rodents, while providing food and cover for many wildlife species. The turf runway was strictly grass, mowed short and did not appear to have any wildlife attractions over and above what would be expected for a short grass habitat. To minimize the attraction of rodents or small birds, the turf runways should be kept free of seeds and non-grass vegetation. If populations of rodents do reach levels that attract predator species, rodent control should be implemented.

c. Grass Management

The vegetation on the 1D8 airfield is predominately grass habitat that contains varying amounts of alfalfa with some weeds and other broad leafed plants. The safety areas and turf runway are maintained at a short height of less than 4 inches. The rest of the airfield is typically mowed once or twice during the summer months and baled for hay. At the time of the site visit, grass was turning green and beginning to grow. Outside of the safety and runway areas, new grass was still relatively short (less than six inches) however, alfalfa, which typically continues to grow well into the cool months of fall, was still present. It created a thin but tall vegetation cover that stood about eighteen to twenty-four inches tall. Soil brought to the surface by pocket gophers was also abundant in the grass areas.

There are no firm guidelines for grass management at airports. The main principles to follow are to use a grass cover and mowing regime that does not result in the buildup of rodent numbers or the production of seeds, forage or insects desired by birds. Short grass (2-6 inches) is preferred by many bird species because it allows clear sight distances, provides forage for grazing birds and does not impede access to insects or other invertebrates. Geese, gulls, blackbirds, doves, horned larks, crows and small insectivorous birds prefer short grass because of these factors.

Longer grass heights (6-12 inches) are attractive to birds such as some species of ducks, meadowlarks, and some species of hawks and owls because of the food and cover provided. When a short grass

regime (6 inches or less) is chosen, management ordinarily involves mowing when grass reaches the upper height limit. The advantages of short grass management are that it does not attract ground nesting birds or large numbers of small mammals and insects, and it reduces availability of seed for seed-eating birds. The disadvantages of short grass are that it exposes earthworms and insects for bird availability and provides an open view for loafing.

Grasses grown at heights between 6-12 inches reduce bird access to earthworms, insects and other small prey animals and denies good visibility to loafing birds. If the grass is allowed to grow higher than 12 inches, it may attract ground nesting birds and provide habitat for mice and voles which in turn may attract fox, coyotes, hawks and other predators. Additionally tall grass that is permitted to develop seed heads is used as food by rodents, geese and other birds.

The type of grass used within the perimeter fence should produce small or no seeds, but still be able to generate new growth or reseed itself to provide a thick, monotypic stand and prevent erosion. It needs to withstand drought, flooding, and other normal climatic conditions, and be somewhat unpalatable to grazers such as geese and deer.

In general, cool season grasses such as bromes, wheatgrass and blue grasses are not usually recommended as they typically have two growing seasons that vary considerably from year to year. If conditions are not just right, these areas often become weedy and can produce a lot of seed. However, if fertilized sufficiently to produce a dense stand, and mowed regularly to maintain proper height and prevent seed formation, these grass types can be managed to minimize their attraction to wildlife. Western wheat grass greens up in the spring but typically does not grow after mid-summer. For an airport that chooses to plant cool season grass, western wheat grass is highly recommended by the U. S. Department of Agriculture's Natural Resource Conservation Service (NRCS). When sparse, it can produce a lot of seed. However, once established, seed is rarely produced. Western wheat grass is broadly adapted to a variety of environments and conditions and makes a good hay crop. Intermediate wheat grass has similar characteristics to western wheat grass but will produce seeds in a moist year. Fescues may be a good mix with western wheat grass however it does produce seeds and should be mowed regularly to prevent seed formation.

Warm season grasses (i.e. buffalo, grama, big bluestem and switch grass) have only one growing season each year which is more predictable. Warm season grasses typically do not begin to grow until June and mature in August, maintaining a short and predictable growing season. Big bluestem and switch grass are taller growing warm season grasses that will produce good hay crops. Buffalo, blue grama and side oats grama are native low growing grasses that are well suited to the Redfield climate and require minimal mowing. Since warm season grasses remain dormant until approximately June, herbicides such as glyphosate (i.e. Roundup) can be applied to control broad-leafed weeds and other cool season grasses in the spring. NRCS plant materials specialists should be consulted before planting any new grasses on the airfield.

Preferred grass management at 1D8 should include: maintaining warm season grasses; a mowing regime that produces a dense cover while minimizing seed production; eliminates non grass species; maintains a grass height between six and twelve inches; and discourages ground nesting birds.

Vegetation that does not get cut during the annual haying operations should be cut by other means to maintain proper grass height. This includes areas that might be too wet or too steep to mow, or along drainage ditches or culverts. Areas with terrain too rough or irregular to mow should be leveled and re-vegetated so that regular mowing can be accomplished.

Hay bales should be removed from the airfield immediately after baling and should never be stored on the airfield. Otherwise, they quickly become perches for hawks and attractants to rabbits and rodents.

d. Agricultural Land

The current 1D8 airfield boundary does not contain any agricultural land except for the airfield grass which is harvested for hay. However, outside of the airfield is land that is managed as cropland or CRP. During the site visit, adjacent cropland consisted of harvested corn fields which where attractive to flocks of mixed blackbirds, pheasants and wherever standing water was present, ducks. The tall overgrown CRP that also bordered the airport provided cover for deer and pheasants which were frequently using the airport. While this agricultural land was influences hazardous wildlife on the airfield, the planned airport expansion should remove some of it.

All of the common row crops and small grains are attractive to a variety of hazardous species, and are typically not recommended for airports. In addition, farming activities such as planting, discing, combining etc. attract problem species. Fallow fields attract loafing birds, sprouting grain provides food for grazers, tall crops provide cover for large and medium sized mammals, grains and insects provide attractive food for wildlife etc. FAA recommends against the use of airport property for agricultural production, unless the airport does not have a financial alternative (FAA Advisory Circular No: 150/5200-33B Hazardous Wildlife Attractants on or Near Airports).

While a wildlife fence should keep deer off of the airfield, the removal of cropland and CRP from any lands that will become part of the expanded airport will be necessary to keep game birds, and medium

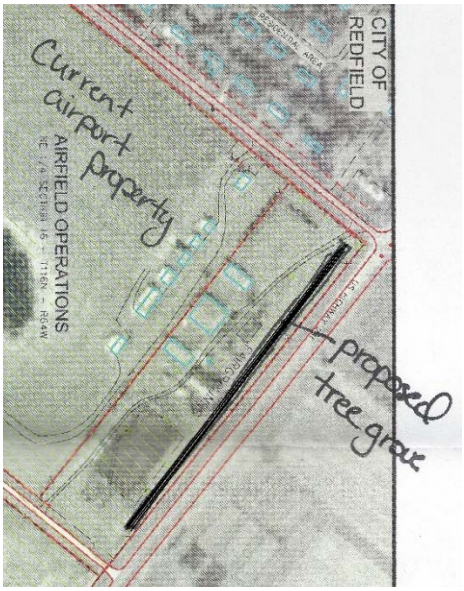
sized mammals to a minimum. Grass habitat should replace any agricultural cropland that is removed from the expanded airport and managed as recommended in the section above on grass management. However, if due to financial constraints, agricultural production is permitted to occur at 1D8, permitted crops should be limited to those crops least attractive to hazardous wildlife. Sunflower, corn and small grains should be avoided. Least attractive crops might include canola, flax and safflower. Immediately following harvest, cropland should be disced and worked to eliminate any remaining crop material.

e. Trees and Shrubs

Trees and shrubs can create attractive habitat for both birds and mammals. Birds utilize trees for roosting, perching and nesting. They often feed on the fruit, nuts and seeds associated with these woody plants. Mammals will use trees for many of the same reasons. Trees and shrubs also provide cover for birds and mammals. Even small shrubs can provide adequate cover to camouflage a jackrabbit or a pheasant on an airfield.

The airfield was relatively free of trees and shrubs. The fence line along the west side of the airport contained a juniper tree and about four small deciduous trees. Wetland 2 also contained several willow trees that are reaching fifteen to twenty feet. While none of these trees are posing a significant hazard, they do have an influence on airfield wildlife and should be removed while they are still small. Whenever woody plant material is found growing on the airfield, it should be removed.

There are several trees of mixed variety at the fairground area near the northeast corner of the airport. These trees are more than a thousand feet from both runways. There are several other trees in the vicinity, including those associated with residential areas to the north, west and east side of the airport. While the trees at the fairgrounds will likely attract some bird species, they do not appear to pose a threat to aircraft at 1D8.



Furthermore, regarding the rented property northeast of the airport where the tenant has shown interest in planting a row of trees, additional trees in this area are unlikely to pose any additional wildlife hazards at 1D8. With respect to wildlife hazard considerations for the airport, there is no need for any restrictions on the type or height of trees to be planted at this location.

f. **Structures**

Wildlife are often attracted to and utilize airfield structures for perching, nesting, and loafing. Airfield structures such as runway lights, signs and light poles are used as hunting and loafing perches for birds such as hawks and small perching birds. Hangars and maintenance buildings often attract roosting, nesting or loafing birds. The perimeter fence and hay bales on the airfield after haying can be used as perches by hawks, pheasants and other birds. Manmade structures on airports are utilized by wildlife in many ways.

Airport Buildings. The buildings on the airfield appeared very neat and tidy. Some of the hangars are of old designs which allows for small birds to enter above the doors or provide ledges and cavities for nesting. Therefore, there were several house sparrows and starlings perched on the buildings. Some of the hangars had dirt or gravel floors. It appeared that ground squirrels or possibly other small mammals are burrowing under the doors. There was some equipment such as tractors, cars and other machinery that was being stored beside the buildings. These stored items were minimal and the vegetation around the buildings was cut short. One large juniper tree was growing beside a hangar. It is recommended that this tree be removed as it has the potential to attract wildlife.

Navigation Structures. No runway structures or other airport instruments appeared to be used significantly by wildlife.

Perimeter Fence. The perimeter fence is currently a three strand barbed wire fence that does little to keep wildlife off of the airfield. Standing only about four foot tall, the only wildlife influence it might have is providing low perch sites for birds. While the fence provides only a minimal attraction to wildlife, replacing it with a 10 foot wildlife fence would help to minimize potential hazard threats caused by deer or medium sized mammals.

Outdoor Storage. The 1D8 airfield had only one notable storage area which included only a few culvert pipes just south of the hangars. While no noticeable wildlife was observed using the culverts, they are likely to be used by rabbits and raccoons, as well as rodents that might be attracted to the overgrown area outside of the culverts. While this is a very minimal wildlife hazard attractant, it would be best to move the culverts and avoid storing items on the airfield.

Dirt Mound. To the south of the hangars is a small mound that appears to be a pile of old sod. The irregular shaped pile has vegetation growing on it as well as dead vegetation from previous years. Small birds were perching on the old vegetation and rodents were burrowing around the pile. While no large burrows were observed, the smell of skunk was evident. Unless this pile provides an airport function, it should be removed to minimize its attraction to rodents, rabbits, birds and medium sized mammals.

g. Wetlands

Wetlands are a magnet for wildlife. Their associated vegetation can provide food and cover for many wildlife species and should be avoided where possible on airports. The planned project to remove the current runways and construct a new 17/35 runway will require airfield wetlands to be addressed. Therefore, a primary objective of this site visit is to evaluate the level of wildlife attraction of each wetland in order to aid in the decision as to which wetlands must/will be filled and mitigated off-site and which ones do not.

A total of 11 wetlands have been identified on or adjacent to the 1D8 airfield as diagramed on the Wetland Delineation Map (Appendix A). While this map does not show the planned new runway, it does show all 11 wetlands. During the first day of the site visit the Redfield area received approximately two inches of rain which may have influenced airfield and area wetland levels. However, it should also be noted that during the previous winter, the Redfield area received snowfall and precipitation at levels well below average. While overall, the 2010/2011 Wildlife Study is representative of the current ID8 habitats and issues, the wetland levels at the time of that study were significantly greater than current levels. In reviewing aerial photos of 1D8 over the last 20 years, most wetlands appeared to be similar in size to the wetlands present during the site visit. However, there did appear to be a considerable increase in wetland size during the 2010 – 2012 period. It is unknown whether 1D8 wetlands will again increase to the 2010-2012 levels. Therefore, the observations, discussions and recommendations of this site visit are based on the typical wetland size documented at 1D8 over the last 20 years. To meet the wetland evaluation objectives of this site visit, detailed information and recommendations for each of the 11 wetlands is provided and discussed below. The following information is provided for each wetland:

1. Description of the wetland at the time of the site visit.
2. Discussion of the expected wildlife attraction of the wetland and its expected influence on aviation safety.
3. Hazard Ratings for both the current and planned 1D8 airfields. This hazard rating system is designed to provide a qualitative, opinion based guide as to the level of hazard that a 1D8 wetland poses to aircraft. It is based on several factors including the size of the wetland, location, type, distance from runway, and how often it is expected to hold water and hazardous bird species. It can be used to facilitate in the decision making process on how each wetland

might be managed. Each wetland was given a rating from 1 to 5 as described below. A review of the hazard ratings for each wetland are provided in Figure 1 on Page 30.

1 – Minimal Hazard Influence
2 – Relatively Low Hazard Influence
3 – Moderate Hazard Influence
4 – Relatively High Hazard Influence
5 – High Hazard influence

4. Recommendations for the wetland mitigation.
5. Picture(s) of the wetland taken during the site visit.

WETLAND 1

Description: Located on the east side of the current airfield near the turf runway, this wetland appears to contain two separate marsh depressions inside of a larger low area. Except for the depressions, most of this wetland consisted of grass species. In most years, the grass areas probably dry up in the late summer and fall of the year. However, it was wet throughout its boundary during the site visit and contained considerable standing water. Both of the depressions were full of water and contained wetland plants such as cattails, phragmites and curly dock. In drier years, these depression areas will probably remain damp and will continue to support cattails and other wetland vegetation.

Wildlife Attraction: Standing water in this wetland will attract a few ducks and geese each spring. A pair of ducks were observed using the eastern depression during the site visit and both depressions each attracted a pair of Canada geese, which were likely attempting to nest in the area. The tall vegetation associated with this wetland provides cover for deer and nesting habitat for blackbirds. Deer sign and nesting blackbirds were both observed in this wetland during the site visit. Currently, since this wetland lies next to the turf runway and a short distance from Runway 13/31, it poses a moderate wildlife hazard threat. Because of its attractiveness to ducks and geese, it is likely to also be a moderate wildlife hazard threat for the new 17/35 runway.

Current Airport Hazard Rating: 3
Planned Airport Hazard Rating: 3

Recommendation: This wetland should be modified so that it does not hold standing water or support wetland vegetation that could be accessed by wildlife.

Wetland 1. Photo is taken from the north side of Wetland 1 facing southeast.

WETLAND 2

Description: Wetland 2 is located on the north side of the 1D8 airfield, next to the end of the turf runway. At the time of the site visit this wetland contained standing water in an area approximately 150 feet in diameter. The center of this wetland contained dense vegetation consisting of cattails, trees and tall grasses. The upper and western half of this wetland did not appear to contain standing water or wetland vegetation, and appears to be mowed without difficulty in most years. From the presence of dense cattails and trees, it appears that the center part of this wetland contains standing water on a consistent and annual basis.

Wildlife Attraction: The center of this wetland, the part which holds water, trees and cattails can attract a variety of wildlife species. Deer tracks and scat from raccoons and coyotes were found in this wetland during the site visit. The standing water can attract waterfowl, the cattails will attract a few nesting blackbirds and the trees provide a nesting area for other birds such as is evident by the mourning dove nest from last year still in the tree. While this wetland is currently close to the end of both runways, it will also be close to and under the flight path of aircraft using the new 17/35 runway and poses a moderate to high wildlife hazard threat at 1D8, depending upon water level and time of year.

Current Airport Hazard Rating: 4
Planned Airport Hazard Rating: 4

Recommendation: This wetland should be modified so that it does not hold standing water or support wetland vegetation that could be accessed by wildlife.

Wetland 2. Photo is taken from the northeast side of Wetland 2 facing southwest.

WETLAND 3

Description: Wetland 3 was a small pothole located just outside of the current airfield in corn stubble. This wetland will become part of the expanded airfield when the new runway 17/35 is constructed. During the site visit it consisted of a small amount of shallow standing water, possibly 12 feet in diameter. It probably only holds water during the spring and early summer in most years.

Wildlife Attraction: No waterfowl were observed using this pothole during the site visit. However, it is likely to attract feeding and loafing ducks whenever water is present and it did attract ducks consistently during the 2010/2011 Wildlife Study. If not continued to be worked as cropland, it will likely remain damp enough through the year to support cattails and other tall wetland vegetation. Due to its size and proximity to Runway 13/31, it likely poses a small hazard threat at the current airfield. As it becomes part of the expanded airport, it will continue to pose a small hazard threat.

Current Airport Hazard Rating: 2
Planned Airport Hazard Rating: 2

Recommendation: This wetland should be modified so that it does not hold standing water or support wetland vegetation that could be accessed by wildlife.

Wetland 3. Photo is taken from airport property near the southwest end of Runway 1/19 facing south.

WETLAND 4

Description: Wetland 4 is the dominate wetland at 1D8. Located on the south side of the current airfield, it contains various habitat types. The large open water basin is about twelve to fourteen acres in size. It is lined with dense cattails and other wetland vegetation and lies directly south of the current 13/31 runway. Part of this open water section extends to the east side of Highway 281. Towards the west, the lake tapers down to a marsh area that somewhat meanders through CRP, much of which will become part of the future airport expansion.

Wildlife Attraction: The large open part of this wetland, influenced in part by its wide cattail border attracts some gulls and large numbers of waterfowl species, especially ducks, grebes, coots and a few geese. Many of these species nest on the lake. The gulls, ducks and geese also utilize the 1D8 airfield as discussed in previous sections of this report. The cattail border also attracts blackbirds and other nesting bird species, and provides cover for pheasants, deer and coyotes.

The more westerly marsh area of this wetland meanders through the tall CRP and creates a mix of habitats, including open water and mixed vegetation types. This habitat combination creates an environment attractive to deer, waterfowl, pheasants, flocking blackbirds and several medium sized mammals, all of which were observed in this wetland during the site visit.

Wetland 4 lies adjacent to the current 1D8 airfield and provides a reservoir of wildlife that frequently use the airfield. While parts of this wetland are located not far from the end of both runways, the new airport will have Runway 17/35 pass directly through the marsh portion of this wetland. Additionally, the larger open water part of this wetland will be an attractant to waterfowl and gulls which are likely to pass through aircraft flight space as they fly to and from this wetland. This will cause a relatively high wildlife hazard to aircraft at 1D8.

Current Airport Hazard Rating: 5
Planned Airport Hazard Rating: 5

Recommendation: This wetland should be modified so that it does not hold standing water or support wetland vegetation that could be accessed by wildlife.

It is understood that if 1D8 goes forward with the planned airport expansion that not all of Wetland 4 will be acquired by the City. Therefore, if the majority of the open water area of Wetland 4 is not acquired, then the removal or modification of the approximate three acre triangle of Wetland 4 on the southeast side of 1D8 (pictured to the right) would provide no significant benefit.

Wetland 4. Photo is taken from the south end of Runway 13/31 facing southwest.

Wetland 4. Photo is taken from the southwest end of Runway 1/19 facing south.

WETLAND 5

Description: Based on the 2015 Wetland Delineation and observations from Highway 281, Wetland 5 consisted of a very small damp area in CRP that contained a few cattails. Without permission from the landowner to access this area, this was the best information that could be attained, but it is believed to be adequate. This wetland is located just south of the open water of Wetland 4 and is not part of the current or planned 1D8 airfield.

Wildlife Attraction: The relatively few cattails of this wetland amongst the tall, dense CRP vegetation, is not likely to have any significant wildlife attraction.

Current Airport Hazard Rating: 1
Planned Airport Hazard Rating: 1

Recommendation: No action recommended.

Wetland 5. Photo taken from the 2015 Wetland Delineation Report.

WETLAND 6

Description: Wetland 6 is a low area that lies south of the current airfield along the north side of 175th Street. It will however become part of the expanded airport and lie within a few feet of the new Runway 17/35. It consists of a low area that appears to contain standing water throughout most of the year. During the site visit it contained standing water with tall wetland vegetation such as cattails and rushes. The wetland vegetation was not so dense as to choke the wetland, but provided considerable open water surrounded by cornfield.

Wildlife Attraction: This marshy wetland was utilized by several ducks during the site visit. It was also heavily used by ducks, pheasants and nesting blackbirds during the 2010/2011 Wildlife Study. Due to its location, Wetland 6 poses a very minimal wildlife hazard threat at the current airport. However, located near the end of Runway 17/35 on the planned airport expansion, Wetland 6 would likely pose a moderate to high hazard for aircraft at 1D8.

Current Airport Hazard Rating: 1
Planned Airport Hazard Rating: 4

Recommendation: This wetland should be modified so that it does not hold standing water or support wetland vegetation that could be accessed by wildlife.

Wetland 6. Photo is taken from 175th Street facing northeast.

WETLAND 7

Description: Located on the far, east side of the airport near the entrance, this wetland area was dry during the site visit. While it may be a somewhat low area, it likely only holds water during periods of high precipitation, or while the ground is saturated when snow is melting in the spring. It consisted of mowed grass and did not have any notable wetland vegetation.

Wildlife Attraction: If this wetland holds some standing water during brief periods in spring, it may attract some ducks. Located a considerable distance from the current runways as well as the planned 17/35 runway, this wetland does not appear to be a wildlife hazard threat.

Current Airport Hazard Rating: 1
Planned Airport Hazard Rating: 1

Recommendation: No action recommended.

Wetland 7. Photo is taken from the southwest side of Wetland 7 facing northeast.

WETLAND 8

Description: This wetland is very similar to Wetland 7. It is located on the east side of the airport, just southwest of Wetland 7. It also was dry during the site visit and likely only holds water during periods of high precipitation, or while the ground is saturated when snow is melting in the spring. It consisted of mowed grass and did not have any notable wetland vegetation.

Wildlife Attraction: If this wetland holds some standing water during brief periods in spring, it may attract some ducks. Located a considerable distance from the current runways as well as the planned 17/35 runway, this wetland does not appear to be a wildlife hazard threat.

Current Airport Hazard Rating: 1
Planned Airport Hazard Rating: 1

Recommendation: No action recommended.

Wetland 8. Photo is taken from the airport entrance road facing southwest.

WETLAND 9

Description: Wetland 9 is a low area in the cropland located south of 175th street, which will lie in the RPZ of the planned Runway 17/35. During the site visit, the cropland still contained soy bean residue from last year. This wetland contained only some very minor wet spots and minimal standing water. However, while not identified as a wetland in the Wetland Delineation, land 400 feet directly east of Wetland 9 contained substantially more standing water. While moisture levels in this area may vary from year to year, it will likely not contain standing water except for brief periods in the spring.

Wildlife Attraction: One or two pairs of ducks were seen using the area to the east of Wetland 9 during the site visit. As long as this area continues to be farmed, it will likely only attract a few pairs of feeding or loafing ducks during the spring, and pose a low hazard threat to aircraft using the new 17/35 runway.

Current Airport Hazard Rating: 1
Planned Airport Hazard Rating: 2

Recommendation: Located within the RPZ of the planned airport, this wetland area should continue to be farmed or maintained in the same manner as its surrounding habitat type. This is discussed more in on Page 32.

Wetland 9. Photo is taken from 175th Street facing southwest.

WETLAND 10

Description: Similar to the nearby Wetland 3, this small pothole was also located just outside of the current airfield in corn stubble. It will become part of the expanded airfield when the new runway 17/35 is constructed. During the site visit it consisted of a small amount of shallow standing water, possibly 10 feet in diameter. It probably only holds water for a short period during the spring and early summer in most years.

Wildlife Attraction: While no waterfowl were observed using this pothole during the site visit, it is likely to attract feeding and loafing ducks when water is present. If not continued to be worked as cropland, it will likely remain damp enough through the year to support cattails and other tall wetland vegetation. Due to its size and proximity to Runway 13/31, it likely poses a minimal hazard threat at the current airfield. As it becomes part of the expanded airport, it may pose a slightly higher hazard threat.

Current Airport Hazard Rating: 1
Planned Airport Hazard Rating: 2

Recommendation: This wetland should be modified so that it does not hold standing water or support wetland vegetation that could be accessed by wildlife.

Wetland 10. Photo is taken from airport property facing south.

WETLAND 11

Description: In close proximity to Wetlands 3 and 10, Wetland 11 is a larger pothole located in the cornfield just outside of the current airfield fence. It will become part of the expanded airfield when the new Runway 17/35 is constructed. During the site visit it contained shallow standing water which measured about 20 feet across. It appears to hold water throughout the spring and early summer but likely dries up by late summer.

Wildlife Attraction: When water is present in this wetland, ducks are highly attracted to this pothole. Whenever observed during the site visit, it typically had large numbers of ducks present, with as many as 35 at any one time. During the 2010/2011 Wildlife Study, this wetland consistently held ducks. If not continued to be worked as cropland, it will likely remain damp enough through the year to support cattails and other tall wetland vegetation which would provide habitat that could be utilized by several wildlife species. Due to its size and proximity to Runway 13/31, it likely poses a moderate hazard threat at the current airfield. As it becomes part of the expanded airport, it will continue to pose a moderate hazard threat.

Current Airport Hazard Rating: 3
Planned Airport Hazard Rating: 3

Recommendation: This wetland should be modified so that it does not hold standing water or support wetland vegetation that could be accessed by wildlife.

Wetland 11. Photo is taken from airport property facing west.

REVIEW OF WETLAND HAZARD RATINGS		
Wetland	Current Airport Hazard Rating	Expanded Airport Hazard Rating
Wetland 1	3	3
Wetland 2	4	4
Wetland 3	2	2
Wetland 4	5	5
Wetland 5	1	1
Wetland 6	1	4
Wetland 7	1	1
Wetland 8	1	1
Wetland 9	1	2
Wetland 10	1	2
Wetland 11	3	3
1 – Minimal Hazard Influence 3 – Moderate Hazard Influence 5 – High Hazard influence	2 – Relatively Low Hazard Influence 4 – Relatively High Hazard Influence	

Figure 1. Wetland Hazard Ratings

E. General Zone Attractants

In addition to those offsite wetlands identified in the 2015 Wetland Delineation, there were other potential bird attractants identified within the 5 mile "general zone" surrounding the 1D8 airfield. Identifying these area attractants is important in understanding why certain hazardous bird species are in the area and if their movements are likely to pass over the airfield or through aircraft flight paths. These other possible attractants include the adjacent agricultural land, the wastewater treatment ponds and the other major wetlands in the area. These are discussed in more detail below.

a. Agricultural Land

Agricultural cropland is a dominate land use in the Redfield area. Cropland, including CRP, borders 1D8 on its west and south sides and is abundant in the area. Most crops and farming practices are attractive to many hazardous bird and wildlife species. In the area around 1D8, ducks appear to be the avian species of most concern but these are typically associated with wetlands. Migrating geese may utilize cropland when migrating through the area during the spring and fall. Large flocks of blackbirds could be attracted to ripening corn or sunflower crops during the late summer and fall. During the site visit heavy numbers of blackbirds were feeding in the corn stubble south of the airfield. While the potential is there, it is not expected that these activities associated with adjacent cropland will pose a significant threat to aircraft at 1D8. Until a perimeter wildlife fence is erected, deer that utilize the adjacent cropland will likely be active on the airport. Since cropland adjacent to 1D8 is not under the control of the airport, there is little the airport can do to influence its use. However, if any cropland does become a significant attractant that causes hazards for aircraft at 1D8, the airport should attempt to work with those landowners and develop a strategy that could minimize the threat.

b. Wastewater Treatment Ponds

Three wastewater treatment ponds lie northeast of 1D8. The lagoons consist of approximately 65 acres and are approximately two miles from the airfield. No waterfowl were observed on the treatment ponds during the site visit. With minimal activity noted during the site visit and their distance from the airport, the treatment ponds do not appear to pose a hazard threat to aircraft. The 2010/2011 Wildlife Study also did find a significant use of these ponds by waterfowl and gulls.

c. Natural Wetlands

Redfield is located in the prairie potholes region of the Northern Great Plains, and has an abundance of natural wetlands throughout the area. Located north and west of the airport are Redfield Lake, Turtle Creek and an unnamed creek that attract waterfowl to the Redfield area. Redfield Lake and Turtle Creek contain a large amount of open water that can attract geese, ducks and gulls. They may also attract other large water birds such as herons and pelicans. The unnamed creek is located less than a half mile from 1D8. It is more of a shallow slough and contains several marsh areas with tall wetland vegetation. While not heavily used by migratory birds throughout the year, it does attract several pairs of nesting ducks and geese as well as an abundance of nesting blackbirds. However, this wetland does not appear to attract large flocks of the large bodied birds, and therefore, does not appear to pose more than a minimal hazard threat to 1D8.

F. Planned Airport Expansion

As part of the airport expansion, the airport will acquire additional land and easements. These should be managed in the same manner as recommended for the current airport.

a. Land Acquisition

The land to be acquired for the planned airport expansion is mostly cropland, CRP or varied types of wetlands. The wetlands associated with this acquisition have been discussed previously in the wetland section. Since most of the wetlands will be in close proximity to the new 17/35 runway, they will pose a

variety of hazards to aircraft if not modified. The rest of the land is cropland, including CRP. These lands, along with any filled wetlands should be planted to grass and managed as discussed above in the section on grass management.

b. RPZ Easement for Planned Airport Expansion

Part of the planned RPZ for Runway 17/35 will be located south of 175th Street. This area is currently being farmed and contains Wetland 9, identified in the 2015 Wetland Delineation. Wetland 9 is a minimal wetland that did not contain any significant standing water or attract any waterfowl during the site visit. It does however lie under the flight path of planes utilizing the planned new runway. The best management for the land in this easement is to manage it in the same manner as the rest of the land in this crop field. The more uniform the area is, the less "edge effect" is created and the less likely that this area will become any more attractive to hazardous species that any of the surrounding area.

III. STATE AND FEDERAL SPECIES STATUS

The legal status of any wildlife species at 1D8 must be determined before any control is attempted. Federal wildlife laws are mainly administered by the U.S. Fish and Wildlife Service (USFWS) and primarily involve migratory birds and threatened & endangered (T&E) species. State wildlife laws are primarily administered by the South Dakota Department of Game, Fish and Parks (SDGFP) and involve resident and migratory birds, mammals, reptiles, amphibians and protected species. Although some species can be controlled without permits, many will require either a federal permit, a state permit or both. Before conducting any wildlife control, 1D8 should refer to Table 1 to determine the permit requirements. To obtain any needed state or federal permits, contact information is provided below. All federal permits will also require a Form 37, which can be obtained from the USDA Wildlife Services Office.

Federal Permit Contacts

Form 37
State Director John Paulson
USDA Wildlife Services Office
2110 Miriam Drive, Suite A
Bismarck, ND 58501
(701) 355-3300

Federal Permit
U.S. Fish and Wildlife Service
Migratory Bird Permit Office
P.O. Box 25486
DFC (60154)
Denver, CO 80225-0486
(303) 236-8171

State Permit Contact
Keith Fisk
South Dakota Game Fish and Parks
Wildlife Damage Management Office
523 East Capitol Avenue
Pierre, SD 57501
(605)773-7595

Table 1. Wildlife Permit Requirements for South Dakota Airports.

Category	Species	State Permit[1]	Federal Permit
RESIDENT GAME BIRDS	Pheasant, grouse, partridge, quail and turkey	YES	NO
RESIDENT NONGAME BIRDS	Starlings, house sparrow, rock dove (feral pigeon)	Yes[2]	NO
MIGRATORY GAME BIRDS	Ducks, geese, swans, coots, snipe, sand hill crane, woodcock, crows and mourning doves	YES[3]	YES
MIGRATORY NONGAME BIRDS	All bird species except game birds, resident nongame birds, fully protected wildlife and feral, domestic & exotic birds	YES[3]	YES
DEPREDATION ORDER BIRDS	Crows, grackles, blackbirds and cowbirds	YES[4]	YES[4]
GAME MAMMALS	Deer, elk, antelope, bighorn sheep, mountain goat, moose, tree squirrels, cottontail rabbit and mountain lion	YES	NO
PREDATORS/VARMINTS	Coyote, red fox, gray fox, skunks, gophers, ground squirrels, chipmunks, jackrabbits, marmots, porcupine, prairie dog	NO[2]	NO
FURBEARERS	Raccoon, beaver, badger, muskrat, bobcat, weasel, mink and opossum	YES[5]	NO
PROTECTED FURBEARERS	Lynx, wolf, swift fox, black bear, pine marten, fisher, river otter and black bear	YES	NO
NONGAME MAMMALS	All species of mammals, except game mammals, predators/varmints, furbearers, protected furbearers and domestic mammals	NO	NO
FERAL DOMESTIC MAMMALS	Dogs, cats, livestock (Call local Animal Control)	NO	NO
REPTILES AND AMPHIBIANS	All reptiles and amphibians (threatened or endangered species require a separate permit)	YES	NO
FULLY PROTECTED WILDLIFE	Eagles, threatened and endangered species	YES	YES

[1] Control actions requiring a state permit should be coordinated through the Wildlife Damage Management Office of the South Dakota Department of Game, Fish and Parks.

[2] No State permit is required if control is conducted by resident airport personnel on airport property

[3] No State permit is required if control is conducted by resident airport personnel on airport property, and a Federal Permit has been obtained.

[4] Permits are not required "when concentrated in such numbers and manner as to constitute a health hazard or other nuisance" (50 CFR §21.43 and SDCL 41-11-10).

[5] Raccoons and badgers may be killed without a permit when doing damage around buildings.

IV. RECOMMENDATIONS

Below is a review of the recommendations made in this report. Each will be identified as an "Action Item" in the WHMP and 1D8 will need to determine how each of these recommendations will be addressed. For more detailed information on each of the recommendations listed below, please refer to the main text of this report.

Recommendation 1. *Follow the grass habitat management guidelines and work toward maintaining a dense grass habitat on the airfield with non-grass species.*

Recommendation 2. *Remove all small trees and shrubs from the airfield.*

Recommendation 3. *Develop an effective program to haze waterfowl and gulls from the airfield. A no-tolerance policy for these species should be enforced whenever these birds are seen on the airfield. Lethal control, with proper permits should be taken when necessary to reinforce the non-lethal techniques.*

Recommendation 4. *Obtain a USFWS Permit to lethally take mallards, Canada geese and gulls at 1D8. Permits should be renewed annually.*

Recommendation 5. Enclose the airfield with an effective deer proof perimeter fence

Recommendation 6. *Modify Wetlands 1, 2, 3, 4, 6, 10 and 11 as able so that they do not contain standing water or support wetland vegetation.*

CONCLUSION

Wildlife species and abundance vary considerably in the Redfield area throughout the year. Likewise, habitats vary seasonally due to several factors (vegetation type, temperatures, precipitation, management etc.). When comparing the observations and results of this site visit to the 2010/2011 Wildlife Study, very little has changed at 1D8 over the last five years. The habitats, the species present and the hazard threats appear to be very similar. As stated earlier in this report, the one notable habitat issue that has changed is that the increased wetland levels that were present during the 2010/2011 Wildlife Study have not persisted.

Waterfowl, primarily ducks, appear to pose the greatest avian threat to aircraft safety at 1D8. While duck activity is influenced by habitats on the airfield, the varied wetlands adjacent to the current airfield have an even greater influence. Moving the runway and modifying several of the area wetlands as planned with the airport expansion will help to minimize the hazard threat posed by ducks. Deer pose the greatest mammalian threat to aircraft. While not often observed in the daytime, deer extensively utilize the 1D8 airfield as evident by the high level of tracks and droppings. Until a perimeter wildlife fence is erected, deer will continue to pose a significant hazard.

The planned expansion of the airport is expected to markedly reduce avian hazards at 1D8. The relocation of the primary runway away from the large open water of Wetland 4 will greatly reduce the hazard threat by ducks. The removal of other wetlands in the vicinity will also help to reduce duck movements over the airport and through aircraft flight paths.

The key to keeping wildlife hazards low at 1D8 is minimizing wetlands and following the recommendations for grass management on the airfield. All other issues identified in this report are also important and should be addressed, as they will further improve safety at the airport.

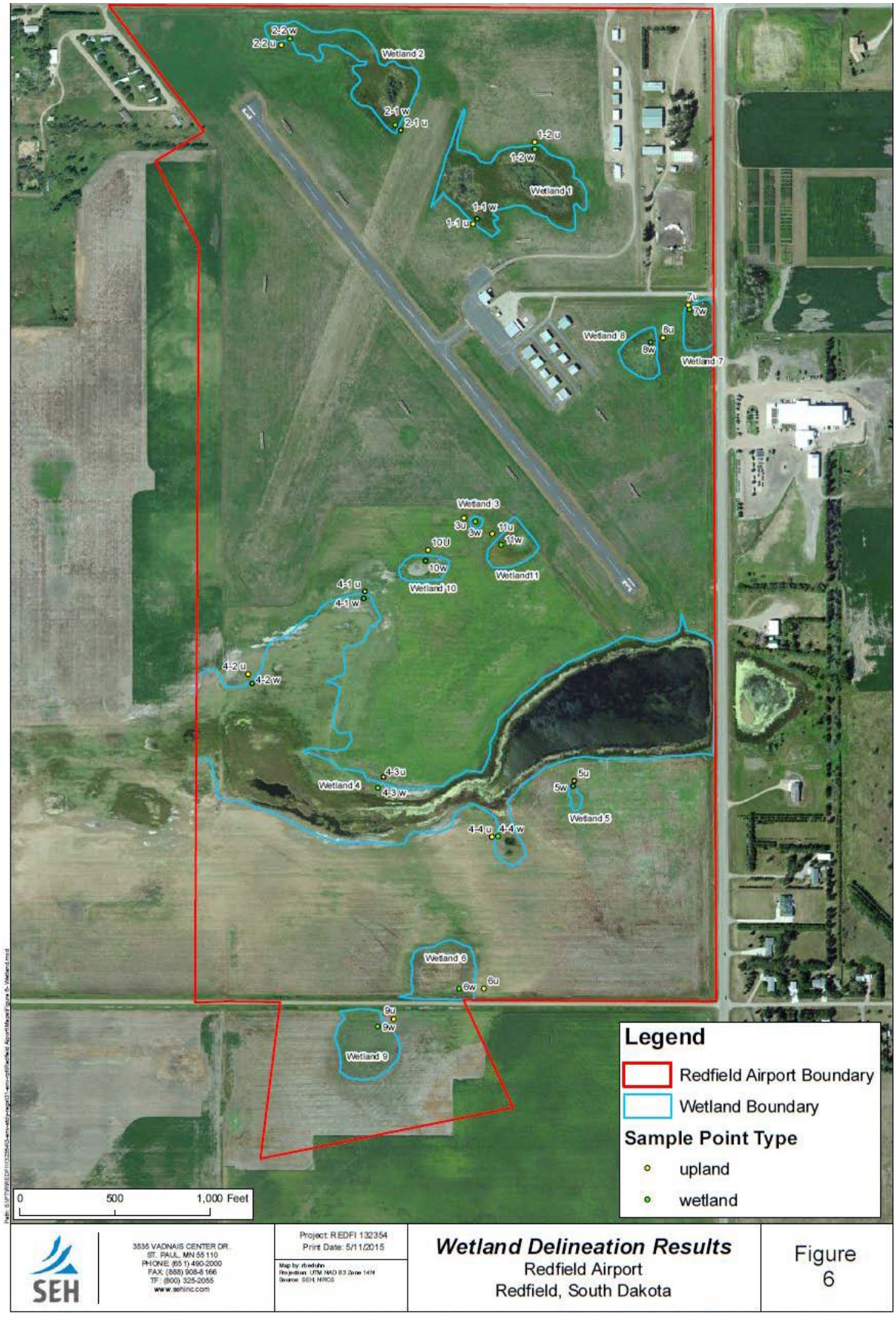
Furthermore, if not being done so already, 1D8 should maintain an ongoing wildlife activity log. Any notable wildlife activity at 1D8 should be recorded in this log. This includes dead wildlife or wildlife parts found on the airfield, incidents where hazardous wildlife are using the airfield, the action taken to haze or remove hazardous wildlife, and the results of those actions. All dates, times, locations and personnel involved should be recorded. This will serve as a permanent record documenting wildlife activity at 1D8 and will prove to be helpful in identifying and managing future wildlife hazards.

For further information on managing wildlife hazards at the airport, FAA has five publications that 1D8 should refer to. These are the 2005 edition of "Wildlife Hazard Management at Airports – A Manual for Airport Personnel" and four ACRP reports:

ACRP Synthesis 23 - Bird Harassment, Repellent, and Deterrent Techniques for Use on and Near Airports
ACRP Synthesis 32 – Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports
ACRP Synthesis 39 – Airport Wildlife Population Management
ACRP Synthesis 52 – Habitat Management to Deter Wildlife at Airports.

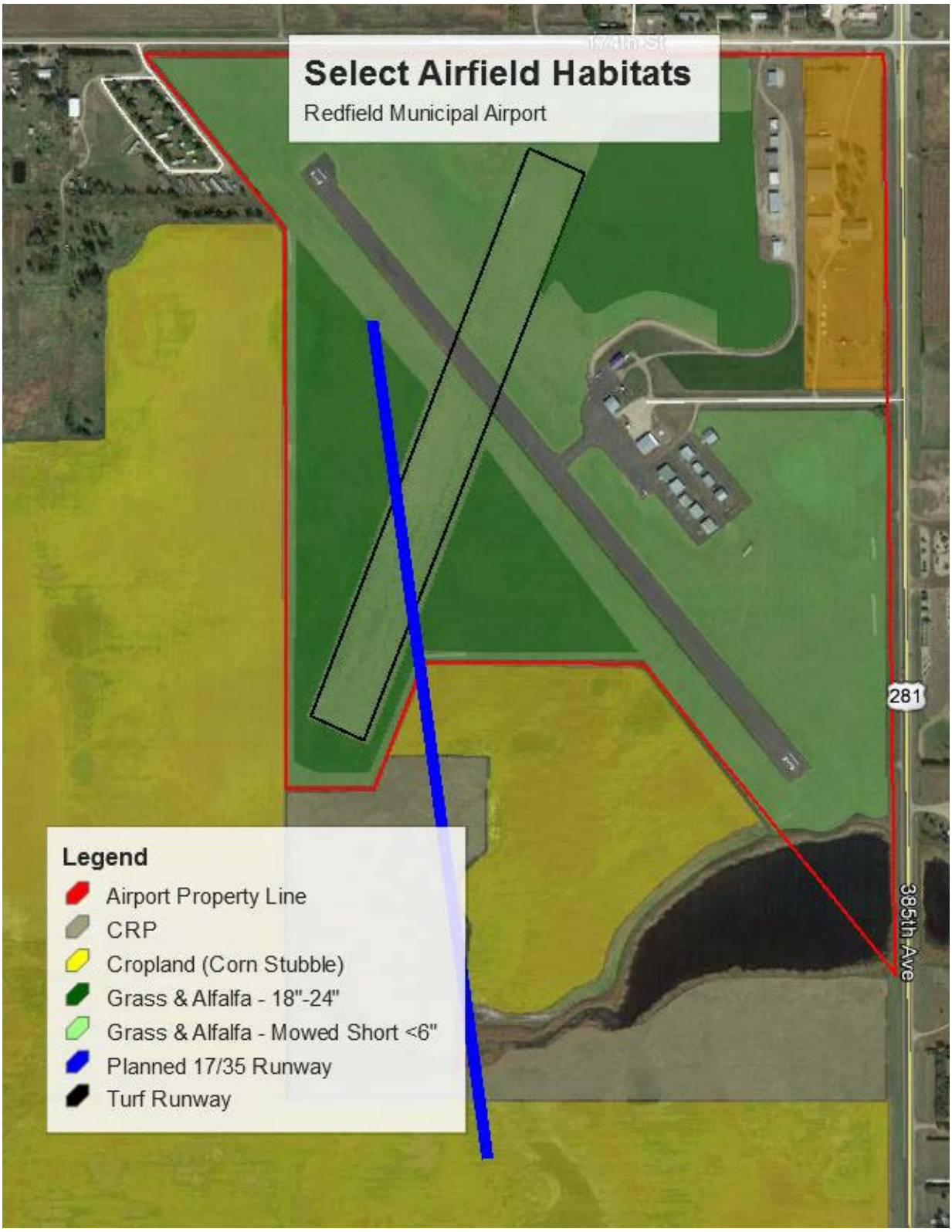
1D8 should have copies of these documents. If not, they can be downloaded from the FAA website at: http://www.faa.gov/airports/airport_safety/wildlife/resources/media/2005_FAA_Manual_complete.pdf and http://www.faa.gov/airports/airport_safety/wildlife/resources/.

If there are any questions about this report or if further information is needed about this site visit, please contact Timothy Pugh, Qualified Airport Wildlife Biologist, Midwest Wildlife Services, at 605-280-0704.



Appendix A. Wetland Delineation Map – June 2015

Appendix B. Current and Planned Airport Boundaries – Redfield Municipal Airport



Appendix C. Select Airfield Habitats