Research & Monitoring Special Use Permit

Station #: 61172 **(For Official Use Only)** **Permit #:** 61172-20-002

Permit Term: From 01/01/2020 To 12/31/2020

1) Principal Investigator Name/Affiliation: Jason Roadman (National Wind Technology Center) (303-384-6992)

2) Permit Status: a) Approved: (●) If approved, provide special conditions (if any) in the text box below.

b) Denied: ( ) If denied, provide justification in the text box below.

[Type in additional Special Conditions or Justification for Denied Permit in the space provided]

Permit allows access to Permittee only (i.e., contractor, crew, and associates) for purposes outlined in "ATTACHMENT" to permit application dated December 2019. No visitors are allowed unless approved by the U.S. Fish and Wildlife Service (USFWS). Permit must be easily accessible by each person in the field (on person or in vehicle nearby) at all times. Vehicles descriptions must be submitted to the USFWS prior to use and must have identifiable placarding. Permittee will make every effort to minimize disturbance to wildlife. Disturbing of changing the landscape or habitat is prohibited except as absolutely necessary for the project. Permittee understands that the USFWS is not responsible for the Permittee's equipment or supplies. Permittee understands that failure to abide by the conditions set forth may be cause to limit or void the permit. NOTE: AF5 PADLOCK KEY ISSUED TO J. ROADMAN (JUNE 2015).

3) Are there additional special conditions attached to the permit? Yes ( ) No (●)

4) Are licenses/permits required, and have they been verified? Yes ( ) No (●) N/A ( )

5) Are Insurance and/or Certification(s) required, and have they been verified? Yes ( ) No (●) N/A ( )

6) Is an Assurance of Animal Care or Institutional Animal Approval form needed? Yes ( ) No ( ) N/A (●)

If yes, is the form attached? Yes ( ) No ( )

7) Has a Minimum Requirements Decision Assessment been conducted? Yes ( ) No ( ) N/A (●)

If yes, is assessment attached? Yes ( ) No ( )

8) Record of Payments: Exempt (●) Partial ( ) Full ( )

Amount of payment: _____ Record of partial payment: _____

9) Is a surety bond or security deposit required? Yes ( ) No (●) N/A ( )

This permit is issued by the U.S. Fish and Wildlife Service and accepted by the applicant signed below, subject to the terms, covenants, obligations, and reservations, expressed or implied herein, and to the notice, conditions, and requirements included or attached. A copy of this permit should be kept on-hand so that it may be shown at any time to any refuge staff.

10) **Permit approved/issued by:** (Signature and title)

David Lucas Digitally signed by David Lucas Date: 2020.01.13 12:04:29 -07'00'

Date: 01/13/2020

11) **Permit accepted by:** (Signature of permittee)

Jason Roadman Digitally signed by Jason Roadman Date: 2020.01.13 12:34:24 -07'00'

Date: 1/13/2020

PRINT FORM

General Conditions and Requirements

1) Responsibility of Permittee: The permittee, by operating on the premises, shall be considered to have accepted these premises with all facilities, fixtures, or improvements in their existing condition as of the date of this permit. At the end of the period specified or upon earlier termination, the permittee shall give up the premises in as good order and condition as when received except for reasonable wear, tear, or damage occurring without fault or negligence. The permittee will fully repay the Service for any and all damage directly or indirectly resulting from negligence or failure on his/her part, and/or the part of anyone of his/her associates, to use reasonable care.

2) Operating Rules and Laws: The permittee shall keep the premises in a neat and orderly condition at all times, and shall comply with all municipal county, and State laws applicable to the operations under the permit as well as all Federal laws, rules, and regulations governing national wildlife refuges and the area described in this permit. The permittee shall comply with all instructions applicable to this permit issued by the refuge official in charge. The permittee shall take all reasonable precautions to prevent the escape of fires and to suppress fires and shall render all reasonable assistance in the suppression of refuge fires.

3) Use Limitations: The permittee's use of the described premises is limited to the purposes herein specified and does not, unless provided for in this permit, allow him/her to restrict other authorized entry onto his/her area; and allows the U.S. Fish and Wildlife Service to carry on whatever activities are necessary for: (1) protection and maintenance of the premises and adjacent lands administered by the U.S. Fish and Wildlife Service; and (2) the management of wildlife and fish using the premises and other U.S. Fish and Wildlife Service lands.

4) Transfer of Privileges: This permit is not transferable, and no privileges herein mentioned may be sublet or made available to any person or interest not mentioned in this permit. No interest hereunder may accrue through lien or be transferred to a third party without the approval of the Regional Director of the U.S. Fish and Wildlife Service and the permit shall not be used for speculative purposes.

5) Compliance: The U.S. Fish and Wildlife Service's failure to require strict compliance with any of this permit's terms, conditions, and requirements shall not constitute a waiver or be considered as a giving up of the U.S. Fish and Wildlife Service's right to thereafter enforce any of the permit's terms or conditions.

6) Conditions of Permit not Fulfilled: If the permittee fails to fulfill any of the conditions and requirements set forth herein, the U.S. Fish and Wildlife Service shall retain all money paid under this permit to be used to satisfy as much of the permittee's obligation as possible.

7) Payments: All payment shall be made on or before the due date to the local representative of the U.S. Fish and Wildlife Service by a postal money order or check made payable to the U.S. Fish and Wildlife Service.

8) Termination Policy: At the termination of this permit the permittee shall immediately give up possession to the U.S. Fish and Wildlife Service representative, reserving, however, the rights specified in paragraph 11 below. If he/she fails to do so, he/she will pay the U.S. Fish and Wildlife Service, as liquidated damages, an amount double the rate specified in this permit for the entire time possession is withheld. Upon yielding possession, the permittee will still be allowed to reenter as needed to remove his/her property as stated in paragraph 11 below. The acceptance of any fee for the liquidated damages or any other act of administration relating to the continued tenancy is not to be considered as an affirmation of the permittee's action nor shall it operate as a waiver of the U.S. Fish and Wildlife Service's right to terminate or cancel the permit for the breach of any specified condition or requirement.

9) Revocation Policy: The Regional Director of the U.S. Fish and Wildlife Service may revoke this permit without notice for noncompliance with the terms hereof, or for violation of general and/or specific laws or regulations governing national wildlife refuges, or for nonuse. It is at all times subject to discretionary revocation by the Director of the Service. Upon such revocation the U.S. Fish and Wildlife Service, by and through any authorized representative, may take possession of said premises for its own and sole use, and/or may enter and possess the premises as the agent of the permittee and for his/her account.

10) Damages: The U.S. Fish and Wildlife Service shall not be responsible for: any loss or damage to property including but not limited to crops, animals, and machinery; injury to the permittee or his/her relatives or to the officers, agents, employees, or any other(s) who are on the premises from instructions; the sufferance from wildlife or employees or representatives of the U.S. Fish and Wildlife Service carrying out their official responsibilities. The permittee agrees to hold the U.S. Fish and Wildlife Service harmless from any and all claims for damages or losses that may arise to be incident to the flooding of the premises resulting from any associated government river and harbor, flood control, reclamation, or Tennessee Valley Authority activity.

11) Removal of Permittee's Property: Upon the expiration or termination of this permit, if all rental charges and/or damage claims due to the U.S. Fish and Wildlife Service have been paid, the permittee may, within a reasonable period as stated in the permit or as determined by the U.S. Fish and Wildlife Service official in charge, but not to exceed 60 days, remove all structures, machinery, and/or equipment, etc., from the premises for which he/she is responsible. Within this period the permittee also must remove any other of his/her property including his/her acknowledged share of products or crops grown, cut, harvested, stored, or stacked on the premises. Upon failure to remove any of the above items within the aforesaid period, they shall become the property of the U.S. Fish and Wildlife Service.

ATTACHMENT for the UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE
SPECIAL USE APPLICATION AND PERMIT

Department of Energy's National Wind Technology Center at the Rocky Flats National Wildlife Refuge

December 2019

The following represents a request for potential activities occurring during the upcoming calendar year as part of the Special Use Permit between U.S. Fish and Wildlife and the National Wind Technology Center.

Activity Description: Where the activity will take place (units, roads, trails); When (seasons, days, hours); How (methods, techniques, transportation); Frequency (one time only, daily, occasionally); Number of people/vehicles/boats; Special Needs/access

Activity:	Tracking of Trained Eagles and Falcons with GPS and Radar
Objective:	Track flight paths of trained eagles and falcons using radars, cameras, and similar technology. Flights will be in collaboration with the experienced handlers from Auburn University's Southeastern Raptor Center (Andrew Hopkins, awh0001@auburn.edu, 334.321.1570), the Colorado Hawking Club (Sam Dollar, 719.641.8488, wsdollar@gmail.com), or other reputable groups. Birds will carry small GPS data loggers to collect position data. Data from these flights will be used to tune existing avian detection and tracking technology with the goal of informing wind turbine operation to reduce bird strikes. 
Where:	Refuge airspace at altitudes ranging up to 400 feet above ground level. Specific locations are flexible based on the needs and requirements set out by the U.S. Fish and Wildlife and project requirements, however the map below details desired locations in order of preference. It is sometimes desired to get 1-5 km away from the NWTC property as it is a goal of the project to be able to detect birds at that distance. 

When:	With the success of flights in the past, continuing this work remains an important priority for protecting avian species from wind turbines. Specific flight dates and times are dependent on research objectives, wind speed, bird availability and weather considerations. Coordination with U.S. Fish and Wildlife personnel for flight campaigns with trained raptors will occur several weeks in advance. Notification of specific flight operations will be given to U.S. Fish and Wildlife personnel via email not less than 48 hours before scheduled flights. An effort will be made to schedule flights during mid-day hours to avoid early morning and late evening times when native wildlife is more active. Typically, two rounds of flights each day will be desired in order to give the birds a rest and chance to work up an appetite again before the second round of flights.
How:	Flying a trained eagle or falcon to the lure; birds will not be hunting. The birds will be wearing both a combined VHF/GPS telemetry device and a GPS data logger. Falconers will be licensed falconers with all paperwork in order for their birds. Turbines at the NWTC will be shut down when falconry is occurring in an area that puts birds at risk.
Frequency:	2-5 days of activity during the calendar year. Individual flights are expected to last for 3-5 minutes, with several flights occurring over a period of 4-8 hours during a day of operations. Each day will likely include 2 discrete rounds of testing with a rest period between for the birds.
Number of People:	~5 people on foot, walking with the bird flying in the vicinity. Access to the launch sites will be by vehicle when necessary but always on existing roads.
Special Needs:	n/a
Benefits:	Since the fall of 2014, the data collected on this project has been and will continue to be beneficial to wildlife by developing technology that can be used to directly reduce the number of bird strikes occurring at wind farms across the country and around the world. Radar, camera, and similar data gathered during flights over Refuge land (where there are few other obstructions to the radar beam) is compared to GPS tracks of bird flights and used to improve the detection and tracking algorithms within these systems, improving their ability to identify birds in the vicinity of wind turbines and inform turbine operation with the end goal of reducing or eliminating bird strikes. Systems tested during past years are now being deployed at commercial wind farms and working to reduce bird strikes. Upcoming work could continue using trained eagles and falcons in order to represent the most realistic flight behavior and radar cross-section to real birds as possible in order to continue to refine the latest version of the avian detection systems in a research setting prior to commercialization. GPS location data allows the avian detection analyst to look at a much more finite data set when developing algorithms, speeding up development significantly.

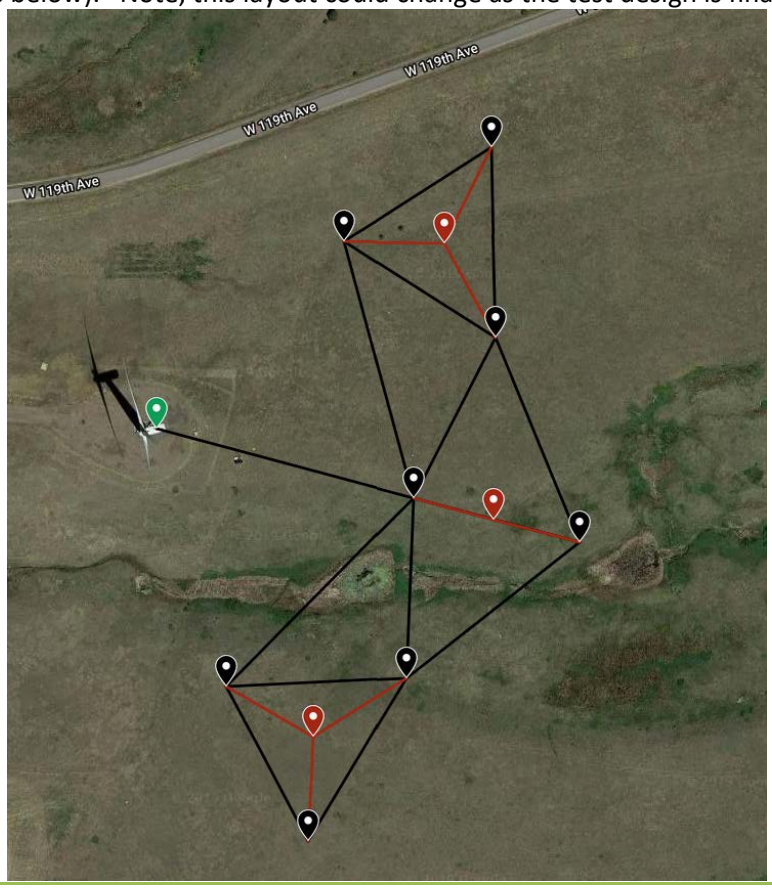
Activity:	Cameras and acoustic detectors for wildlife study
Objective:	Study of bird and bat behavior near wind turbines for the purpose of understanding drivers of risk and inform solutions to reduce or avoid impacts.
Where:	East of the NWTC large turbine row, extending into the refuge approximately 500' and near southern pond.
When:	No specific projects in the plan currently, but the potential exists for one to occur during the calendar year. Notification of operations will be given to U.S. Fish and Wildlife personnel via email not less than 48 hours before scheduled study period and initial project notification at least 2 weeks in advance. Deployment of equipment will occur over a 5-10 day period. Multiple deployments may be requested in order to obtain samples from different times of year.
How:	Installation of remote cameras or acoustic detectors that are self-powered and weather proof. Access by foot.
Frequency:	1-4 times throughout the calendar year.
Number of People:	2 people on foot, walking.
Special Needs:	n/a
Benefits:	Improved understanding of wildlife behavior near wind turbines can improve our understanding of drivers of risk for animals of concern. It is difficult to study behavior of birds and bats near wind energy facilities and the NREL Flatirons Campus and Rocky Flats Wildlife Refuge provide a unique opportunity to better understand behavioral drivers of risk. These learnings will catalyze the development of effective solutions to avoid or minimize impacts to wildlife from wind turbines.

Activity:	Unmanned Aerial Vehicles
Objective:	1) Track flight paths of unmanned aircraft (used to simulate birds) using visual or radar detection systems. Data from these flights will be used to tune existing avian detection and tracking algorithms with the goal of informing wind turbine operation to reduce bird strikes. 2) Measure velocity field in the wake of utility scale wind turbines with unmanned aerial vehicles. Unmanned aircraft will be less than 50 lb. GTOW with wingspans less than 15'. 
Where:	East and south of the NWTC large turbine row, extending into the Refuge airspace approximately 2,800 feet at altitudes ranging from 50 feet to 400 feet above ground level. Flights within KBJC airport's airspace will be coordinated with the tower.
When:	Specific flight dates and times are dependent on wind speed and other weather considerations. Notification of flight operations will be given to U.S. Fish and Wildlife Personnel via email not less than 48 hours before scheduled flights, however attempts will be made to provide initial project notification at least 2 weeks in advance. An effort will be made to schedule flights during mid-day hours to avoid early morning and late evening hours when native wildlife is more active.
How:	Aerial flight of an unmanned aircraft
Frequency:	1-2 days of flight activity over the course of the calendar year, depending on quality of research results and successes. Individual flights typically last for 30-60 minutes, with several flights occurring over a period of 4-6 hours during a day of operations.
Number of People:	Every effort will be made to operate (launch/land) from NWTC property whenever possible. During those flights over Refuge property, human activity will not occur on Refuge lands unless retrieval of the UAV becomes necessary. In that event, 1-2 people, on foot. In order to operate out of the inner dead-band of some avian detection systems installed on NWTC property while maintaining good visual contact with the

	aircraft, launch and retrieval may be necessary on Refuge land. Human activity will be limited to 2 persons, on foot. Two stakes, less than 12" long, may be placed in the ground to facilitate bungee launching of the UAS. Bungee will be surgical tubing with a diameter on the order of ½".
Special Needs:	n/a
Benefits:	The data collected could be beneficial to wildlife in the following ways: 1) Radar and visual image data gathered during flights over Refuge land (where there are few other obstructions to the detection system) will be used to improve the detection and tracking algorithms within the avian detection systems, improving the ability to utilize radar and visual systems to identify birds in the vicinity of wind turbines and inform their operation with the end goal of reducing or eliminating bird strikes. If this system is successful, it could be deployed at sites beyond the NWTC, including at commercial wind farms and have broad reaching impacts for conservation. Unmanned aircraft are used as they can be flown along prescribed paths while measuring position using GPS. GPS location data allows the detection analyst to look at a much more finite data set when developing algorithms, speeding up development significantly. 2) While in the turbine wakes, NREL will measure pressure fluctuations and velocity fields, which can be used to see how bats and other animals could be affected by wind turbine wakes. 3) Additionally, wake measurements could help identify if the wake affects the wind flow above the Refuge, which affects pollen dispersion and noise propagation across the Refuge. 4) Birds in some regions choose to migrate during times of strong low-level winds, and simulations have suggested that these winds are eroded for some distance downstream from wind farms due to the wake effects. The data could be used to validate that hypothesis. High-resolution measurements of wind speed, temperature, and energy dissipation rate are required to develop more accurate turbine wake models to estimate wind farm power production and downstream impacts. These data are lacking from current measurement practices thus limiting our understanding of atmosphere-turbine interactions and wake dynamics.

Activity:	Various Ecological Monitoring/Studies in Conjunction with USFWS Staff
Objective:	Continue to maintain and develop partnerships with USFWS Refuge Staff for ecological monitoring that benefits refuge and NWTC activities. Biologist contact: Tom Ryon, 303.275.3252, Tom.Ryon@nrel.gov.
Where:	Refuge property – likely in the Rock Creek Drainage
When:	During the growing season: spring, summer, fall as needed to complete objective.
How:	Develop a bat monitoring program for one or two sites on the refuge. Assist with PMJM trapping during summer as needed.
Frequency:	2-4 weeks of activity throughout the calendar year. One week for PMJM trapping as scheduled by USFWS refuge staff. Bat acoustic monitoring – access equipment monthly, mist netting once per summer.
Number of People:	1 person in vehicle, working at monitoring stations to retrieve SD cards. 1-2 people mist netting bats one evening. Vehicle access to study site on the refuge, then work performed on foot.
Special Needs:	Evening and night activities for bat acoustics and mist netting. Personnel involved will have rabies vaccinations current at the time of mist netting.
Benefits:	The data collected will be beneficial to refuge and NWTC staff by inventorying and gaining a better understanding of the types of bats and developing an index of bat activity at the site chosen. Further monitoring of PMJM is needed to understand the current status of their population.

Activity:	Noxious weed control along shared boundaries in conjunction with USFWS staff
Objective:	Maintain partnerships with USFWS Refuge Staff for control of noxious weeds that benefits refuge and NWTC natural resource management. Biologist contact: Tom Ryon, 303.275.3252, Tom.Ryon@nrel.gov.
Where:	Refuge property boundary shared with NWTC.
When:	During the growing season: spring, summer, fall as needed to complete objective.
How:	When NWTC is conducting herbicide spraying, continue into adjacent areas on refuge as directed by USFWS staff when it is efficient to treat nearby areas.
Frequency:	2-4 days of activity during calendar year. Once early in growing season for knapweed, once during summer or fall for other species of interest.
Number of People:	1 person in vehicle (small ATV), working along common border.
Special Needs:	Coordination with USFWS staff
Benefits:	Control of noxious weeds in a cost effective manner that benefits both sites.

Activity:	Microphones
Objective:	Study of acoustic emissions of wind turbines under unique operating conditions for the purpose of research (and possibly certification) including reduction of overall acoustic emissions.
Where:	East of the NWTC large turbine row, extending into the refuge approximately 500'.
When:	It is desired to conduct a significant acoustic measurement campaign during the spring and summer of 2020. Final details, including measurement equipment, are still being worked out and will be discussed with USFWS as they solidify. Upon approval of the larger campaign, notification of individual operations will be given to U.S. Fish and Wildlife personnel via email not less than 48 hours before each scheduled study period. Ideally, testing will occur over a period of a few days several times throughout the measurement campaign, depending on weather, wind, and results.
How:	Access by foot, temporary placement of a up to 8 plywood boards 3 foot in diameter on the ground for the duration of the test (black dots below). Several small (1'x1'x1') enclosures, and cabling between boards and enclosures (red dots and lines below). Note, this layout could change as the test design is finalized. 
Frequency:	Approximately 8-12 recording days throughout the year
Number of People:	3-4 people on foot, walking.
Special Needs:	n/a
Benefits:	Improved understanding of acoustic noise levels associated with wind turbines under unique conditions allows for better siting and permitting regulations including the ability to take into account environmental and wildlife impacts.

Activity:	Cameras
Objective:	Study of wind turbine blade aerodynamics through photography of flow visualization for the purposes of optimizing the performance of wind turbines.
Where:	East of the NWTC large turbine row, extending into the refuge approximately 500'.
When:	No specific projects in the plan currently, but the potential exists for one to occur during the calendar year. Notification of operations will be given to U.S. Fish and Wildlife personnel via email not less than 48 hours before scheduled study period and initial project notification at least 2 weeks in advance. Testing will occur over the period of a day or two, depending on weather and wind.
How:	Access by foot.
Frequency:	Once, however there is a potential for follow-on tests in the future.
Number of People:	1-2 people on foot, walking.
Special Needs:	n/a
Benefits:	Improved understanding and optimization of wind turbine performance can lead to more efficient and quieter turbines. Additionally, better understanding of wind turbine rotor aerodynamics can lead to a better understanding of wind turbine wakes. Both of these improvements could have trickle-down effects that reduce impact on wildlife.

Activity:	Monitor integrity of north and east pond berms on the Bluestone site
Objective:	During 2013 and 2015, breaches developed in the pond berms of the "historic pre-1981 pit/pond" just south of the NWTC property, leading to significant water damage to the NWTC site. Modifications to the berms and overflow channel from this pond were completed by Lafarge in summer 2015. NWTC would like to monitor the integrity of the repairs and functionality of the overflow channel annually if significant precipitation events occur throughout the calendar year. NWTC contact: Michael O'Rell, Michael.ORell@nrel.gov, 303.384.6129
Where:	Refuge property around the pond just south of the NWTC.
When:	After significant precipitation events, likely in spring or early summer. Notification will be given to U.S. Fish and Wildlife personnel in advance. This notice will be given at least 48 hours prior for non-time-critical situations.
How:	Access by foot.
Frequency:	1 or 2 times during the calendar year, depending on precipitation patterns.
Number of People:	1 to 3 people.
Special Needs:	None
Benefits:	Reduce potential for flooding of refuge and NWTC properties.

Activity:	Trash pickup along the adjoining NWTC and Refuge fence
Objective:	Keep the adjoining area between the NWTC eastern fence line and the western edge of the Refuge clean. Often, during the windy season, trash will blow into the NWTC property from its western border along Highway 93. Sometimes the NWTC is not able to stop all this trash before it blows into the Refuge. However, we would like to make every effort possible to pick it up along the adjoining fence line. Additionally, projects that simulate avian activity using projectiles launched from the base of wind turbines are becoming more prevalent at the NWTC. Every effort is made to keep these projectiles on NWTC property and retrieve them at the conclusion of the experiment. Additionally, targets consisting of biodegradable fabric sacks containing local soils may also be used. Depending on launch trajectory and local wind conditions, projectiles may land over the fence line. In that case, researchers would like to make every effort to retrieve projectiles to keep the refuge clean.
Where:	The adjoining boundaries between the NWTC and F&W land, entering the refuge 100-200 yards.
When:	Monthly, as needed.
How:	Walking and picking up trash.
Frequency:	As necessary, mid-day operations to minimize impact to wildlife.
Number of People:	1-2 people on foot, walking.
Special Needs:	n/a
Benefits:	Keeping the refuge and adjoining land clean and free of trash. Good land stewardship.

Activity:	Fence repairs as needed
Objective:	Maintain property boundary fences in acceptable condition. NWTC contact: Michael O'Rell, Michael.ORell@nrel.gov, 303.384.6129
Where:	Along the property boundaries between the refuge and the NWTC.
When:	Anytime fence damage or failure has been identified. Notification will be given to U.S. Fish and Wildlife personnel via email not less than 48 hours before scheduled work with an attempt to notify about project initiation 2 weeks or more in advance.
How:	Access by foot.
Frequency:	Expected to be less than 2 times during calendar year
Number of People:	1 to 3 people.
Special Needs:	None
Benefits:	Property boundaries are identified, reducing the likelihood of inadvertent property access.

Activity:	Electrical Transmission Line Monitoring & Maintenance
Objective:	Maintain partnership with USFWS Staff to actively manage the new 115 kV electric utility corridor providing power to the Flatirons Campus. This maintenance activity includes proper preventative maintenance of the electrical transmission line infrastructure as well as performing periodic wildlife and vegetation surveys along the easement right-of-way. See attached Right-of-Way permit (Permit No. 1E, Exhibit A – RFETS Land Survey Plat – shown below).
Where:	North-West corner of Refuge property – from the South-West corner of the FC due south approximately one mile along the North-West boundary of the FWS property.
When:	As needed, intermittent monitoring.
How:	Access by foot, vehicle or use of unmanned aerial systems (aka: drones).
Frequency:	As needed, monthly, quarterly and annual PM visits throughout the calendar year.
Number of People:	Generally 1-2 people, but could be larger groups (up to six people).
Special Needs:	n/a
Benefits:	Proper maintenance and operation of electrical power infrastructure for reliability and dependability. Also good environmental stewardship along the utility corridor to protect and enhance wildlife and vegetation.

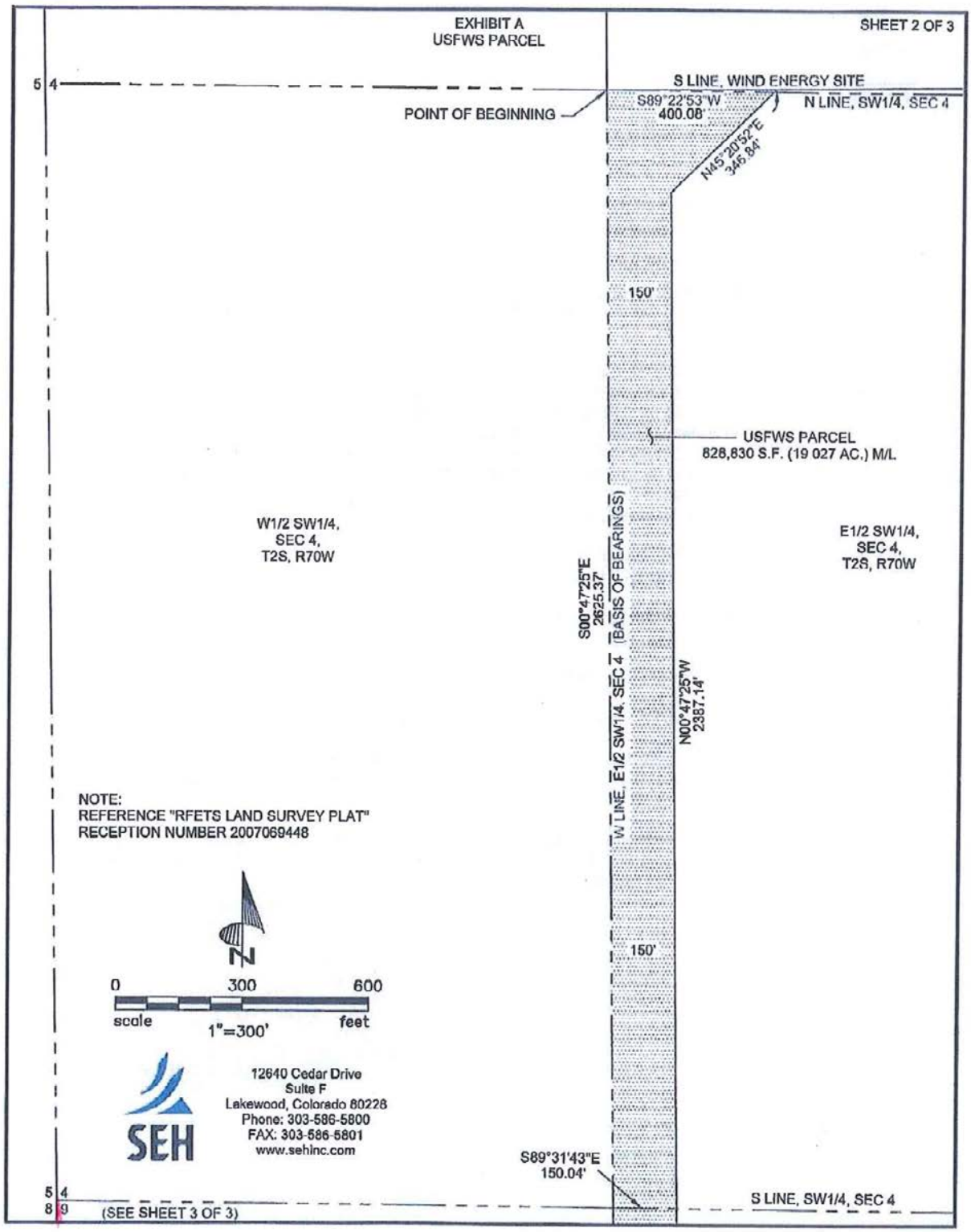
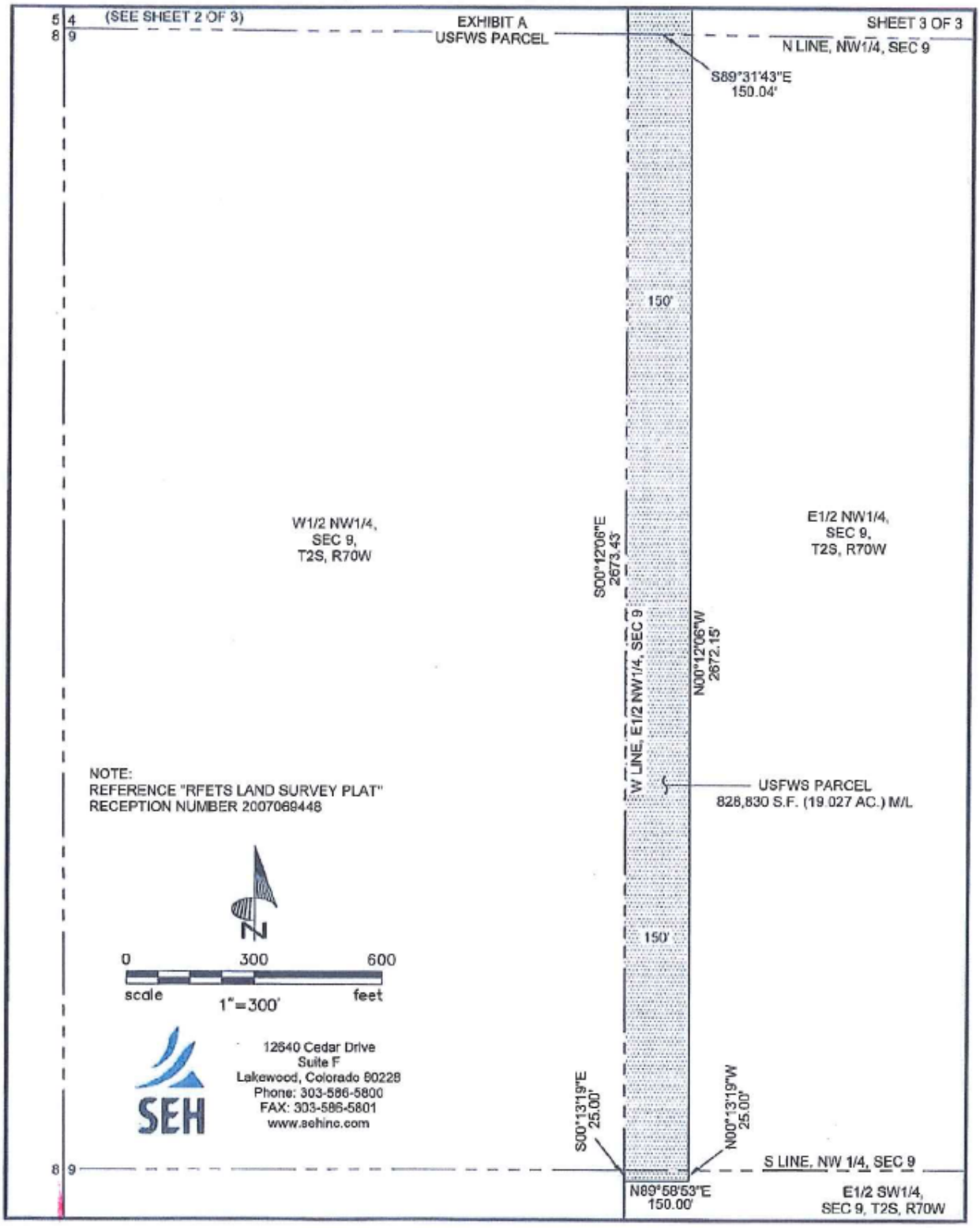


EXHIBIT A
USFWS PARCEL
SHEET 2 OF 3
5 4
S LINE, WIND ENERGY SITE
POINT OF BEGINNING
S89°22'53"W
400.08'
N LINE, SW1/4, SEC 4
N45°20'52"E
346.84'
150'
USFWS PARCEL
828,830 S.F. (19 027 AC.) M/L
W1/2 SW1/4,
SEC 4,
T2S, R70W
E1/2 SW1/4,
SEC 4,
T2S, R70W
S00°47'25"E
2625.37'
(BASIS OF BEARINGS)
W LINE, E1/2 SW1/4, SEC 4
N00°47'25"W
2387.14'
NOTE:
REFERENCE "RFETS LAND SURVEY PLAT"
RECEPTION NUMBER 2007069448
N
0
300
600
scale
1"=300'
feet
SEH
12640 Cedar Drive
Suite F
Lakewood, Colorado 80228
Phone: 303-586-5800
FAX: 303-586-5801
www.sehinc.com
150'
S89°31'43"E
150.04'
S LINE, SW1/4, SEC 4
5 4
8 9
(SEE SHEET 3 OF 3)


(SEE SHEET 2 OF 3)
EXHIBIT A
USFWS PARCEL
SHEET 3 OF 3
N LINE, NW1/4, SEC 9
S89°31'43"E
150.04'
150'
W1/2 NW1/4,
SEC 9,
T2S, R70W
E1/2 NW1/4,
SEC 9,
T2S, R70W
S00°12'06"E
2673.43'
N00°12'06"W
2672.15'
W LINE, E1/2 NW1/4, SEC 9
USFWS PARCEL
828,830 S.F. (19.027 AC.) M/L
NOTE:
REFERENCE "RFETS LAND SURVEY PLAT"
RECEPTION NUMBER 2007069448
150'
0
300
600
scale
feet
1"=300'
12540 Cedar Drive
Suite F
Lakewood, Colorado 80228
Phone: 303-986-5800
FAX: 303-986-5801
www.sehinc.com
SEH
S00°13'19"E
25.00'
N00°13'19"W
25.00'
S LINE, NW 1/4, SEC 9
N89°58'53"E
150.00'
E1/2 SW1/4,
SEC 9, T2S, R70W

Activity:	Tagline access for support of maintenance or component changeout of existing turbines
Objective:	The research wind turbines at the NWTC are at a phase of their life where older components may be swapped with newer to meet ongoing research and development objectives. Some of the large components may be swapped using a crane from the NWTC property. Taglines are used to control these loads during the lift to ensure safety and can usually be managed entirely from the NWTC property. However, if the wind is out of certain unfavorable directions, a crew of 1-2 people may need to cross the fence to hold a tagline and ensure safety during the lift. 
Where:	Refuge property adjacent to large turbines at the NWTC.
When:	As needed, depending on research objectives.
How:	By foot
Frequency:	No major lifts expected, but projects may come up throughout the calendar year.
Number of People:	1-2
Special Needs:	n/a
Benefits:	Safety of personnel and property during lift.