

**State-Listed Wintering Grassland Raptor  
2020-2021 Survey Report  
for the  
Flat Creek Solar Project**

**Town of Root  
Montgomery County,  
New York**

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## EXECUTIVE SUMMARY

SunEast Flat Creek Solar LLC (Applicant), a subsidiary to SunEast Development LLC, is proposing the construction of the Flat Creek Solar Project (Project), an approximately 200-megawatt (MW) photovoltaic (PV) solar energy generation facility in the Town of Root, Montgomery County, New York. The Project Area at the time of the study consisted of approximately 2,175 acres, of which the actual Project will require only a portion to construct and operate the facility.

TRC Environmental Corporation (TRC) was conducted a winter raptor study at the proposed Project Area from November 16, 2020, to March 31, 2021, following the *NYSDEC Survey Protocol for State-listed Wintering Grassland Raptor Species* (Draft 2015, [Protocol]). In accordance with the Protocol, an additional survey event was performed between April 1 and April 15, 2021, based on observations of listed species recorded during the final two weeks of March. The objective of the winter raptor surveys was to determine the presence and Project Area use of state-listed grassland raptor species during the winter season and assess the need for any additional studies.

The study included both stationary and driving surveys throughout the Project Area in areas of potential habitat for state-listed overwintering grassland raptors. A total of nine stationary survey points were identified in areas of potential habitat, and a driving route consisting of 18 driving survey stops was established along public roads traversing the Project Area. A total of 99 stationary surveys and 196 driving route survey stops were completed over 11 Survey Events, amounting to a total survey effort of 153.3 stationary survey hours and 16.0 driving survey hours during the study.

observations of raptor species were recorded during stationary surveys comprising a total of use minutes. Overall mean use of the Project Area by raptors during stationary surveys was. observations of species were recorded during driving route surveys in the Project Area. Red tailed hawk (*Buteo jamaicensis*) was the most frequently observed raptor during both stationary and driving surveys, accounting for 45.1 percent and 38.1 percent of stationary and driving route survey observations, respectively.

state-listed wintering grassland raptors were observed during the study, including observations of and observations of. were commonly observed flapping, hunting, and perching and (i.e., ). observations were recorded, while observations were recorded during. were commonly documented hunting, flapping, and gliding at the Project Area over the course of the survey period; although, sightings tended to be more consistent in the of the Project Area. Indeed, the most numerous consistent observations of both species were recorded at survey location.

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Additionally, [REDACTED] state-listed species, the [REDACTED] and [REDACTED], and [REDACTED] state-listed species of special concern, [REDACTED] and [REDACTED], were observed during the study. Overall, raptor use of the Project Area was [REDACTED] throughout the study period, with observations being the [REDACTED] and [REDACTED].

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## APPENDICES

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- Appendix A    NYSDEC Survey Protocol for State-listed Wintering Grassland Raptor Species Draft 2015
- Appendix B    Data Form Example
- Appendix C    List of Avian Species Observed
- Appendix D    Survey Data Sheets (*provided as zipped file*)
- Appendix E    GIS Shapefile Package (*provided as zipped file*)

## 1.0 INTRODUCTION

SunEast Flat Creek Solar LLC (Applicant), a subsidiary to SunEast Development LLC, is proposing the construction of the Flat Creek Solar Project (Project), a 200-megawatt (MW) photovoltaic (PV) solar energy generation facility in the Town of Root, Montgomery County, New York. On behalf of the Applicant, TRC Environmental Corporation (TRC) has prepared this State-Listed Wintering Grassland Raptor Survey Report supporting development of the Project.

### 1.1 Project Description

The Project is located in a rural residential community. Lands surrounding the Project Area are predominantly comprised of cropland (active and fallow), interspersed with successional old fields and isolated patches of northern hardwood forest. The location of Project components is evolving as siting and design efforts progress. The Project Area at the time of the study consisted of approximately 2,175 acres; however, Project components will not require usage of the full extent of lands within the Project Area. Project components may consist of tracker technology PV panels, inverters, access roads, buried (and possibly overhead) electric collection lines, a collection substation, and electrical interconnection facilities.

██████████ in the Project Area contain potential habitat for overwintering grassland raptor species including the state-listed ██████████ and ██████████. Potential habitat for wintering grassland raptors is located ██████████ the Project Area and consists of ██████████ and ██████████. The Project Area contains ██████████ and ██████████. The Project is located immediately adjacent to the Mohawk River, and is intersected by Flat Creek, sites which might potentially concentrate migratory raptors and eagles. A review of the New York Natural Heritage Program (NYNHP) database and Environmental Resource Mapper, and consultation with NYSDEC received on December 3, 2020, indicated ██████████ records occupied habitat or occurrences of state-listed species targeted by the surveys (i.e., ██████████) exist within or nearby the Project Area.

Survey protocols were based on the *New York State Department of Environmental Conservation (NYSDEC) Survey Protocol for State-listed Wintering Grassland Raptor Species, Draft 2015* (Protocol, Appendix A). NYSDEC provided comments on the survey study plan on December 3, 2020, which were incorporated as applicable.

### 1.2 Purpose and Objectives

The purpose of the winter raptor survey was to determine the presence and Project Area use by state-listed threatened/endangered grassland raptor species during the winter season. Target species were the state-listed ██████████ and ██████████. Data was used to develop a qualitative assessment of general patterns of use by those species and other raptors identified within the vicinity of the proposed Project.

The main objectives of winter raptor surveys were to:

- document presence of state-listed species within the Project Area,
- summarize and map use of the Project Area by state-listed species, and
- summarize and map use of the Project Area by any non-listed raptor species observed during surveys.

Information obtained from these surveys will help determine the need for additional comprehensive studies, regulatory review, and if necessary, avoidance and minimization.

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## 2.0 STUDY PROTOCOL

### 2.1 Survey Site Selection

A total of nine stationary survey locations were selected within the Project Area in areas of potential habitat that may be used by [REDACTED] and/or [REDACTED] (Figure 1). Stationary survey locations were selected based on habitat and visibility at the Project Area to effectively survey potential habitat for grassland wintering raptors. Review of aerial imagery of potential habitat within the Project Area was used to pre-determine locations for stationary points and driving routes with consideration of site-specific topographical conditions and visual obstructions. Survey locations were established within potential habitat for over-wintering raptors (e.g., [REDACTED] and [REDACTED]) at vantage points with clear visibility of the habitat area. Locations were situated along public rights-of-way or in participating parcels within the Project Area. Locations were established along hedgerows or forest edges or were conducted within or next to vehicles to conceal surveyors from raptors flying overhead. Locations were spaced approximately 1,000 meters apart where multiple sites were required to survey a contiguous area of unobstructed grassland habitat. Several locations also provided views of presumed reference areas (e.g., [REDACTED] or [REDACTED] not located within the proposed Project Area or area to be developed). Where possible, observations were determined to represent control data where the viewshed was primarily of potential habitat located outside of the Project Area boundary effective at the time of the study.

A driving survey route was established along roads traversing the Project Area. Short-duration point counts were conducted at pre-determined locations along the route which provided visibility of potential habitat for grassland wintering raptors from the public road. Point-count locations were established approximately every 0.5 mile along the driving route where habitat was visible.

Potential habitat is located throughout the Survey Area and is visible from State Route 162, Flat Creek Road, Carlisle Road, Hilltop Road, and Conway Road. One driving survey route consisting of 18 stops was selected along the above roadways. Routes and survey stops are depicted on Figure 1. GIS shapefiles of the survey points and driving routes/stops are included in a zipped package as Appendix E.

### 2.2 Survey Protocol

The protocol for state-listed wintering grassland raptor surveys at the Flat Creek Solar Project followed the *NYSDEC Survey Protocol for State-listed Wintering Grassland Raptor Species, Draft 2015*, supplemented with input received from NYSDEC on December 3, 2020. Surveys included rotating stationary survey points as described above (Figure 1), and a driving route survey along public roads in areas of potential habitat.

Per NYSDEC recommendations, stationary surveys were designed such that weekly presence was maintained at the Project Area throughout the duration of the study, weather permitting. Approximately half of the stationary survey locations were surveyed each week such that all



stationary locations were surveyed over a two-week period ("Survey Event"). Stationary surveys were completed by a single observer.

A driving route survey was completed once during each Survey Event, with one of the two driving routes completed each week. Driving surveys were completed by a single surveyor. Surveyors followed a set route along public roads within the Project Area and completed five-minute point counts at each established point count location along the route. Where raptors were noted between intended point count locations, the driver pulled over as needed to confirm identification.

Survey dates were selected to take advantage of optimal weather during each Survey Event; however, some surveys were conducted under unfavorable conditions. Whenever possible, surveys were not conducted during inclement weather that would significantly interfere with either visibility or use of sites by raptors. Inclement weather included heavy precipitation, dense fog, or strong winds (i.e., wind speed 3 or 4 on Beaufort Scale).

### **2.2.1      *Number and Timing of Surveys***

Surveys were performed in winter of 2020-2021 and were conducted during the NYSDEC recommended study period between November 15, 2020, and March 31, 2021 (study period). This study was initiated on November 16, 2020. Due to observations of listed species during the last two weeks of March, an additional Survey Event was completed between April 1 and April 15, 2021. A total of 11 complete Survey Events occurred during the study period, which ended on April 15, 2021. One complete Survey Event encompassed stationary surveys at all stationary locations and one daytime driving survey along the driving route, conducted over a two-week period.

Stationary surveys were initiated one hour before sunset and concluded when it was too dark to see flying birds, typically one-half hour after sunset, or up to one hour after sunset if conditions such as snow cover or a full moon allowed for observing flying birds after dark. This timing targeted the temporal window when overwintering raptors are foraging and leaving/returning to their roosts.

The driving route survey was initiated prior to stationary surveys scheduled for the day, providing for ample time to complete the driving route and mobilize to stationary survey locations within the required timeframe.

### **2.2.2      *Surveyor Preparedness***

Field biologists with experience conducting natural resource assessments, including rare, threatened and endangered species assessments, performed this study. Biologists received specialized training in bird observation and species identification. In addition, surveyors familiarized themselves with the survey protocol, survey locations, driving routes, and the Project Area as a whole to facilitate identification of site-specific features that raptors may use (i.e., stacked hay bales, trees stumps, fence posts, etc.). This training also highlighted the importance of surveyor concealment next to a parked vehicle or hedgerow vegetation to lessen behavioral

avoidance by wintering raptors during the stationary surveys. Biologists were outfitted with binoculars with a magnification of 10x42 or higher and received training on proper use and techniques.

### **2.2.3 Data Collection**

Detailed weather and bird observation data was collected during each survey. All data was entered onto digital data forms accessed by smartphone or tablet. Data was collected on forms adapted from those utilized by the Hawk Migration Association of North America (HMANA) for raptor migration surveys using HMANA-suggested codes and guidelines. An example data form is provided in Appendix B. Any observed roost sites, foraging paths, or flight paths were recorded digitally, and appended to the digital data sheet. Data was collected for any raptor or owl species observed at the Project Area. Additionally, observations of listed non-raptor species, arctic songbirds and winter resident grassland birds (i.e., snow buntings (*Plectrophenax nivalis*), [REDACTED], and Lapland longspurs (*Calcarius lapponicus*)), and incidental observations were documented, if sighted. Incidental observations include species documented within the Project Area, outside of the scheduled survey window (i.e., when walking to or from a survey location).

A data form was completed for each survey, regardless of anything observed. General information that was recorded on the forms include:

- project name,
- survey type (driving or stationary),
- survey location,
- visit number,
- date,
- observer name(s),
- survey start and end time,
- duration of survey (minutes), and
- sunset time.

#### **2.2.3.1 Weather Observations**

Weather conditions known to influence detectability of raptor species were noted at the beginning of each survey and as conditions changed significantly throughout the survey. Parameters that were recorded included:

- wind speed (recorded based on the Beaufort scale),
- wind direction (compass direction from which the wind is coming, or “variable”),
- temperature (degrees Fahrenheit),
- relative humidity (percent relative),
- barometric pressure (in mmHg),
- percent cloud cover,
- visibility (approximate distance in kilometers [km]),

- precipitation, and
- snow depth (inches [in]) and condition (i.e., powder, crust, slush, etc.).

### 2.2.3.2 Individual Raptor Observations

Observations of any raptor or owl were recorded continuously throughout each survey. When collecting data, surveyors performed continuous scanning of the habitat, both with the naked eye and with binoculars. The following data was recorded for each individual bird observed:

- species (if possible) or genera,
- whether the raptor observation was an incidental sighting or not,
- count of individuals,
- first and last time observed,
- duration of observation (rounded to the nearest minute),
- age class (if possible),
- gender (if possible),
- behavior (such as circling, flapping, gliding, hunting, perching, soaring, or other),
- general compass bearing flight direction (S, SSW, NE, etc.),
- approximate flight height (in feet),
- digital map of flight path(s)/roost site(s)/etc., and
- any additional notes about the observation.

In the event that a bird could not be identified to the species level, the bird was described to the greatest extent possible. For example, unknown raptors were further described as “buteo” versus “accipiter”, or “large” versus “small.”

If [REDACTED] or [REDACTED] were observed, documentation of behavioral observations of [REDACTED] and [REDACTED] was as specific as possible, particularly when attempting to identify potential [REDACTED] locations. [REDACTED] of [REDACTED] and [REDACTED] were documented where [REDACTED] behavior was observed. [REDACTED] behavior was identified by observing [REDACTED] dropping down to the ground and not taking flight again as it gets dark, or observation of one or more [REDACTED] taking flight from the ground in the evening. Additionally, any concentrated activity in an area at or near dusk, interactions between [REDACTED] and [REDACTED], and individuals coming and going or appearing from a [REDACTED], or other protected locations were noted as potential [REDACTED] locations. Locations of these sites, as well as number of individuals using a [REDACTED], were recorded in addition to the standard information recorded for all observations, if applicable. Additionally, [REDACTED] locations and substrate were recorded for [REDACTED] and [REDACTED]. Any observed [REDACTED] sites, foraging paths, or flight paths were documented digitally, overlain on photos of the Project Area, and then attached to the digital data form. Flight paths and roost locations for listed species are shown on Figure 5.

### *2.2.3.3 Additional and Incidental Observations*

When it did not detract from the detection of target species, observations of non-raptor species and/or other animals were recorded as “Additional Observations” on the digital data form. The time of the observation and a description of the observation were recorded.

Target species (i.e., raptors) where observed outside of a regular survey period were recorded as incidental observations and appended to the stationary survey data form for the survey being conducted on the evening of the observation. During driving route surveys, individuals observed between driving stops were not considered incidental. These observations were appended to the survey data form at the next driving route stop.

A full list of avian species documented at the Project, including non-target species and those observed incidentally, is included as Appendix C.

### *2.2.3.4 Field Quality Assurance and Quality Control*

Data forms were reviewed for completeness and accuracy prior to leaving the survey location. Any errors or inconsistencies noted were rectified at that time. Data was further reviewed and verified by Project management staff following each Survey Event. Data was analyzed concurrently with on-going field work to ensure Project objectives were being met by the types and method of data being collected.

## **2.3 Data Entry and Analysis**

### **2.3.1 Data Entry**

Data was uploaded to the survey database after every survey was completed in order to ensure that no data was stored on the devices on which it was collected. Flight paths and locations for listed and target species were digitized over aerial maps of the Project and appended to data forms. Survey Data Forms are provided as Appendix D in a zipped file.

### **2.3.2 Data Analysis**

The following summaries and statistics were generated in map or table form as appropriate to address the objectives and goals of this study:

- species composition,
- number and frequency of observations,
- raptor use patterns, both temporal and spatial, throughout the Project Area,
- [REDACTED]/foraging site locations of state-listed species, if identified, and
- flight paths of state-listed species observed.

Standard statistical parameters (e.g., means) were computed where appropriate to support the basis for any determinations.

### 3.0 RESULTS

#### 3.1 Survey Effort

A total of 99 stationary surveys and 196 driving route survey stops were completed over 11 Survey Events (Table 1). High winds were noted during surveys conducted on March 2, 2021, potentially impacting observations. [REDACTED] state-listed raptor species including [REDACTED], [REDACTED], and [REDACTED], and [REDACTED]-state-listed species of special concern (SSC) [REDACTED], and [REDACTED], were observed during the study. Observations of state-listed raptor species are further described in Section 3.4. A list of all avian species documented at the Project is included as Appendix C.

**Table 1. Summary of Survey Effort**

Survey Event	Survey Dates	Number of Stationary Survey Hours	Number of Driving Route Stops Completed	Conditions Affecting Detectability	Raptors Observed
1	11/16/2020-11/24/2020	13.9	18	-	Yes
2	12/1/2020-12/08/2020	14.1	18	-	Yes
3	12/14/2020-12/23/2020	14.0	18	Snow depths >6 inches	Yes
4	12/28/2020-1/7/2021	14.2	18	-	Yes
5	1/12/2021-1/22/2021	14.1	18	-	Yes
6	1/25/2021-2/4/2021	14.1	18	Snow depths >6 inches	Yes
7	2/8/2021-2/17/2021	13.9	18	Snow depths >6 inches	Yes
8	2/23/2021-3/4/2021	13.9	18	High Winds; Snow depths >6 inches	Yes
9	3/8/2021-3/17/2021	13.6	18	-	Yes
10	3/22/2021-3/31/2021	14.0	18	-	Yes
11	4/4/2021-4/14/2021	13.5	18	-	Yes

### 3.2 Stationary Surveys

A total of ■ observations of ■ raptor species were recorded over the 153.3 hours of surveys completed at stationary survey locations during the study. The most observed species was the red-tailed hawk, which was observed 41 times (45.1 percent of observations). Overall, ■ raptor use minutes<sup>1</sup> were recorded throughout the study for a mean use of ■<sup>2</sup>. Raptor use was highest by the red-tailed hawk, which had a mean overall use of 0.058. Table 2 summarizes the frequency and use of raptor species observed during stationary surveys. Listed species were observed during stationary surveys. Section 3.4 summarizes observations of state- and/or federally listed species. Observations of non-raptor species and species observed incidentally to surveys are discussed in Section 3.5.

**Table 2: Frequency of Raptor Observations During Stationary Surveys by Species**

Species	No. Observations <sup>1</sup>	Percent of Total Observations	Use Minutes <sup>2</sup>	Mean Overall Use <sup>3</sup>
American Kestrel	6	6.6	69	0.008
■	■	■	■	■
■	■	■	■	■
Merlin	1	1.1	2	0.000
■	■	■	■	■
■	■	■	■	■
Red-tailed Hawk	41	45.1	533	0.058
Rough-legged Hawk	1	1.1	5	0.001
■	■	■	■	■
■	■	■	■	■
Turkey Vulture	10	11.0	12	0.001
<b>Total Observations</b>	<b>91</b>	<b>100.0</b>	<b>852</b>	<b>0.093</b>

<sup>1</sup> Includes only observations recorded during regular surveys

<sup>2</sup> Raptor use minutes are defined as the number of minutes raptors were observed within the Project Area during surveys.

<sup>3</sup> Mean overall use is calculated by dividing the number of use minutes by the total number of survey minutes conducted to determine a use rate.

<sup>4</sup> Indicates state-listed species

#### 3.2.1 Spatial and Temporal Patterns of Raptor Use

Raptors were documented from all nine stationary survey locations. Table 3 summarizes the spatial distribution of observations recorded during stationary surveys. Raptor activity was concentrated at survey location ■, with a total of ■ observations of ■ species, representing ■ percent of stationary survey observations. Additionally, ■ accounts for ■ raptor use

<sup>1</sup> Raptor use minutes are defined as the number of minutes raptors were observed within the Project Area during surveys.

<sup>2</sup> Mean overall use is calculated by dividing the number of use minutes by the total number of survey minutes conducted to determine a use rate.

minutes, the [REDACTED] number of use minutes observed at a stationary location, behind [REDACTED] with [REDACTED] raptor use minutes.

Use at the Project Area was widespread, with observations occurring at [REDACTED] stationary survey locations; however, the most concentrated observations were in the [REDACTED] portions of the Project Area at locations [REDACTED] and [REDACTED] (Figure 2). The highest number of species was recorded at location [REDACTED] with [REDACTED] species observed (Table 3).

**Table 3: Raptor Observations During Stationary Surveys by Survey Location**

Survey Location	Species <sup>1</sup>	No. Observations <sup>2</sup>	% Total Observations	Use Minutes	Mean Overall Use
S1	Red-tailed Hawk	3	3.3	6	0.006
	[REDACTED]	3	3.3	6	0.006
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	American Kestrel	6	6.6	69	0.067
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Red-tailed Hawk	3	3.3	138	0.132
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Red-tailed Hawk	7	7.7	92	0.088
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Merlin	1	1.1	2	0.002
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Red-tailed Hawk	5	5.5	66	0.065
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Turkey Vulture	1	1.1	1	0.001
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Rough-legged Hawk	1	1.1	5	0.005
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Turkey Vulture	9	9.9	11	0.011
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Red-tailed Hawk	12	13.2	162	0.155

2 Includes only observations recorded during regular surveys

Driving route surveys were conducted during every Survey Event throughout the study, with total observation time totaling 16.0 hours. A total of [REDACTED] raptor observations of [REDACTED] species were documented during driving route surveys, with [REDACTED] incidental observations also being recorded. Table 4 summarizes the frequency of raptor species observed during the driving surveys. [REDACTED] state-listed species, [REDACTED], was observed during daytime driving surveys. The [REDACTED] [REDACTED], a state-listed SSC, was also observed. All species observed during the driving survey were also observed during the stationary surveys. Section 3.4 summarizes observations of state and/or federally listed species. Red-tailed hawks were the most frequently observed raptor during daytime driving surveys, accounting for 38.1 percent of raptor observations.



**Table 4: Frequency of Raptor Observations During Daytime Driving Surveys by Species**

Species	No. Observations	No. Incidental Observations	Percent of Observations
American Kestrel	1	1	4.8
Red-tailed Hawk	8	1	38.1
Rough-legged Hawk	5	1	23.8
Turkey Vulture	2	-	9.5
<b>Total Observations</b>			

### 3.3.1 Spatial and Temporal Patterns of Raptor Use

Raptors were observed most frequently in the [REDACTED] portion of the Project Area during driving route surveys. Figure 4 summarizes the spatial distribution of observations recorded along the driving route. Raptors were observed from [REDACTED] of 18 driving route locations. The greatest number of observations ([REDACTED]) was recorded at driving survey location [REDACTED] which is adjacent to [REDACTED] and [REDACTED], bordered by [REDACTED]. No observations were recorded at driving survey locations [REDACTED] and [REDACTED] (Figure 4).

Table 5 summarizes the temporal distribution of observations recorded during driving route surveys. Raptor activity was heavily skewed toward the [REDACTED] of the survey season, with [REDACTED] of [REDACTED] observations occurring between Survey Events [REDACTED] and [REDACTED]. The highest number of raptor observations was recorded during Survey Event [REDACTED], which accounted for [REDACTED] percent of total observations during the study period. Species richness was greatest during Survey Event [REDACTED], with [REDACTED] raptor species observed.

**Table 5: Raptor Observations During Driving Surveys by Survey Event**

Survey Event	Survey Dates	Species	No. Observations	% Total Observations
[REDACTED]	[REDACTED]	[REDACTED]		
		Red-tailed Hawk	1	4.8
		Rough-legged Hawk	1	4.8
		[REDACTED]		
		Turkey Vulture	1	4.8

Survey Event	Survey Dates	Species	No. Observations	% Total Observations
2	12/7/2020	Red-tailed Hawk	5	23.8
		Rough-legged Hawk	1	4.8
			6	28.6
3	12/22/2020	Red-tailed Hawk	2	9.5
			2	9.5
4	1/5/2021	No Raptors Observed		
		Rough-legged Hawk	3	14.3
6	2/3/2021	No Raptors Observed		
7	2/17/2021	No Raptors Observed		
8	3/4/2021	No Raptors Observed		
9	3/15/2021	No Raptors Observed		
		American Kestrel	1	4.8
		Turkey Vulture	1	4.8
11	4/13/2021	No Raptors Observed		
		Grand Total		

### 3.4 Project Area Use by State-Listed Species

A total of [REDACTED] observations of state-listed threatened, endangered, and special concern species, including [REDACTED] incidental observations, were recorded during the study period for a total of [REDACTED] use minutes. Observations were [REDACTED] the Project Area but were [REDACTED] at stationary locations [REDACTED] in the [REDACTED] portion of the Project Area.

A total of [REDACTED] observations, including [REDACTED] incidental sightings, and [REDACTED] observations occurred during winter raptor surveys at the Project Area. [REDACTED] was observed for a total of [REDACTED] use minutes at [REDACTED] of the stationary survey locations and at [REDACTED] of 18 driving route stops. [REDACTED] were observed at [REDACTED] stationary locations for a total of [REDACTED] use minutes. These [REDACTED] species were documented at the [REDACTED] locations throughout the study, but not on the same survey days.

██████████ was observed █████ times at █████ stationary locations for █████ use minutes and █████ driving route stop. ████████████████████ was observed at one stationary location for █████ use minute. ████████████████████ were observed at █████ stationary locations for █████ use minutes and at █████ driving route stop. ████████████████████ was observed at █████ stationary survey locations for █████ use minutes. Table 6 summarizes observations of state-listed species.

### ██████████ Observations

A total of ████████████████████ (SE) were recorded during the study period, with all observations occurring during stationary surveys. █████ of these observations occurred at location █████, █████ occurred at █████, and █████ occurred at █████, located in the █████ and █████ portions of the Project Area (Figure 5). The first observation (location █████) occurred on November 24, 2020, and the last observation (location █████) occurred on April 14, 2021. ████████████████████ were observed during every month of the study except January 2021. Most observations were brief (<3 minutes) and no observations was for longer than seven minutes.

More than one individual was observed at the same location, █████, on November 24, 2020. Individuals were documented actively hunting within the vicinity of █████ on several occasions (Survey Events █████, and █████). The presence of multiple individuals at or near the ground, emerging at dusk to hunt fields suggests this location may contain a █████ location. Specific information for each observation is provided on the data forms in Appendix D.

### ██████████ Observations

A total of █████ observations of ████████████████████ were recorded during or incidental to stationary surveys and █████ observations were recorded during daytime driving surveys. █████ of the stationary survey observations occurred at location █████ in the █████ portion of the Project Area, with remaining observations at locations █████ and █████ (Figure 5). The first observation occurred at location █████ on November 24, 2020, and the last observation occurred at location █████ on April 13, 2021. █████ of the █████ observations occurred during March. █████ observation of █████ individuals occurred on March 15, 2020, at location █████; remaining observations were of a single individual. Hunting behavior was observed during all non-incidental observations. Observations of multiple individuals at a single location could indicate a potential █████ location in the vicinity of location █████. No nesting or breeding behavior was documented for this species, and only █████ observation was recorded during the additional visit on April 14, 2021. Specific information for each observation is provided on the data forms in Appendix D.

### ██████████ Observations

A total of █████ observations of ████████████████████ were recorded during or incidental to stationary surveys, with █████ incidental observation recorded during daytime driving surveys. █████ of the stationary survey observations occurred at location █████ in the █████ portion of the Project Area (Figure 5), and an additional █████ observations were recorded as incidental in the vicinity of this location. The first observation occurred on December 8, 2020 (location █████) and the last observation

occurred on March 10, 2021 (location [REDACTED]). [REDACTED] observations except for [REDACTED] occurred between December 8, 2020, and February 8, 2021, with [REDACTED] of the [REDACTED] observations recorded on December 23, 2020. Common behaviors include circling, perching, gliding, and soaring. Individuals were observed using multiple perch locations proximal to survey locations where observed, specifically along [REDACTED] to the [REDACTED] and [REDACTED] of [REDACTED]. No nests or nest-building behaviors were documented for any observation of this species. Specific information for each observation is provided on the data forms in Appendix D.

#### [REDACTED] Observation

[REDACTED] was observed during stationary surveys at location [REDACTED] on March 29, 2021, for [REDACTED] minute. The individual was recorded flapping and hunting behind a barn to the [REDACTED] of the survey location (Figure 5).

#### [REDACTED] Observations

[REDACTED] were observed during stationary surveys at locations [REDACTED] and [REDACTED] on December 29, 2020, and January 13<sup>th</sup>, 2021, respectively. The individuals were recorded flapping, gliding, and perching for [REDACTED] minute each (Figure 5).

#### [REDACTED] Observations

[REDACTED] observations of [REDACTED] (SSC) were recorded during the survey period, with [REDACTED] occurring during stationary surveys and [REDACTED] occurring daytime driving surveys. There was also [REDACTED] observation recorded incidentally to the daytime driving survey. The first observation occurred on November 24, 2020 (location [REDACTED]) and the last observation occurred on March 29, 2021 (location [REDACTED]). Individuals were observed flying through or across the Project Area, with individual observed to be hunting on November 24, 2020, in [REDACTED] to the [REDACTED] of location [REDACTED]. Specific information for each observation is provided on the data forms in Appendix D.

**Table 6. Observations of State-listed Species**

Species	Listing Status	No. Observations <sup>1</sup>	No. Incidental Observations <sup>2</sup>	Survey Locations Observed <sup>3</sup>	No. Use Minutes <sup>4</sup>	Roosts/ Roosting Behavior Recorded
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Species	Listing Status	No. Observations <sup>1</sup>	No. Incidental Observations <sup>2</sup>	Survey Locations Observed <sup>3</sup>	No. Use Minutes <sup>4</sup>	Roosts/ Roosting Behavior Recorded
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

1 Includes only observations recorded during regular surveys

2 Includes only observations recorded incidentally to regular surveys

3 Includes both stationary and driving route survey locations

4 Calculated using only observations recorded during regular stationary surveys

Flight paths documented for listed species observed during surveys are shown in Figure 5. No definitive [REDACTED] locations were documented, though a potential [REDACTED] may exist in the vicinity of survey location [REDACTED] based on behaviors observed in proximity to this point. GIS shapefiles of winter raptor survey stationary points and driving routes/stops, state-listed and special concern species observations, and the Project Area are included as Appendix E, a zipped file.

### 3.5 Additional Observations

Twenty-nine non-raptor avian species were recorded during surveys including American woodcock (*Scolopax minor*) eastern meadowlark (*Sturnella magna*), [REDACTED], ruffed grouse (*Bonasa umbellum*), and snow bunting. Observations include both those documented during scheduled surveys and incidentally while observers were present within the Project Area. A list of all avian species observed is provided as Appendix C.

## 4.0 CONCLUSIONS

A total of 153.3 hours of stationary surveys and 16.0 hours of driving surveys were completed over 11 Survey Events during the Winter Raptor Survey implemented at the Project. [REDACTED] observations of [REDACTED] species were recorded during stationary surveys, with an additional [REDACTED] observations of [REDACTED] species during driving surveys. Across both surveys a total of [REDACTED] species were observed. Both stationary and driving wintering grassland raptor surveys at the SunEast Flat Creek Solar Project indicated that the Project Area is used most by red-tailed hawks. Activity was [REDACTED] the Project Area but was concentrated in the [REDACTED] portion of the Project Area near stationary location [REDACTED].

Observations were recorded at [REDACTED] stationary survey locations. No observations were recorded at driving survey locations [REDACTED], and [REDACTED]. The number of birds observed was relatively consistent throughout the study period with the more than [REDACTED] observations recorded during [REDACTED] of the [REDACTED] survey events. However, use was highest during the middle and end of the study period, peaking during Survey Event [REDACTED].

[REDACTED] state listed species were observed during the study, including [REDACTED] (ST), [REDACTED] (SE), [REDACTED] (ST), [REDACTED] (SE), and [REDACTED] species of special concern, [REDACTED] and [REDACTED]. [REDACTED] were observed throughout the Project Area, during most Survey Events. [REDACTED] were observed primarily at stationary location [REDACTED], during multiple Survey Events. [REDACTED] was observed [REDACTED] at location [REDACTED] in the [REDACTED] portion of the Project Area during Survey Event [REDACTED]. [REDACTED] were observed [REDACTED] the Project Area during Survey Events [REDACTED].

Behaviors exhibited by the [REDACTED] and [REDACTED] observed suggest both species are winter [REDACTED], utilizing the Project Area for foraging and potentially [REDACTED] during the winter season. No nests or breeding behavior were documented for any state-listed species observed. No additional studies to determine presence and use by state-listed wintering grassland raptors are recommended at this time.

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## 5.0 REFERENCES

eBird. 2021. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available: <http://www.ebird.org>.

Hawk Migration Association of North America (HMANA). 2005. Hawk Migration Association of North America Daily Report Form and data collection instructions. Information available online at: [www.hmana.org](http://www.hmana.org)

New York State Department of Environmental Conservation (NYSDEC). Environmental Resource Mapper (ERM). Available at <https://gisservices.dec.ny.gov/gis/erm/>

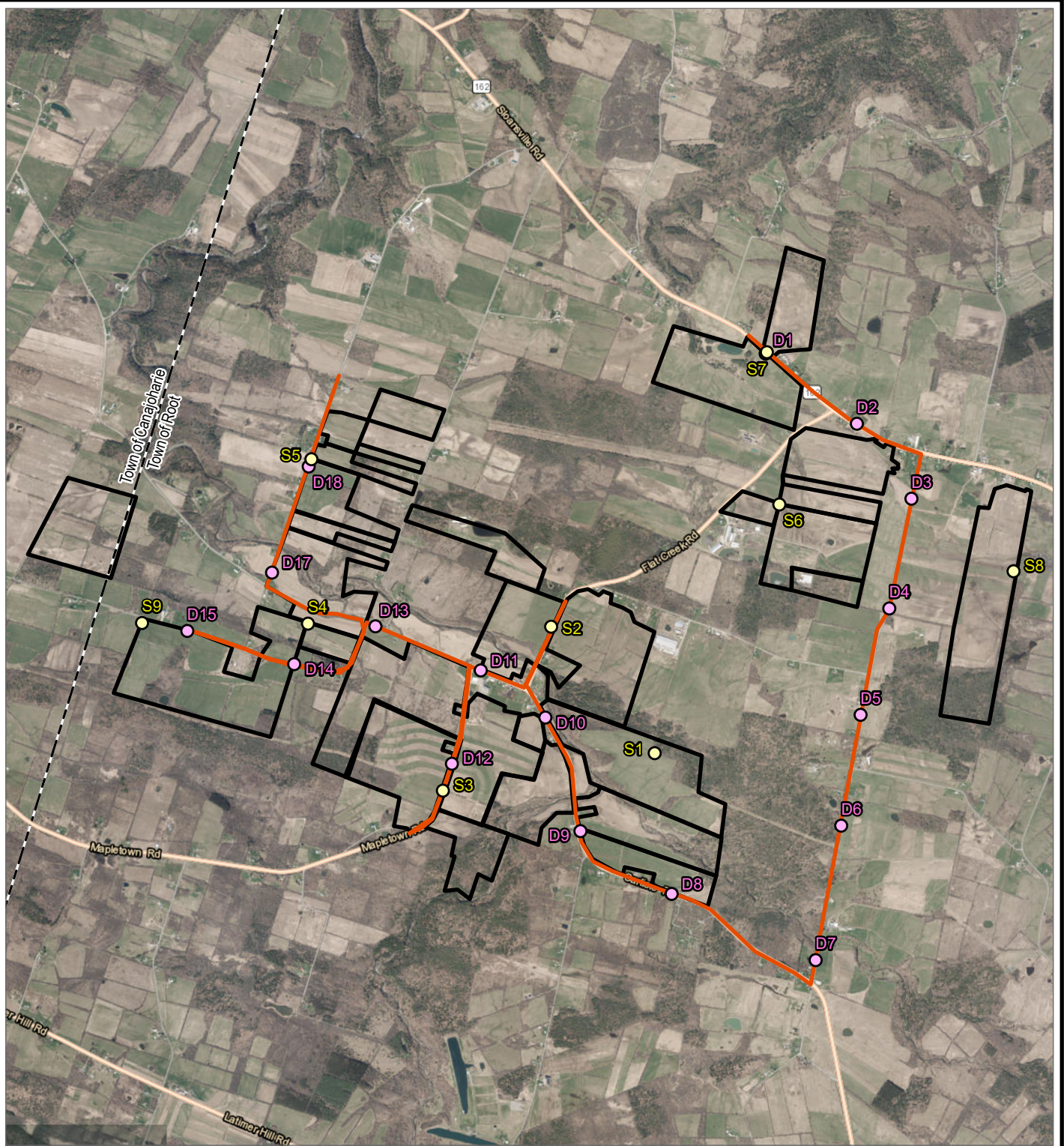
NYSDEC. 2015. New York State Department of Environmental Conservation Survey Protocol for State -listed Wintering Grassland Raptor Species- Draft 2015.

## FIGURES

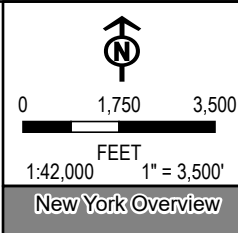
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**Figure 1. Wintering Grassland Raptor Survey Locations**



- DRIVING SURVEY LOCATION
- STATIONARY SURVEY LOCATION
- DRIVING ROUTE
- PROPOSED PROJECT AREA
- MUNICIPAL BOUNDARY



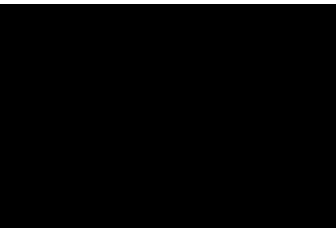
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<b>MONTGOMERY COUNTY, NY</b>	
TITLE: <b>WINTER RAPTOR SURVEY SURVEY LOCATIONS MAP</b>	
DRAWN BY: R. BARBER	PROJ. NO.: 427281
CHECKED BY: R. MONROE	<b>FIGURE 1</b>
APPROVED BY: K. BARNSTEAD	
DATE: APRIL 2021	
<div> <b>TRC</b></div> <div>10 MAXWELL DRIVE CLIFTON PARK, NY 12065 PHONE: 518-348-1190</div>	
FILE:	Flat_Creek_WRS

BASE MAP: ESRI WORLD IMAGERY MAP SERVICE  
DATA SOURCES: ESRI, TRC

Coordinate System: NAD 1983 StatePlane New York East FIPS 3101 Feet; Map Rotation: 0  
- Saved By: RBARBER on 4/29/2021 09:24:36 AM; File Path: S:\1-PROJECT\S\SunEastFlatCreek\8-APRX\Flat\_Creek\_WRS.aprx; Layout Name: FlatCreek\_Fig1\_WRS\_8x11\_20210428

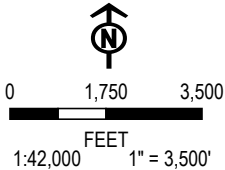
**Figure 2. Raptor Use Minutes Recorded During Stationary Surveys by Survey Location**





- PROPOSED PROJECT BOUNDARY
- MUNICIPAL BOUNDARIES

BASE MAP: ESRI WORLD IMAGERY MAP SERVICE  
DATA SOURCES: ESRI, TRC

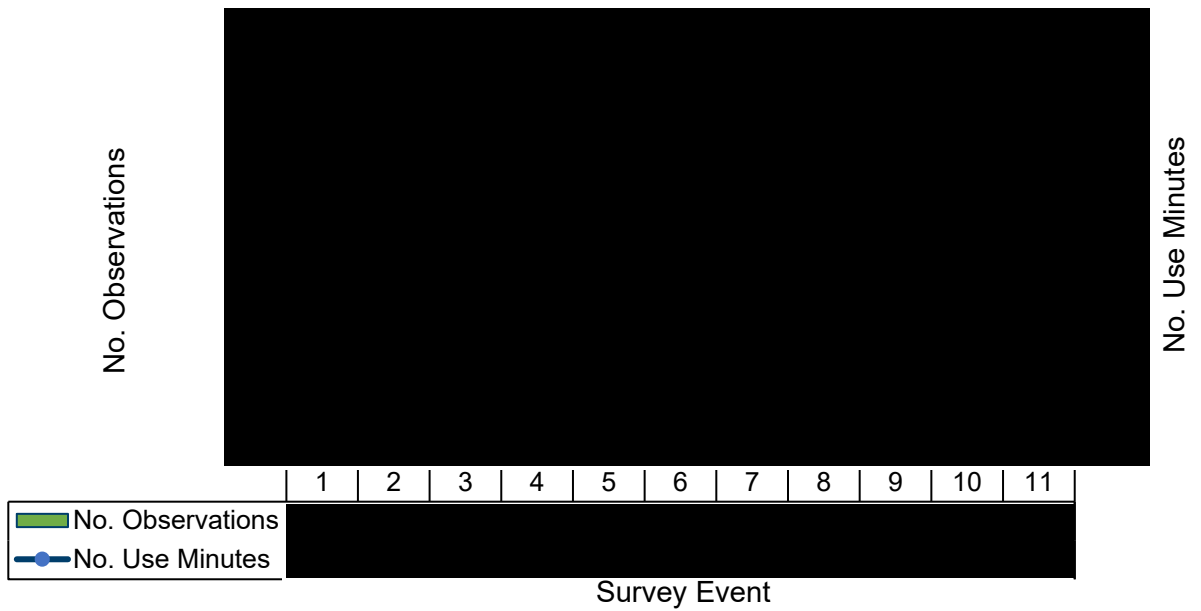


New York Overview

SITE LOCATION

PROJECT: <b>SUNEAST - FLAT CREEK SOLAR PROJECT</b> MONTGOMERY COUNTY, NY		
TITLE: <b>RAPTOR USE MINUTES RECORDED DURING STATIONARY SURVEYS BY SURVEY LOCATION</b>		
DRAWN BY: R. BARBER	PROJ. NO.: 427281	
CHECKED BY: R. MONROE	<b>FIGURE 2</b>	
APPROVED BY: K. BARNSTEAD		
DATE: APRIL 2021		
		10 MAXWELL DRIVE CLIFTON PARK, NY 12065 PHONE: 518-348-1190
FILE:	Flat_Creek_WRS	

Coordinate System: NAD 1983 StatePlane New York East FIPS 3101 Feet; Map Rotation: 0  
- Saved By: RBARBER on 4/29/2021 09:24:36 AM; File Path: S:\PROJECTS\SuneastFlatCreek\8-APRX\Flat\_Creek\_WRS.aprx; Layout Name: FlatCreek\_Fig2\_WRS\_8x11\_20210429

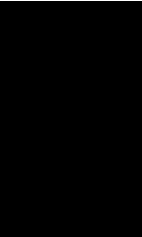


**Figure 3. Number of Observations and Raptor Use by Survey Event for Stationary Surveys**

**Figure 4. Distribution and Frequency of Raptor Observations During Daytime Driving Surveys**

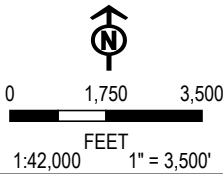


OBSERVATIONS



- DRIVING ROUTE
- PROPOSED PROJECT BOUNDARY

BASE MAP: ESRI WORLD IMAGERY MAP SERVICE  
DATA SOURCES: ESRI, TRC



New York Overview

SITE LOCATION

PROJECT: **SUNEAST - FLAT CREEK SOLAR PROJECT**  
**MONTGOMERY COUNTY, NY**

TITLE: **DISTRIBUTION AND FREQUENCY OF RAPTOR  
OBSERVATIONS DURING DAYTIME DRIVING SURVEYS**

DRAWN BY:	R. BARBER	PROJ. NO.:	427281
CHECKED BY:	R. MONROE	<b>FIGURE 4</b>	
APPROVED BY:	K. BARNSTEAD		
DATE:	APRIL 2021		

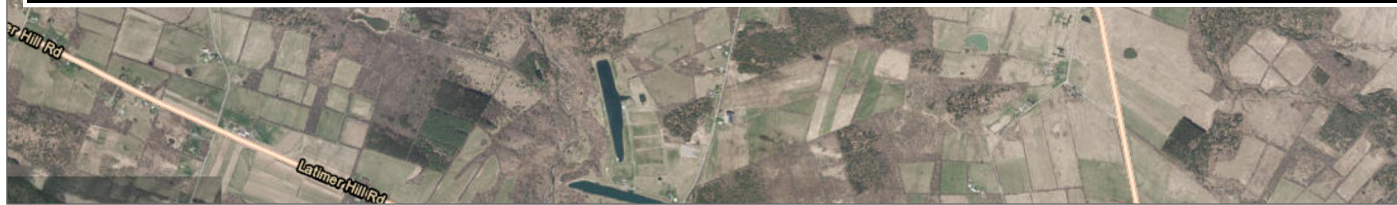
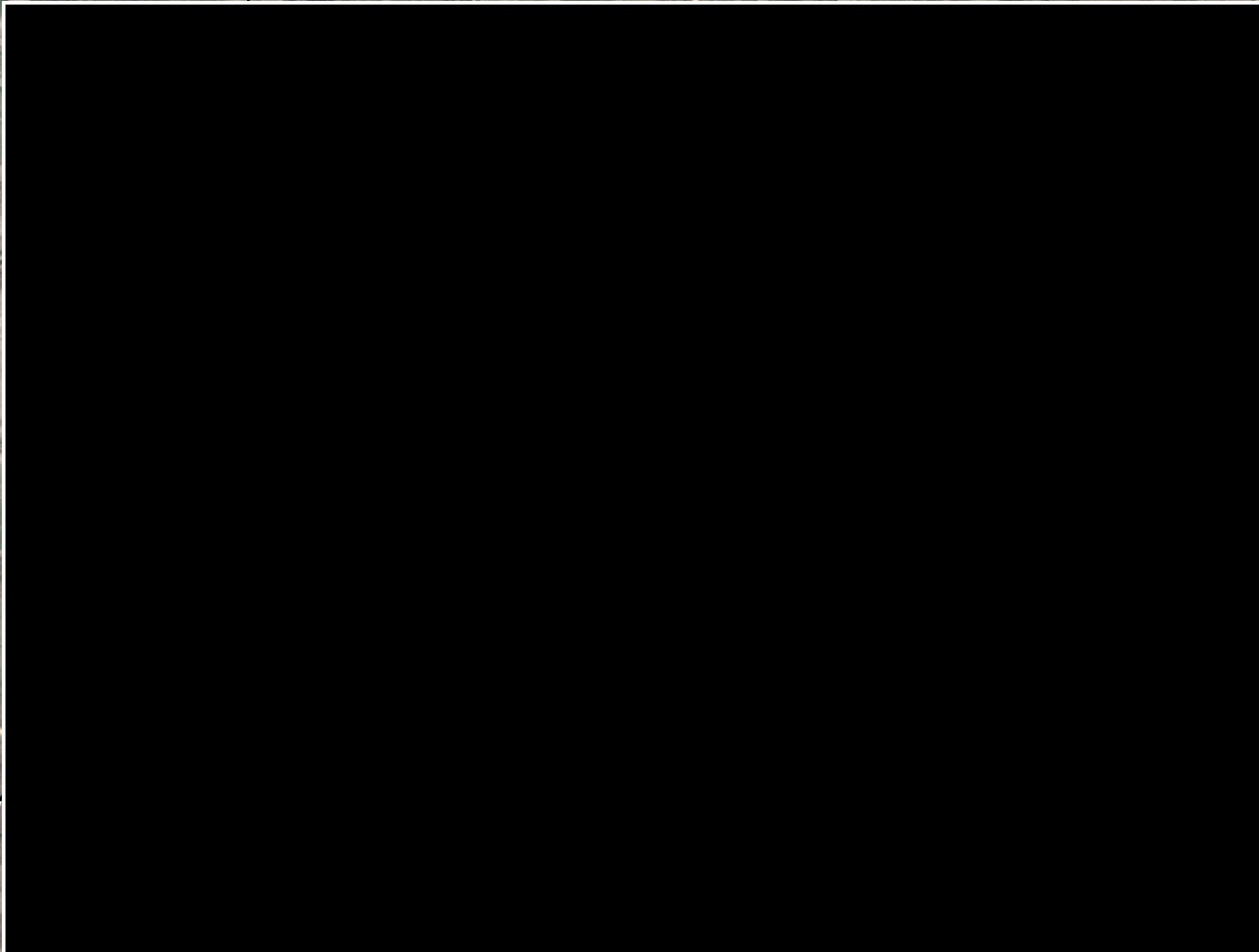
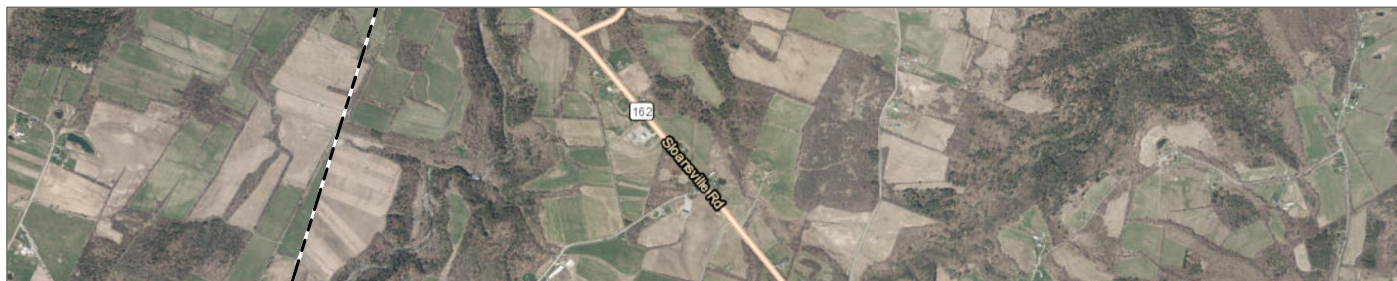


10 MAXWELL DRIVE  
CLIFTON PARK, NY 12065  
PHONE: 518-348-1190

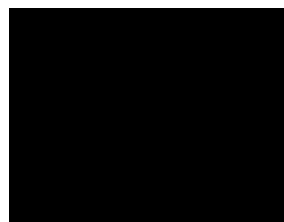
FILE: Flat\_Creek\_WRS

**Figure 5. Listed Species Flight Paths**



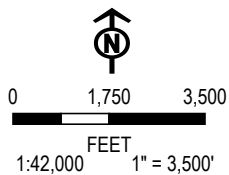


- DRIVING SURVEY LOCATION
- STATIONARY SURVEY LOCATION
- DRIVING ROUTE



PROPOSED PROJECT BOUNDARY

BASE MAP: USGS NATIONAL MAP  
DATA SOURCES: TRC



New York Overview



PROJECT: **SUNEAST- FLAT CREEK SOLAR PROJECT**  
**MONTGOMERY COUNTY, NY**

TITLE: **OBSERVATIONS OF  
STATE-LISTED SPECIES**

DRAWN BY: R. BARBER	PROJ. NO.: 427281
CHECKED BY: R. MONROE	<b>FIGURE 5</b>
APPROVED BY: K. BARNSTEAD	
DATE: APRIL 2021	



10 MAXWELL DRIVE  
CLIFTON PARK, NY 12065  
PHONE: 518-348-1190

FILE: Flat\_Creek\_WRS

## APPENDIX A

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### **NYSDEC SURVEY PROTOCOL FOR STATE-LISTED WINTERING GRASSLAND RAPTOR SPECIES DRAFT 2015**

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**New York State Department of Environmental Conservation**  
**Survey Protocol for State-listed Wintering Grassland Raptor Species**  
**DRAFT- 2015**

These protocols describe requirements for determining presence and site use by state-listed threatened/endangered grassland raptor species during the winter season as part of the NYSDEC permit review process for a project application. These protocols specifically target the New York state listed Short-eared Owl (Endangered) and Northern Harrier (Threatened). Information obtained from surveys will be considered in determining the possible need for additional comprehensive studies (e.g., using radio-telemetry and/or night-vision optics), regulatory review and, if necessary, avoidance, minimization, and/or mitigation strategies pursuant to 6 NYCRR Part 182.9.

### **Survey Periods**

Surveys should be conducted during the winter season, here defined as November 15-March 31, the primary time period during which Short-eared Owl and Northern Harrier often occur at winter concentration areas. At a minimum, surveys will be conducted every other week between November 15 and March 31, for a total of nine survey periods during the course of the winter season. Additional surveys may be required in April should Short-eared Owls and/or Northern Harrier be present at the project site during the second March survey period. When that occurs, applicants should discuss the possible need for April and/or breeding season surveys with NYSDEC.

### **Establishing Survey Points and Driving Routes**

The primary survey method for wintering Short-eared Owl and Northern Harrier should consist of a regimented series of visual scans and observations with binoculars from one or more stationary points or “stations” within a given project area. A spotting scope may also be necessary to aid in making positive species identifications for birds perched far from a survey station. The total number of stations will depend on the size of the project area, the amount of grassland habitat within the project area, and the visibility of that grassland habitat from selected survey station(s). Survey stations should be situated in or near grassland habitat at vantage points with clear visibility in all directions, or most directions if stations are from roadside locations or edges of grasslands. Actual observations should be made from within or next to a vehicle or blind if the station is within an open grassland habitat. When the station is at the edge of grassland habitat, the observer(s) should be backed up to a hedgerow or other background feature at the edge of a grassland habitat, or within or next to a vehicle. Stations should not be located further than 1,000 meters from one another (observations have shown that birds seen at distances greater than 1,000 meters are less likely to be correctly identified to species), and the total number of stations need to provide full coverage of the grassland habitat within the entire project site.

Driving routes, where an observer drives between a series of roadside stops and conducts observations of a short duration from multiple stationary, roadside locations may serve as

an additional survey method for Northern Harrier. However, due to the short time period during which Short-eared Owls are active and visible before dark, driving surveys **cannot** be the sole survey method at a project site. Driving route(s) for a site should include all roads within the project site from which grassland habitat can be easily viewed. The number and distribution of roadside stops will be dictated by the length and distribution of roads in the project area, and what areas may be viewed from various roadside stops. Stops located approximately a half mile apart will typically allow for sufficient coverage.

### Timing of Surveys

Because of the late afternoon/evening activity period of Short-Eared Owls, surveys for State-listed wintering grassland raptor species **must** be conducted during the 1 hour before sunset to ½ hour (or up to 1 hour) after sunset period described below. Daytime surveys and/or driving route surveys can be added as an additional survey method, but cannot replace the evening surveys.

Short-eared owls are crepuscular and nocturnal hunters and while they may occasionally, and at some sites, be active in the late afternoon, winter surveys conducted throughout New York State from 2008-2013 indicate that at many sites, they often do not leave their daytime roost to begin hunting until sunset or later, and sometimes just 5 or 10 minutes before full dark. Northern Harriers are diurnal and crepuscular raptors and may be seen hunting throughout the day, but are most active in the morning and late afternoon right up until sunset, when they can be observed landing at their nighttime roost site. In order to observe both species, surveys **must** be conducted from one hour before sunset until it is too dark to observe flying birds (up to one hour after sunset). On many nights, especially those with clear, moonlit skies, and on days with complete snow cover, birds can frequently be seen well after the official time of sunset. Therefore, the entire length of the survey will typically be 1.5 hours, but on some nights could be as long as 2.5 hours, depending on conditions and bird activity.

### Conducting Surveys

These required surveys have two primary purposes: (1) documenting the presence (occupied habitat) or apparent absence of the target species, and (2) recording particular areas used by the target species, such as roost sites or foraging areas, within a project site. Both Short-eared Owls and Northern Harriers typically roost on the ground, though Short-eared owls may roost in conifers or thick hedgerows when snow becomes deeper than roughly 6 inches. At times, these two species may roost in close proximity to one another and Northern Harriers may be observed dropping to the ground at their nighttime roost just before dark at the same time that Short-eared Owls are leaving their daytime roost to begin foraging for the evening. The period surrounding sunset is particularly critical for the identification of likely roost locations and determining the number of individuals using them.

Surveys should not be conducted during inclement weather, including precipitation, fog, or moderate to strong winds (i.e. wind greater than 12 mph, or Beaufort Scale 3). Multiple



observers at different stations and/or multiple evenings will be needed to sufficiently cover most project sites for a given stationary survey period because the survey time constraints dictate that an observer can only cover one station per evening. Repeated trips on additional evenings may be necessary to adequately confirm species presence or suspected absence and to adequately document foraging and roost areas. For example, Short-eared Owls may fly considerable distances from roost sites to foraging areas. Appropriately stationing observers on subsequent nights farther out along these flight paths may be necessary to identify important foraging areas.

Observers conducting stationary surveys should scan the available grassland habitat throughout the course of the survey period. Particular attention should be paid to birds perching on fence posts, on utility poles, on hay bales, coursing low over the ground, or perched on the ground. Observers should also listen for the bark-like call of the Short-eared Owl and rapid series of *kek* calls of the Northern Harrier.

While one observer is sufficient for conducting stationary surveys at a given station, two observers are recommended if driving routes are conducted. As noted above, survey stops will typically be spaced approximately a half mile apart. Roadside surveys for other established bird monitoring programs vary from 3-5 minutes per survey stop and this should be considered a minimum time for the purposes of these winter grassland raptor surveys, though there would be no restriction regarding a longer observation time period. The length of the driving route and the number of points to be included would dictate whether stops last longer than 3-5 minutes. At each stop, the observer(s) should get out of the vehicle and scan the surrounding suitable open-country habitat in all directions for the 3-minute (or longer) observation period. For each raptor seen, record the time that each raptor is first observed and mark its location on a map. Behavior or activity notes must also be recorded. If a raptor is observed while driving between stops, the observation location and data should be recorded upon reaching the next stationary point.

Observations of other species during the stationary and driving surveys, as well as incidentally while on the project area (not necessarily during the survey period), should also be recorded on data sheets. Other species of interest include all state-listed endangered, threatened, and special concern species, all raptors (owls, hawks, falcons, eagles, osprey), shrikes, and arctic-breeding songbirds such as snow buntings, larkspurs, and pipits.

## **Recording Data**

Data recorded for each survey must include: date; observer name(s); survey location (i.e. stationary survey locations and driving route stops, if any); start and end time of observation period; weather information (including temperature, wind speed, wind direction, snow depth, and cloud cover); number and identification of each species observed; individual behavior; and the location of target species relative to observer. Record Northern Harriers as male or female/juvenile. Observations of all raptors should also be documented, and birds identified to species, where possible. When species identification is uncertain, record "unidentified raptor", although "unidentified buteo" or

“unidentified accipiter” would be preferable where possible. Location coordinates for all Short-eared Owls and Northern Harriers must be provided or locations indicated on an aerial photograph or map of the survey area. Where raptors fly into or out of an area of visibility, indicate direction of flight on the maps. Foraging and roost areas should be clearly shown on the maps.

Specific behaviors to be noted for Short-Eared Owl and Northern Harrier include foraging (defined as flying low over vegetation, over in a back and forth pattern, and dropping to or toward the ground in an attempt to capture prey, at least once during the observation period), perching (as on elevated perches such as fence posts, utility poles, hay bales, on the ground, etc.), fly-through (i.e., straight-line flight such as when relocating between roosting and foraging areas), and roosting. Flight height and direction should be recorded for all raptors observed at proposed wind energy projects.

Any likely roost areas should also be noted on aerial photographs, maps, and data sheets. Roost areas would be suspected in cases where one or more Short-eared owls are observed arising from the ground or conifers in the evening and then begin flying and foraging activities, or where one or more Northern Harriers are active in an area near dusk and are then observed dropping to the ground, but not coming back up as it gets dark. Late winter surveys (late March and April) should specifically document any breeding behavior observed.

### **Reporting Requirements**

A detailed, site specific work plan, including stationary survey locations and driving route stops, if they are to be used, should be developed and submitted to NYSDEC for review and written approval prior to the start of field work. A final report should be submitted to NYSDEC at the conclusion of each year of surveys. Final reports should include data sheets; maps (ideally recent aerial photographs); summaries of all observations of Short-eared Owls, Northern Harriers, and any other state-listed species; and a conclusion whether more comprehensive studies may be necessary to assess the potential for the project to negatively affect endangered or threatened winter raptor species.

## APPENDIX B

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### DATA FORM EXAMPLE

## APPENDIX C

### List of Avian Species Observed

Common Name	Scientific Name	Listing Status
American Crow	<i>Corvus brachyrhynchos</i>	-
American Goldfinch	<i>Spinus tristis</i>	-
American Kestrel	<i>Falco sparverius</i>	HPSGCN
American Robin	<i>Turdus migratorius</i>	-
American Tree Sparrow	<i>Spizelloides arborea</i>	-
American Woodcock	<i>Scolopax minor</i>	SGCN
[REDACTED]	[REDACTED]	[REDACTED]
Black-capped Chickadee	<i>Poecile atricapillus</i>	-
Canada Goose	<i>Branta canadensis</i>	-
Common Raven	<i>Corvus corax</i>	-
[REDACTED]	[REDACTED]	[REDACTED]
Downy Woodpecker	<i>Picoides pubescens</i>	-
European Starling	<i>Sturnus vulgaris</i>	-
Great Blue Heron	<i>Ardea herodias</i>	-
Killdeer	<i>Charadrius vociferus</i>	-
Merlin	<i>Falco columbarius</i>	-
Mourning Dove	<i>Zenaida macroura</i>	-
Northern Cardinal	<i>Cardinalis cardinalis</i>	-
Northern Flicker	<i>Colaptes auratus</i>	-
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
Pileated Woodpecker	<i>Dryocopus pileatus</i>	-
Red-tailed Hawk	<i>Buteo jamaicensis</i>	-
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	-
Ring-billed Gull	<i>Larus delawarensis</i>	-
Rock Pigeon	<i>Columba livia</i>	-
Rough-legged Hawk	<i>Buteo lagopus</i>	-
Ruffed Grouse	<i>Bonasa umbellum</i>	SGCN
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
Snow Bunting	<i>Plectrophenax nivalis</i>	-
Song Sparrow	<i>Melospiza melodia</i>	-
Turkey Vulture	<i>Cathartes aura</i>	-
Wild Turkey	<i>Meleagris gallopavo</i>	-
Wilson's Snipe	<i>Gallinago delicata</i>	-



## APPENDIX D

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### SURVEY DATA SHEETS (*provided as zipped file*)

## APPENDIX E

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### GIS SHAPEFILES (*provided as zipped file*)