



Grand Bend Wind Farm
2021 Post-construction Mortality
Monitoring Report

Prepared for:
Grand Bend Wind LP
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NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

**Grand Bend Wind Farm
2021 Post-construction Mortality Monitoring Report**

Project Team:

Staff	Role
Andrew Ryckman	Project Advisor/Biologist
Pamela Hammer	Project Manager/Biologist
Elizabeth Milne	Project Coordinator/Biologist
Meagan Beck	Biologist
Mark Bosco	Biologist
Allison Vanderpas	Biologist
Monica Varga	GIS Technician

Report submitted on January 28, 2022



Pamela Hammer
Senior Terrestrial and Wetland Biologist

Executive Summary

Natural Resource Solutions Inc. was retained to conduct the fifth year of post-construction monitoring at the operational Grand Bend Wind Farm, located within the Municipalities of Bluewater and South Huron in Huron County, Ontario. This wind energy project has a nameplate capacity of 100MW and consists of 40 operational turbines situated in an agricultural landscape dominated by row crops. Occasional wooded habitats, wetlands, and aquatic features are also present in the areas surrounding the project infrastructure. This report provides the detailed methods and results from the fifth year of post-construction monitoring for bat mortality conducted at the Grand Bend Wind Farm in 2021.

This fifth year of monitoring for bat mortality was conducted as a result of exceeding the provincial threshold of 10 bats/turbine/year during the first year of monitoring (2017). As the bat mortality threshold was exceeded after operational mitigation was implemented in years 2018-2019, a bat mortality contingency plan was prepared, bat deterrents were installed, and the first year of effectiveness monitoring began in 2020. As such, 2021 represents the second year of effectiveness monitoring after implementation of the bat mortality contingency plan. Bird and raptor mortality data are not considered or presented within this report, as regulatory commitments, including associated monitoring, have already been completed and presented in previous report submissions.

During twice-weekly searches from May 1 to October 31, 2021, 42 bat mortalities were documented within the search areas around the subset of 12 turbines. Bat mortalities of both long-distance migratory and resident species were documented, including Hoary Bat (*Lasiurus cinereus*), Silver-haired Bat (*Lasionycteris noctivagans*), Eastern Red Bat (*Lasiurus borealis*), Big Brown Bat (*Eptesicus fuscus*), and Little Brown Myotis (*Myotis lucifugus*). The first three species above are considered long-distance migratory species which over-winter outside of Ontario, and represent approximately 90% of the total bat mortality observations that could be identified to the species level at the Grand Bend Wind Farm in 2021. Using appropriate correction factors, an estimated bat mortality rate of 5.88 bats/turbine/year (2.39 bats/MW/year) was determined for the Grand Bend Wind Farm. This is below the provincial threshold of 10 bats/turbine/year.

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1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained to conduct the fifth year of post-construction monitoring at the operational Grand Bend Wind Farm (Grand Bend WF), located within the Municipalities of Bluewater and South Huron in Huron County, Ontario. The Grand Bend WF consists of 40 wind energy generating turbines with a total nameplate capacity of 100MW. The locations of turbines and access roads are provided on Map 1.

Post-construction mortality monitoring at the Grand Bend WF in 2021 consisted of bat mortality monitoring and the associated searcher efficiency trials, scavenger removal trials, and turbine visibility class mapping that are required in order to calculate estimated mortality rates. These surveys were conducted in accordance with provincial guidelines and approval conditions of the Grand Bend WF to assess the potential impacts of this wind energy generating facility on local and migratory bats.

The purpose of this report is to provide the detailed methods and results from the fifth year of post-construction bat mortality monitoring conducted at the Grand Bend WF and to provide a general comparison of the results to the first four years of monitoring (R.J. Burnside & Associates 2018, R.J. Burnside & Associates 2019, R.J. Burnside & Associates 2020, NRSI 2021). This fifth year of monitoring for bat mortality was conducted as a result of exceeding the provincial threshold of 10 bats/turbine/year during the first year of monitoring (2017). As the bat mortality threshold was exceeded after operational mitigation was implemented in years 2018-2019, the *Grand Bend Wind Farm: Bat Mortality Contingency Plan Rev. 1* (NRSI 2020) was prepared and bat deterrents were installed at the Grand Bend WF prior to the first year of effectiveness monitoring in 2020. As such, 2021 represents the second year of effectiveness monitoring after implementation of the bat mortality contingency plan.

Bird and raptor mortality data are not considered or presented within this report, as regulatory commitments, including associated monitoring, have already been completed and presented in previous report submissions.

For the purposes of this report, NRSI will frequently use the terms 'mortality' and 'carcass'. The term 'mortality' will refer to dead bats that were found in the vicinity of

turbines at the Grand Bend WF. The term 'carcass' will refer to dead birds and bats that have been placed beneath wind turbines by NRSI staff for the purposes of searcher efficiency and/or scavenger removal trials.

Any mortality that was incidentally observed beyond the formal search parameters of the monitoring program was still documented, photographed, and collected, but has not been included in formal calculations of estimated mortality rates and is not discussed further in this report.

2.0 Mortality Monitoring Methodology

2.1 Mortality Monitoring

All monitoring undertaken at the Grand Bend WF was conducted in accordance with Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF) guidelines (OMNR 2011) and any other associated project approval conditions. The summarized methods are provided in the following sections.

2.1.1 Sample Locations

Since the Grand Bend WF is a facility consisting of more than 10 turbines, a subset of at least 30% of turbines is required to be monitored (OMNR 2011, MOE 2014 [L4]). In accordance with these requirements, NRSI biologists conducted mortality monitoring at a subset of 12 turbines (30%) in 2021, which was consistent with the subset monitored in previous years (2017-2020) and is shown on Map 1.

2.1.2 Monitoring Period and Search Frequency

NRSI biologists conducted twice-weekly (three- and four-day intervals) mortality monitoring at the subset of 12 turbines during the monitoring period of May 1 to October 31, 2021, which is consistent with the monitoring period for bat mortalities, as identified in the NDMNRF guidelines (OMNR 2011).

As a result of inclement weather and other safety concerns, some turbines could not be searched on their regularly scheduled dates. These relatively minor adjustments to the monitoring protocol are not expected to impact the results or conclusions presented in this report. The dates when turbines were not able to be searched on their regularly-scheduled search date are listed in Table 1.

Table 1. Summary of Regular Search Days When Turbines Could Not be Searched (2021)

Regular Search Date (2021)	Date Turbine Next Searched (2021) ¹	Turbine(s)	Rationale
June 1	June 4	T33	Agricultural Activities (Pesticide Spraying)
June 8	June 11	T27, T31	Inclement Weather (Thunderstorm)
June 24	June 25	T20	Attending to Injured Wildlife
July 5	July 12	T20	Turbine Maintenance
July 8	July 12	T07, T16, T17, T18, T20	Inclement Weather (Thunderstorm)
July 13	July 16	T27, T31, T33	Inclement Weather (Thunderstorm)
July 26	July 27	T18	Turbine Maintenance
August 5	August 6	T17	Turbine Maintenance
August 9	August 10	T17	Turbine Maintenance
September 3	September 10	T27	Turbine Maintenance
September 7	September 10	T27	Turbine Maintenance
September 16	September 17	T02	Turbine Maintenance
September 17	September 21	T38	Turbine Maintenance
September 24	September 28	T31	Turbine Maintenance

¹ Due to a variety of factors which may include the duration of turbine maintenance, weather conditions, the location of the project, and/or staff commitments, certain turbines could not be searched again until the next regularly scheduled search day.

2.1.3 Sample Area and Survey Duration

NRSI biologists conducted mortality searches within a 50m radius of each turbine base. Mortality searches were conducted using linear transects, spaced approximately 3m apart. In order to maintain a consistent search effort, mortality searches followed a consistent search time of 30 minutes per turbine throughout each month of monitoring. As teams consisting of two searchers conducted each of the surveys from May 1 to October 31, this search effort is equivalent to 60 minutes per turbine of total person-effort during each search event in the monitoring period. This search effort is considerably greater than the suggested baseline effort of 20 minutes noted in the NDMNRF guidelines (OMNR 2011), and was implemented proactively in an effort to improve the accuracy of the monitoring results.

2.1.4 Data Collection

During each visit to conduct mortality searches, all appropriate information was documented, including weather conditions, date, time, and observer. The mortality monitoring data collection sheet has been provided in Appendix I.

In addition to general information collected on each visit, a variety of specific information was recorded upon encountering any mortality. This detailed information, as shown on the data sheet provided in Appendix I, included species (if identifiable), sex of the individual (if identifiable), condition, estimated time since death, any apparent injuries, distance and direction from turbine base, substrate type and visibility class, and a unique mortality identification number for future reference. UTM coordinates and photographs were also taken for each specimen to allow for further analysis, if necessary.

2.2 Scavenger Removal Trials

Scavenger removal trials were conducted in each of the spring, summer, and fall seasons of mortality monitoring. For the purposes of this monitoring program, the spring monitoring season is defined as the months of May and June, the summer monitoring season is July and August, and the fall monitoring season is September and October. A minimum of 10 carcasses were placed during each monitoring season at the subset of 12 turbines. No more than five carcasses were placed at one time and no more than one carcass was placed at any single turbine during each trial. These measures were taken to avoid potential bias in the trial resulting from saturation of carcasses available to scavengers. Carcasses were placed throughout the range of habitats and substrate types being searched during each season. Species, UTM coordinates, distance and direction from turbine base, and visibility class were recorded on a data sheet during the placement of each specimen. The scavenger removal data sheet is provided in Appendix I.

Carcasses placed included both bird and bat specimens, with each trial consisting of at least one-third representation of each of bird and bat carcasses. Bird carcasses included species commonly encountered in this region of the province and ranged in size from very small to moderately-sized carcasses. Long-distance migratory bat carcasses were used in each seasonal scavenger removal trial, and included Hoary Bat (*Lasiurus cinereus*), Eastern Red Bat (*Lasiurus borealis*), and Silver-haired Bat

(*Lasionycteris noctivagans*). Carcasses used in scavenger removal trials were obtained from the Royal Ontario Museum and/or were collected from operational wind energy facilities within Ontario. A list of the bird and bat species used during scavenger removal trials is provided in Appendix II.

During each scavenger removal trial, the bird and bat carcasses were left for up to 14 days and were checked at the same frequency as mortality searches (i.e., twice per week) to note any scavenging or signs of scavenger presence. Following completion of the scavenger removal trials after 14 days, all remaining test carcasses were retrieved and disposed of appropriately.

2.3 Searcher Efficiency Trials

In conjunction with mortality searches, NRSI conducted searcher efficiency trials on search teams that conducted mortality searches at the Grand Bend WF. Searcher efficiency trials were conducted on each unique search team (consisting of two searchers) at a minimum of once during each season (spring, summer, and fall). In order to account for seasonal changes in groundcover, weather, or other potential variations in search conditions, NRSI conducted monthly searcher efficiency trials from May to October. During each trial, search teams were tested without their knowledge through the placement of a minimum of 10 test carcasses per visibility class searched (classes 1 and 2) at the subset of 12 turbines. During all monthly trials, no more than three carcasses were placed on any single search event, as per the *Grand Bend Wind Farm: Natural Heritage Environmental Effects Monitoring Plan* (EEMP; Neegan Burnside Ltd. 2013).

Carcasses were placed randomly within each visibility class searched, and within the 50m search radii at the subset of 12 turbines at the Grand Bend WF. Distance and direction from turbine base, visibility class, substrate type, and UTM coordinates were recorded for each test carcass placed. Each specimen found was later compared to the total number of carcasses placed at each turbine, the locations of their placement, and species placed. The data sheet used for searcher efficiency trials is provided in Appendix I.

In order to meet the understood intent of the NDMNRF guidelines to limit searcher bias (OMNR 2011), NRSI has not physically marked trial carcasses at this project, as

marking the carcasses could influence the results of the trial by alerting the search team to the ongoing searcher efficiency trial. Instead, NRSI biologists collect detailed information on the location of trial carcasses, including UTM coordinates, distance and direction from the turbine, and mapping the location of each carcass. All collected carcasses are compared to this detailed location and species information to distinguish between trial carcasses and turbine-related mortalities. These steps have been taken to ensure that the location of the carcasses, along with species information, is well documented for future reference should there be any uncertainty about whether an observed carcass is a turbine-related mortality or a trial carcass.

Searcher efficiency carcasses included both bird and bat specimens, with each trial consisting of at least one-third representation of each of bird and bat carcasses. Bird carcasses included species commonly encountered in this region of the province and varied in size from very small to moderately-sized carcasses. Bat carcasses used during searcher efficiency trials included the three long-distance migratory species known to occur in Ontario, including Hoary Bat, Eastern Red Bat, and Silver-haired Bat. Carcasses used in searcher efficiency trials were obtained from the Royal Ontario Museum and/or were collected from operational wind energy facilities within Ontario. A list of the bird and bat species used during searcher efficiency trials is provided in Appendix III.

2.4 Proportion of Area Searched

Following NDMNRF guidelines, visibility class maps were completed by search teams at a minimum frequency of once per season (OMNR 2011). Due to the potential for changing conditions between monitoring months, NRSI completed visibility class maps once per month from May to October to provide additional information on the conditions of the search plots to support whether more frequent searcher efficiency trials were warranted, and ultimately to increase the accuracy of the estimated mortality rate.

Visibility class mapping was completed for the 50m search radius at each of the 12 subset turbines. This mapping categorized portions of the search area according to visibility classes recommended by the NDMNRF (OMNR 2011). These include visibility classes 1 through 4, in addition to any areas which may be deemed “unsearchable”, such as aquatic features, areas deemed safety hazards, or other areas where searching

was not possible. Mapping of these visibility classes within the 50m search radius of each turbine was conducted and calculated as per a repeatable methodology using a combination of the visibility class field maps, review of aerial photographs, and Geographic Information System (GIS) software. The data sheet used to record visibility class mapping includes the definitions of the visibility classes used and is provided in Appendix I.

In an effort to increase the accuracy of searcher efficiency rates and minimize the influence of the proportion of area searched on the bat mortality estimate, the search radii at the subset of 12 turbines were maintained at visibility classes 1 or 2 by occasional plowing or mowing during the monitoring year (May through October), as needed. Small areas of other visibility classes were occasionally present, particularly near the outer limit of the 50m radii. When small and/or temporary areas of other visibility classes were present, they were searched thoroughly until scheduled vegetation maintenance could occur. As a result, the majority of the 50m radius at each turbine was searched for the duration of the 2021 monitoring period. At one turbine, some larger areas were mapped as visibility classes that were not searched as part of this monitoring program (i.e., visibility class 3 or 4) in June, July and October. In these cases, the appropriate proportion of area searched was calculated and used for the final mortality estimate. Visibility class maps for each turbine in each month are provided in Appendix IV.

Maintenance of the 50m search radii was only completed when necessary to maintain appropriate mortality visibility and followed a strict schedule that ensured the maintenance activities were completed in a manner to minimize or eliminate any potential negative influence on the mortality monitoring, searcher efficiency trials, and scavenger removal trials. The maintenance of the search areas is expected to increase the accuracy of the final estimated mortality rate at the Grand Bend WF.

3.0 Scavenger Removal Trial Results

Scavenging activity at the Grand Bend WF was generally moderate throughout the monitoring period, with the highest scavenging activity noted during the spring trial and the lowest scavenging activity noted during the fall trial.

Table 2 shows the results of the seasonal scavenger removal trials conducted at the Grand Bend WF. Details on the date placed, species, distance and direction from turbine, visibility class, dates checked and by whom, UTM coordinates, and whether the carcass was scavenged are provided in Appendix II.

Table 2. Number of Carcasses Remaining During Scavenger Removal Trials at the Grand Bend Wind Farm (2021)

Number of Carcasses Remaining					
Spring Trial (May/June)					
Turbine	Visit 0	Visit 1	Visit 2	Visit 3	Visit 4
T02	1	0	0	0	0
T07	1	0	0	0	0
T18	1	0	0	0	0
T17	1	0	0	0	0
T16	1	0	0	0	0
T18	1	0	0	0	0
T17	1	0	0	0	0
T48	1	1	1	1	0
T42	1	1	0	0	0
T33	1	1	0	0	0
T31	1	1	1	1	1
Total	11	4	2	2	1
Summer Trial (July/August)					
Turbine	Visit 0	Visit 1	Visit 2	Visit 3	Visit 4
T16	1	0	0	0	0
T18	1	0	0	0	0
T20	1	1	1	0	0
T02	1	0	0	0	0
T07	1	1	1	1	1
T27	1	1	1	0	0
T38	1	0	0	0	0
T33	1	1	1	0	0
T48	1	1	1	1	1
T10	1	0	0	0	0
Total	10	5	5	2	2

Number of Carcasses Remaining					
Fall Trial (September/October)					
Turbine	Visit 0	Visit 1	Visit 2	Visit 3	Visit 4
T02	1	0	0	0	0
T07	1	0	0	0	0
T16	1	1	1	0	0
T18	1	0	0	0	0
T17	1	1	1	1	1
T48	1	1	0	0	0
T42	1	0	0	0	0
T38	1	1	1	1	1
T33	1	0	0	0	0
T48	1	1	1	1	1
Total	10	5	4	3	3

To calculate the scavenger removal rate for each of the specific monitoring periods, NRSI has used the following equation recommended by the NDMNRF:

$$Sc = \frac{n_{\text{visit1}} + n_{\text{visit2}} + n_{\text{visit3}} + n_{\text{visit4}}}{n_{\text{visit0}} + n_{\text{visit1}} + n_{\text{visit2}} + n_{\text{visit3}}}$$

Sc: proportion of carcasses not removed by scavengers

n_{visit0} : total number of carcasses placed

$n_{\text{visit1}} - n_{\text{visit4}}$: number of carcasses remaining on visits 1 through 4

Using the scavenger removal results presented in Table 2 and the equation provided by the NDMNRF, the seasonal scavenger removal rates have been determined as follows:

$$\begin{aligned} SC_{\text{Spring}} &= (4 + 2 + 2 + 1) / (11 + 4 + 2 + 2) \\ &= 9 / 19 \\ &= \mathbf{0.47} \end{aligned}$$

$$\begin{aligned} SC_{\text{Summer}} &= (5 + 5 + 2 + 2) / (10 + 5 + 5 + 2) \\ &= 14 / 22 \\ &= \mathbf{0.64} \end{aligned}$$

$$\begin{aligned} SC_{\text{Fall}} &= (5 + 4 + 3 + 3) / (10 + 5 + 4 + 3) \\ &= 15 / 22 \\ &= \mathbf{0.68} \end{aligned}$$

The above scavenger removal rates represent the proportion of carcasses still remaining from one visit to the next. These values generally represent a low level of scavenging

activity in the summer and fall and a moderate level of scavenging activity in the spring. These values are used to calculate the estimated bat mortality rate in Section 6.0.

4.0 Searcher Efficiency Trial Results

Searcher efficiency rates at the Grand Bend WF were consistently high throughout the 2021 monitoring period. Results of the monthly searcher efficiency trials are summarized in Table 3 below. Details on the search team, species, distance and direction from turbine, UTM coordinates, visibility class, habitat/substrate, and whether the carcass was found or scavenged are provided in Appendix III.

Table 3. Results of Searcher Efficiency Trials at the Grand Bend Wind Farm (2021)

Searcher(s)	Carcasses Found	Carcasses Placed	Carcasses Scavenged	Searcher Efficiency (Se)	Proportion of Turbines Searched
May 2021					
Search Team A	18	24	5	0.95	1.00
June 2021					
Search Team A	17	21	1	0.85	1.00
July 2021					
Search Team A	20	20	0	1.00	1.00
August 2021					
Search Team A	19	20	0	0.95	1.00
September 2021					
Search Team A	19	20	1	1.00	1.00
October 2021					
Search Team A	17	20	0	0.85	1.00

Based on the information collected during searcher efficiency trials and the equations recommended by the NDMNRF, overall searcher efficiency (SeO) was calculated for each of the monitoring months as follows:

$$Se = \frac{\text{number of test carcasses found}}{\text{number of test carcasses placed} - \text{number of test carcasses scavenged}}$$

$$SeO = Se_A(\text{proportion of turbines searched}) + Se_B(\text{proportion of turbines searched})...$$

$$SeO_{\text{May}} = 0.95 (1.00) = \mathbf{0.95}$$

$$SeO_{\text{June}} = 0.85 (1.00) = \mathbf{0.85}$$

$$SeO_{\text{July}} = 1.00 (1.00) = \mathbf{1.00}$$

$$SeO_{\text{August}} = 0.95 (1.00) = \mathbf{0.95}$$

$$SeO_{\text{September}} = 1.00 (1.00) = \mathbf{1.00}$$

$$SeO_{\text{October}} = 0.85 (1.00) = \mathbf{0.85}$$

These searcher efficiency values represent relatively high searcher efficiency rates, likely due to the additional search effort and steps taken to maintain clear search areas and keep the search areas in low visibility classes (i.e., clear and more easily searched) to increase the accuracy of the estimated mortality rate. These values are used to calculate the estimated bat mortality rate in Section 6.0.

5.0 Proportion of Area Searched Results

Visibility class mapping was completed each month from May to October within the 50m search radius at each of the 12 subset turbines in order to reflect changes in groundcover, land use, or other seasonal factors that may influence the resulting visibility classes.

NRSI biologists searched all areas of visibility classes 1 and 2 at each subset turbine, which have been combined to represent the proportion of area searched (Ps). In June, July, and October, some larger areas of visibility classes 3 or 4 were present at one turbine for an extended period within the months. These large, and persistent, areas of visibility classes 3 and 4 were not searched, and are reflected as such in the Total Searched Area values below. The calculations in Table 4 below show the Ps value during each month of the monitoring program for all 12 subset turbines. The Ps values are used to calculate the estimated bat mortality rate in Section 6.0. Visibility class mapping is provided in Appendix IV.

Table 4. Proportion of Area Searched at the Grand Bend Wind Farm (2021)

Month	Total Searched Area (m ²) ¹	Total Search Radius (m ²)	Proportion of Area Searched (Ps)
May	94,200	94,200	1.00
June	93,136	94,200	0.99
July	93,136	94,200	0.99
August	94,200	94,200	1.00
September	94,200	94,200	1.00
October	93,136	94,200	0.99

¹ Total area searched includes all areas identified as visibility classes 1 and 2.

6.0 Bat Mortality Results

6.1 Bat Mortalities

During post-construction mortality monitoring at the Grand Bend WF in 2021, NRSI biologists documented 42 bat mortalities within the 50m search radii at the subset of 12 turbines. Bat mortalities represented five different species, including three long-distance migratory species (Eastern Red Bat, Hoary Bat, and Silver-haired Bat), as well as the resident species Big Brown Bat (*Eptesicus fuscus*) and Little Brown Myotis (*Myotis lucifugus*). The most abundant species observed was Silver-haired Bat (n=17), followed by Hoary Bat (n=15), Eastern Red Bat (n=5), Big Brown Bat (n=2), and Little Brown Myotis (n=2). One additional bat was observed that could not be identified to the species level, but was determined to be either a Silver-haired Bat or Big Brown Bat based on the forearm measurement. Observed mortalities of the three long-distance migratory bat species combined to represent approximately 90% of all bat mortalities documented at the subset of turbines that could be identified to the species level.

In addition, three live bats were encountered while completing mortality monitoring at the subset of 12 turbines, as follows:

- Hoary Bat; August 17, 2021 at Turbine T38;
- Silver-haired Bat; September 9, 2021 at Turbine T02; and
- Silver-haired Bat; October 15, 2021 at Turbine T38.

All three live bats showed no visible signs of injury and appeared to behave normally. As a result, each bat was placed on a nearby tree and were not present when next checked by the search team. Given that there were no visible or behavioural indications of injuries and the bats were not present on subsequent follow-up visits, it is assumed that these bats recovered, and as a result, they have not been included in the calculation of estimated mortality rates below.

A detailed discussion of bat mortalities observed during 2021 post-construction mortality monitoring at the Grand Bend WF is included in the following sections. A list of each bat mortality, including date and time of observation, location, and species, is provided in Appendix V.

6.2 Temporal Distribution of Bat Mortalities

Bat mortalities were generally observed throughout the monitoring period, but were most commonly observed during the month of September (n=17) (see Figure 1 below). The monitoring date with the highest number of documented mortalities was September 28, 2021, when five bat mortalities were documented across the monitoring subset. Bat mortalities by date are shown on Figure 1 below.

Patterns of bat mortalities appear to be consistent with the expected migratory time periods for these species, with increases in long-distance migratory bat mortalities expected during the mid- to late-summer. Overall, bat mortality was highest from early August to late September, corresponding to the anticipated peak periods of summer swarming and early fall migration of bats.

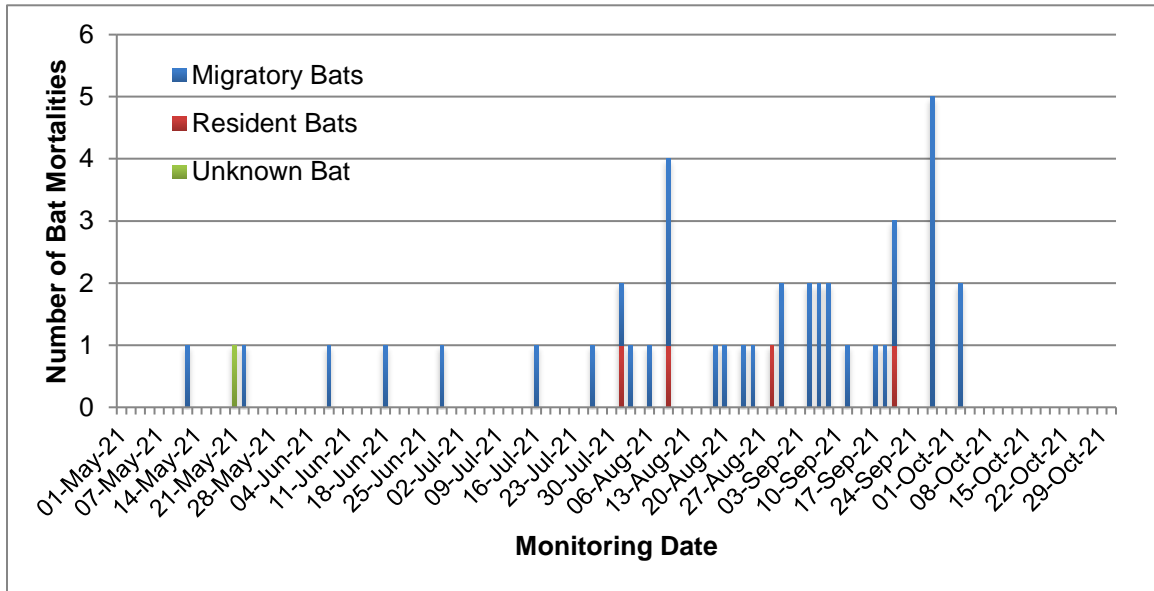


Figure 1. Bat Mortalities Observed by Date at the Grand Bend Wind Farm (2021)

6.3 Spatial Distribution of Bat Mortalities

Bat mortalities were observed at 11 of the 12 subset turbines at the Grand Bend WF in 2021, ranging from zero bat mortalities at T48 to seven bat mortalities at Turbines T31 and T42 (see Figure 2 below). The five turbines with the highest bat mortality (T18, T27, T31, T38, and T42) are geographically diverse within the project area, and no clear geographic patterns of bat mortality are immediately apparent. Maps identifying the location of each observed mortality by turbine are provided in Appendix VI.

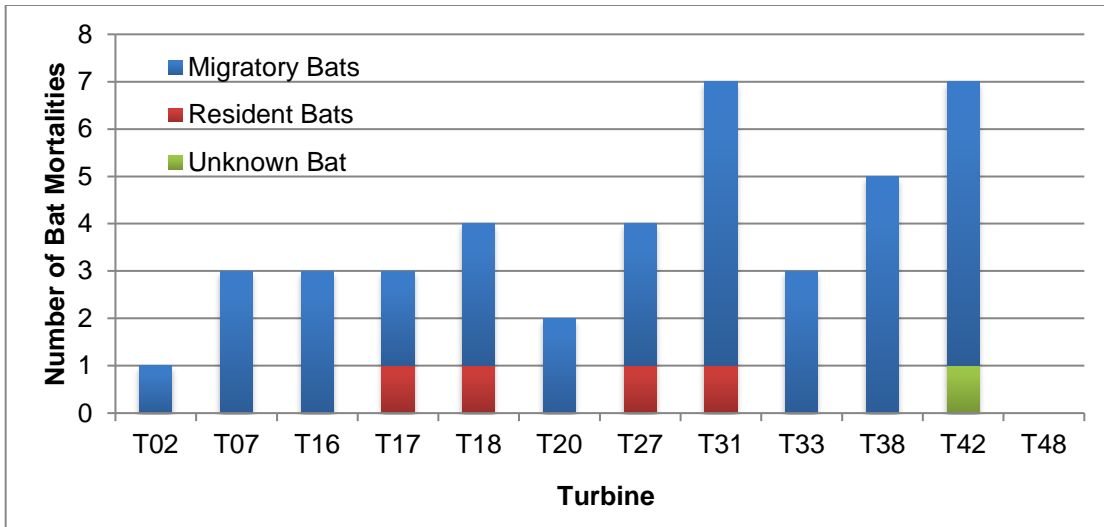


Figure 2. Bat Mortalities Observed by Turbine at the Grand Bend Wind Farm (2021)

Distance and direction of bat mortalities from each of the turbine bases were also documented for each observed mortality. Bat mortalities were generally found throughout the area searched by NRSI biologists, ranging in distance from 0m to 50m from the turbine base, with an average distance of approximately 27m from the turbine base. The overall distribution of mortalities by distance class is shown on Figure 3 below.

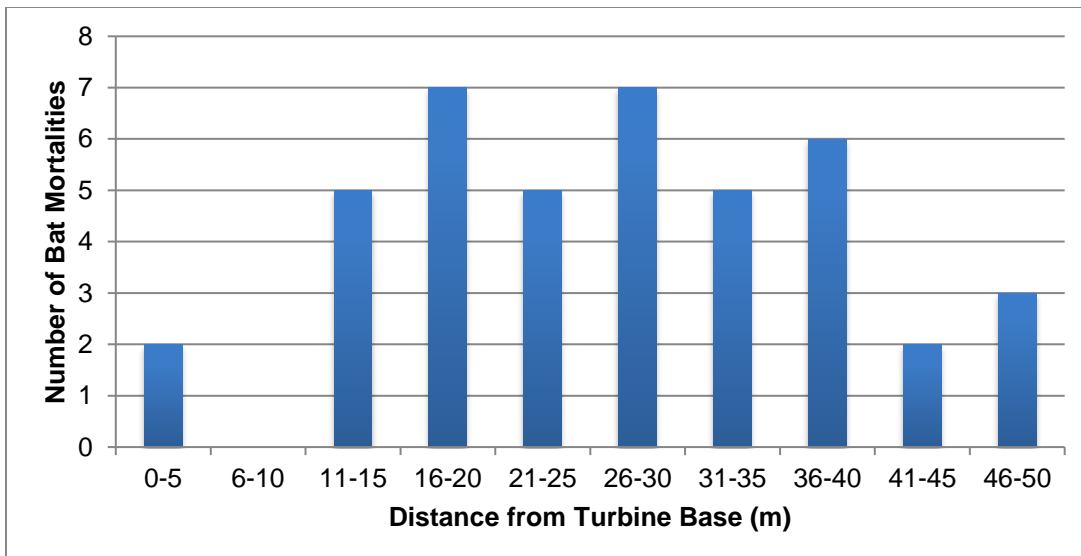


Figure 3. Bat Mortalities Observed by Distance from Turbine at the Grand Bend Wind Farm (2021)

6.4 Corrected (Estimated) Bat Mortality

Based on field observations at the Grand Bend WF, NRSI biologists have compiled the searcher efficiency trials, scavenger removal trials, proportion of area searched, and direct mortality observations into an equation that will be used to estimate the total bat mortality at the Grand Bend WF in 2021. The equation recommended by the NDMNRF is found below:

$$C = c / (Se * Sc * Ps)$$

C: Corrected (Estimated) Mortality Rate
c: observed mortalities
Se: overall searcher efficiency
Sc: proportion of remaining carcasses
Ps: proportion of area searched

Using the equation and variables described above, the estimated bat mortality rates by month have been presented below:

C_{May}	$= 3 / (0.95 * 0.47 * 1.00) = 3 / 0.4465 = 6.72 \text{ bats}$ = 0.56 bats/turbine (0.23 bats/MW)
C_{June}	$= 3 / (0.85 * 0.47 * 0.99) = 3 / 0.3955 = 7.59 \text{ bats}$ = 0.63 bats/turbine (0.26 bats/MW)
C_{July}	$= 2 / (1.00 * 0.64 * 0.99) = 2 / 0.6336 = 3.16 \text{ bats}$ = 0.26 bats/turbine (0.11 bats/MW)
C_{August}	$= 15 / (0.95 * 0.64 * 1.00) = 15 / 0.6080 = 24.67 \text{ bats}$ = 2.06 bats/turbine (0.83 bats/MW)
$C_{\text{September}}$	$= 17 / (1.00 * 0.68 * 1.00) = 17 / 0.6800 = 25.00 \text{ bats}$ = 2.08 bats/turbine (0.84 bats/MW)
C_{October}	$= 2 / (0.85 * 0.68 * 0.99) = 2 / 0.5722 = 3.50 \text{ bats}$ = 0.29 bats/turbine (0.12 bats/MW)
Total	= 5.88 bats/turbine (2.39 bats/MW)

Using the appropriate variables and recommended equations provided by the NDMNRF, NRSI has determined the corrected (estimated) bat mortality at the Grand Bend WF in 2021 to be 5.88 bats/turbine/year (2.39 bats/MW/year). The monthly estimated mortality rates, and resulting annual estimated bat mortality rate, for the Grand Bend WF are provided in Table 5 below.

Table 5. Corrected Bat Mortality Rates Based on Mortality Monitoring at the Grand Bend Wind Farm (2021)

Month (2021)	Observed Bat Mortalities	Corrected Mortality (bats/turbine)	Corrected Mortality (bats/MW)
May	3	0.56	0.23
June	3	0.63	0.26
July	2	0.26	0.11
August	15	2.06	0.83
September	17	2.08	0.84
October	2	0.29	0.12
TOTAL	42	5.88	2.39

Based on the information collected during the 2021 post-construction monitoring period, the anticipated impact of this facility on bats is characterized by a corrected mortality rate of **5.88 bats/turbine/year** (2.39bats/MW/year), which is below the provincial threshold of 10 bats/turbine/year.

7.0 Assessment of Bat Contingency Measures

As outlined in the accepted *Grand Bend Wind Farm: Bat Mortality Contingency Plan Rev. 1* (Contingency Plan; NRSI 2020), acoustic bat deterrents were installed as a contingency measure on six of the 12 subset turbines prior to May 1, 2020 (Map 1) and were activated between sunset and sunrise throughout the bat active season (May 1 – October 31) in 2020 and 2021. The following section provides an analysis of the effectiveness of the bat deterrent units in reducing estimated bat mortality rates at the Grand Bend WF.

The acoustic bat deterrents were selectively installed in 2020 on six turbines that have previously demonstrated high bat mortality, relative to other turbines within the monitoring subset. Although this approach will make direct comparisons between treatment and control turbines more difficult, this strategy was chosen in an effort to minimize overall bat mortality and to also maximize the benefit of the acoustic deterrents at the onset of implementation.

7.1 Contingency Plan Monitoring Results

During the 2021 post-construction mortality monitoring period, 19 bat mortalities were documented at the six control turbines (i.e., no deterrent) and 23 bat mortalities were documented at the six treatment turbines (i.e., with deterrent) (see Figure 4 below).

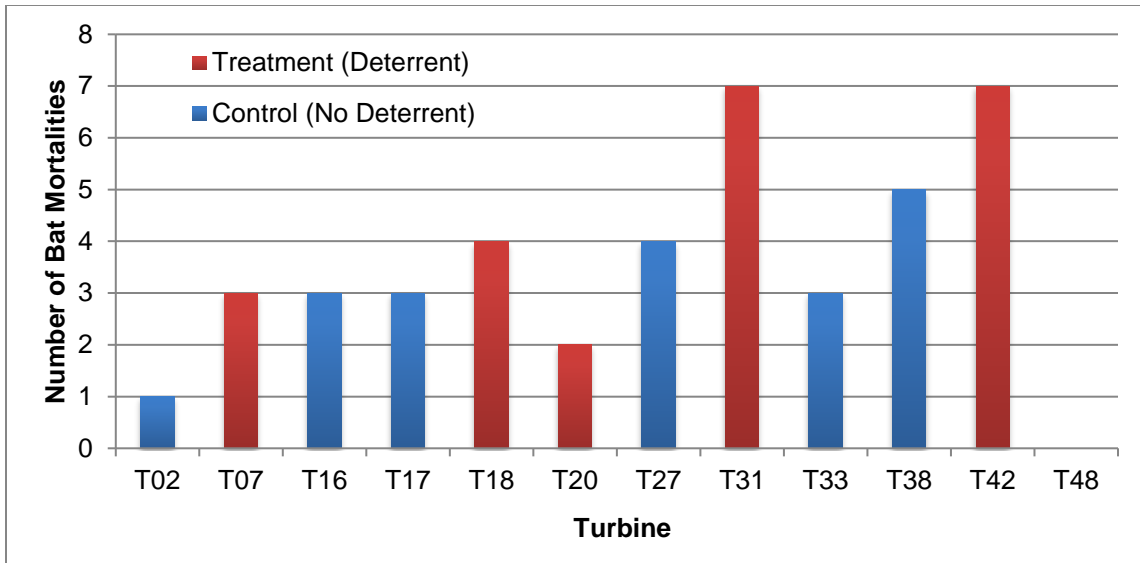


Figure 4. Bat Mortalities Observed at Treatment and Control Turbines at the Grand Bend Wind Farm (2021)

The corrected (estimated) bat mortality rates at the six control turbines (i.e., no deterrent) are compared with the corrected (estimated) bat mortality rates at the six treatment turbines (i.e., with deterrent) in Table 6 below. For comparison, the corrected (estimated) bat mortality rates at all 12 subset turbines as a whole are also presented below.

Table 6. Corrected Bat Mortality Rates at Treatment and Control Turbines at the Grand Bend Wind Farm (2021)

Month (2021)	Corrected Mortality (bats/turbine)		
	Control Turbines (No Deterrent)	Treatment Turbines (with Deterrent)	All Subset Turbines Combined
May	0.00	1.12	0.56
June	1.26	0.00	0.63
July	0.26	0.26	0.26
August	1.92	2.19	2.06
September	1.72	2.45	2.08
October	0.29	0.29	0.29
TOTAL	5.45	6.31	5.88

Results of the 2021 bat mortality monitoring program indicate comparable results between treatment groups, but with slightly higher bat mortality observed at the six treatment turbines (i.e., with deterrent), when compared with the six control turbines (i.e.,

no deterrent). However, since the six treatment turbines were selected based on higher levels of bat mortality observed in previous monitoring years, relative to the other subset turbines, it is still possible that a notable reduction may be experienced at these turbines while still having higher mortality estimates than the six control turbines.

In consideration of the corrected (estimated) bat mortality rates, NRSI has calculated rates for the entire 12 subset turbines, as well as the separate rates for each of the control turbines and treatment turbines. In all cases, the corrected (estimated) bat mortality rates were below the provincial threshold of 10 bats/turbine/year, indicating that the Contingency Plan (i.e., installation of bat deterrents at 50% of the subset turbines) was effective in reducing estimated bat mortality rates at the Grand Bend WF during the 2021 monitoring year.

As this second year of effectiveness monitoring indicates that the bat deterrent systems have been successful in sufficiently reducing bat mortality at the Grand Bend WF at their current implementation on 50% of the subset turbines, no adjustments to the Contingency Plan approach are proposed at this time. If additional monitoring of these contingency measures in the third year of effectiveness monitoring (2022) continue to demonstrate that this approach is effective in reducing bat mortality rates, the Contingency Plan requires the Grand Bend WF to install deterrents on a minimum of 50% of the non-subset turbines to ensure the facility, as a whole, is operated in a similar manner to the subset turbines during this assessment of effectiveness.

8.0 Mortality Thresholds and Notifications

In accordance with the appropriate NDMNRF guidelines, project approval conditions, and other commitments made as part of the monitoring program, specific mortality thresholds and notification requirements have been established for the Grand Bend WF. The status of each threshold and confirmation of notifications, where applicable, are described in the following sections.

8.1 Annual Bat Mortality

The annual bat mortality threshold for the Grand Bend WF is 10 bats/turbine/year. Based on an estimated rate of 5.88 bats/turbine/year, the annual mortality estimate for the Grand Bend WF in 2021 remains below this provincial threshold. Since the results are below the established threshold, no notification is required.

8.2 Species at Risk Mortality Event

Any provincially listed Threatened or Endangered Species at Risk (MECP 2020) mortality documented during post-construction mortality monitoring at the Grand Bend WF requires formal notification to the Ministry of the Environment, Conservation and Parks (MECP) and NDMNRF within 24 hours (or next business day) of a confirmed species identification (Neegan Burnside Ltd. 2013).

Where applicable, and in accordance with the *Grand Bend Wind Farm: Natural Heritage Environmental Effects Monitoring Plan* (Neegan Burnside Ltd. 2013), notifications were sent to the MECP and NDMNRF within 24 hours (or next business day), following confirmed identifications of any Species at Risk mortalities at the Grand Bend WF.

9.0 Comparative Annual Results

Mortality monitoring conducted by NRSI in 2021 represents the fifth year of post-construction mortality monitoring at the Grand Bend WF, and the second year of effectiveness monitoring after the implementation of the Contingency Plan (NRSI 2020). The following section provides a summarized comparison of the 2017, 2018, 2019, 2020, and 2021 post-construction mortality monitoring results for bats.

Table 7 below provides an abbreviated summary of the total bat mortalities, monitoring periods, and corrected (estimated) mortality rates for each of the five years of mortality monitoring conducted at the Grand Bend WF. Further details of the 2021 bat mortality results are provided in Section 6.0 of this report.

Table 7. Comparative Results of Bat Mortality Monitoring Seasons (2017-2021)

Year	Total Mortalities	Monitoring Period	Corrected Mortality Rates	
			Bats/Turbine/Year	Bats/MW/Year
2017 ¹	91	May 1 – October 31	27.85	11.23
2018 ²	36	May 1 – October 31	10.19	4.11
2019 ³	47	May 1 – October 31	14.86	5.99
2020	41	May 1 – October 31	4.95	1.99
2021	42	May 1 – October 31	5.88	2.39

¹ R.J. Burnside & Associates 2018

² R.J. Burnside & Associates 2019

³ R.J. Burnside & Associates 2020

Although a general comparison between the five years of post-construction monitoring data has been made above, the differences in searcher efficiency rates, scavenger removal rates, and proportion of area searched over the five monitoring years do not necessarily allow for a direct comparative analysis of observed mortalities between each year. Local bat abundance and behaviour will also change annually based on other variables, such as weather conditions, adjacent land uses, food availability, or general variations in population numbers, further adding to the challenges of making direct comparisons between monitoring years.

In addition, the approach to turbine operation has also changed throughout the 2017-2021 monitoring period. Beginning in the 2018 monitoring year, operational mitigation below wind speeds of 5.5m/s was applied at all turbines at the Grand Bend WF from sunset to sunrise, from July 15 to September 30, in accordance with the NDMNRF

guidelines (OMNR 2011). Prior to the 2020 monitoring year, additional measures were taken and acoustic bat deterrents were installed at six of the 12 subset turbines, which were used as an additive measure to the previously implemented operational mitigation. These considerations further add to the challenges of making direct comparisons between monitoring years.

Despite these comparative challenges, general comparisons between the monitoring years have been made. Overall, the uncorrected number of bat mortalities documented in 2018, 2019, 2020, and 2021 were similar, and were notably lower than the number of bat mortalities documented in the first year of monitoring (2017), which is likely a result of the implementation of operational mitigation after the 2017 monitoring year. The corrected bat mortality rate was similar in each of 2018 and 2019, while the 2020 and 2021 monitoring years have resulted in lower corrected bat mortality rates observed compared to the previous monitoring years, which is likely attributed to the implementation of the Contingency Plan, and the installation of acoustic deterrents, prior to the 2020 monitoring season.

10.0 Summary and Conclusions

NRSI was retained to conduct the fifth year of post-construction monitoring at the operational Grand Bend WF. The Grand Bend WF consists of 40 wind energy generating turbines with a total nameplate capacity of 100MW.

As a result of exceeding the provincial threshold of 10 bats/turbine/year during the first year of monitoring in 2017, and exceeding the provincial threshold after operational mitigation was implemented in both 2018 and 2019, monitoring in 2021 represents the second year of effectiveness monitoring after implementation of the bat mortality contingency plan (NRSI 2020).

Post-construction monitoring at the Grand Bend WF in 2021 included bat mortality monitoring and the associated searcher efficiency trials, scavenger removal trials, and visibility class mapping that are used in the calculation of estimated mortality rates. These surveys were conducted to assess the potential impacts of this wind energy generating facility on local and migratory bats.

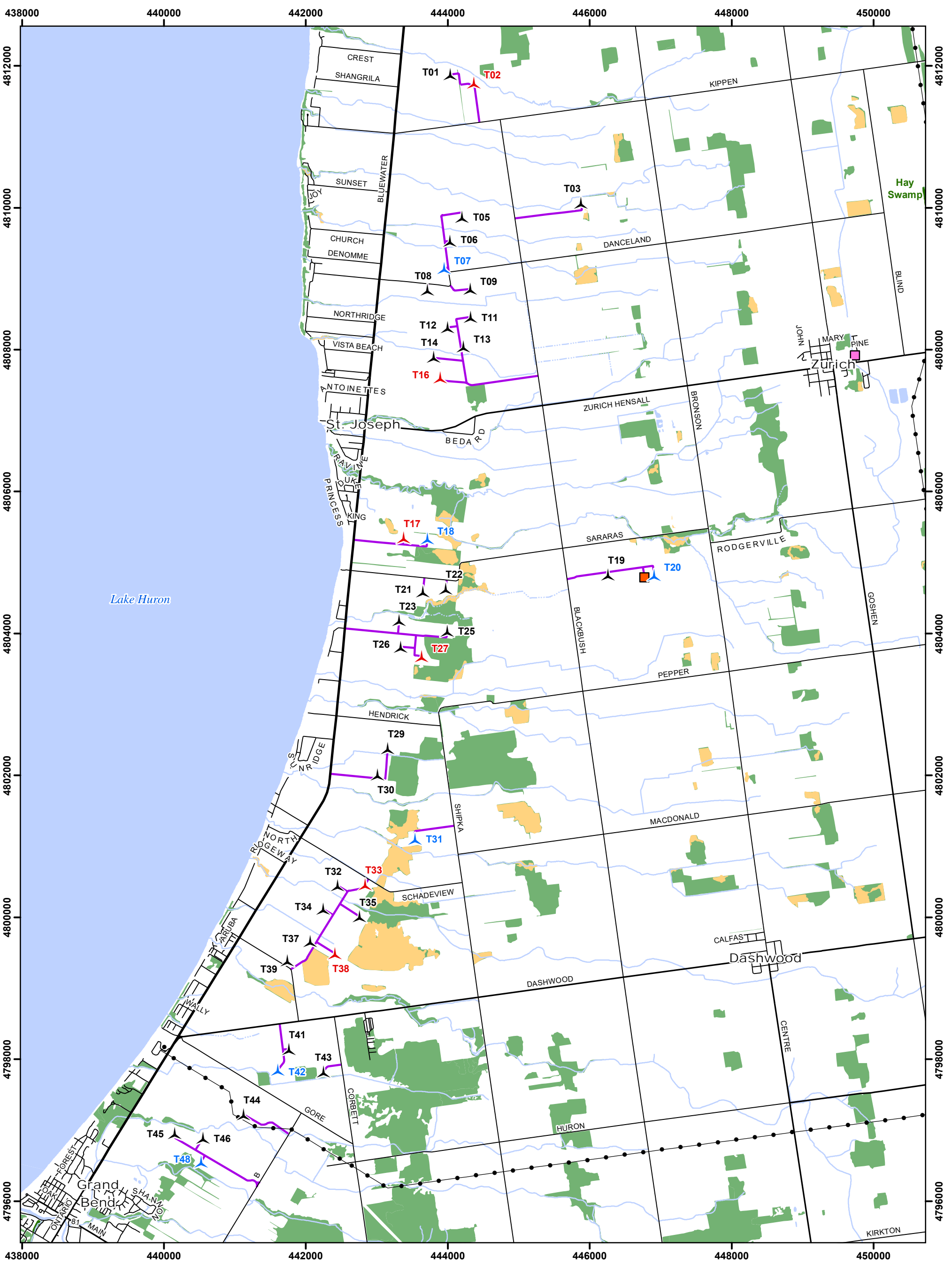
During the monitoring program, 42 bat mortalities were documented at the Grand Bend WF. Long-distance migratory bat species were the most commonly observed mortalities, representing approximately 90% of the documented mortalities that could be identified to the species level. Based on the number of observed bat mortalities, searcher efficiency rates, scavenger removal rates, proportions of area searched, and equations recommended by the NDMNRF, a total corrected (estimated) bat mortality rate of **5.88 bats/turbine/year** (2.39 bats/MW/year) has been determined for the Grand Bend WF. This estimated bat mortality rate is below the provincial threshold of 10 bats/turbine/year established by the NDMNRF guidelines.

Based on the completion of this second year of effectiveness monitoring without exceeding the provincial threshold for bats, no adjustments to the bat mortality contingency plan approach are proposed at this time. The third year of effectiveness monitoring of the bat mortality contingency plan will occur in 2022.

11.0 References

- Ministry of the Environment, Conservation and Parks (MECP). 2020. Species at Risk in Ontario. Queen's Printer for Ontario. Available at: <https://www.ontario.ca/page/species-risk-ontario>
- Natural Resource Solutions Inc. (NRSI). 2021. Grand Bend Wind Farm: 2020 Post-construction Mortality Report. January 2021.
- Natural Resource Solutions Inc. (NRSI). 2020. Grand Bend Wind Farm: Bat Mortality Contingency Plan Rev. 1. August 2020.
- Neegan Burnside Ltd. 2013. Grand Bend Wind Farm: Natural Heritage Environmental Effects Monitoring Plan. February 2013.
- Ontario Ministry of Natural Resources (OMNR). 2011. Bats and Bat Habitats: Guidelines for Wind Power Projects. First edition. July 2011.
- Ontario Ministry of the Environment (MOE). 2014. Renewable Energy Approval No. 5186-9HBJXR; Grand Bend Wind Farm. Issued June 26, 2014; amended March 24, 2015.
- R.J. Burnside & Associates Limited (R.J. Burnside & Associates). 2020. Grand Bend Wind Farm Post-Construction Monitoring Report – Year 3. March 2020.
- R.J. Burnside & Associates Limited (R.J. Burnside & Associates). 2019. Grand Bend Wind Farm Post-Construction Monitoring Report – Year 2. January 2019 (Finalized December 2019).
- R.J. Burnside & Associates Limited (R.J. Burnside & Associates). 2018. Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1. February 2018 (Revised May 2018).

Maps



Legend

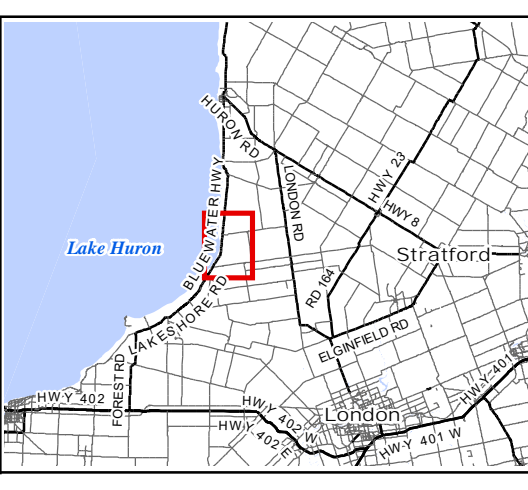
- Utility Line
- Highway
- Primary Road
- Secondary Road

Project Components

- Turbine (Non-subset)
- Subset Turbine (Control; No Deterrent)
- Subset Turbine (Treatment; Acoustic Bat Deterrent)
- Operations & Maintenance Building
- Substation

Natural Features

- Access Road
- Permanent Watercourse
- Intermittent Watercourse
- Water Body
- Provincially Significant Wetland (PSW)
- Unevaluated Wetland
- Wooded Area



Map 1

Grand Bend Wind Farm Post-construction Monitoring Locations

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

0 500 1,000 1,500 2,000 Meters

Map Produced by Natural Resource Solutions Inc. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of NRSI. Source: Data provided by MNRFP © Copyright: Queen's Printer Ontario

Project: 2408B
Date: January 5, 2022
NAD83 - UTM Zone 17
Scale 1:50,000 (11x17")

Appendix I
Post-construction Monitoring Data Sheets

Searcher Efficiency Data Form

Project Name: _____ Project #: _____

Date: _____ Time: _____ hrs

Searcher: _____ Placed By: _____

Condition of Carcasses: Fresh Thawed Carcasses marked (and how)? _____

WEATHER

Temp: _____ °C *Wind Speed: _____ Wind Direction (from): _____ Visibility: High Medium Low

Cloud Cover (%): _____ Cloud Height: High Medium Low Precipitation: Rain Fog Snow None _____

Additional Weather or Other Comments: _____

	Time Placed (24hr)	Turbine #	Species	Distance From Turbine	Direction from Turbine	Habitat/Substrate	Visibility Class	UTM	Found By Searcher (Y/N)	Found After Search (Y/N)
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

*Beaufort Wind Scale: 0 calm; 1 smoke drifts; 2 wind felt on face; 3 leaves in motion; 4 small branches move; 5 small trees sway; 6 large branches move; 7 whole trees in motion; 8 twigs break off and hard to walk; 9 light structural damage; 10 tree uprooted

Placement Location Sketches (Draw access road for each sketch)

N ↑

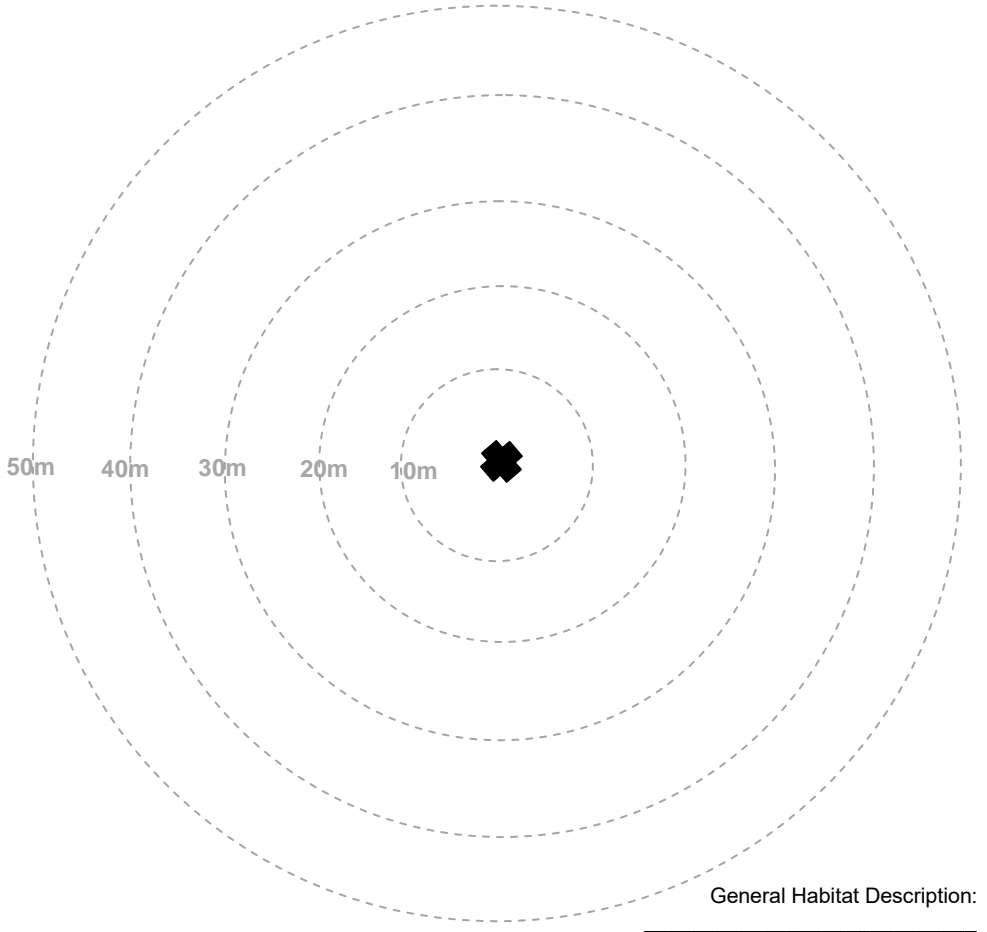
1	2	3	4	5	6	7	8	9	10
X	X	X	X	X	X	X	X	X	X
T#___	T#___	T#___	T#___	T#___	T#___	T#___	T#___	T#___	T#___

Visibility Class Map

Project Name: _____ Project #: _____ Turbine #: _____ Degree of Slope _____ degrees Slope Orientation _____ (e.g. SSW)

Photo Numbers (from turbine base)
 Facing North: _____
 Facing East: _____
 Facing South: _____
 Facing West: _____
 (sketch habitat and visibility classes)

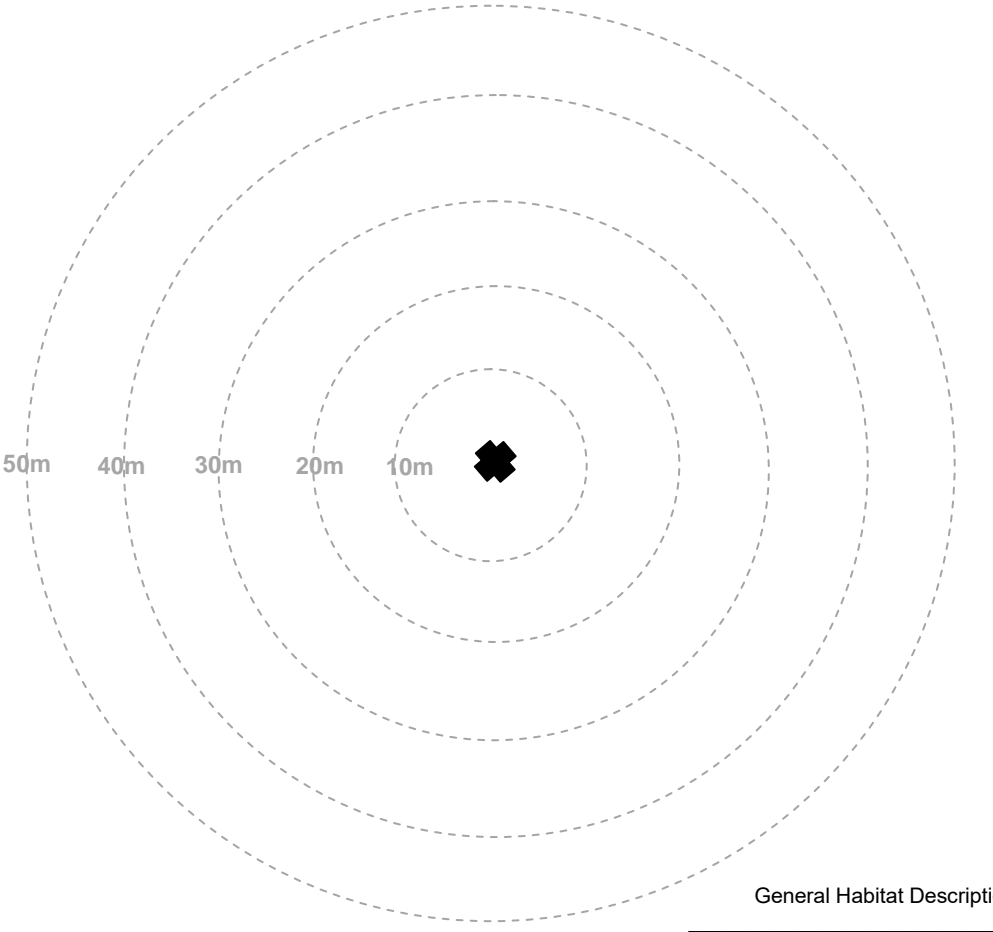
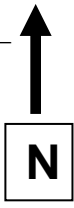
Date (DD/MM/YY): ___/___/___
 Observer: _____
 Monthly/Seasonal
 Linear Transect Width: _____ m



General Habitat Description: _____

Photo Numbers (from turbine base)
 Facing North: _____
 Facing East: _____
 Facing South: _____
 Facing West: _____
 (sketch habitat and visibility classes)

Date (DD/MM/YY): ___/___/___
 Observer: _____
 Monthly/Seasonal
 Linear Transect Width: _____ m



General Habitat Description: _____

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Appendix II
Scavenger Removal Trial Results

Appendix II
 2408B Grand Bend Wind Farm
 Scavenger Removal Trial Results 2021

Spring (May/June) 2021 Scavenger Removal Trial

Carcass Number	Turbine	Species	Distance from Turbine Base (m)	Direction from Turbine Base (°)	UTM (Zone 17T)		Visibility Class	Trial Day	Date	Carcass Present (Y/N)	Signs of Scavenging	Observer
					Easting	Northing						
1	T02	Blue Jay	40	80	444413	4811774	1	Day 0	6-May-21	Y	Carcass placed	Search Team A
								Day 4	10-May-21	N	Carcass removed	Search Team A
								Day 7	13-May-21	N	N/A	Search Team A
								Day 11	17-May-21	N	N/A	Search Team A
								Day 14	20-May-21	N	N/A	Search Team A
2	T07	Eastern Red Bat	24	335	443938	4809171	1	Day 0	6-May-21	Y	Carcass placed	Search Team A
								Day 4	10-May-21	N	Carcass removed	Search Team A
								Day 7	13-May-21	N	N/A	Search Team A
								Day 11	17-May-21	N	N/A	Search Team A
								Day 14	20-May-21	N	N/A	Search Team A
3	T18	Red-eyed Vireo	7	345	443711	4805338	2	Day 0	6-May-21	Y	Carcass placed	Search Team A
								Day 4	10-May-21	N	Carcass removed	Search Team A
								Day 7	13-May-21	N	N/A	Search Team A
								Day 11	17-May-21	N	N/A	Search Team A
								Day 14	20-May-21	N	N/A	Search Team A
4	T17	Yellow-bellied Sapsucker	18	120	443393	4805348	1	Day 0	6-May-21	Y	Carcass placed	Search Team A
								Day 4	10-May-21	N	Carcass removed	Search Team A
								Day 7	13-May-21	N	N/A	Search Team A
								Day 11	17-May-21	N	N/A	Search Team A
								Day 14	20-May-21	N	N/A	Search Team A
5	T16	Hoary Bat	45	60	443936	4807633	2	Day 0	17-May-21	Y	Carcass placed	Search Team A
								Day 3	20-May-21	N	Carcass removed	Search Team A
								Day 7	24-May-21	N	N/A	Search Team A
								Day 10	27-May-21	N	N/A	Search Team A
								Day 14	31-May-21	N	N/A	Search Team A
6	T18	Hoary Bat	49	225	443694	4805294	1	Day 0	24-May-21	Y	Carcass placed	Search Team A
								Day 3	27-May-21	N	Carcass removed	Search Team A
								Day 7	31-May-21	N	N/A	Search Team A
								Day 10	3-Jun-21	N	N/A	Search Team A
								Day 14	7-Jun-21	N	N/A	Search Team A
7	T17	Magnolia Warbler	27	20	443384	4805381	1	Day 0	24-May-21	Y	Carcass placed	Search Team A
								Day 3	27-May-21	N	Carcass removed	Search Team A
								Day 7	31-May-21	N	N/A	Search Team A
								Day 10	3-Jun-21	N	N/A	Search Team A
								Day 14	7-Jun-21	N	N/A	Search Team A
8	T48	American Robin	29	180	440533	4796523	2	Day 0	1-Jun-21	Y	Carcass placed	Search Team A
								Day 3	4-Jun-21	Y	Slightly moved from original location	Search Team A
								Day 7	8-Jun-21	Y	None	Search Team A
								Day 10	11-Jun-21	Y	None	Search Team A
								Day 14	15-Jun-21	N	Carcass removed	Search Team A
9	T42	Silver-haired Bat	38	350	441703	4797891	2	Day 0	1-Jun-21	Y	Carcass placed	Search Team A
								Day 3	4-Jun-21	Y	None	Search Team A
								Day 7	8-Jun-21	N	Carcass removed	Search Team A
								Day 10	11-Jun-21	N	N/A	Search Team A
								Day 14	15-Jun-21	N	N/A	Search Team A
10	T33	Wilson's Warbler	19	30	442828	4800481	2	Day 0	1-Jun-21	Y	Carcass placed	Search Team A
								Day 3	4-Jun-21	Y	None	Search Team A
								Day 7	8-Jun-21	N	Carcass removed	Search Team A
								Day 10	11-Jun-21	N	N/A	Search Team A
								Day 14	15-Jun-21	N	N/A	Search Team A
11	T31	Hoary Bat	6	310	443538	4801103	1	Day 0	1-Jun-21	Y	Carcass placed	Search Team A
								Day 3	4-Jun-21	Y	None	Search Team A
								Day 7	8-Jun-21	Y	None	Search Team A
								Day 10	11-Jun-21	Y	None	Search Team A
								Day 14	15-Jun-21	Y	None	Search Team A

Summer (July/August) 2021 Scavenger Removal Trial

Carcass Number	Turbine	Species	Distance from Turbine Base (m)	Direction from Turbine Base (°)	UTM (Zone 17T)		Visibility Class	Trial Day	Date	Carcass Present (Y/N)	Signs of Scavenging	Observer
					Easting	Northing						
1	T16	Hoary Bat	48	180	443906	4807562	2	Day 0	1-Jul-21	Y	Carcass placed	Search Team A
								Day 4	5-Jul-21	N	Carcass removed	Search Team A
								Day 7	9-Jul-21	N	N/A	Search Team A
								Day 11	12-Jul-21	N	N/A	Search Team A
								Day 14	15-Jul-21	N	N/A	Search Team A
2	T18	Eastern Red Bat	18	110	443708	4805320	1	Day 0	1-Jul-21	Y	Carcass placed	Search Team A
								Day 4	5-Jul-21	N	Carcass removed	Search Team A
								Day 7	9-Jul-21	N	N/A	Search Team A
								Day 11	12-Jul-21	N	N/A	Search Team A
								Day 14	15-Jul-21	N	N/A	Search Team A
3	T20	Red-eyed Vireo	6	80	446914	4804820	2	Day 0	1-Jul-21	Y	Carcass placed	Search Team A
								Day 4	5-Jul-21	Y	None	Search Team A
								Day 7	9-Jul-21	Y	None	Search Team A
								Day 11	12-Jul-21	N	Carcass removed	Search Team A
								Day 14	15-Jul-21	N	N/A	Search Team A
4	T02	Silver-haired Bat	25	195	444368	4811741	1	Day 0	5-Jul-21	Y	Carcass placed	Search Team A
								Day 3	8-Jul-21	N	Carcass removed	Search Team A
								Day 7	11-Jul-21	N	N/A	Search Team A
								Day 10	15-Jul-21	N	N/A	Search Team A
								Day 14	19-Jul-21	N	N/A	Search Team A
5	T07	Nashville Warbler	37	125	443987	4809130	1	Day 0	5-Jul-21	Y	Carcass placed	Search Team A
								Day 3	8-Jul-21	Y	None	Search Team A
								Day 7	11-Jul-21	Y	Carcass moved 3m from original location	Search Team A
								Day 10	15-Jul-21	Y	No further signs	Search Team A
								Day 14	19-Jul-21	Y	No further signs	Search Team A
6	T27	Eastern Red Bat	24	150	443655	4803663	1	Day 0	3-Aug-21	Y	Carcass placed	Search Team A
								Day 3	6-Aug-21	Y	Moved from original location	Search Team A
								Day 7	10-Aug-21	Y	No further signs	Search Team A
								Day 10	13-Aug-21	N	One wing remains	Search Team A
								Day 14	17-Aug-21	N	Carcass removed	Search Team A
7	T38	Silver-haired Bat	10	255	442401	4799487	2	Day 0	3-Aug-21	Y	Carcass placed	Search Team A
								Day 3	6-Aug-21	N	Carcass removed	Search Team A
								Day 7	10-Aug-21	N	N/A	Search Team A
								Day 10	13-Aug-21	N	N/A	Search Team A
								Day 14	17-Aug-21	N	N/A	Search Team A
8	T33	Hermit Thrush	34	310	442806	4800482	2	Day 0	3-Aug-21	Y	Carcass placed	Search Team A
								Day 3	6-Aug-21	Y	None	Search Team A
								Day 7	10-Aug-21	Y	Scattered feathers, one wing and one leg remain	Search Team A
								Day 10	13-Aug-21	N	Carcass removed	Search Team A
								Day 14	17-Aug-21	N	N/A	Search Team A
9	T48	Hoary Bat	47	245	440486	4796530	2	Day 0	6-Aug-21	Y	Carcass placed	Search Team A
								Day 3	10-Aug-21	Y	None	Search Team A
								Day 7	13-Aug-21	Y	None	Search Team A
								Day 10	17-Aug-21	Y	None	Search Team A
								Day 14	20-Aug-21	Y	None	Search Team A
10	T31	Black-capped Chickadee	18	55	443553	4801119	1	Day 0	10-Aug-21	Y	Carcass placed	Search Team A
								Day 3	13-Aug-21	N	Carcass removed	Search Team A
								Day 7	17-Aug-21	N	N/A	Search Team A
								Day 10	20-Aug-21	N	N/A	Search Team A
								Day 14	24-Aug-21	N	N/A	Search Team A

Fall (September/October) 2021 Scavenger Removal Trial

Carcass Number	Turbine	Species	Distance from Turbine Base (m)	Direction from Turbine Base (°)	UTM (Zone 17T)		Visibility Class	Trial Day	Date	Carcass Present (Y/N)	Signs of Scavenging	Observer
					Easting	Northing						
1	T02	Eastern Red Bat	24	330	444353	481773	1	Day 0	2-Sep-21	Y	Carcass placed	Search Team A
								Day 4	6-Sep-21	N	Carcass removed	Search Team A
								Day 7	9-Sep-21	N	N/A	Search Team A
								Day 11	13-Sep-21	N	N/A	Search Team A
								Day 15	17-Sep-21	N	N/A	Search Team A
								Day 0	2-Sep-21	Y	Carcass placed	Search Team A
2	T07	Yellow-bellied Sapsucker	48	80	443996	4809176	2	Day 4	6-Sep-21	N	Carcass removed	Search Team A
								Day 7	9-Sep-21	N	N/A	Search Team A
								Day 11	13-Sep-21	N	N/A	Search Team A
								Day 14	16-Sep-21	N	N/A	Search Team A
								Day 0	2-Sep-21	Y	Carcass placed	Search Team A
								Day 4	6-Sep-21	Y	None	Search Team A
3	T16	Hoary Bat	18	210	443885	4807596	2	Day 7	9-Sep-21	Y	None	Search Team A
								Day 11	13-Sep-21	N	Carcass removed	Search Team A
								Day 14	16-Sep-21	N	N/A	Search Team A
								Day 0	2-Sep-21	Y	Carcass placed	Search Team A
								Day 4	6-Sep-21	Y	None	Search Team A
								Day 7	9-Sep-21	Y	None	Search Team A
4	T18	Common Yellowthroat	6	0	443212	4805345	1	Day 7	9-Sep-21	N	N/A	Search Team A
								Day 11	13-Sep-21	N	N/A	Search Team A
								Day 14	16-Sep-21	N	N/A	Search Team A
								Day 0	2-Sep-21	Y	Carcass placed	Search Team A
								Day 4	6-Sep-21	N	Carcass removed	Search Team A
								Day 7	9-Sep-21	N	N/A	Search Team A
5	T17	Silver-haired Bat	34	20	443392	4805388	1	Day 11	13-Sep-21	Y	None	Search Team A
								Day 14	16-Sep-21	Y	None	Search Team A
								Day 0	2-Sep-21	Y	Carcass placed	Search Team A
								Day 4	6-Sep-21	Y	None	Search Team A
								Day 7	9-Sep-21	Y	None	Search Team A
								Day 11	13-Sep-21	Y	None	Search Team A
6	T48	Mourning Dove	48	310	440484	4796584	2	Day 11	12-Oct-21	N	Carcass removed	Search Team A
								Day 14	15-Oct-21	N	N/A	Search Team A
								Day 0	1-Oct-21	Y	Carcass placed	Search Team A
								Day 4	5-Oct-21	Y	Only feathers remain	Search Team A
								Day 7	8-Oct-21	N	Few feathers remain	Search Team A
								Day 11	12-Oct-21	N	Carcass removed	Search Team A
7	T42	Hoary Bat	12	10	441608	4797866	2	Day 11	12-Oct-21	N	N/A	Search Team A
								Day 14	15-Oct-21	N	N/A	Search Team A
								Day 0	1-Oct-21	Y	Carcass placed	Search Team A
								Day 4	5-Oct-21	N	Carcass removed	Search Team A
								Day 7	8-Oct-21	N	N/A	Search Team A
								Day 11	12-Oct-21	N	N/A	Search Team A
8	T38	Baltimore Oriole	6	30	442413	4799491	2	Day 11	12-Oct-21	Y	Only feathers and bones remain	Search Team A
								Day 14	15-Oct-21	Y	No further signs	Search Team A
								Day 0	1-Oct-21	Y	Carcass placed	Search Team A
								Day 4	5-Oct-21	Y	None	Search Team A
								Day 7	8-Oct-21	Y	None	Search Team A
								Day 11	12-Oct-21	Y	Only feathers and bones remain	Search Team A
9	T33	Wilson's Warbler	39	320	442805	4800486	1	Day 11	12-Oct-21	N	N/A	Search Team A
								Day 14	15-Oct-21	N	N/A	Search Team A
								Day 0	1-Oct-21	Y	Carcass placed	Search Team A
								Day 4	5-Oct-21	N	Carcass removed	Search Team A
								Day 7	8-Oct-21	N	N/A	Search Team A
								Day 11	12-Oct-21	N	N/A	Search Team A
10	T31	Eastern Red Bat	27	110	443557	4801098	1	Day 11	12-Oct-21	Y	None	Search Team A
								Day 14	15-Oct-21	Y	None	Search Team A
								Day 0	1-Oct-21	Y	Carcass placed	Search Team A
								Day 4	5-Oct-21	Y	None	Search Team A
								Day 7	8-Oct-21	Y	None	Search Team A
								Day 11	12-Oct-21	Y	None	Search Team A

Appendix III
Searcher Efficiency Trial Results

**Appendix III
2408B Grand Bend Wind Farm
Searcher Efficiency Trial Results 2021**

May 2021 Searcher Efficiency Trial

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (Zone 17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
6-May-21	Search Team A	1	T17	Horned Lark	6	115	Bare soil	1	443384	4805358	Y	-
		2	T18	Blackburnian Warbler	19	225	Bare soil	1	443705	4805321	N	N
		3	T20	Hoary Bat	34	275	Bare soil	1	446887	4804820	Y	-
10-May-21	Search Team A	4	T17	European Starling	45	150	Bare soil	1	443416	4805366	N	Y
		5	T18	Wilson's Warbler	33	190	Gravel	1	443715	4805304	Y	-
		6	T20	Hoary Bat	14	185	Bare soil	1	446915	4804817	Y	-
11-May-21	Search Team A	7	T48	Purple Martin	33	180	Grass	2	440540	4796521	Y	-
		8	T42	Eastern Red Bat	19	50	Grass	2	441608	4797868	N	Y
		9	T38	European Starling	46	210	Grass	2	442405	4799446	N	Y
13-May-21	Search Team A	10	T16	Purple Martin	42	30	Grass	2	443932	4807636	N	Y
		11	T16	Hoary Bat	22	340	Grass	2	443887	4807633	Y	-
		12	T02	Silver-haired Bat	31	285	Bare soil	1	444343	4811761	Y	-
14-May-21	Search Team A	13	T42	Swainson's Thrush	40	345	Grass	2	441583	4797885	Y	-
		14	T38	Yellow-bellied Sapsucker	17	60	Grass	2	442419	4799506	N	Y
		15	T33	Eastern Red Bat	8	180	Grass	2	442836	4800460	Y	-
17-May-21	Search Team A	16	T07	Northern Cardinal	41	115	Bare soil	1	444006	4809148	Y	-
		17	T16	Eastern Red Bat	42	150	Grass	2	443924	4807577	Y	-
		18	T16	Silver-haired Bat	16	100	Grass	2	443908	4807605	Y	-
20-May-21	Search Team A	19	T17	American Robin	25	210	Gravel	1	443371	4805331	Y	-
		20	T18	Swainson's Thrush	19	300	Bare soil	1	443694	4805341	Y	-
		21	T20	Eastern Red Bat	48	70	Bare soil	1	446957	4804846	Y	-
21-May-21	Search Team A	22	T33	Black-throated Blue Warbler	42	125	Grass	2	442874	4800441	Y	-
		23	T38	Magnolia Warbler	28	11	Grass	2	442417	4799522	Y	-
		24	T42	American Robin	16	100	Grass	2	441625	4797848	Y	-

June 2021 Searcher Efficiency Trial

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (Zone 17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
3-Jun-21	Search Team A	1	T17	Silver-haired Bat	10	140	Bare soil	1	443385	4805351	N	-
		2	T18	Swainson's Thrush	26	260	Bare soil	1	443698	4805328	Y	-
		3	T20	Golden-crowned Kinglet	37	175	Bare soil	1	446925	4804790	Y	-
7-Jun-21	Search Team A	4	T16	Yellow-billed Cuckoo	45	330	Grass	2	443880	4807662	N	Y
		5	T17	Hoary Bat	31	75	Bare soil	1	443413	4805360	Y	-
		6	T18	Black-and-white Warbler	22	210	Gravel	1	443720	4805317	Y	-
8-Jun-21	Search Team A	7	T48	Swainson's Thrush	32	340	Weeds	2	440516	4796585	Y	-
		8	T42	Silver-haired Bat	40	110	Weeds	2	441648	4797855	Y	-
		9	T33	Black-capped Chickadee	9	130	Weeds	2	442848	4800467	Y	-

June 2021 Searcher Efficiency Trial (Continued)

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (Zone 17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
10-Jun-21	Search Team A	10	T16	Fox Sparrow	23	150	Grass	2	443909	4807599	Y	-
		11	T07	Yellow-bellied Sapsucker	44	300	Bare soil	1	443918	4809160	Y	-
		12	T02	Hoary Bat	37	330	Bare soil	1	444354	4811789	N	N
11-Jun-21	Search Team A	13	T48	Hoary Bat	44	240	Grass	2	440494	4796533	Y	-
		14	T42	Fox Sparrow	21	210	Grass	2	441601	4797833	Y	-
		15	T38	Black-capped Chickadee	8	30	Grass	2	442398	4799498	Y	-
14-Jun-21	Search Team A	16	T17	Eastern Red Bat	23	210	Gravel	1	443369	4805334	N	N
		17	T18	Nashville Warbler	16	300	Bare soil	1	443700	4805339	Y	-
		18	T20	White-throated Sparrow	44	240	Bare soil	1	446883	4804796	Y	-
29-Jun-21	Search Team A	19	T38	Nashville Warbler	18	135	Grass	2	442415	4799479	Y	-
		20	T22	Hoary Bat	45	125	Grass	2	442880	4800444	Y	-
		21	T31	Silver-haired Bat	41	100	Weeds	2	443581	4801119	Y	-

July 2021 Searcher Efficiency Trial

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (Zone 17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
5-Jul-21	Search Team A	1	T16	Red-eyed Vireo	27	300	Grass	2	443875	4807616	Y	-
		2	T20	Hoary Bat	42	175	Bare soil	1	446925	4804788	Y	-
		3	T17	Nashville Warbler	19	155	Bare soil	1	443387	4805348	Y	-
6-Jul-21	Search Team A	4	T48	Eastern Red Bat	20	95	Grass	2	440551	4796552	Y	-
		5	T42	Swainson's Thrush	32	355	Grass	2	441593	4797876	Y	-
9-Jul-21	Search Team A	6	T42	Northern Flicker	47	340	Grass	2	441576	4797885	Y	-
		7	T33	Hoary Bat	22	110	Grass	2	442864	4800463	Y	-
		8	T27	Silver-haired Bat	19	270	Gravel	1	443617	4803681	Y	-
12-Jul-21	Search Team A	9	T18	Ovenbird	22	165	Bare soil	1	443728	4805316	Y	-
		10	T20	Brown-headed Cowbird	43	30	Bare soil	1	446930	4804864	Y	-
13-Jul-21	Search Team A	11	T48	Hoary Bat	28	240	Grass	2	440513	4796539	Y	-
		12	T42	Red-eyed Vireo	44	337	Grass	2	441588	4797892	Y	-
15-Jul-21	Search Team A	13	T02	Eastern Red Bat	33	270	Bare soil	1	444338	4811751	Y	-
		14	T07	Red-eyed Vireo	5	160	Gravel	1	443955	4809146	Y	-
		15	T16	Nashville Warbler	12	270	Grass	2	443880	4807598	Y	-
19-Jul-21	Search Team A	16	T17	Hoary Bat	8	160	Gravel	1	443383	4805351	Y	-
		17	T18	Silver-haired Bat	13	90	Bare soil	1	443730	4805336	Y	-
		18	T20	Chestnut-sided Warbler	30	315	Bare soil	1	446883	4804840	Y	-
27-Jul-21	Search Team A	19	T42	Mourning Dove	42	50	Grass	2	441609	4797897	Y	-
		20	T38	Hoary Bat	31	10	Grass	2	442399	4799525	Y	-

August 2021 Searcher Efficiency Trial

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (Zone 17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
2-Aug-21	Search Team A	1	T16	Hermit Thrush	12	130	Grass	2	443905	4807604	Y	-
		2	T17	Hoary Bat	24	250	Bare soil	1	443360	4805349	Y	-
		3	T18	Yellow-bellied Sapsucker	28	30	Bare soil	1	443725	4803363	Y	-
9-Aug-21	Search Team A	4	T16	Eastern Red Bat	33	205	Grass	2	443882	4807578	Y	-
		5	T18	Black-capped Chickadee	41	175	Bare soil	1	443723	4808294	Y	-
		6	T20	Silver-haired Bat	14	320	Bare soil	1	446901	4804831	N	N
13-Aug-21	Search Team A	7	T38	Mourning Dove	42	60	Grass	2	442449	4799514	Y	-
		8	T33	Hoary Bat	25	330	Grass	2	442818	4800489	Y	-
		9	T27	Silver-haired Bat	5	100	Gravel	1	443643	4803684	Y	-
16-Aug-21	Search Team A	10	T18	Cape May Warbler	11	280	Bare soil	1	443706	4805334	Y	-
		11	T20	Horned Lark	6	345	Gravel	1	446907	4804832	Y	-
19-Aug-21	Search Team A	12	T07	Swainson's Thrush	18	30	Bare soil	1	443063	4809165	Y	-
		13	T16	Nashville Warbler	14	300	Grass	2	443890	4807609	Y	-
		14	T17	Silver-haired Bat	44	260	Bare soil	1	443337	4808340	Y	-
24-Aug-21	Search Team A	15	T48	Silver-haired Bat	8	280	Weeds	2	440510	4796570	Y	-
		16	T42	Hoary Bat	44	165	Weeds	2	441643	4797823	Y	-
		17	T27	Blackburnian Warbler	34	130	Bare soil	1	443675	4803686	Y	-
27-Aug-21	Search Team A	18	T42	American Woodcock	35	158	Grass	2	441629	4797820	Y	-
		19	T38	Silver-haired Bat	48	260	Grass	2	442362	4799474	Y	-
		20	T33	Common Yellowthroat	25	135	Grass	2	442859	4800450	Y	-

September 2021 Searcher Efficiency Trial

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (Zone 17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
9-Sep-21	Search Team A	1	T16	Yellow-billed Cuckoo	39	215	Grass	2	443875	4807578	Y	-
		2	T17	Hoary Bat	15	110	Bare soil	1	443389	4805350	Y	-
		3	T18	Black-and-white Warbler	26	315	Gravel	1	443698	4805349	Y	-
13-Sep-21	Search Team A	4	T17	Hoary Bat	9	135	Bare soil	1	443384	4805350	Y	-
		5	T18	Silver-haired Bat	14	35	Bare soil	1	443726	4805347	Y	-
		6	T20	Baltimore Oriole	23	330	Bare soil	1	446896	4804844	Y	-
14-Sep-21	Search Team A	7	T38	Eastern Red Bat	15	165	Grass	2	442416	4799480	Y	-
		8	T33	White-throated Sparrow	46	343	Grass	2	442815	4800510	Y	-
		9	T31	Silver-haired Bat	13	45	Gravel	1	443553	4801117	Y	-

September 2021 Searcher Efficiency Trial (Continued)

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (Zone 17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
16-Sep-21	Search Team A	10	T16	Black-capped Chickadee	26	280	Grass	2	443867	4807611	Y	-
		11	T20	Tree Swallow	45	55	Bare soil	1	446593	4804857	Y	-
20-Sep-21	Search Team A	12	T07	Common Yellowthroat	24	160	Bare soil	1	443966	4809132	Y	-
		13	T16	Eastern Red Bat	48	340	Grass	2	443871	4807856	Y	-
		14	T17	Horned Lark	18	170	Bare soil	1	443384	4808338	Y	-
21-Sep-21	Search Team A	15	T48	Eastern Red Bat	38	62	Grass	2	440560	4796578	N	Y
		16	T42	Common Grackle	25	235	Grass	2	441587	4797833	Y	-
		17	T33	Tennessee Warbler	7	50	Grass	2	442840	4800474	Y	-
24-Sep-21	Search Team A	18	T38	Eastern Red Bat	32	325	Grass	2	442408	4799513	Y	-
		19	T33	Hoary Bat	16	280	Grass	2	442821	4800466	Y	-
		20	T27	Silver-haired Bat	48	310	Bare soil	1	443599	4803721	Y	-

October 2021 Searcher Efficiency Trial

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (Zone 17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
4-Oct-21	Search Team A	1	T07	Nashville Warbler	5	135	Gravel	1	443954	4809147	Y	-
		2	T16	Hoary Bat	16	270	Grass	2	443886	4807607	Y	-
		3	T17	Silver-haired Bat	23	100	Bare soil	1	443399	4805355	Y	-
5-Oct-21	Search Team A	4	T42	Black-and-white Warbler	42	330	Grass	2	441578	4797892	N	N
		5	T38	Hoary Bat	19	120	Grass	2	442426	4799485	Y	-
		6	T31	Fox Sparrow	21	10	Weeds	2	443540	4801135	Y	-
7-Oct-21	Search Team A	7	T07	Horned Lark	18	140	Bare soil	1	443968	4809133	N	N
		8	T16	Ovenbird	23	160	Grass	2	443910	4807593	Y	-
		9	T20	Eastern Red Bat	46	40	Bare soil	1	446937	4804868	N	N
14-Oct-21	Search Team A	10	T16	Ovenbird	43	210	Grass	2	443878	4807572	Y	-
		11	T17	Northern Waterthrush	30	280	Bare soil	1	443347	4805353	Y	-
		12	T18	Song Sparrow	18	60	Bare soil	1	443731	4805349	Y	-
15-Oct-21	Search Team A	13	T42	Hoary Bat	20	10	Grass	2	441608	4797874	Y	-
		14	T38	Eastern Red Bat	39	155	Grass	2	442444	4799477	Y	-
		15	T27	Hoary Bat	17	240	Bare soil	1	443623	4803668	Y	-
22-Oct-21	Search Team A	16	T48	Swainson's Thrush	32	95	Grass	2	440561	4796548	Y	-
		17	T42	Hoary Bat	14	180	Grass	2	441604	4797839	Y	-
		18	T31	Silver-haired Bat	28	350	Bare soil	1	443530	4801135	Y	-
25-Oct-21	Search Team A	19	T18	Swainson's Thrush	16	190	Gravel	1	443721	4805322	Y	-
		20	T20	Eastern Red Bat	22	325	Bare soil	1	446897	4804845	Y	-

Appendix IV
Visibility Class Mapping

Visibility Class Map

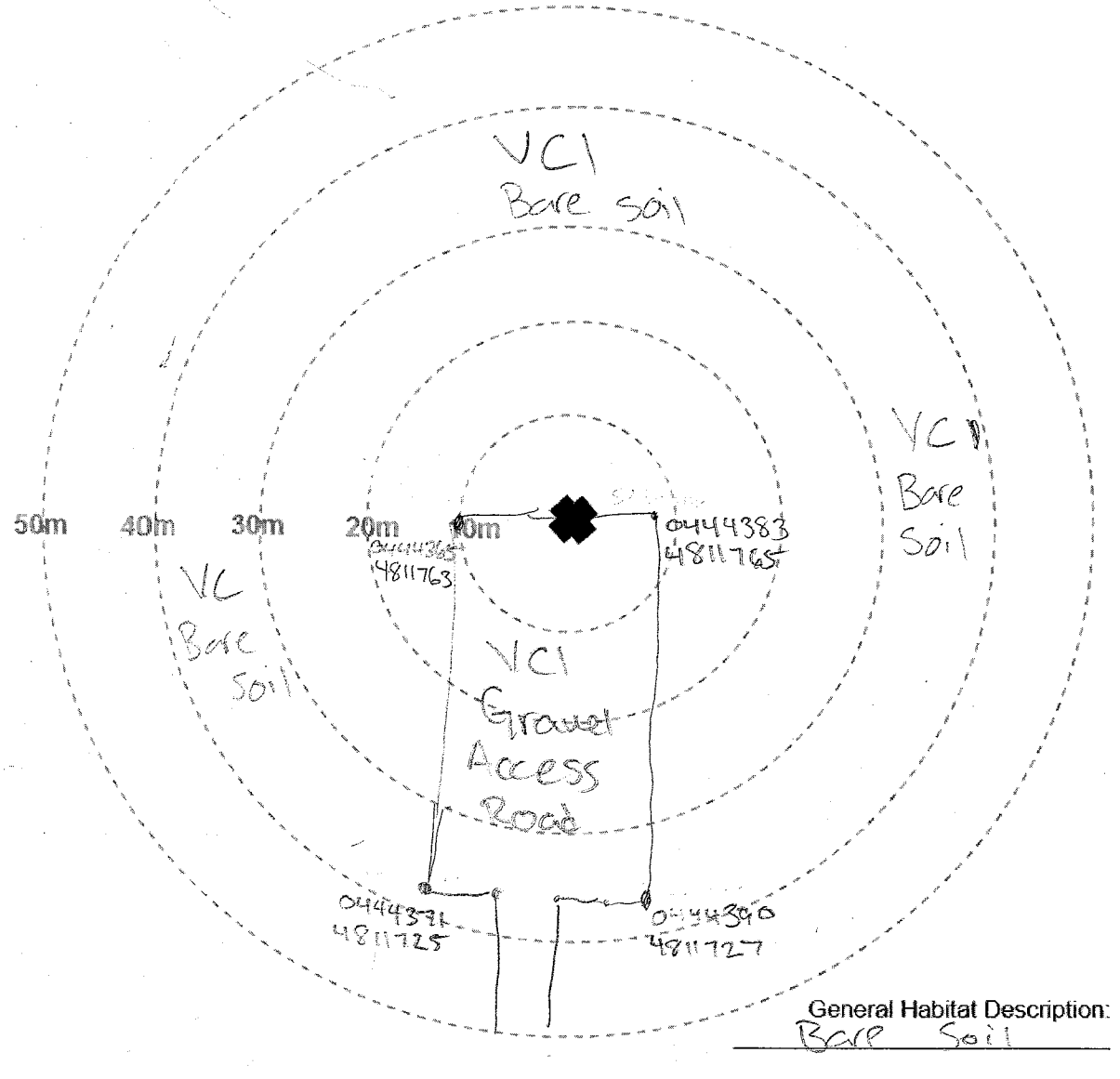
Project Name: Grand Bend Wind CP Project #: 2408B Turbine #: T02 Degree of Slope 0 degrees Slope Orientation — (e.g. SSW)

Photo Numbers (from turbine base)
 Facing North: 8001
 Facing East: 8002
 Facing South: 8003
 Facing West: 8004
 (sketch habitat and visibility classes)

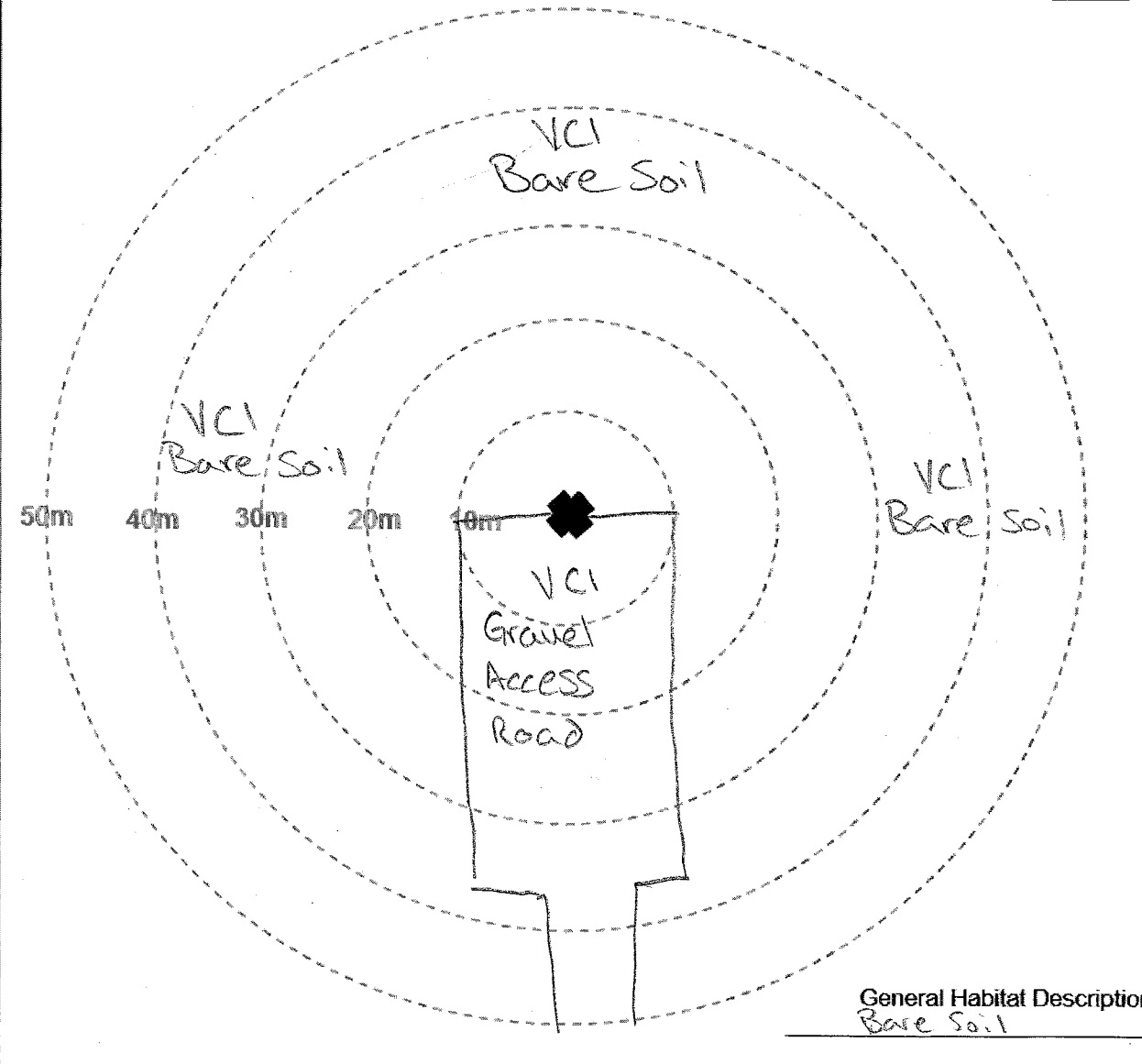
Date (DD/MM/YY): 03/05/21
 Observer: A. Vanderpas/M. Bosco
 Monthly/Seasonal
 Linear Transect Width: 3 m **N**

Photo Numbers (from turbine base)
 Facing North: 8307
 Facing East: 8308
 Facing South: 8309
 Facing West: 8310
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/06/21
 Observer: A. Vanderpas
M. Bosco
 Monthly/Seasonal
 Linear Transect Width: 3 m **N**



General Habitat Description:
Bare Soil



General Habitat Description:
Bare Soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T02

Photo Numbers (from turbine base)
 Facing North: 8498
 Facing East: 8499
 Facing South: 8500
 Facing West: 8501
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 01/07/21
 Observer: ACU, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m

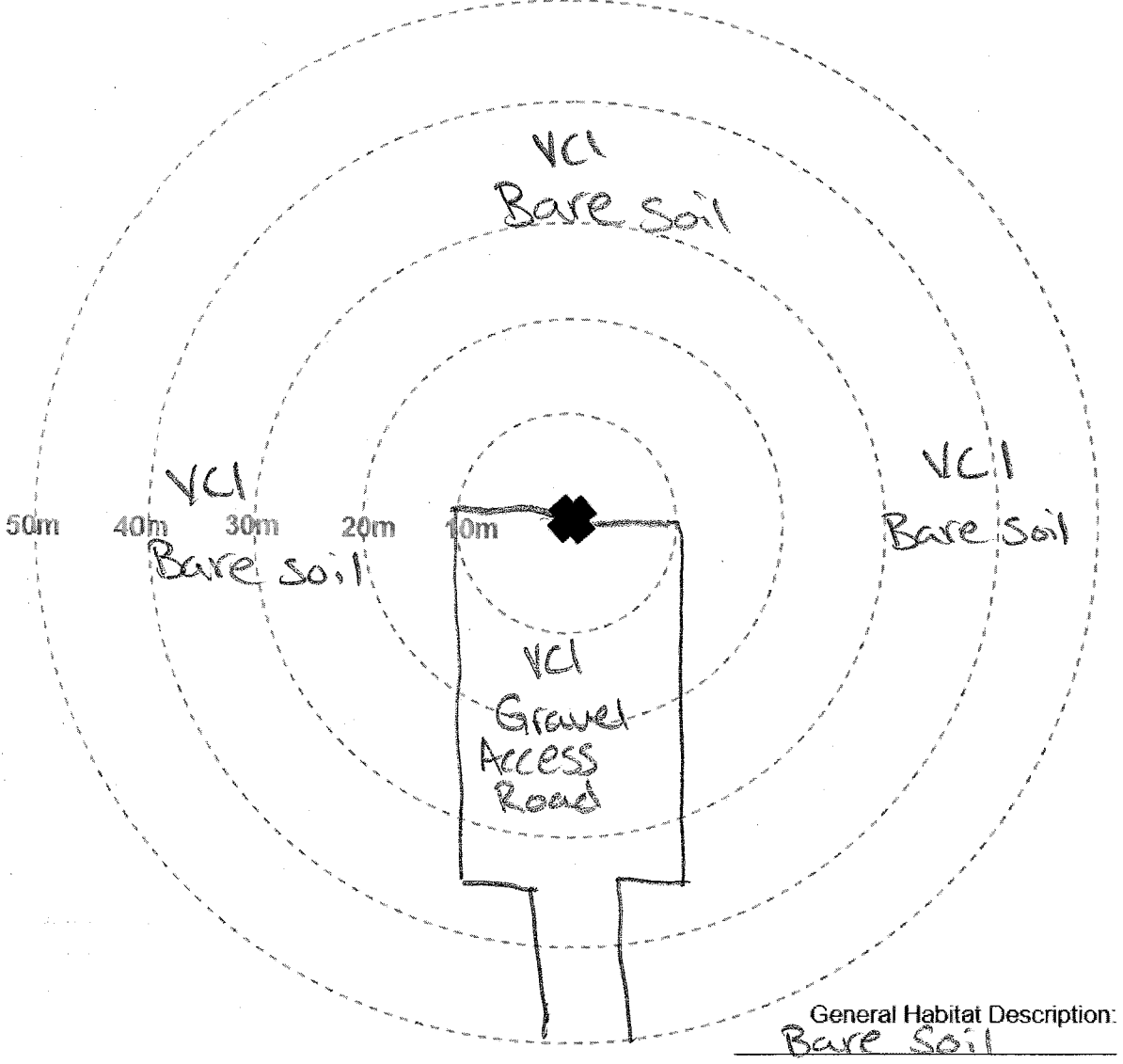
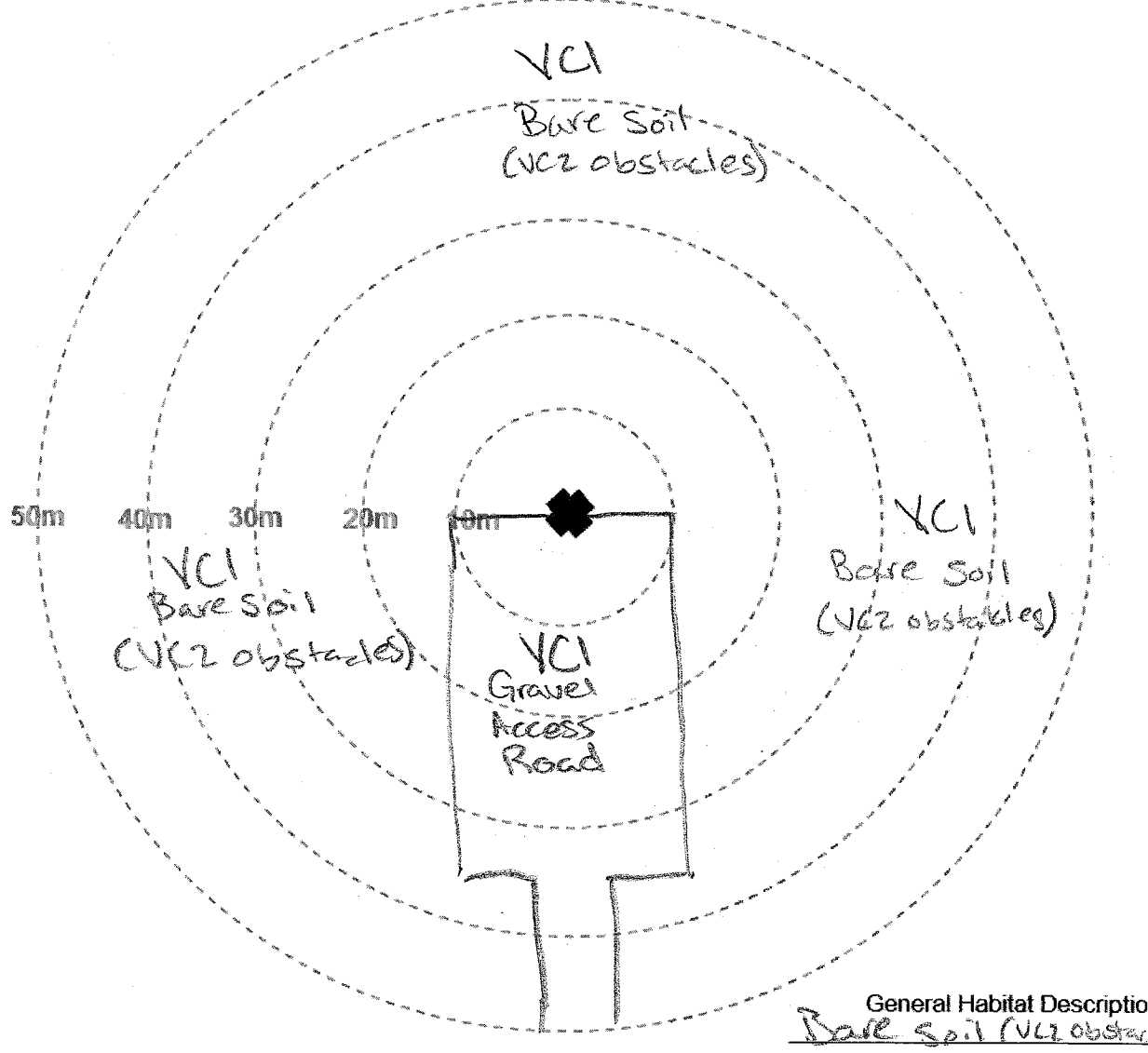


Photo Numbers (from turbine base)
 Facing North: 8786
 Facing East: 8787
 Facing South: 8788
 Facing West: 8789
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 05/08/21
 Observer: ACU, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend W/F Project #: 2408B Turbine #: T02

Photo Numbers (from turbine base)
 Facing North: 9034
 Facing East: 9055
 Facing South: 9036
 Facing West: 9037
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 02/09/21 ↑
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m ↑
N

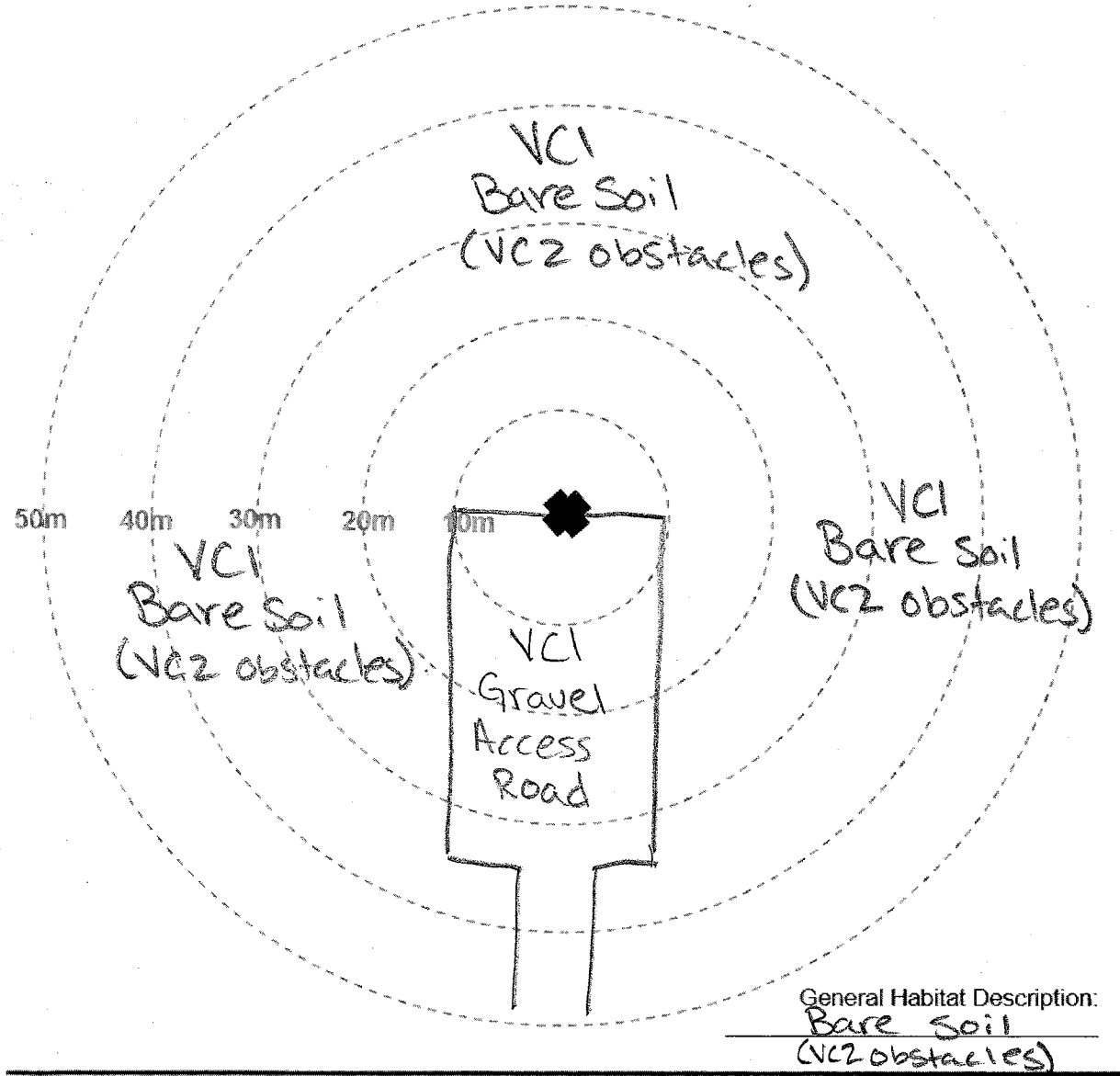
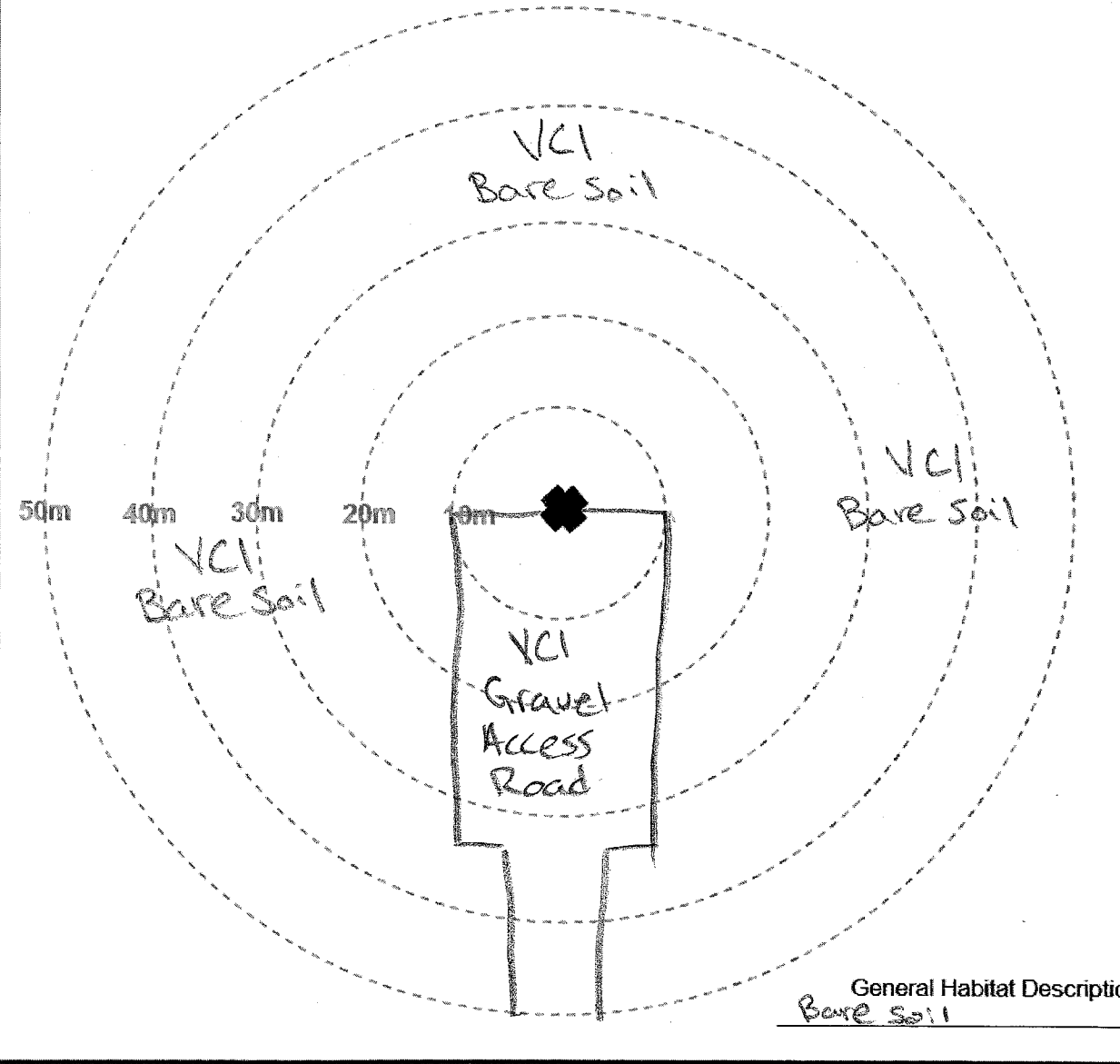


Photo Numbers (from turbine base)
 Facing North: 9447
 Facing East: 9448
 Facing South: 9449
 Facing West: 9450
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 04/10/21 ↑
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m ↑
N



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

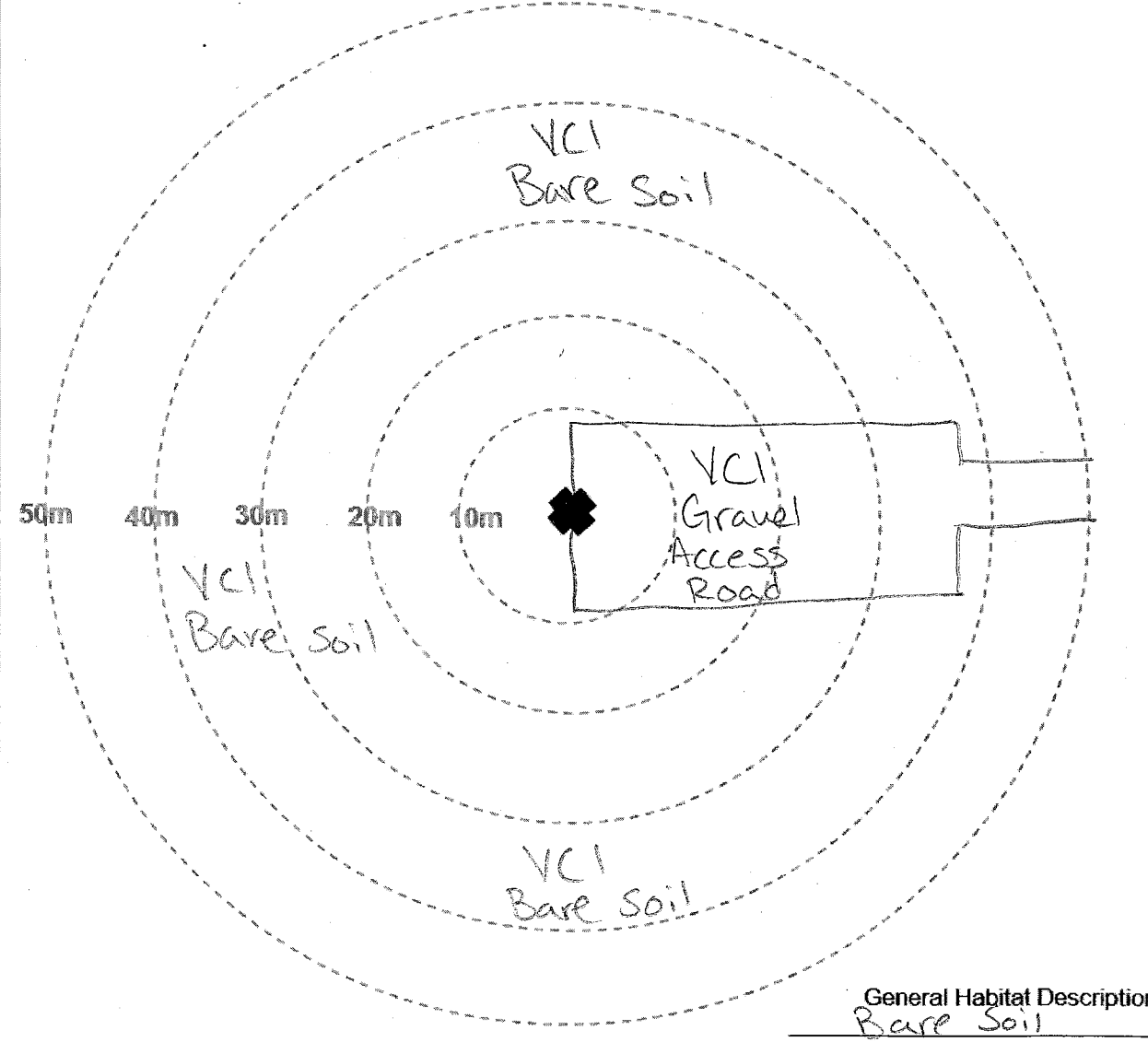
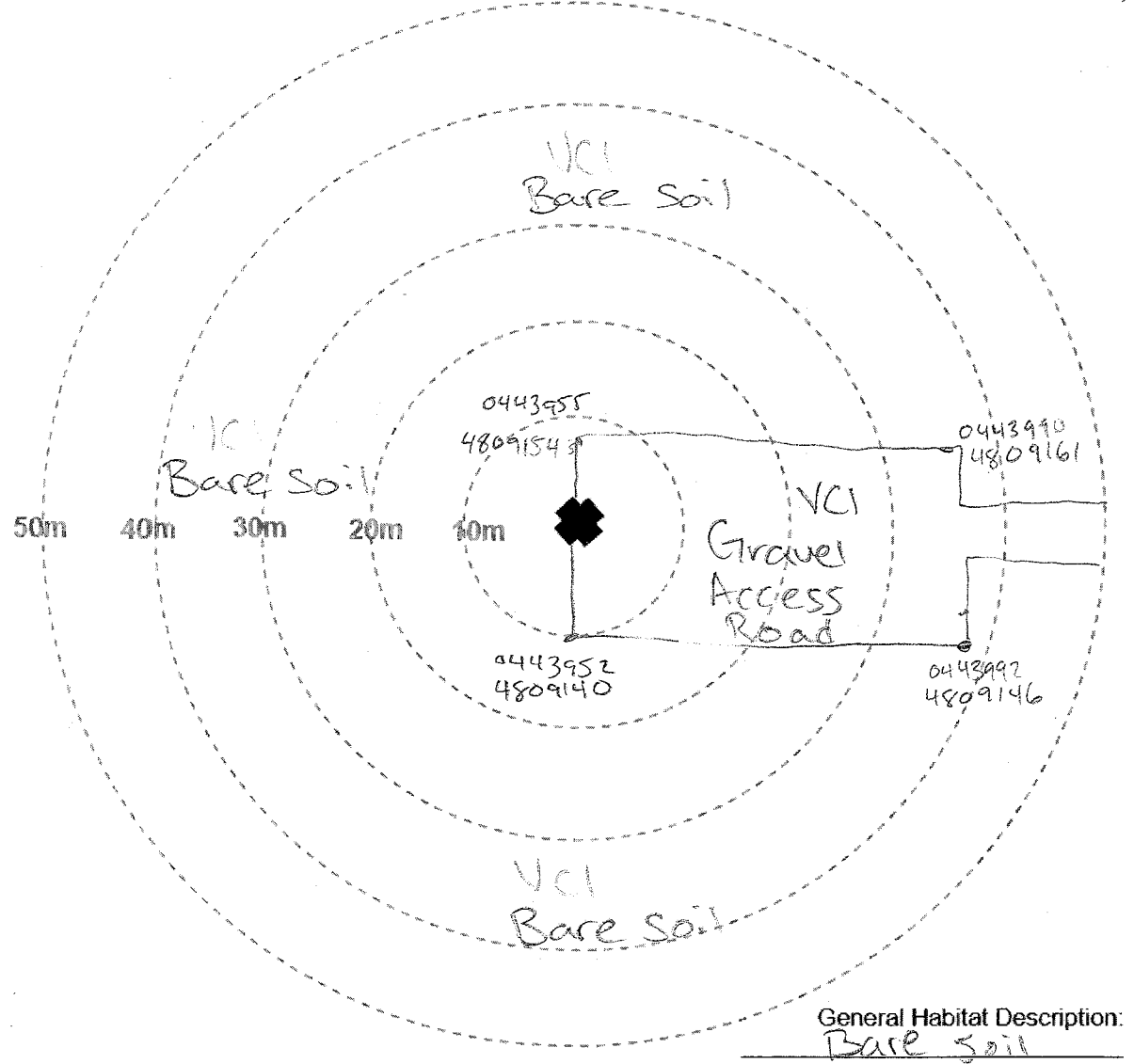
Project Name: Grand Bend WF Project #: 2408B Turbine #: 707 Degree of Slope 0 degrees Slope Orientation — (e.g. SSW)

Photo Numbers (from turbine base)
 Facing North: 8005
 Facing East: 8006
 Facing South: 8007
 Facing West: 8008
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 02/05/21
 Observer: A. Vanderpas/N. Bosco
 Monthly/Seasonal Linear Transect Width: 3 m **N**

Photo Numbers (from turbine base)
 Facing North: 8311
 Facing East: 8312
 Facing South: 8313
 Facing West: 8314
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 07/06/21
 Observer: A. Vanderpas
N. BOSCO
 Monthly/Seasonal Linear Transect Width: 3 m **N**



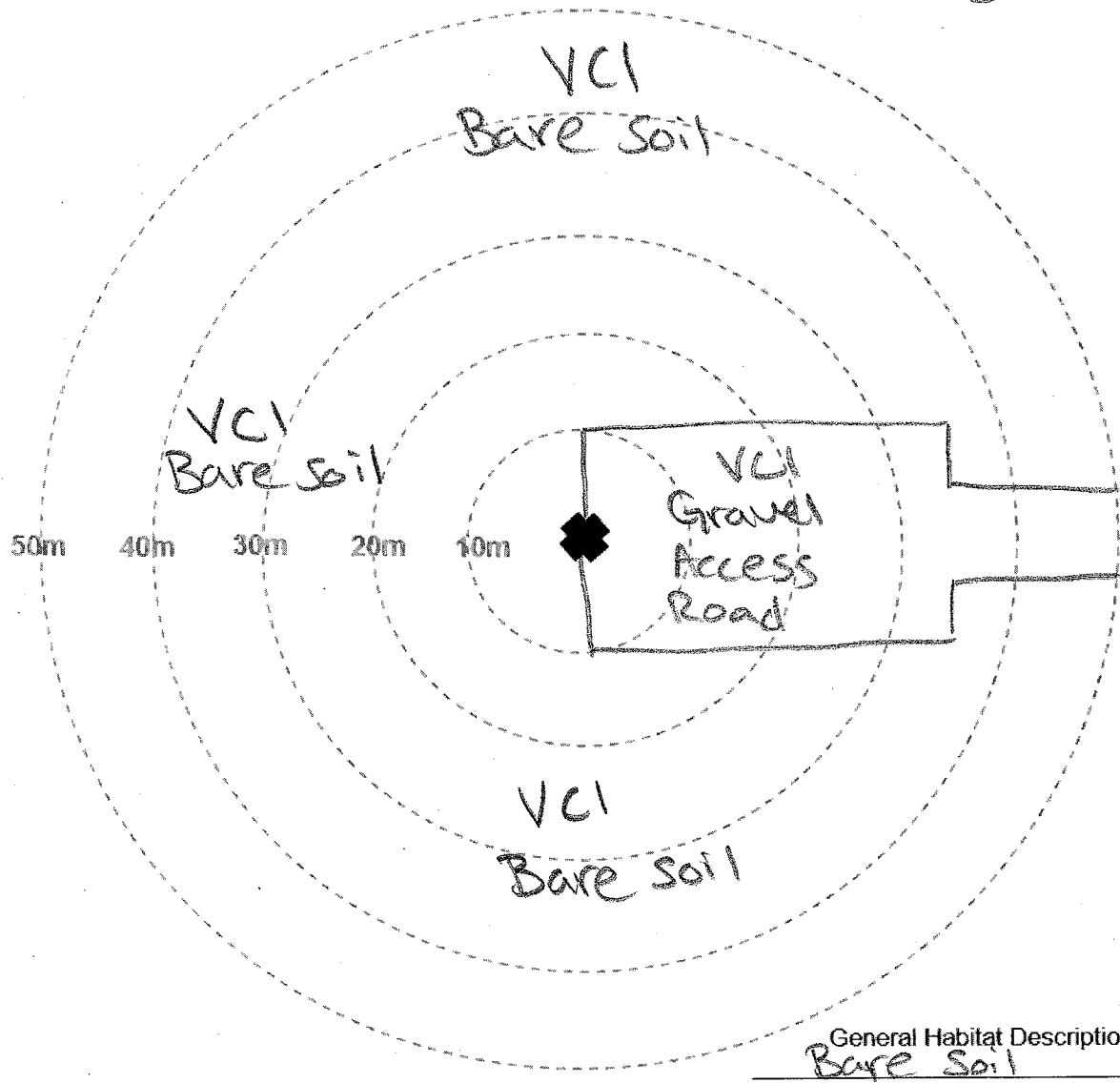
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T07

Photo Numbers (from turbine base)
 Facing North: 8503
 Facing East: 8504
 Facing South: 8505
 Facing West: 8506
 (sketch habitat and visibility classes)

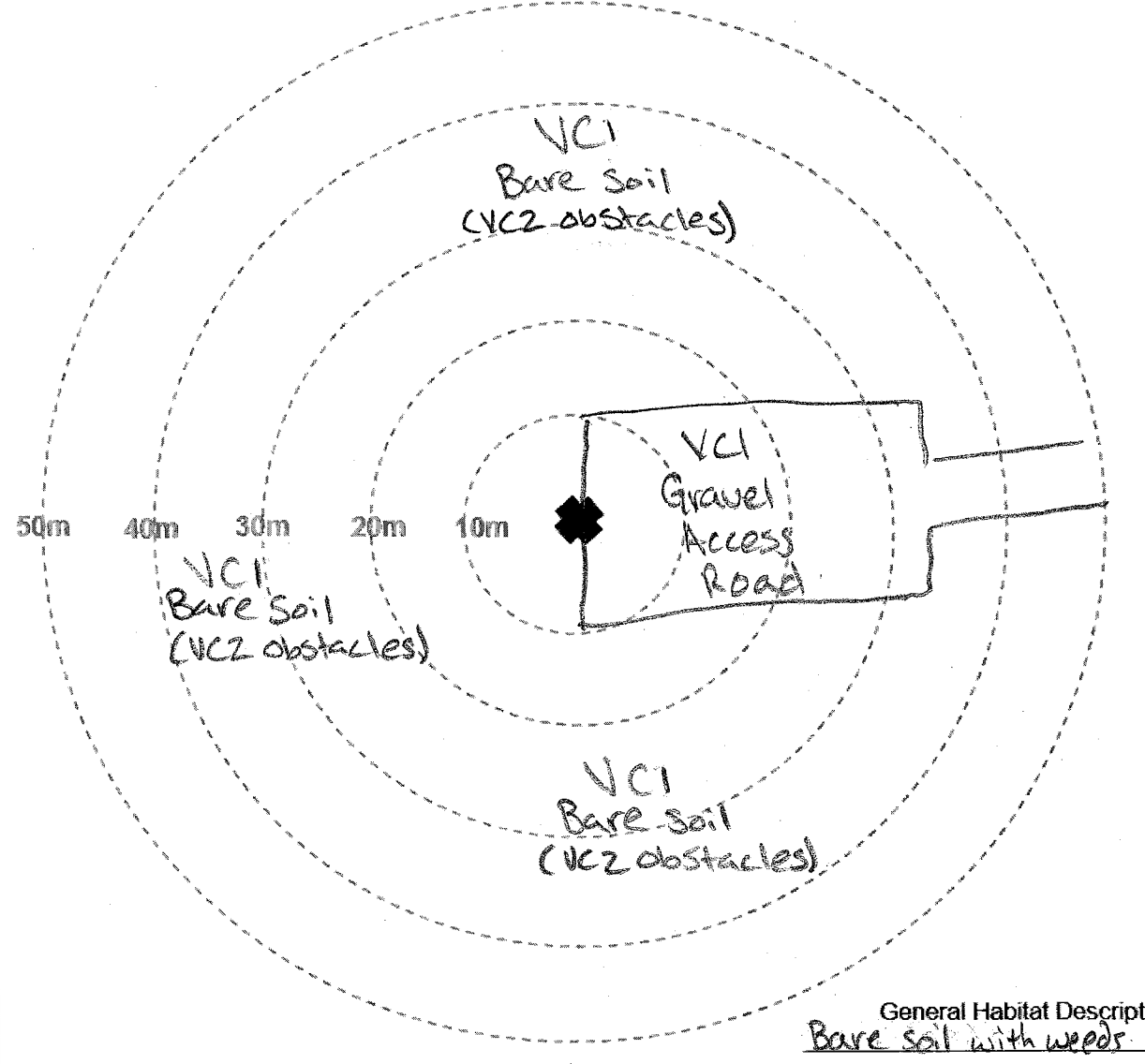
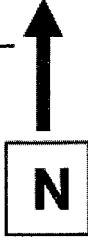
Date (DD/MM/YY): 01/07/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Bare Soil

Photo Numbers (from turbine base)
 Facing North: 8790
 Facing East: 8791
 Facing South: 8792
 Facing West: 8793
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 05/08/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Bare soil with weeds

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF Project #: 24088 Turbine #: T07

Photo Numbers (from turbine base)
 Facing North: 9039
 Facing East: 9040
 Facing South: 9041
 Facing West: 9042
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 02/09/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m

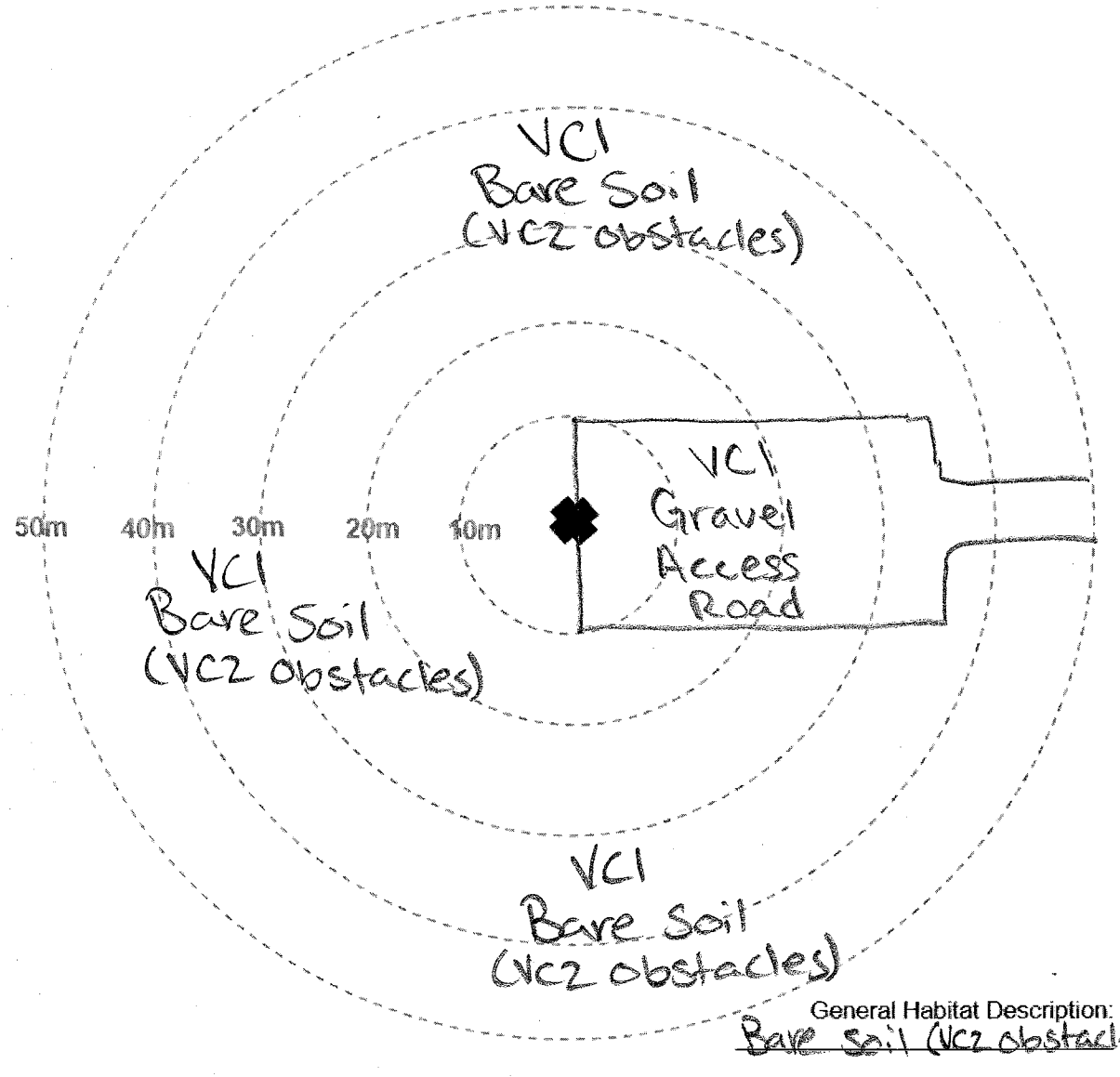
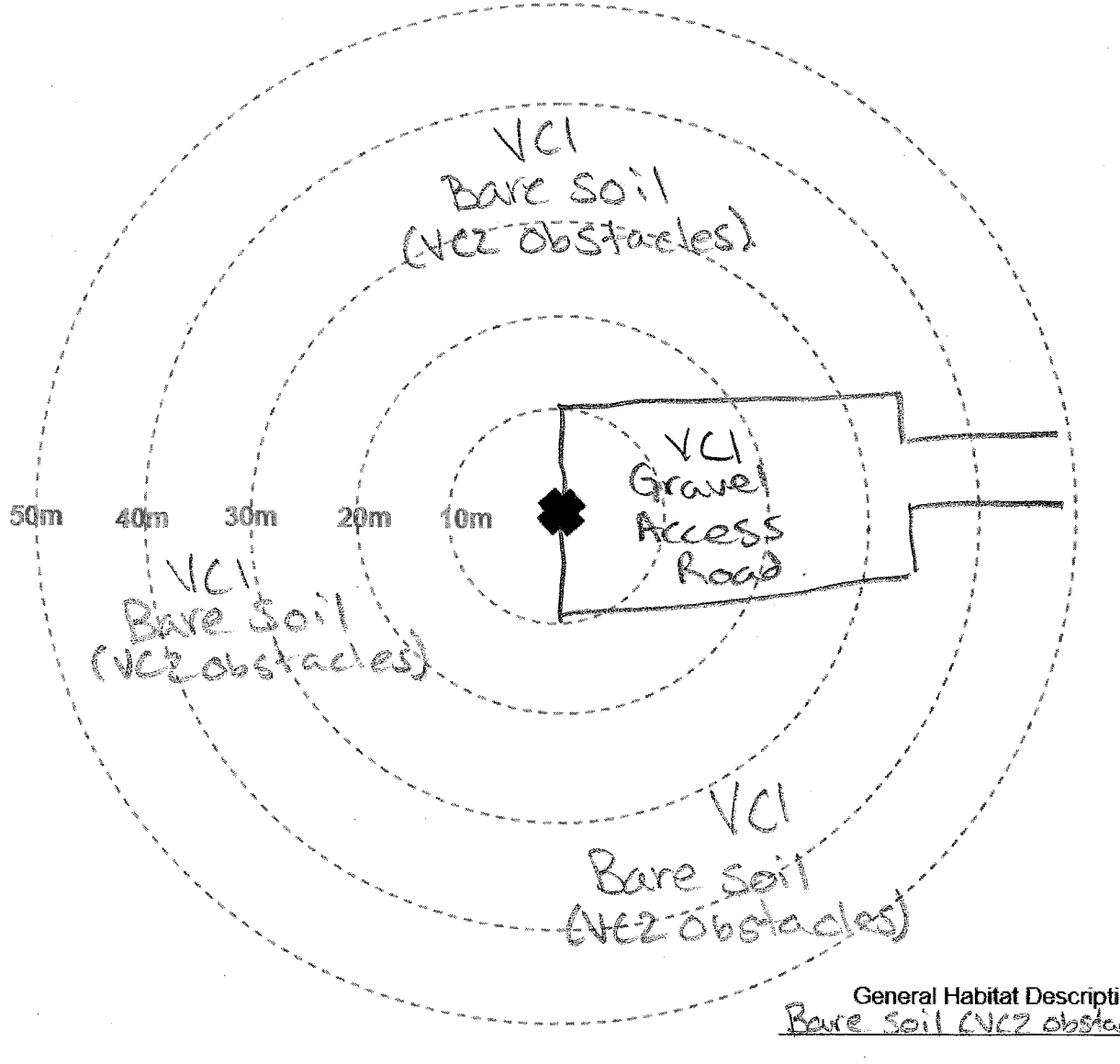


Photo Numbers (from turbine base)
 Facing North: 9451
 Facing East: 9452
 Facing South: 9453
 Facing West: 9454
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 04/10/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T16 Degree of Slope 0 degrees Slope Orientation — (e.g. SSW)

Photo Numbers (from turbine base)
 Facing North: 8609
 Facing East: 8010
 Facing South: 8011
 Facing West: 8012
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/05/21

Observer: A. Vanderpas
M. BOSCO

Monthly/Seasonal
 Linear Transect Width: 3 m

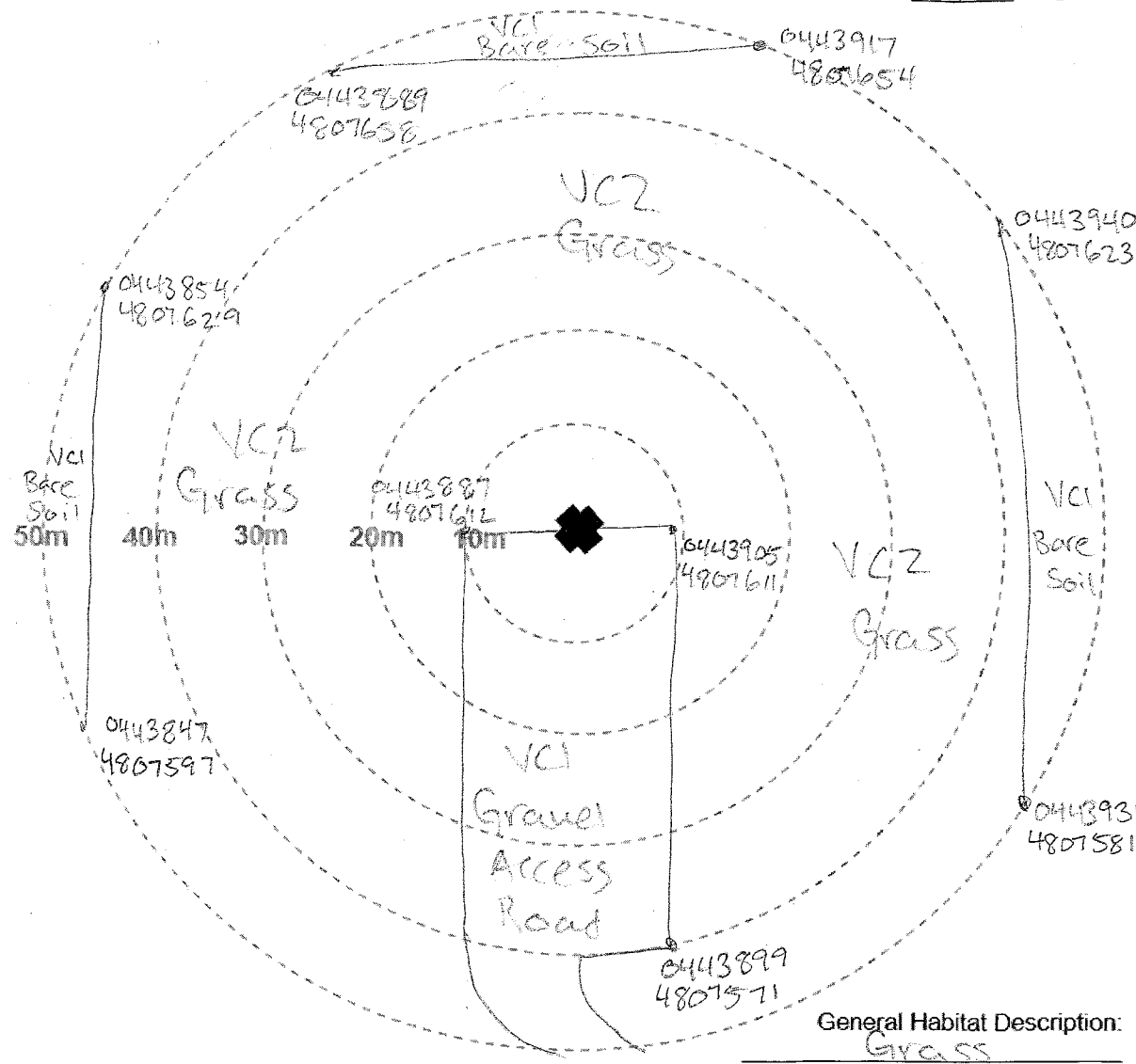
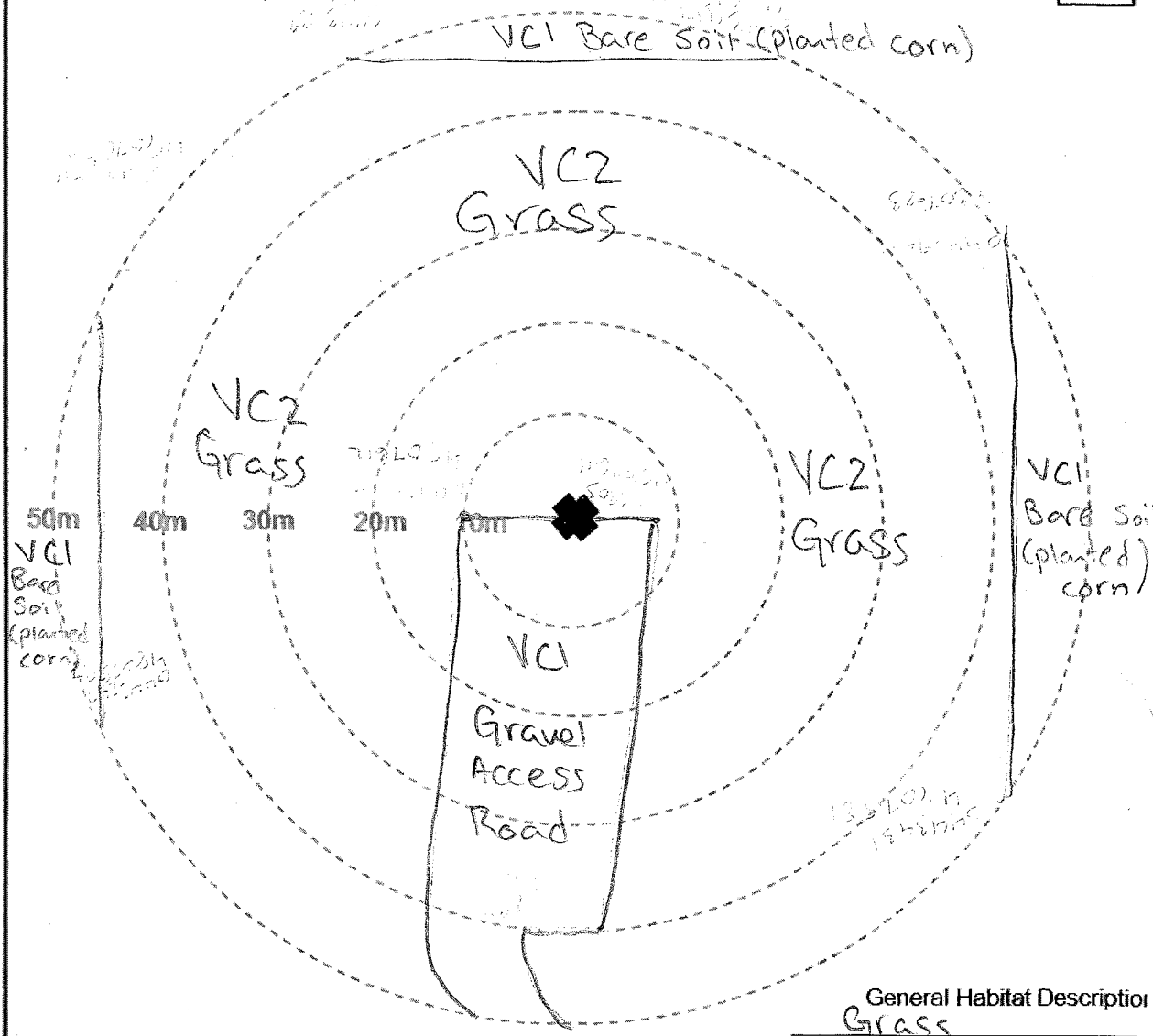
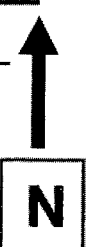


Photo Numbers (from turbine base)
 Facing North: 8315
 Facing East: 8316
 Facing South: 8317
 Facing West: 8318
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/06/21

Observer: A. Vanderpas
M. BOSCO

Monthly/Seasonal
 Linear Transect Width: 3 m



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Turbine Habitat Map

Project Name: Grand Bend WF Project #: 24088 Turbine #: T16

Photo Numbers (from turbine base)
 Facing North: 8508
 Facing East: 8509
 Facing South: 8510
 Facing West: 8511
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 01/07/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m

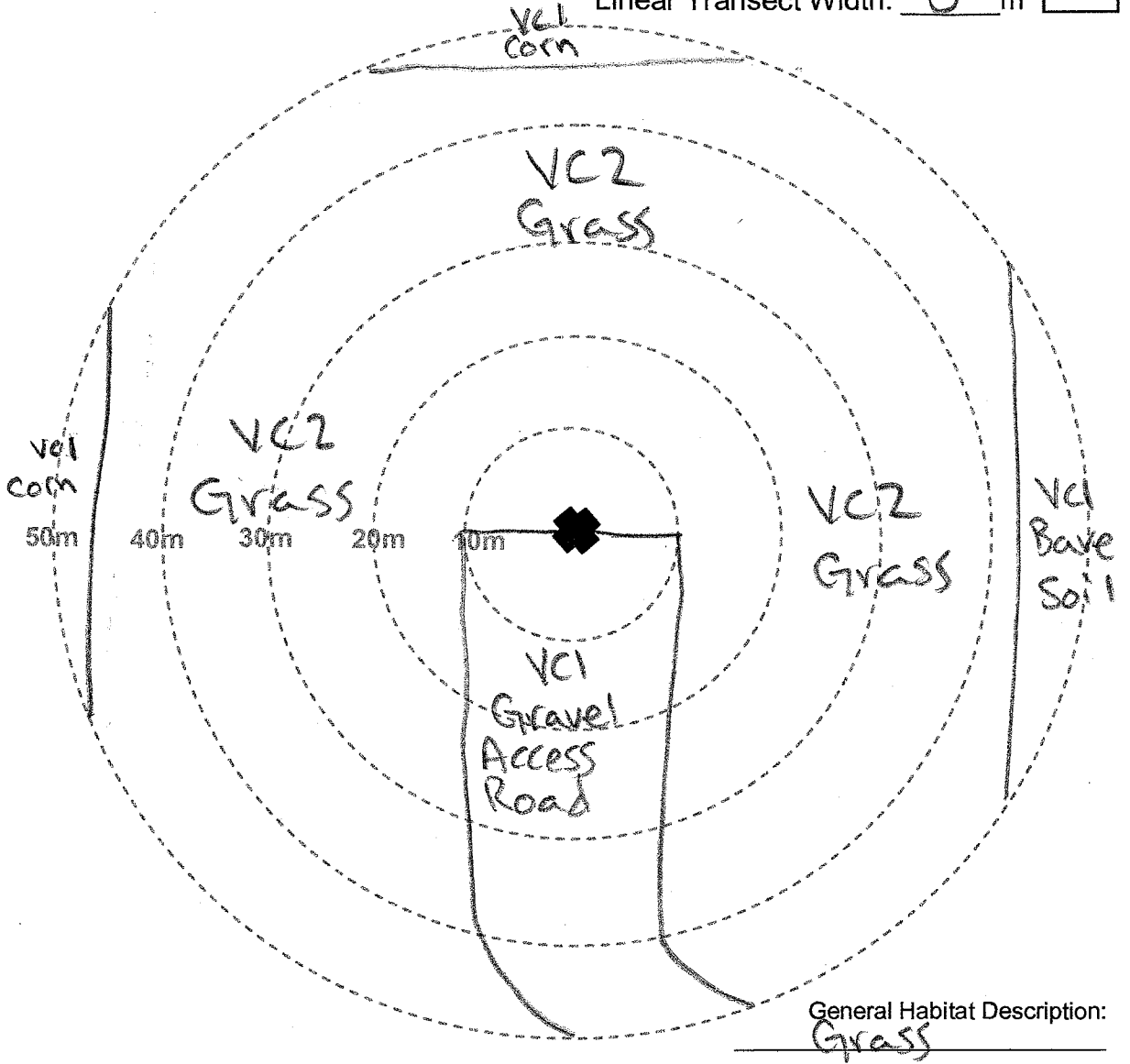
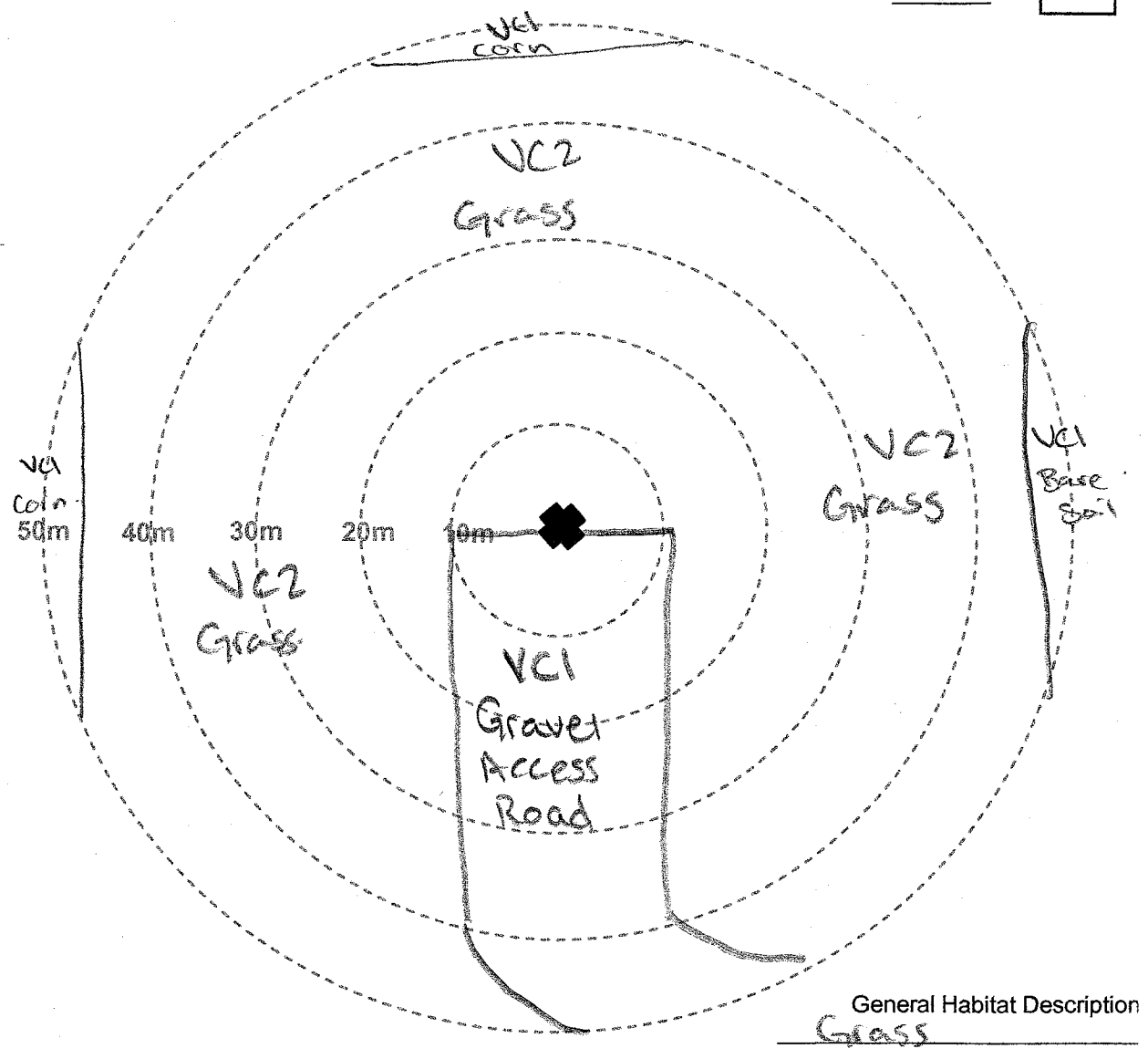


Photo Numbers (from turbine base)
 Facing North: 8794
 Facing East: 8795
 Facing South: 8796
 Facing West: 8797
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 05/08/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Turbine Habitat Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T16

Photo Numbers (from turbine base)
 Facing North: 9044
 Facing East: 9045
 Facing South: 9046
 Facing West: 9047
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 02/09/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m

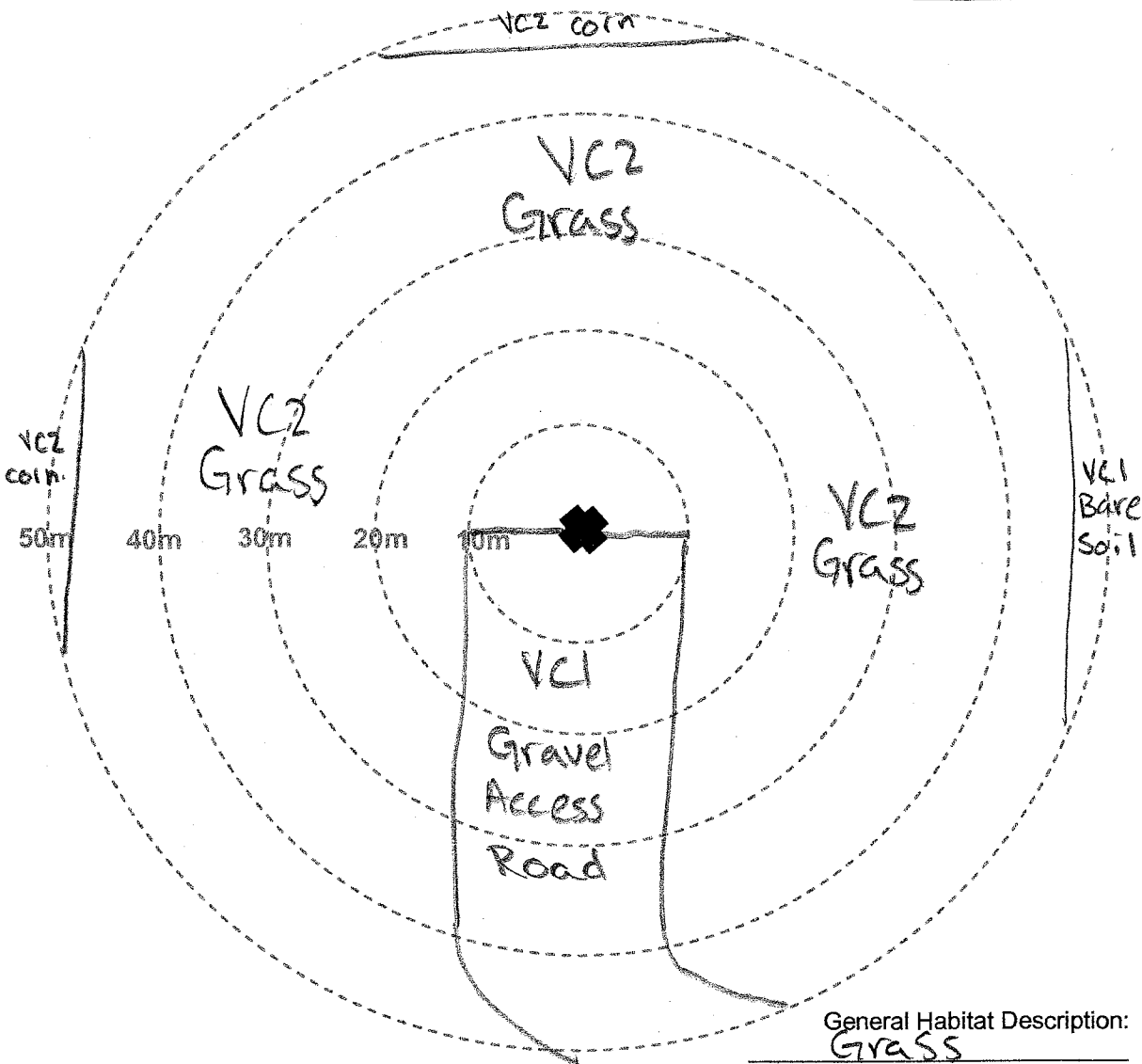
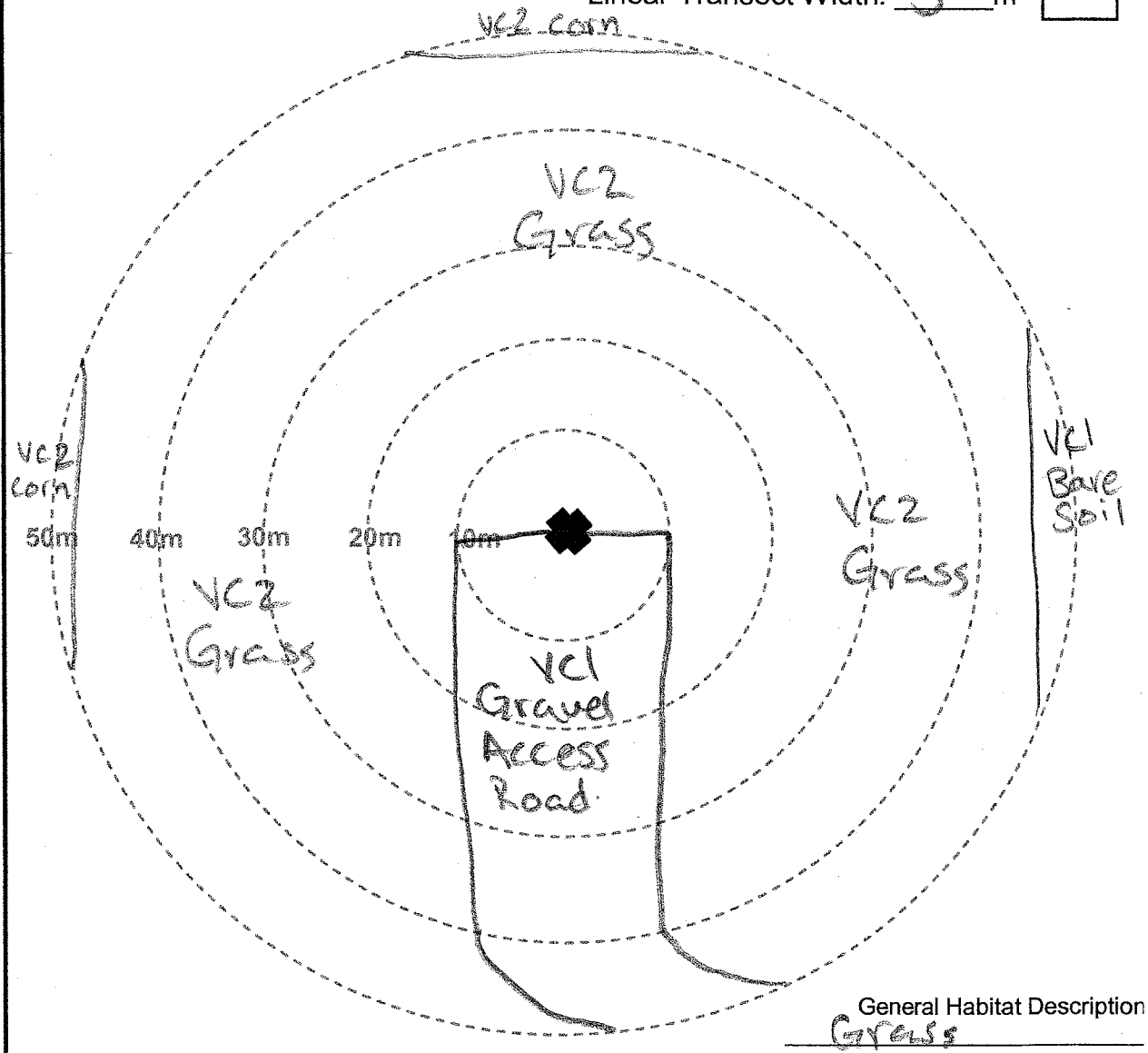


Photo Numbers (from turbine base)
 Facing North: 9457
 Facing East: 9458
 Facing South: 9459
 Facing West: 9460
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 04/10/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



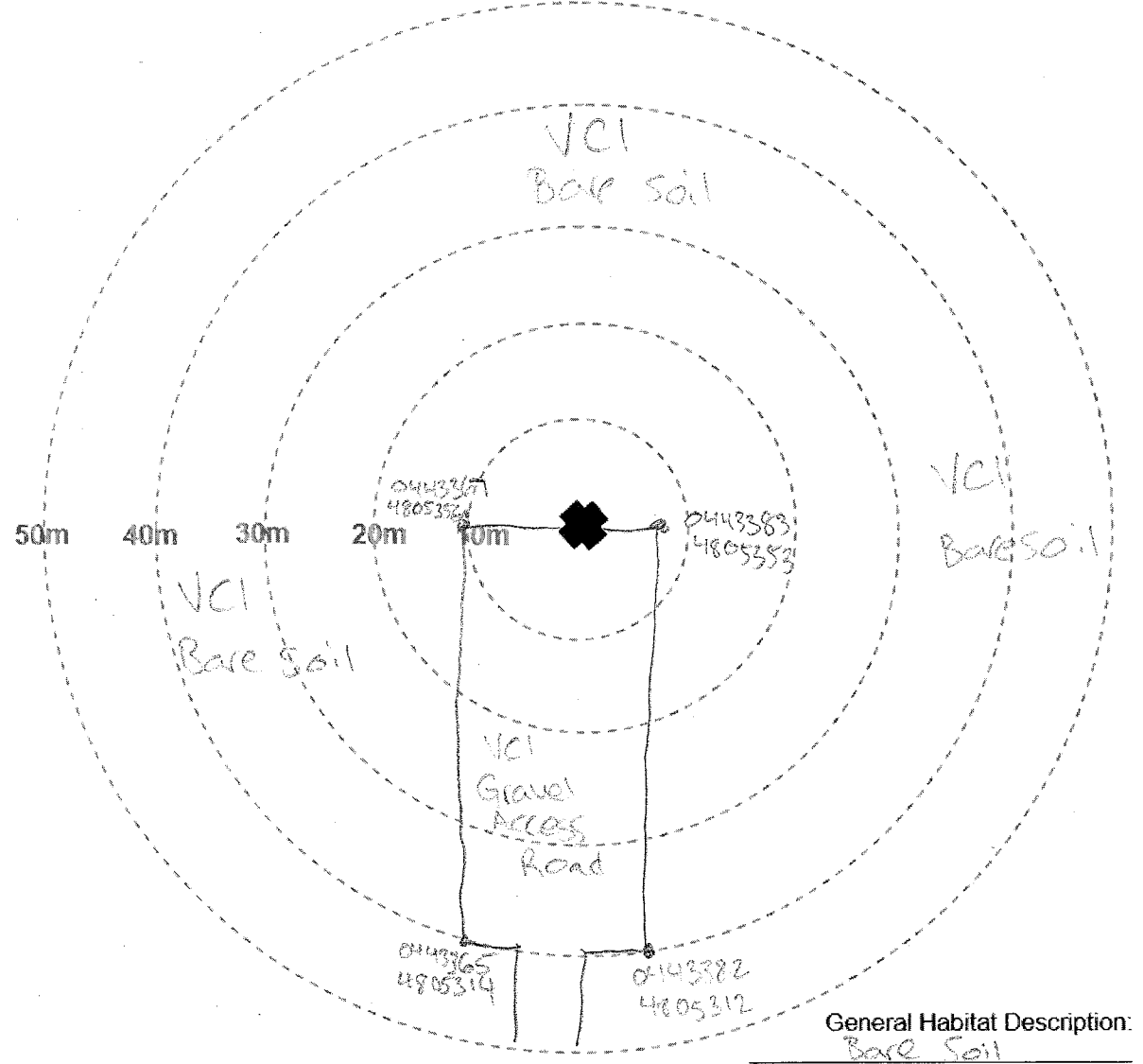
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T17 Degree of Slope 0 degrees Slope Orientation — (e.g. SSW)

Photo Numbers (from turbine base)
 Facing North: 8029
 Facing East: 8030
 Facing South: 8031
 Facing West: 8032
 (sketch habitat and visibility classes)

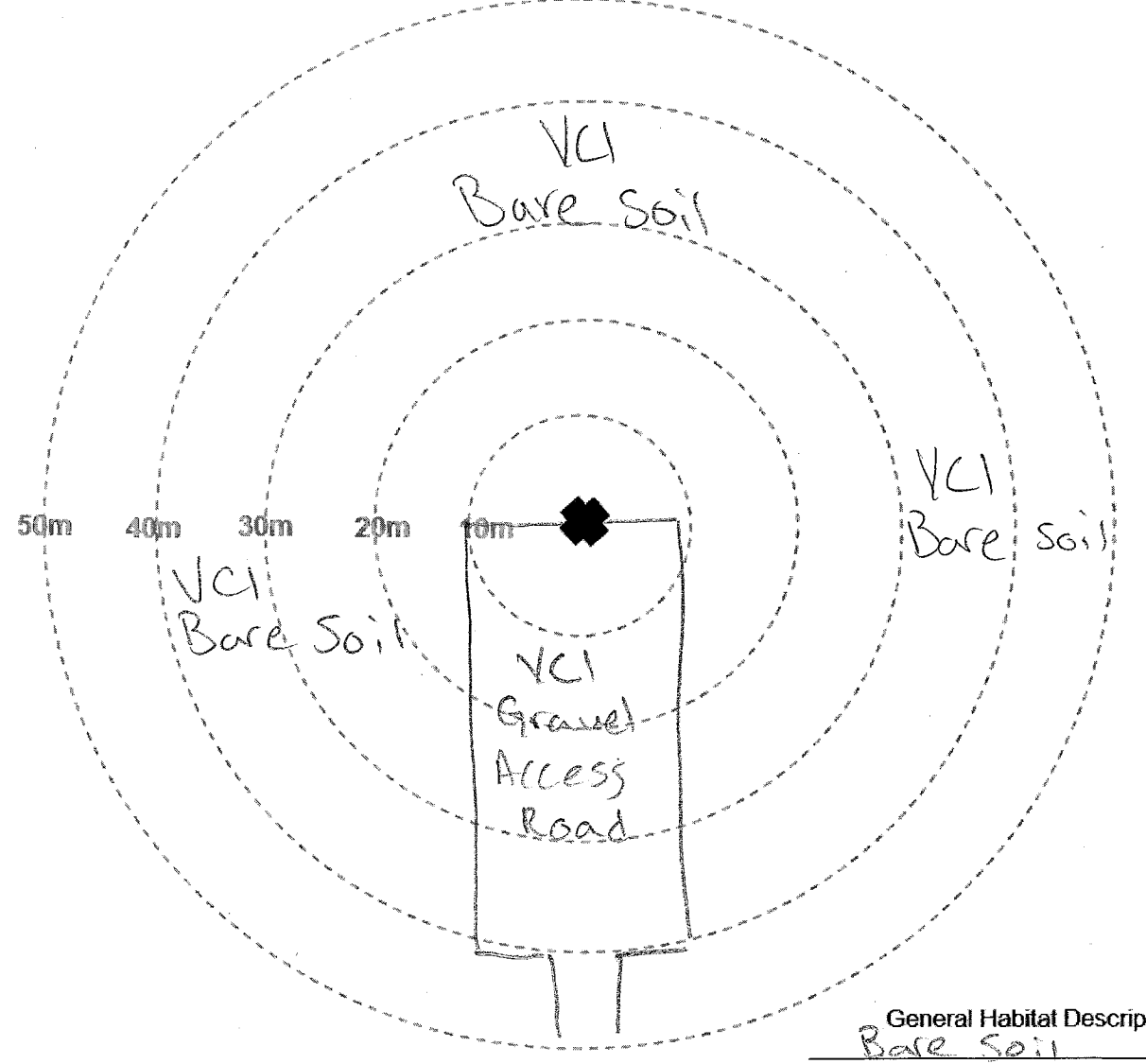
Date (DD/MM/YY): 03/05/21
 Observer: A. Vanderpas, M. Bosco
 Monthly/Seasonal Linear Transect Width: 3 m **N**



General Habitat Description:
Bare Soil

Photo Numbers (from turbine base)
 Facing North: 8327
 Facing East: 8328
 Facing South: 8329
 Facing West: 8330
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/06/21
 Observer: A. Vanderpas, M. Bosco
 Monthly/Seasonal Linear Transect Width: 3 m **N**



General Habitat Description:
Bare Soil

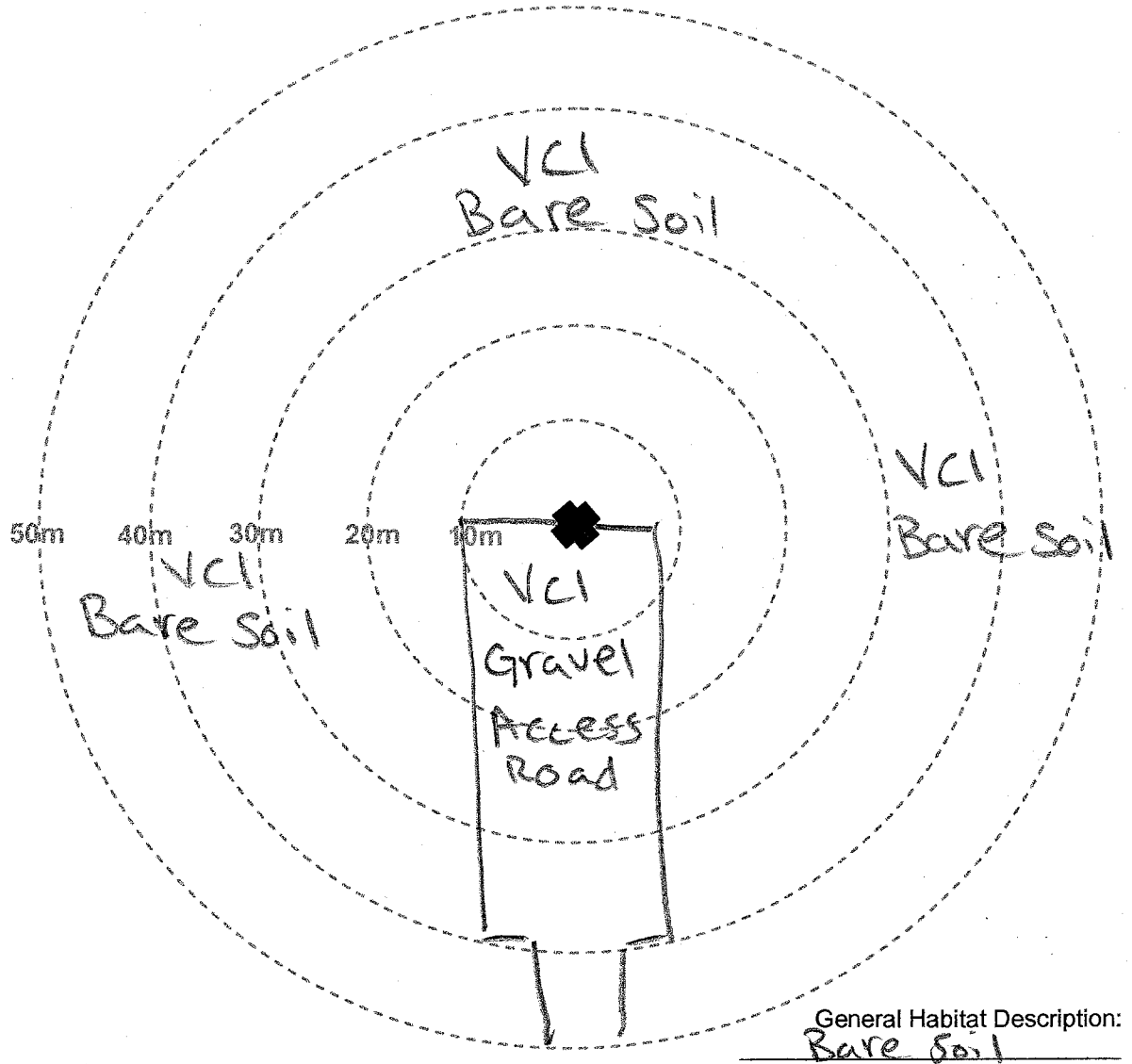
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Turbine Habitat Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T17

Photo Numbers (from turbine base)
 Facing North: 8518
 Facing East: 8519
 Facing South: 8520
 Facing West: 8521
 (sketch habitat and visibility classes)

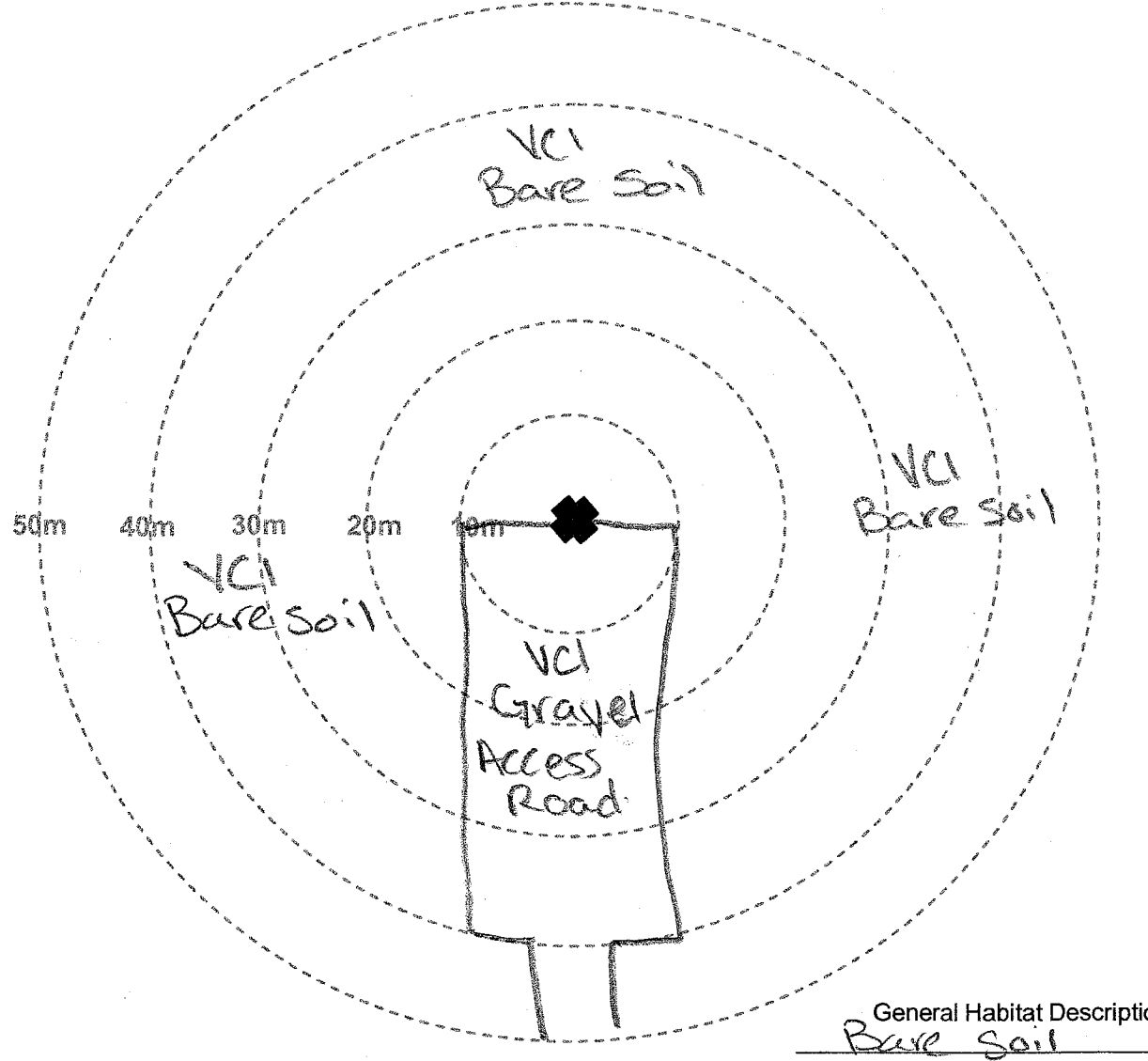
Date (DD/MM/YY): 01/07/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Bare Soil

Photo Numbers (from turbine base)
 Facing North: 8831
 Facing East: 8832
 Facing South: 8833
 Facing West: 8834
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 06/08/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Bare Soil

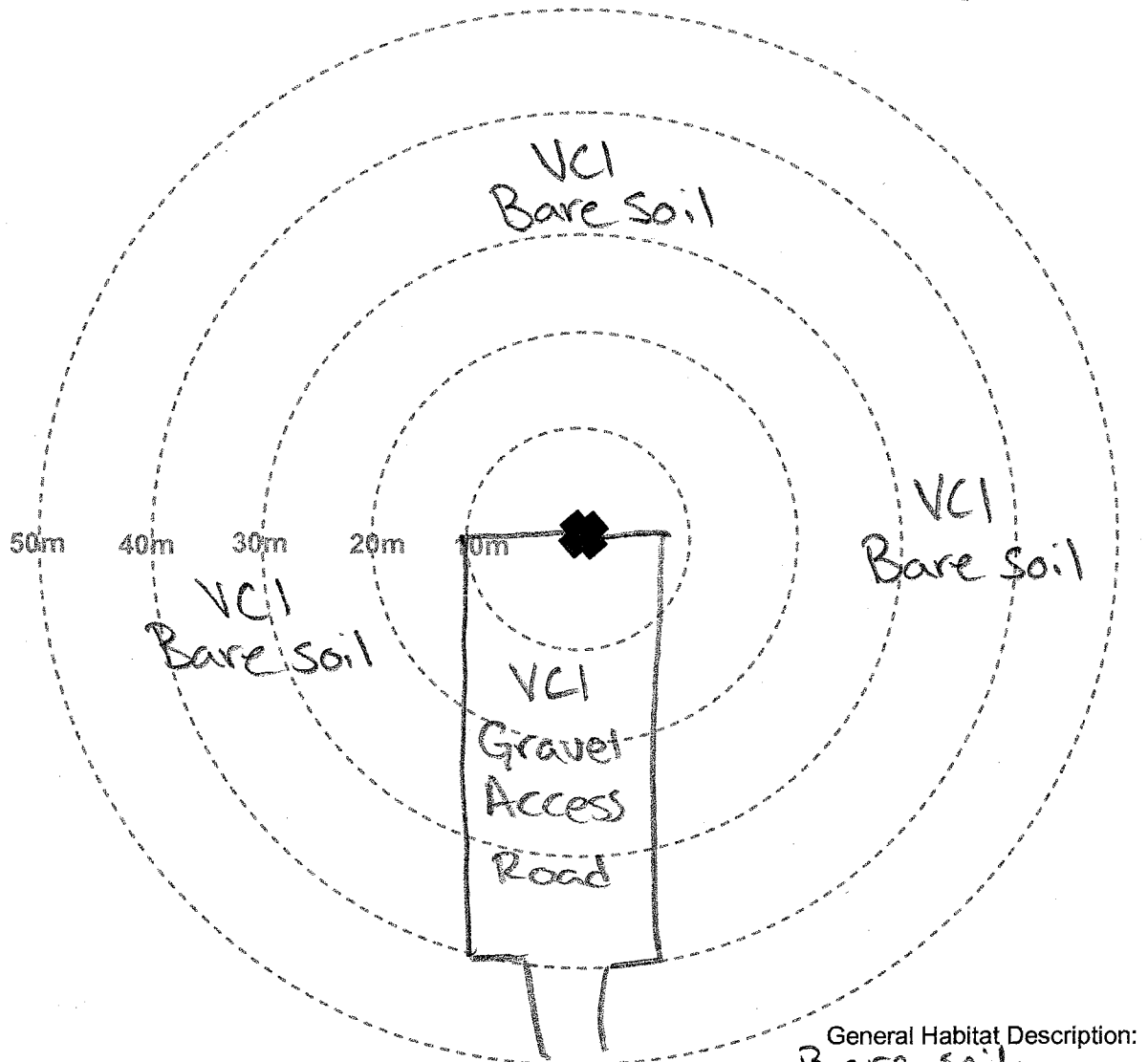
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Turbine Habitat Map

Project Name: Grand Bend WF Project #: 24088 Turbine #: T 17

Photo Numbers (from turbine base)
 Facing North: 9054
 Facing East: 9055
 Facing South: 9056
 Facing West: 9057
 (sketch habitat and visibility classes)

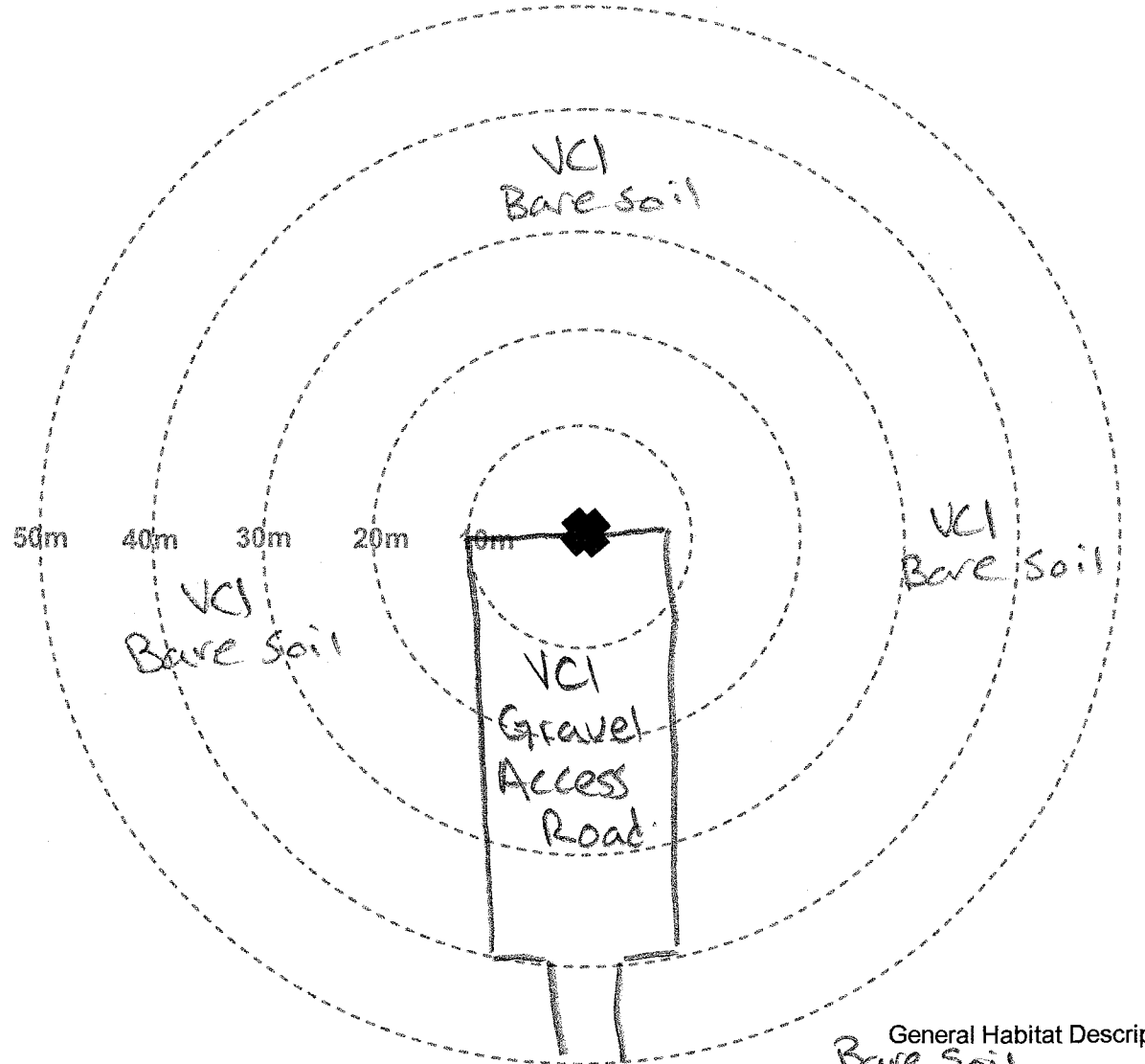
Date (DD/MM/YY): 02/09/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Bare soil.

Photo Numbers (from turbine base)
 Facing North: 9472
 Facing East: 9473
 Facing South: 9474
 Facing West: 9475
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 04/10/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Bare Soil

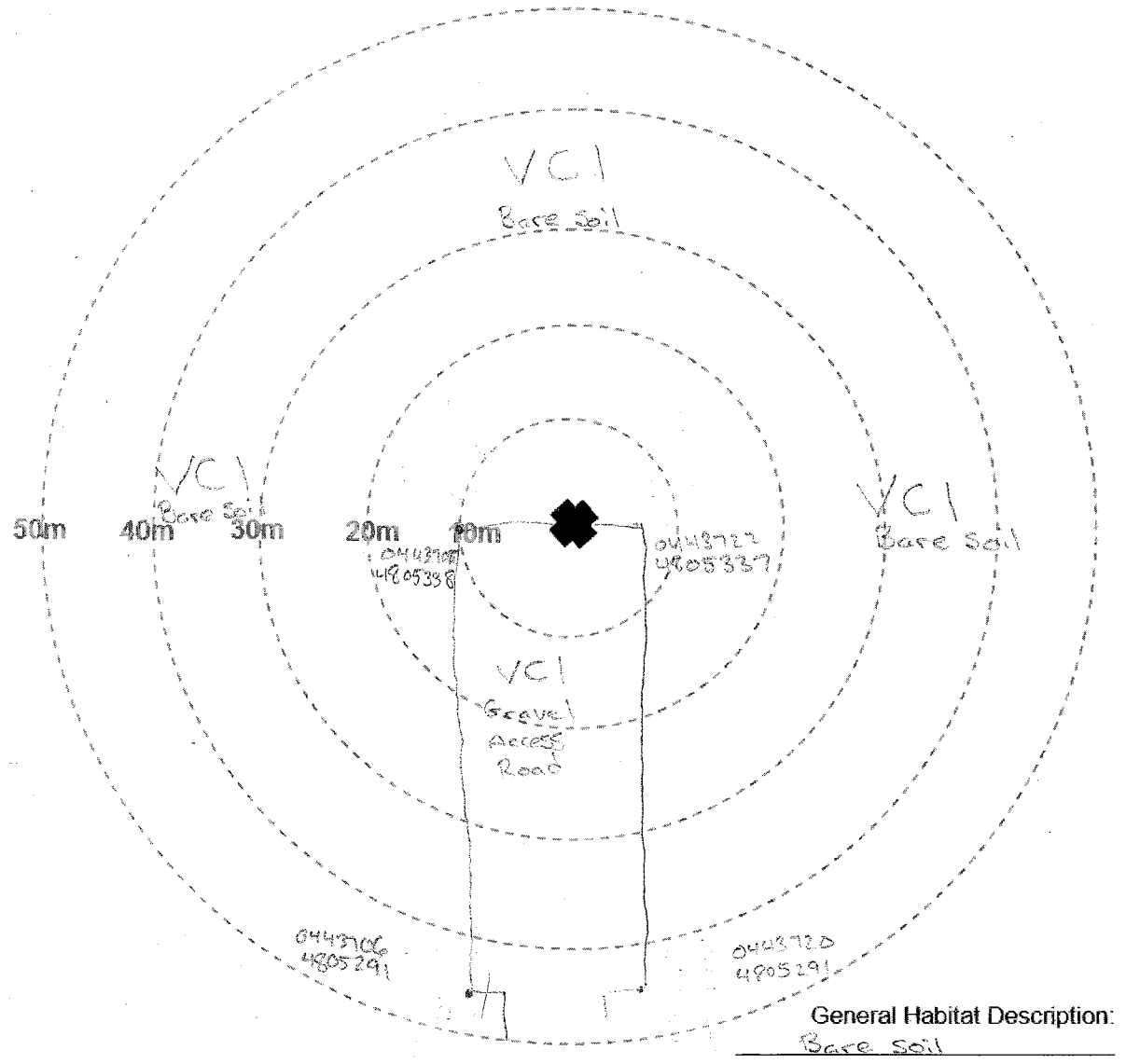
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend Project #: 24055 Turbine #: 78 Degree of Slope 0 degrees Slope Orientation — (e.g. SSW)

Photo Numbers (from turbine base)
 Facing North: 8017
 Facing East: 8018
 Facing South: 8019
 Facing West: 8020
 (sketch habitat and visibility classes)

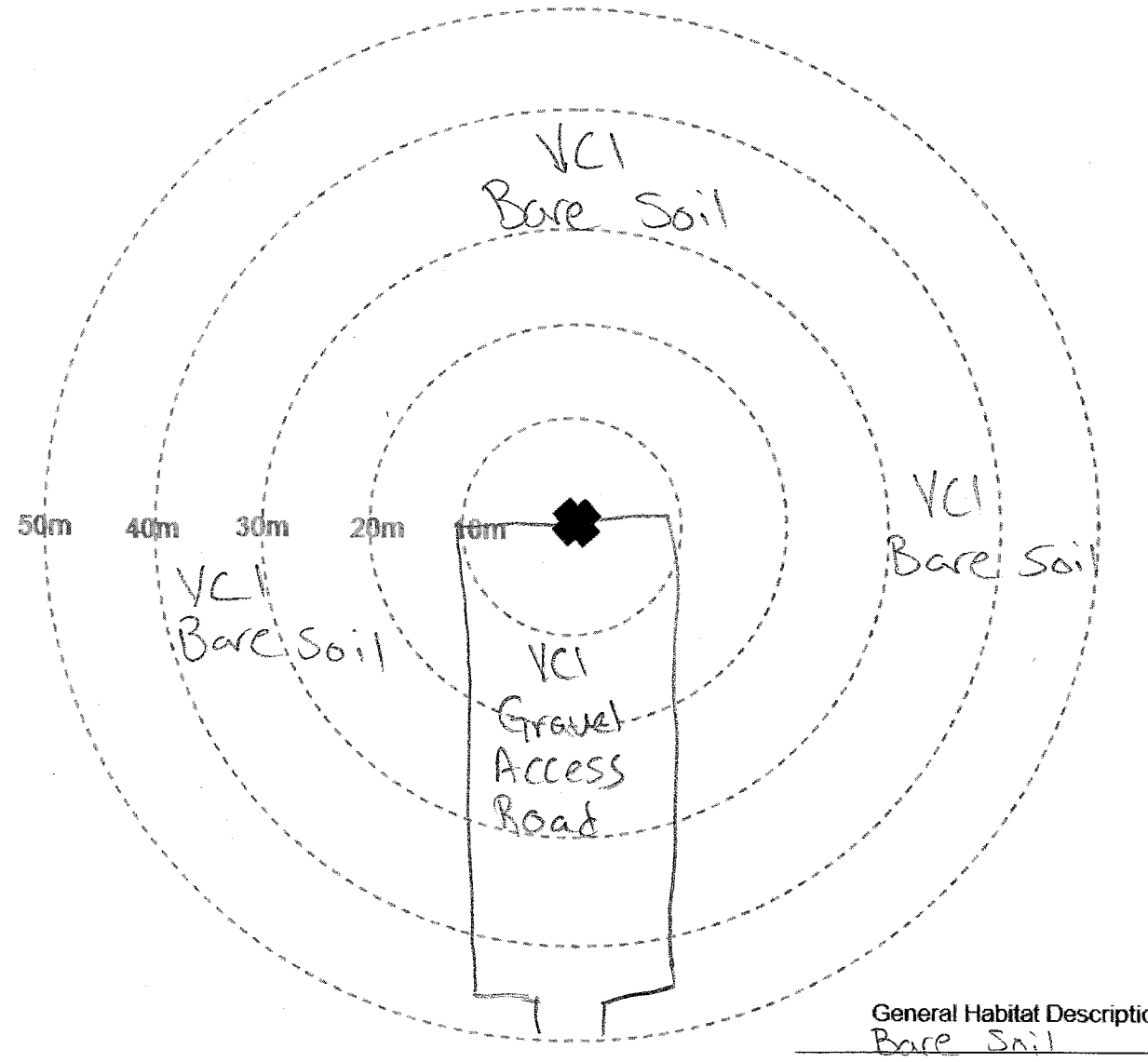
Date (DD/MM/YY): 03/05/21
 Observer: ACV, MGR
 Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: Bare Soil

Photo Numbers (from turbine base)
 Facing North: 8320
 Facing East: 8321
 Facing South: 8322
 Facing West: 8323
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/06/21
 Observer: A. Vanderpas
 Monthly/Seasonal Linear Transect Width: 3 m



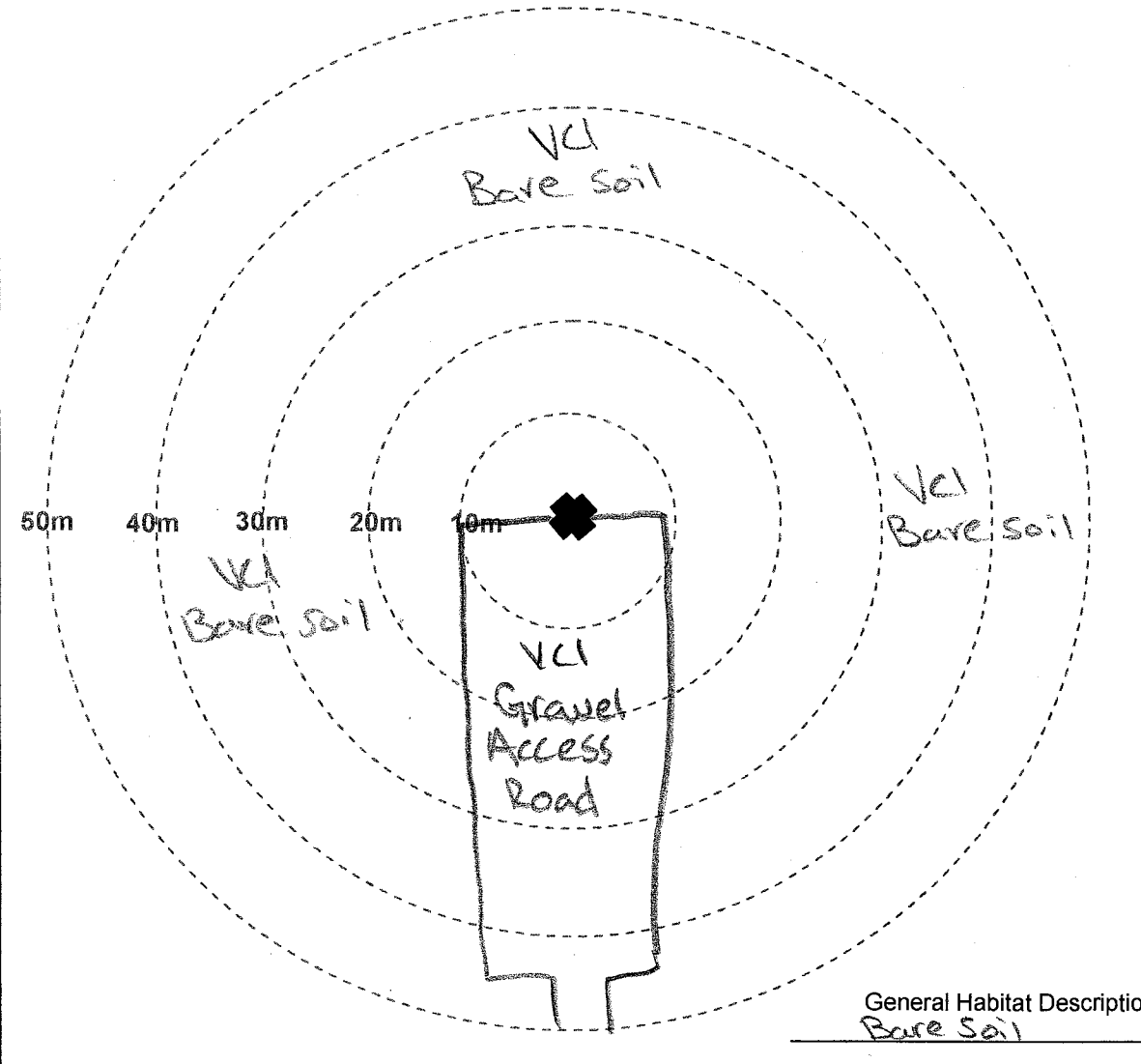
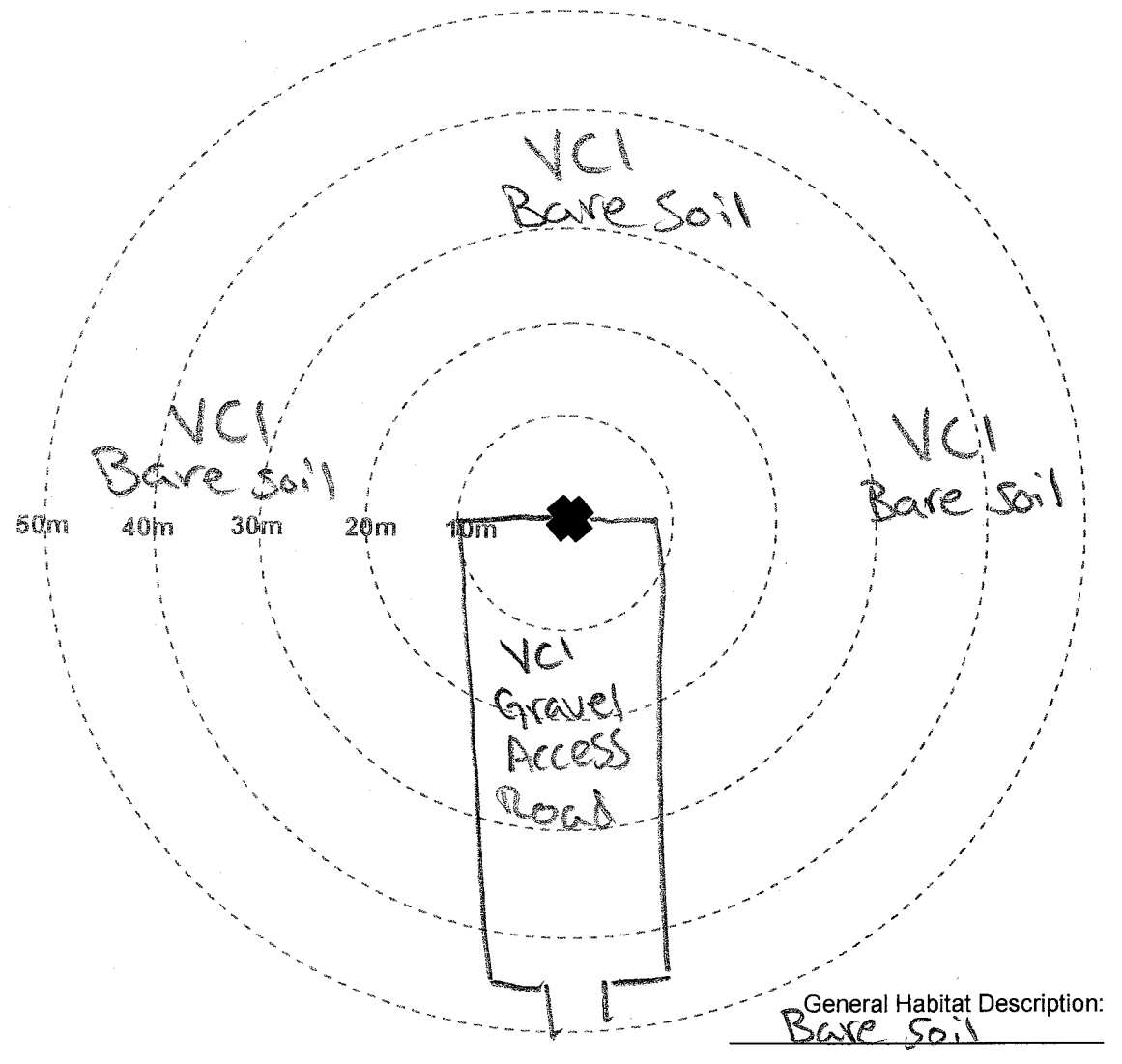
General Habitat Description: Bare Soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T18

Photo Numbers (from turbine base) Facing North: <u>8513</u> Facing East: <u>8514</u> Facing South: <u>8515</u> Facing West: <u>8516</u> (sketch habitat and visibility classes)	Date (DD/MM/YY): <u>01/07/21</u> Observer: <u>ACU, MGB</u> Monthly/Seasonal Linear Transect Width: <u>3</u> m	Photo Numbers (from turbine base) Facing North: <u>8798</u> Facing East: <u>8799</u> Facing South: <u>8800</u> Facing West: <u>8801</u> (sketch habitat and visibility classes)	Date (DD/MM/YY): <u>05/08/21</u> Observer: <u>ACU, MGB</u> Monthly/Seasonal Linear Transect Width: <u>3</u> m
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VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Turbine Habitat Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T18

Photo Numbers (from turbine base)
 Facing North: 9049
 Facing East: 9050
 Facing South: 9051
 Facing West: 9052
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 02/09/21 ↑
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m ↑
N

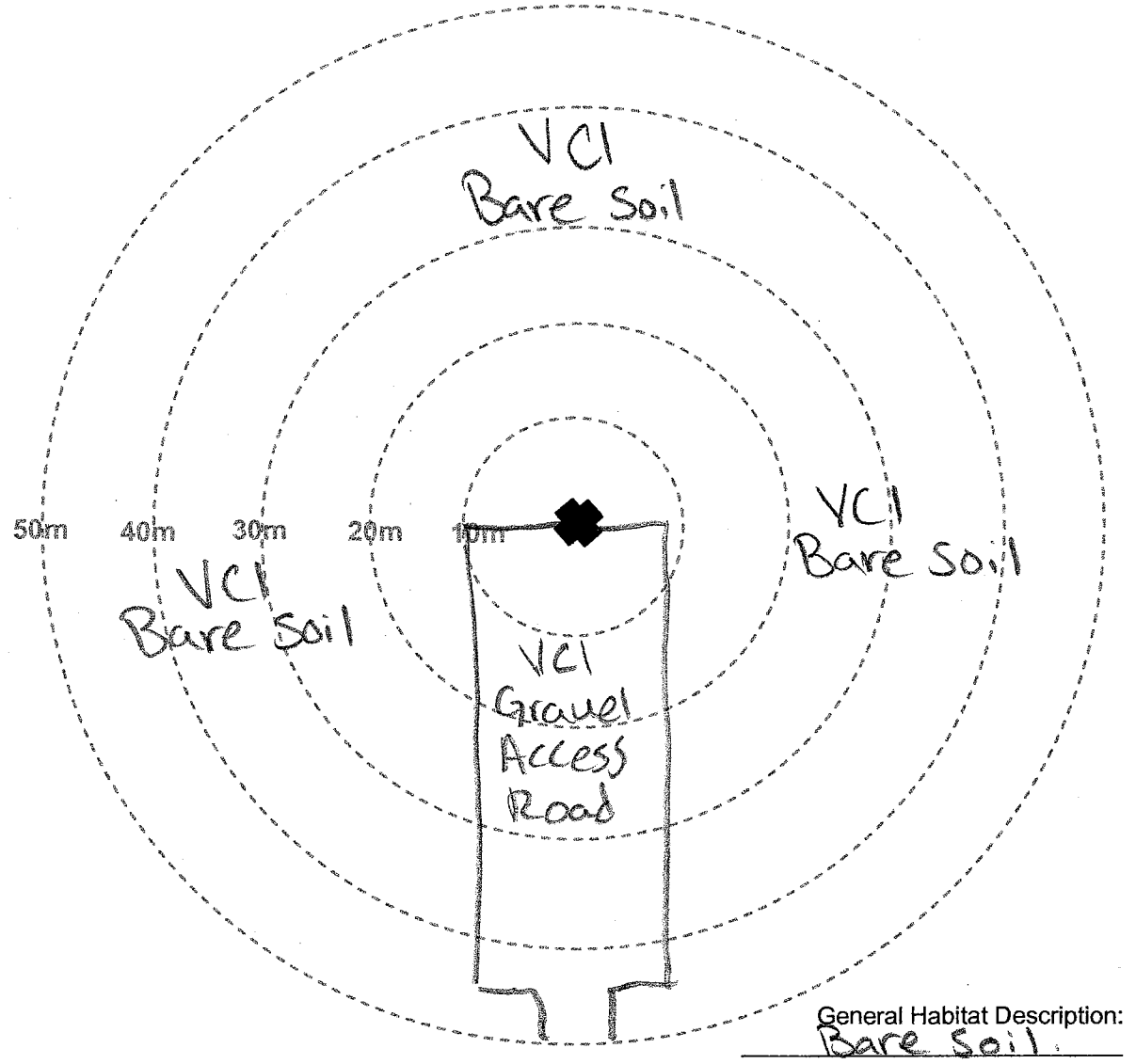
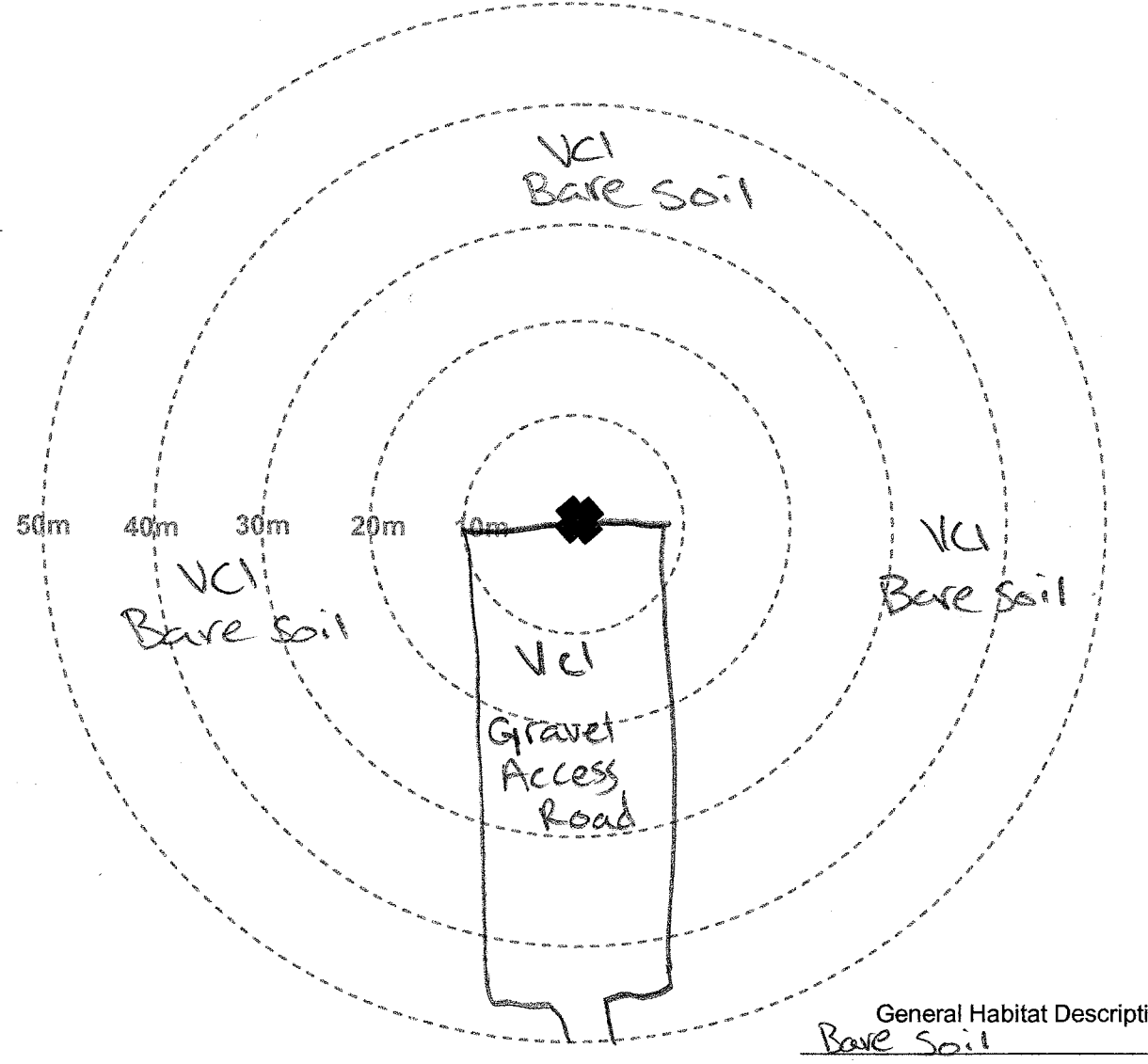


Photo Numbers (from turbine base)
 Facing North: 9468
 Facing East: 9469
 Facing South: 9470
 Facing West: 9471
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 04/10/21 ↑
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m ↑
N



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF Project #: 24088 Turbine #: T20 Degree of Slope 3 degrees Slope Orientation NW (e.g. SSW)

Photo Numbers (from turbine base)
 Facing North: 8013
 Facing East: 8014
 Facing South: 8015
 Facing West: 8016
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/05/21
 Observer: A. Vanderpas
 Monthly/Seasonal: N. BOSCO
 Linear Transect Width: 3 m

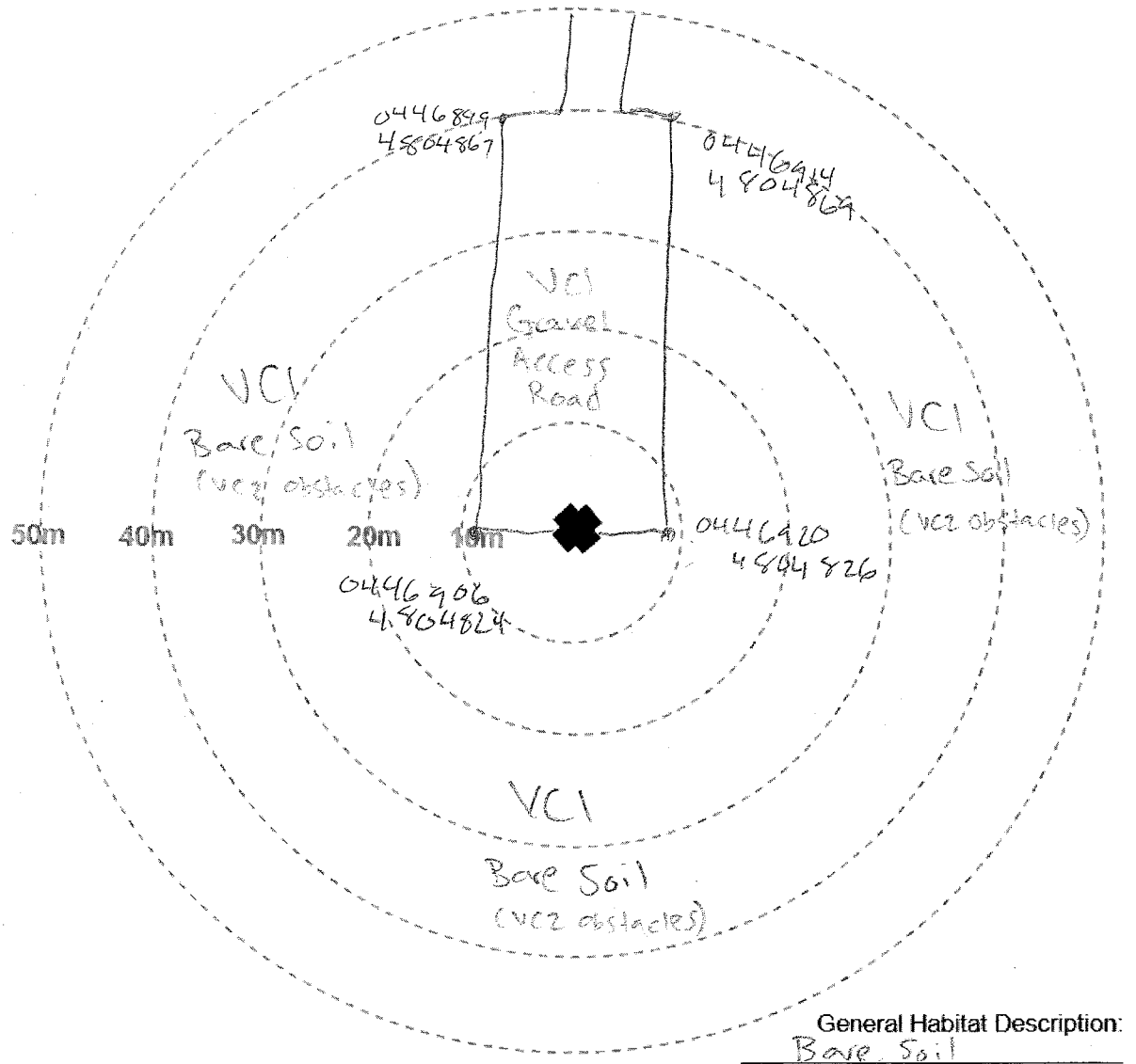
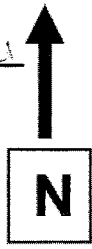
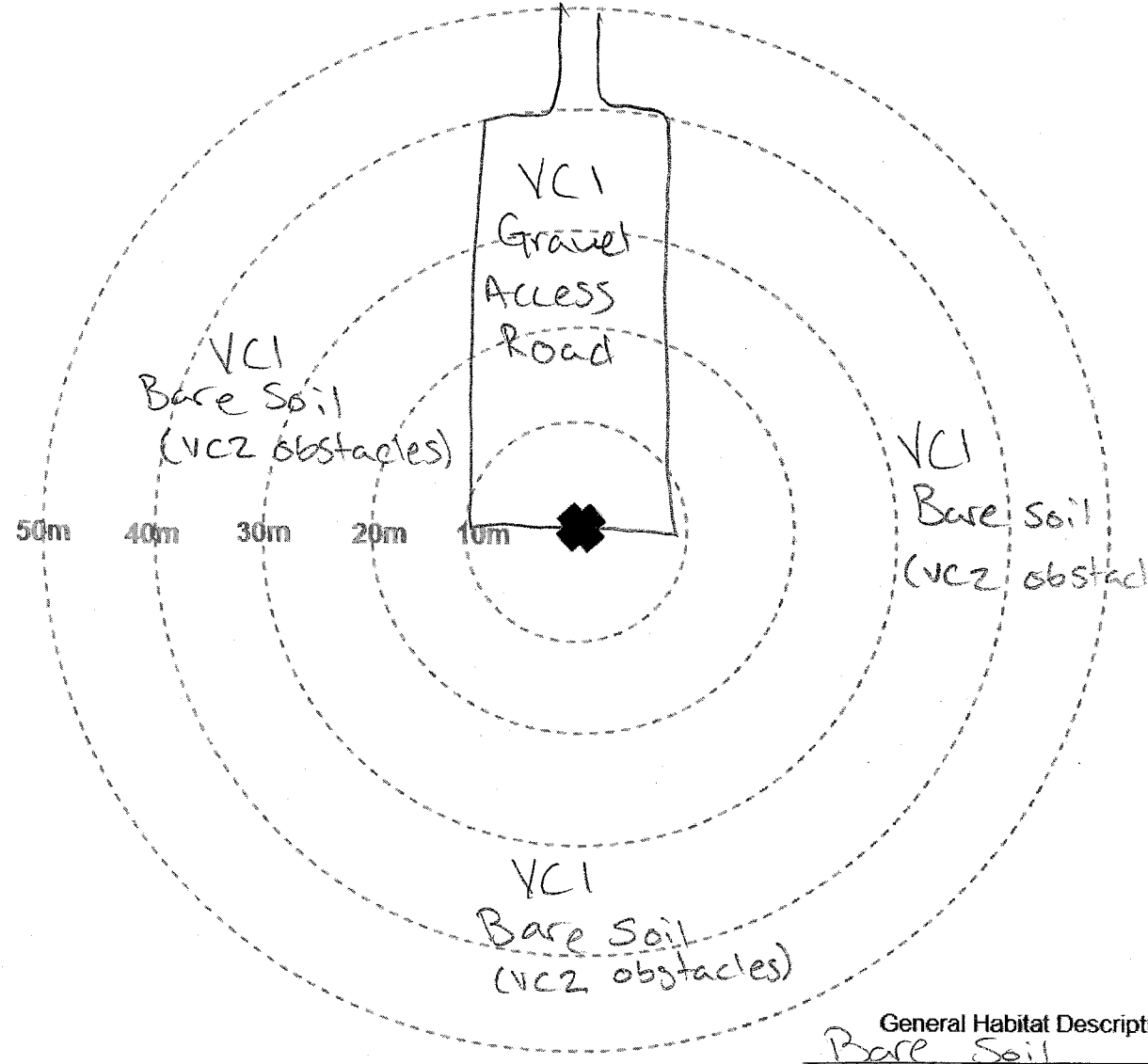


Photo Numbers (from turbine base)
 Facing North: 8338
 Facing East: 8339
 Facing South: 8340
 Facing West: 8341
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/06/21
 Observer: A. Vanderpas
 Monthly/Seasonal: N. BOSCO
 Linear Transect Width: 3 m



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF Project #: 24088 Turbine #: T20

Photo Numbers (from turbine base)
 Facing North: 8522
 Facing East: 8523
 Facing South: 8524
 Facing West: 8525
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 01/07/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m

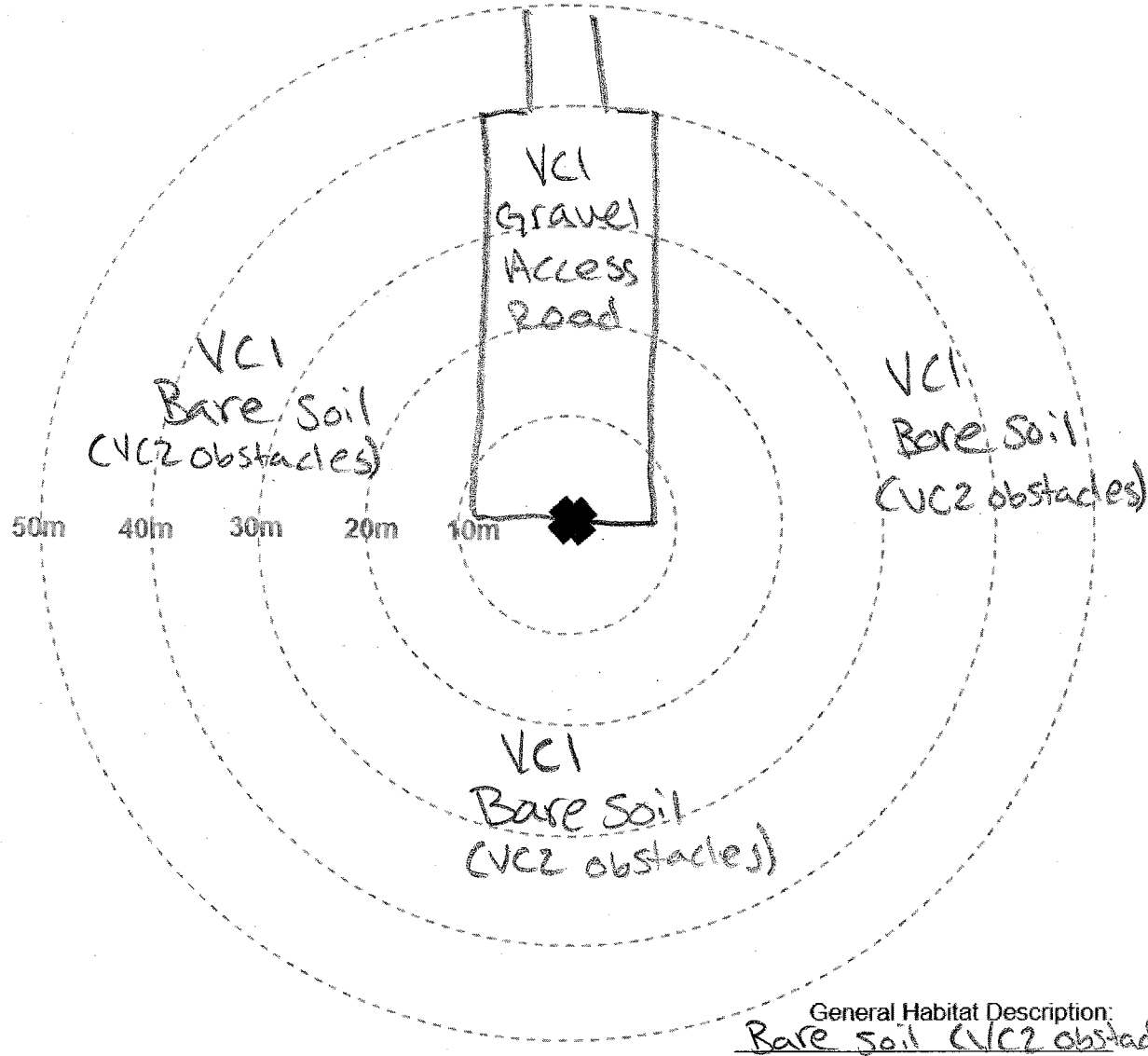
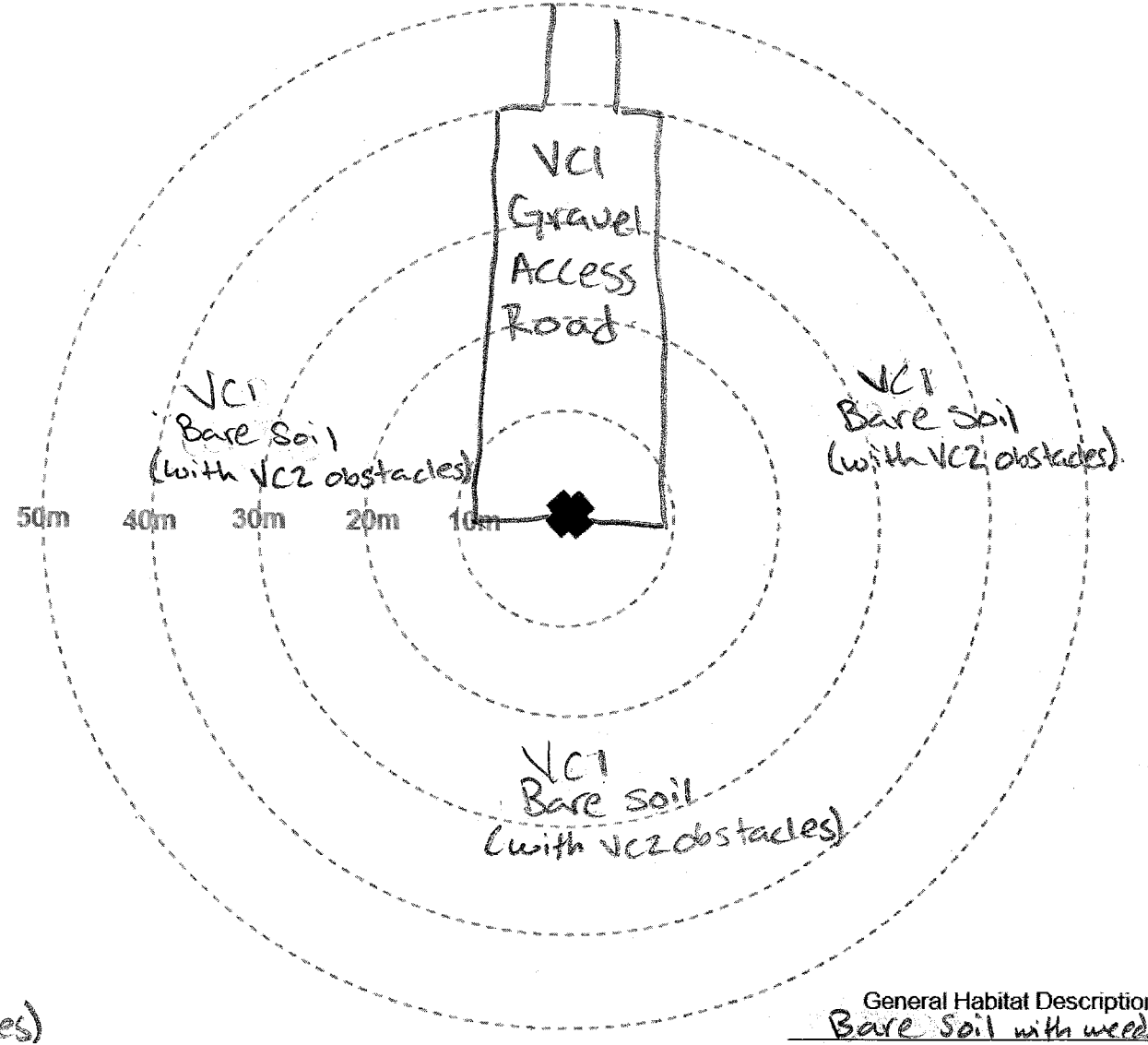


Photo Numbers (from turbine base)
 Facing North: 8802
 Facing East: 8803
 Facing South: 8804
 Facing West: 8805
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 05/08/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

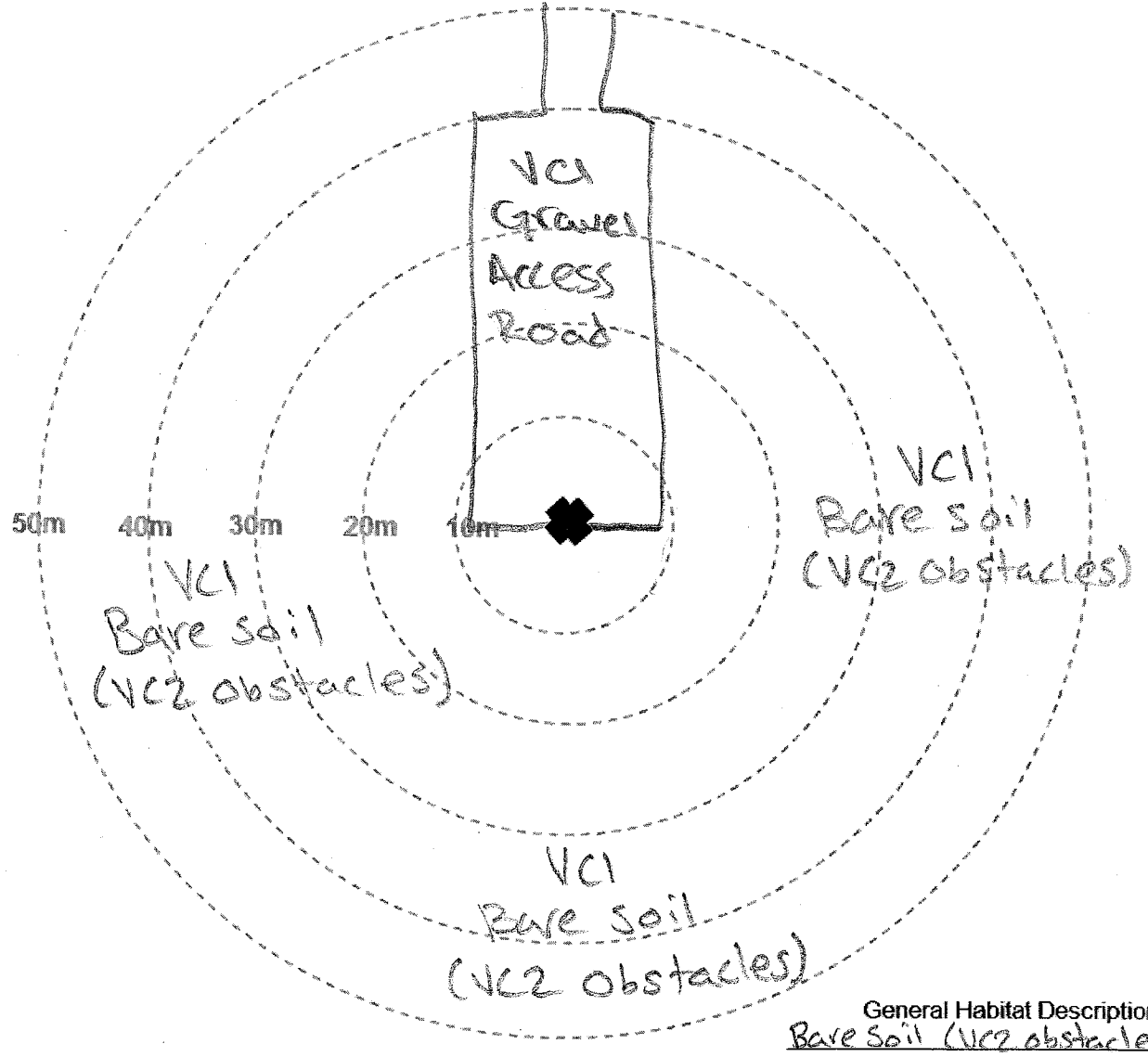
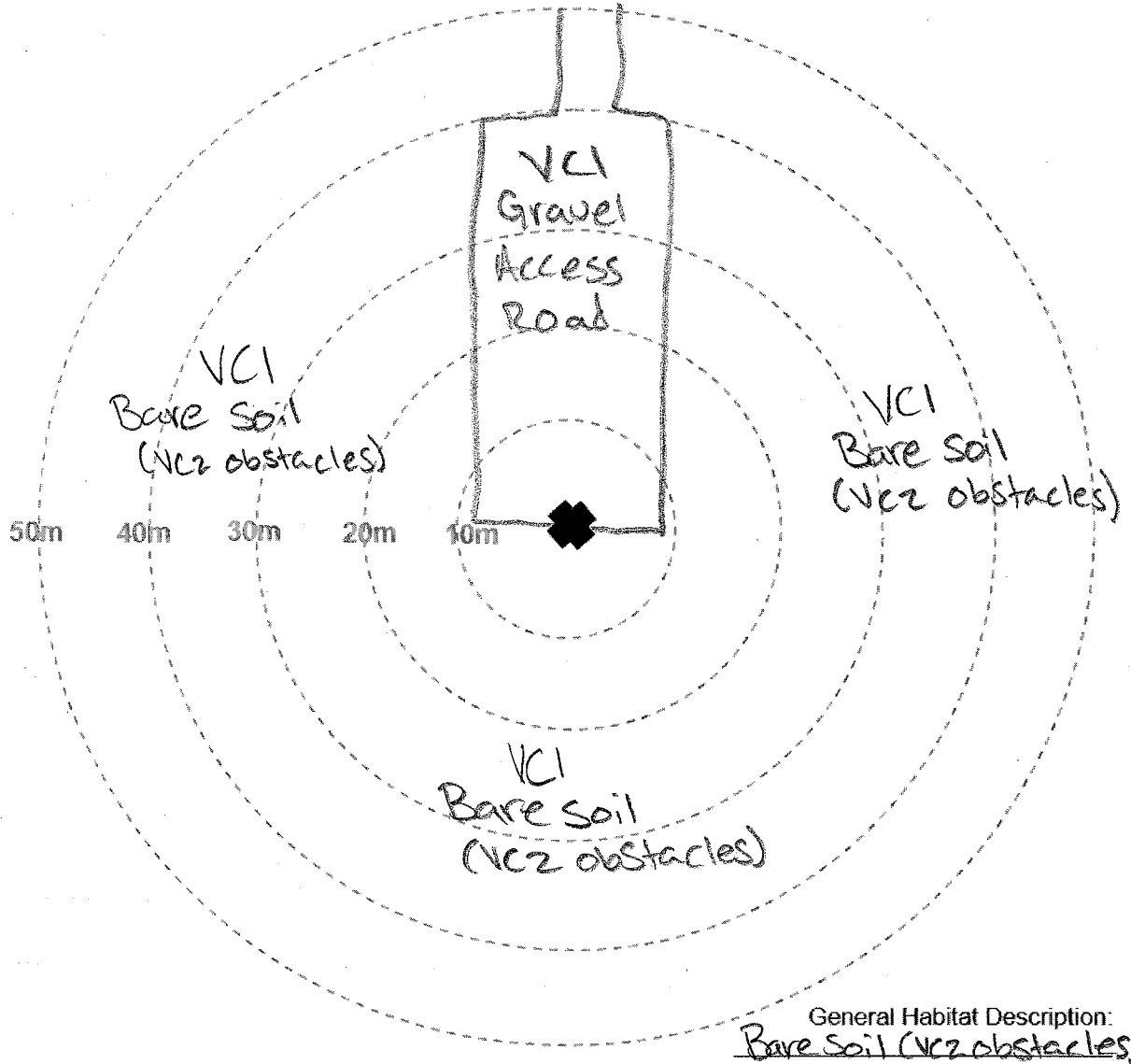
Project Name: Grand Bend WF Project #: 2408B Turbine #: T20

Photo Numbers (from turbine base)
 Facing North: 9059
 Facing East: 9060
 Facing South: 9061
 Facing West: 9062
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 02/09/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m **N**

Photo Numbers (from turbine base)
 Facing North: 9478
 Facing East: 9479
 Facing South: 9480
 Facing West: 9481
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 04/10/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m **N**



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

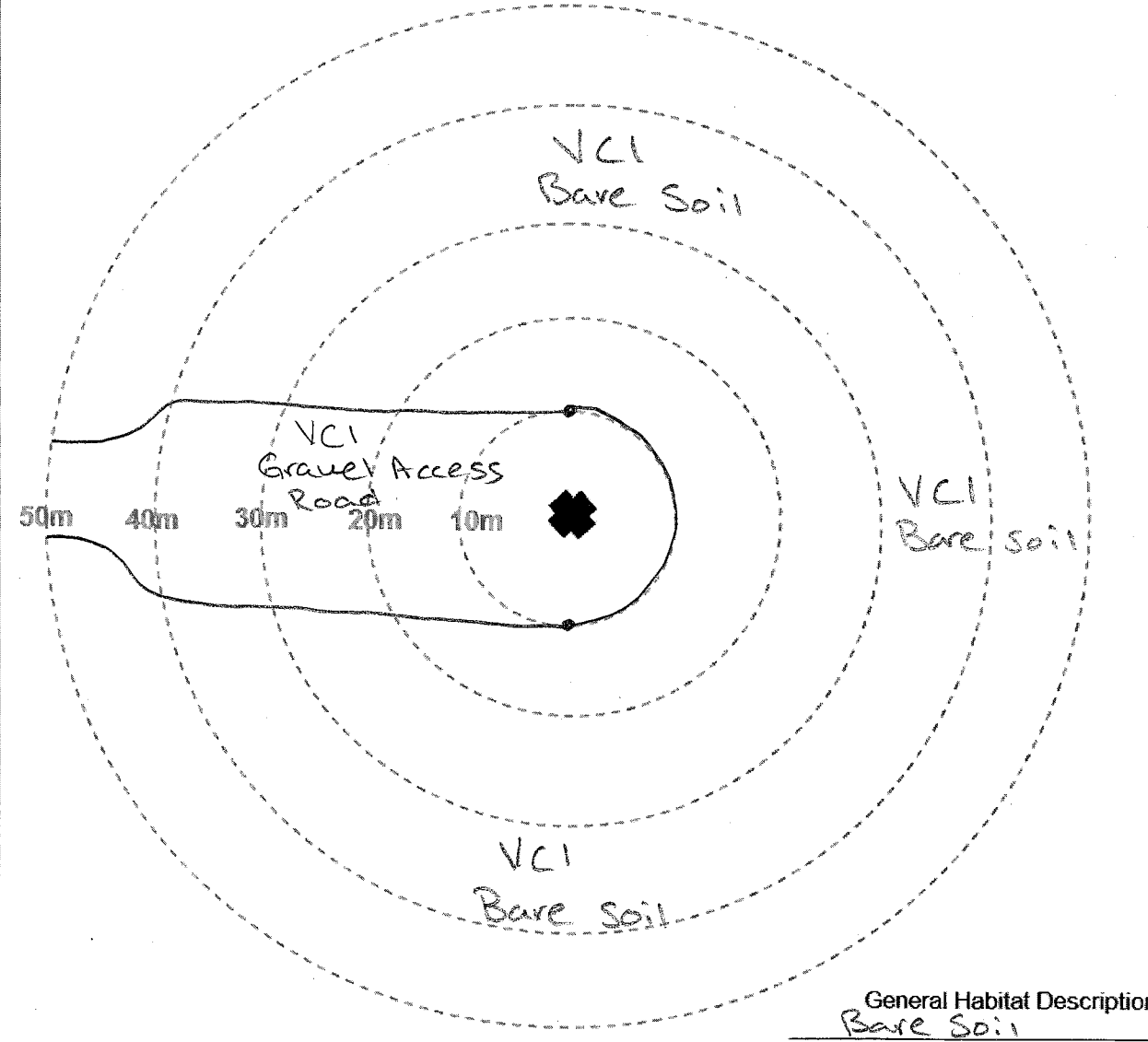
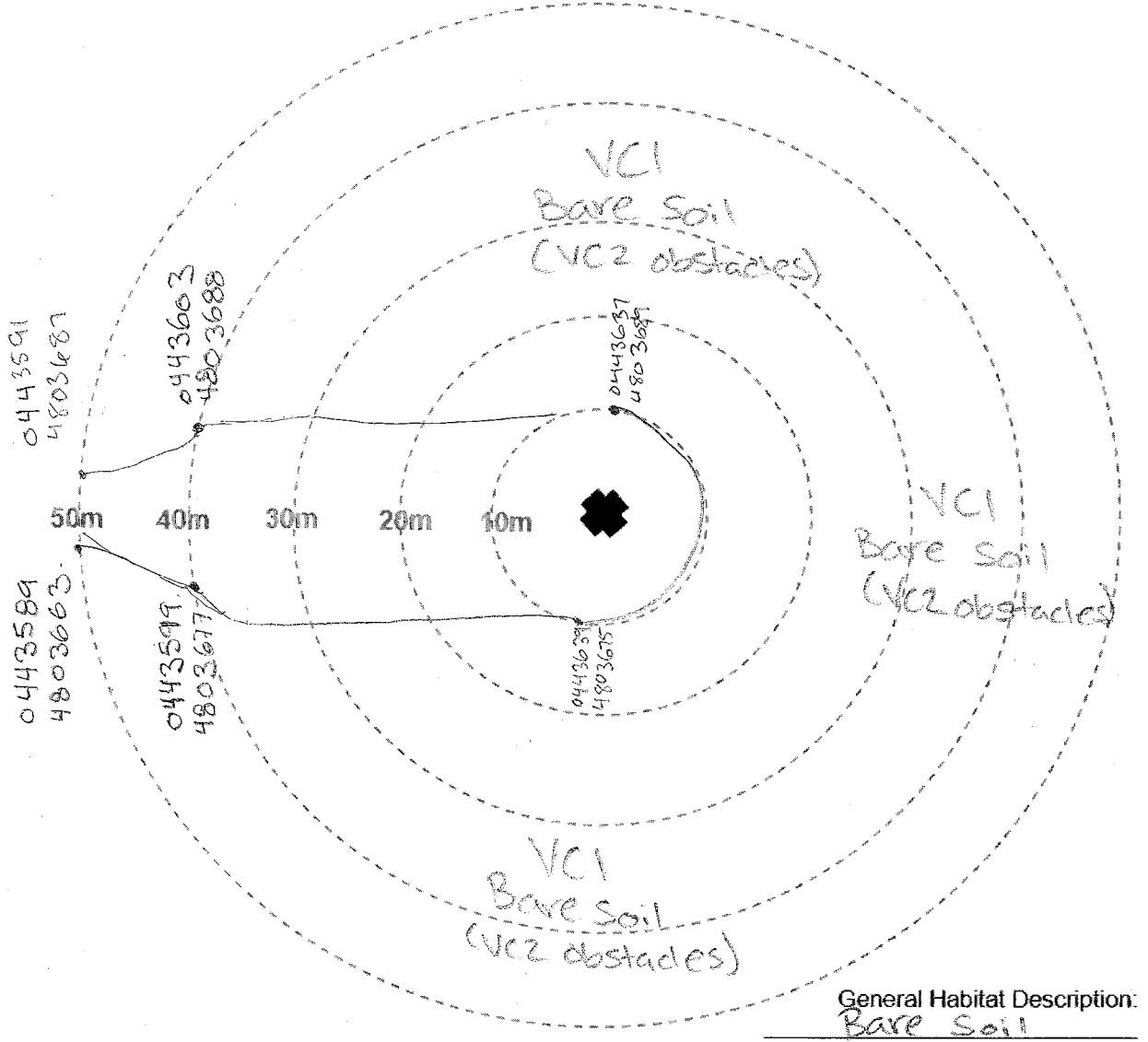
Project Name: Grand Bend W.F Project #: 24088 Turbine #: T27 Degree of Slope 0 degrees Slope Orientation — (e.g. SSW)

Photo Numbers (from turbine base)
 Facing North: 8066
 Facing East: 8067
 Facing South: 8068
 Facing West: 8069
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 04/05/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m **N**

Photo Numbers (from turbine base)
 Facing North: 8294
 Facing East: 8295
 Facing South: 8296
 Facing West: 8297
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 01/06/21
 Observer: A. Vanderbas
M. Bosco
 Monthly/Seasonal
 Linear Transect Width: 3 m **N**



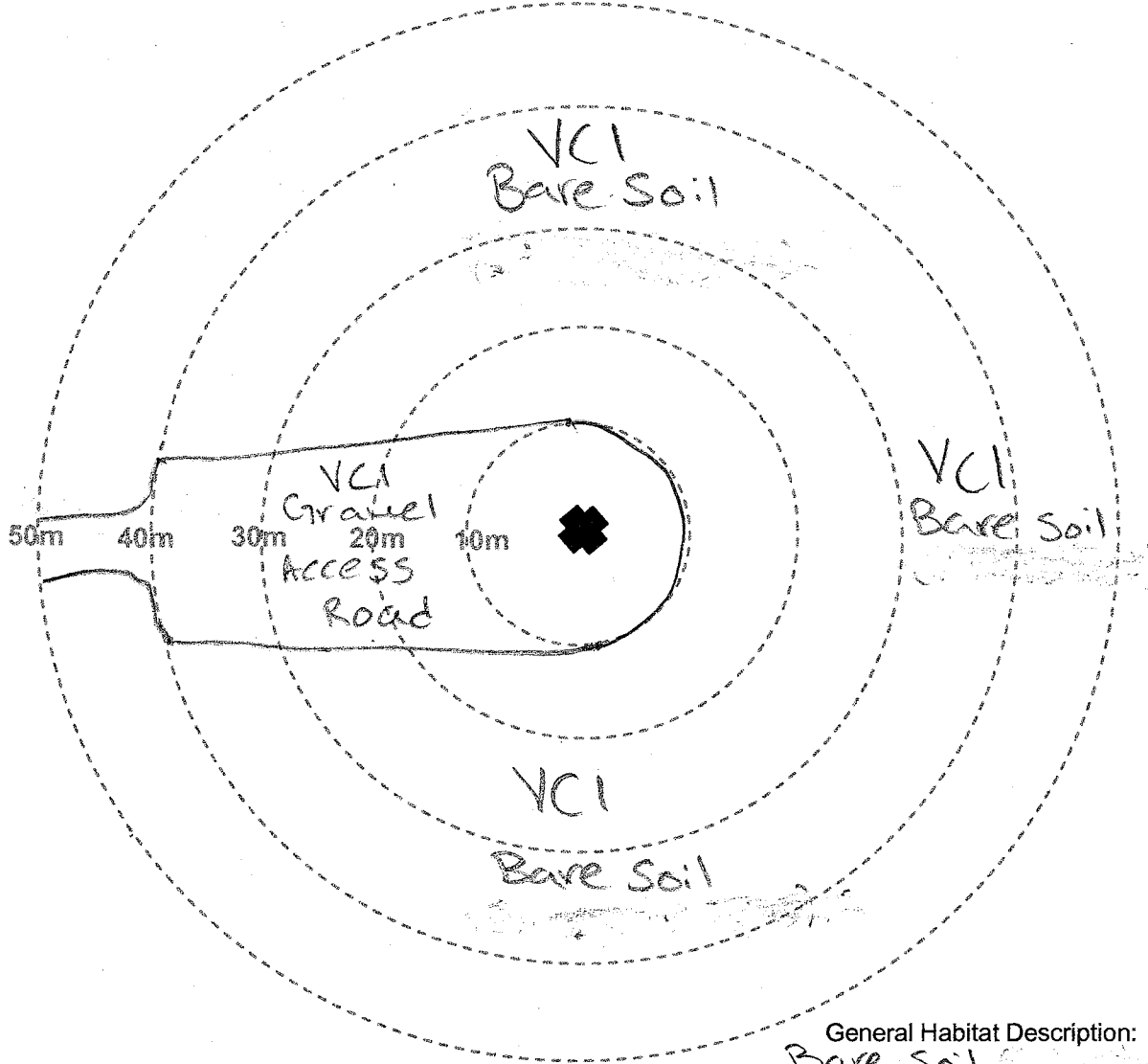
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Turbine Habitat Map

Project Name: Grand Bend WF Project #: 24088 Turbine #: T27

Photo Numbers (from turbine base)
 Facing North: 8556
 Facing East: 8557
 Facing South: 8558
 Facing West: 8559
 (sketch habitat and visibility classes)

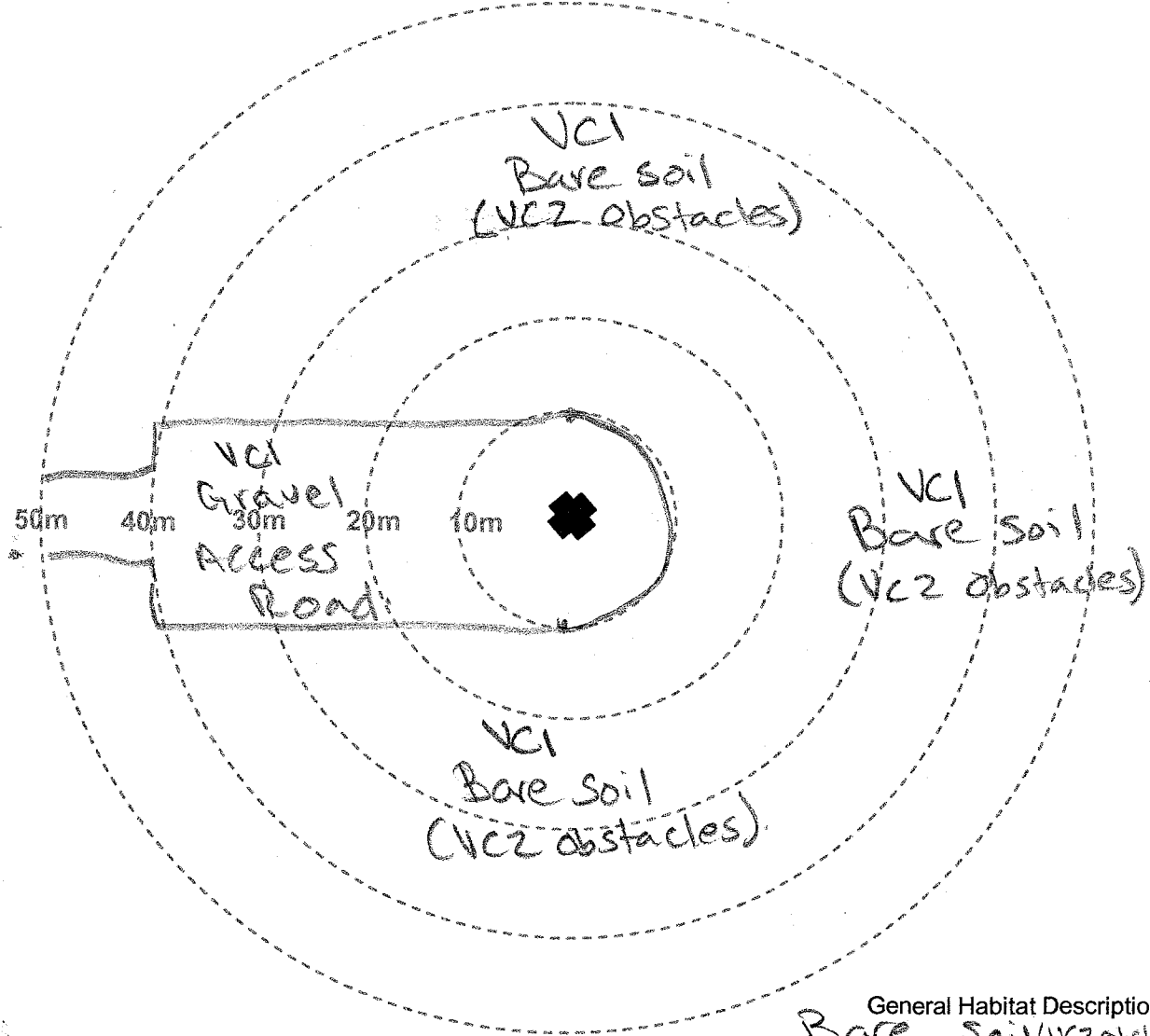
Date (DD/MM/YY): 04/07/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Bare Soil

Photo Numbers (from turbine base)
 Facing North: 8763
 Facing East: 8764
 Facing South: 8765
 Facing West: 8766
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/08/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Bare soil (Vc2 obstacle)

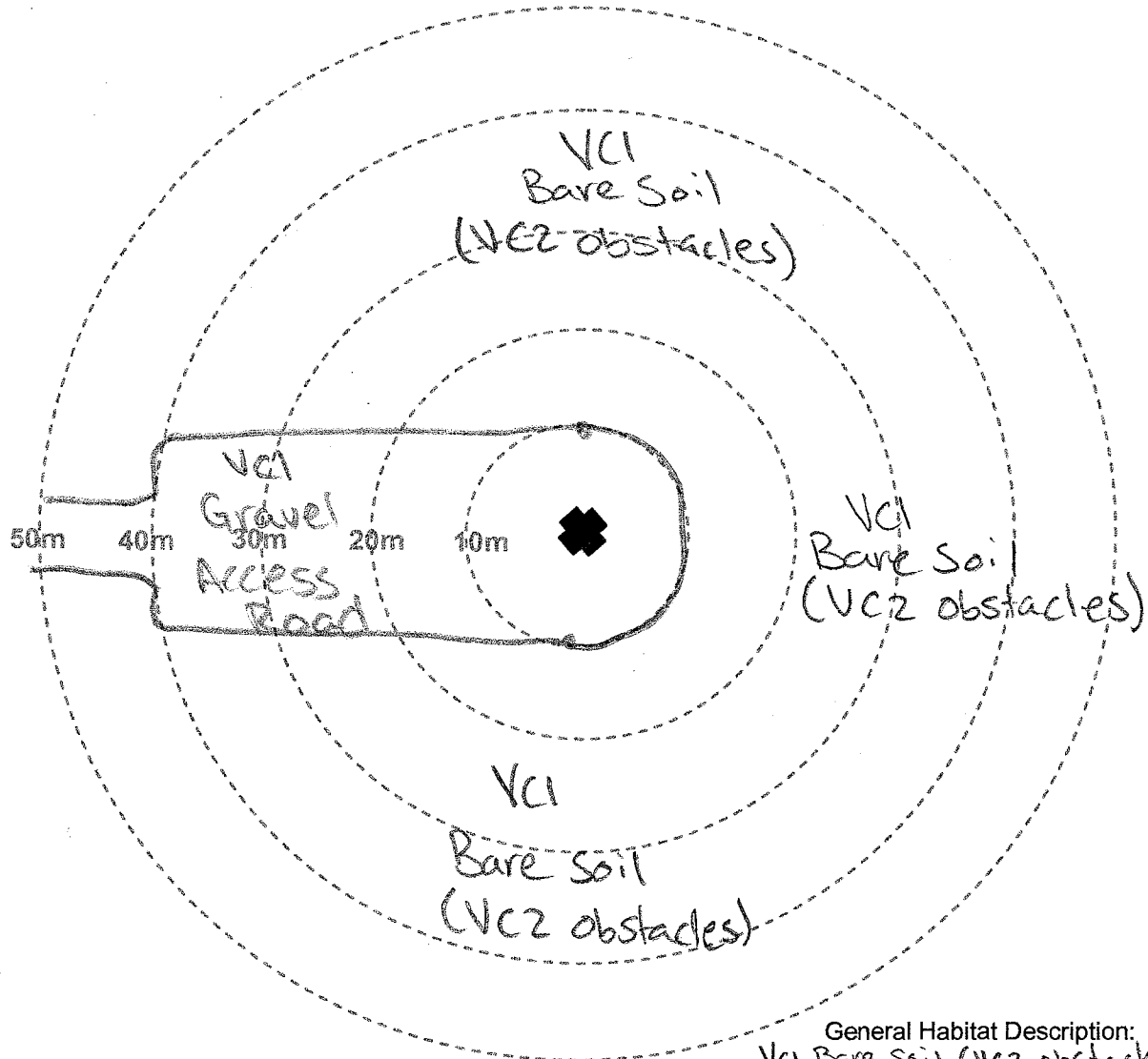
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Turbine Habitat Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T27

Photo Numbers (from turbine base)
 Facing North: 9170
 Facing East: 9171
 Facing South: 9172
 Facing West: 9173
 (sketch habitat and visibility classes)

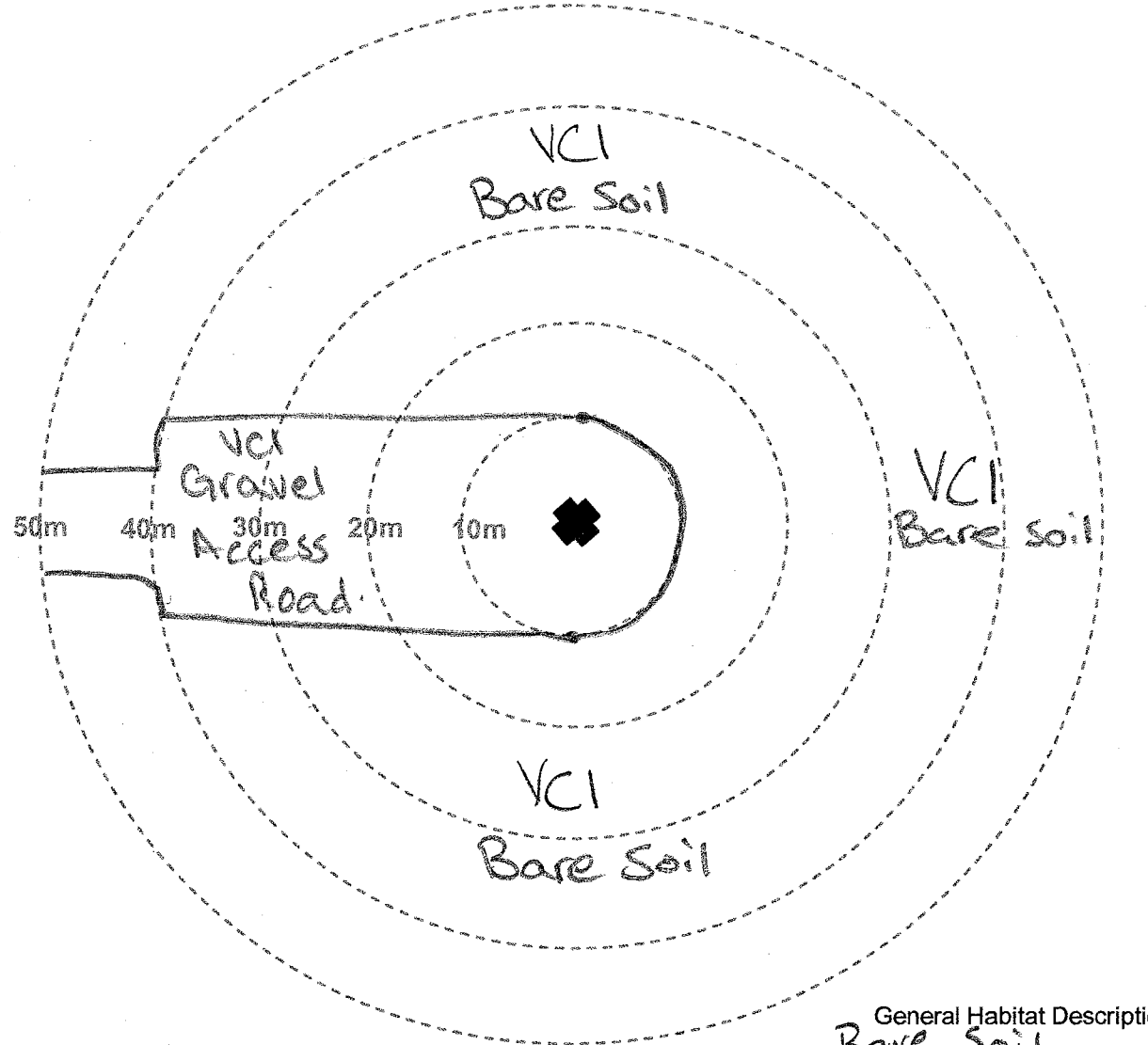
Date (DD/MM/YY): 10/09/21 ↑
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m ↑
N



General Habitat Description:
Vc1 Bare Soil (Vc2 obstacles)

Photo Numbers (from turbine base)
 Facing North: 9436
 Facing East: 9437
 Facing South: 9438
 Facing West: 9439
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 01/10/21 ↑
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m ↑
N



General Habitat Description:
Bare Soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend Wind Farm Project #: 24088 Turbine #: T31 Degree of Slope 0 degrees Slope Orientation — (e.g. SSW)

Photo Numbers (from turbine base)
 Facing North: 8056
 Facing East: 8057
 Facing South: 8058
 Facing West: 8059
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 04/05/21

Observer: ACV, MGB

Monthly/Seasonal Linear Transect Width: 3 m

↑
N

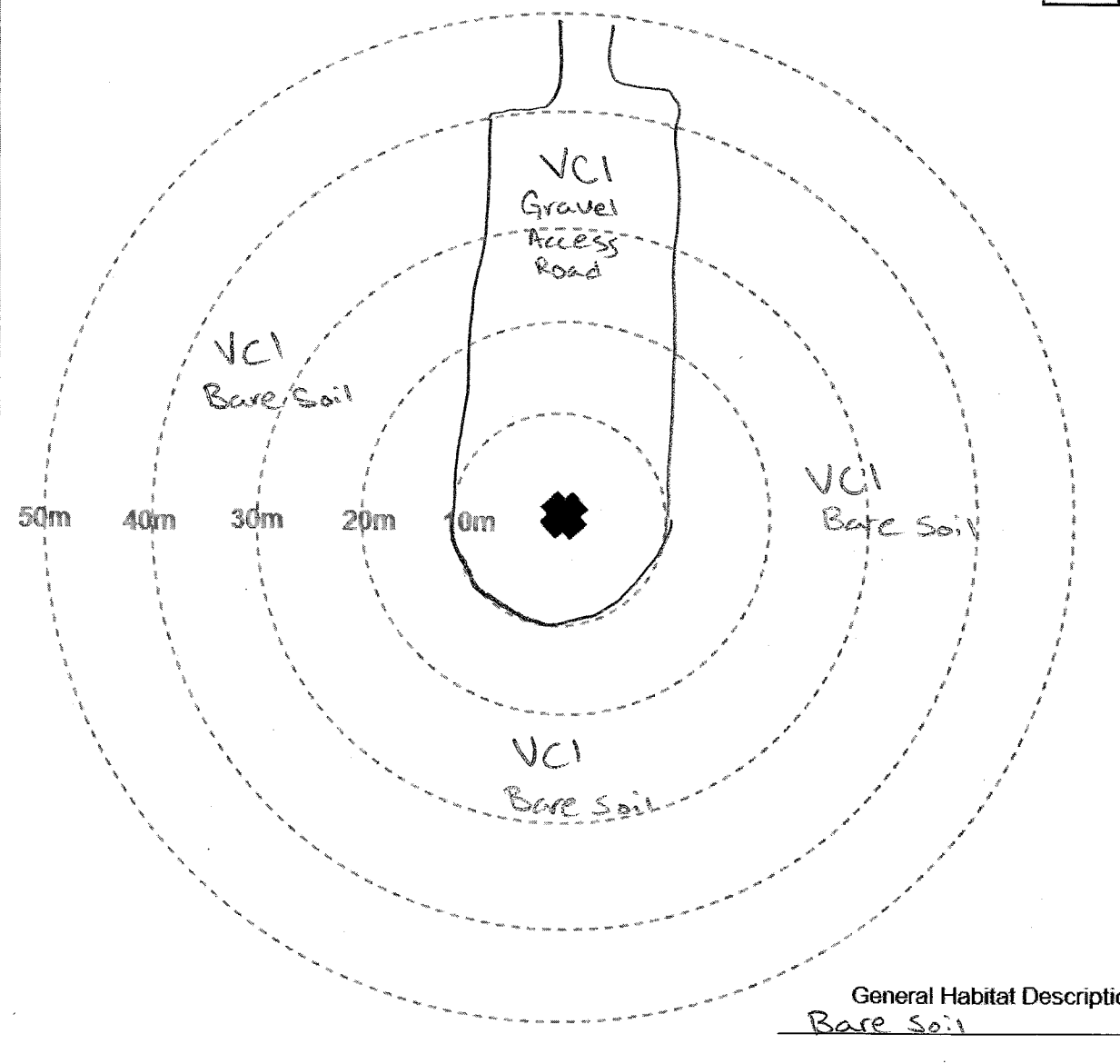
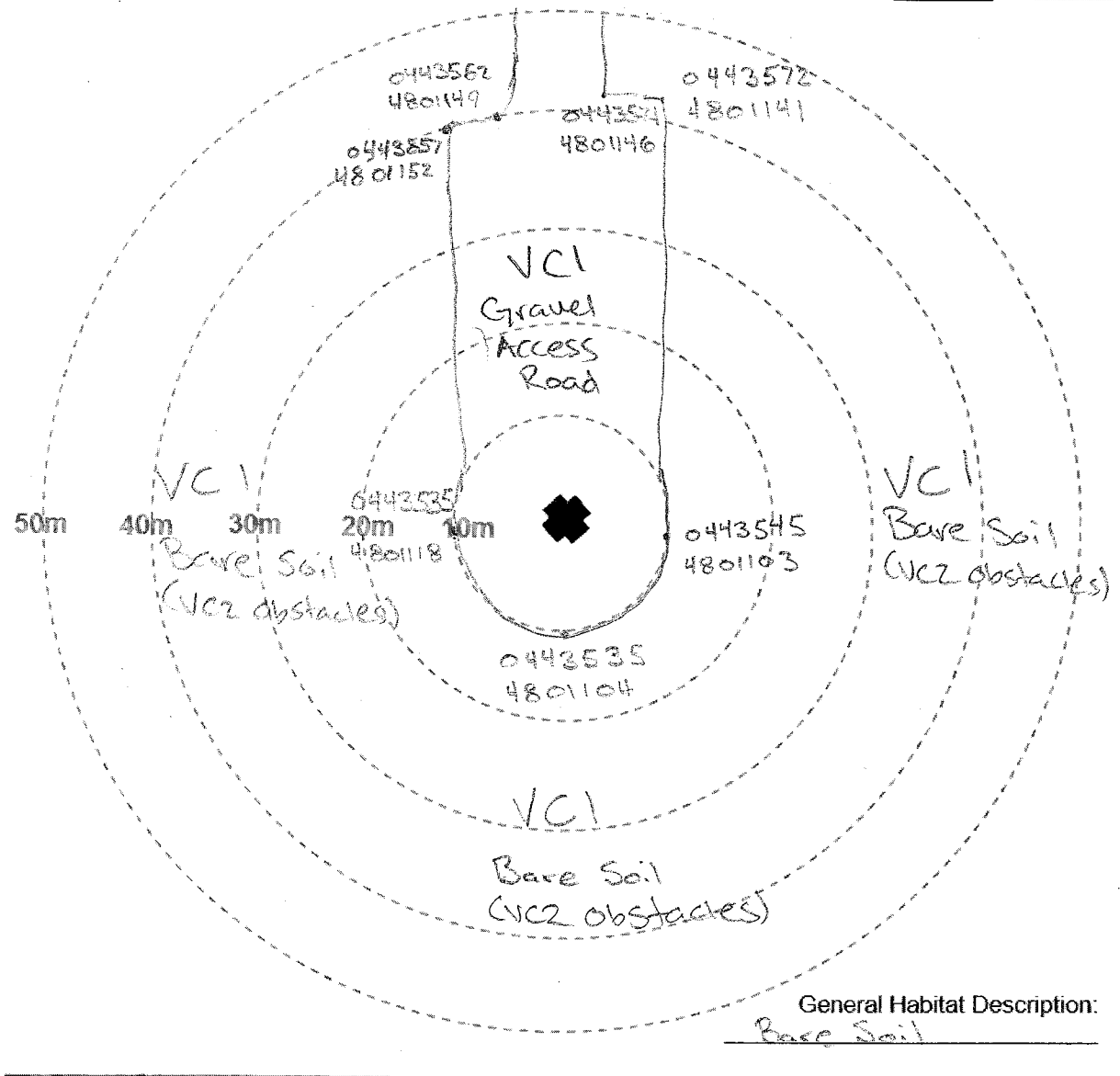
Photo Numbers (from turbine base)
 Facing North: 8289
 Facing East: 8290
 Facing South: 8291
 Facing West: 8292
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 01/06/21

Observer: A. Vanderpas, M. Bosco

Monthly/Seasonal Linear Transect Width: 3 m

↑
N



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Turbine Habitat Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T31

Photo Numbers (from turbine base)
 Facing North: 8552
 Facing East: 8553
 Facing South: 8554
 Facing West: 8555
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 04/07/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m

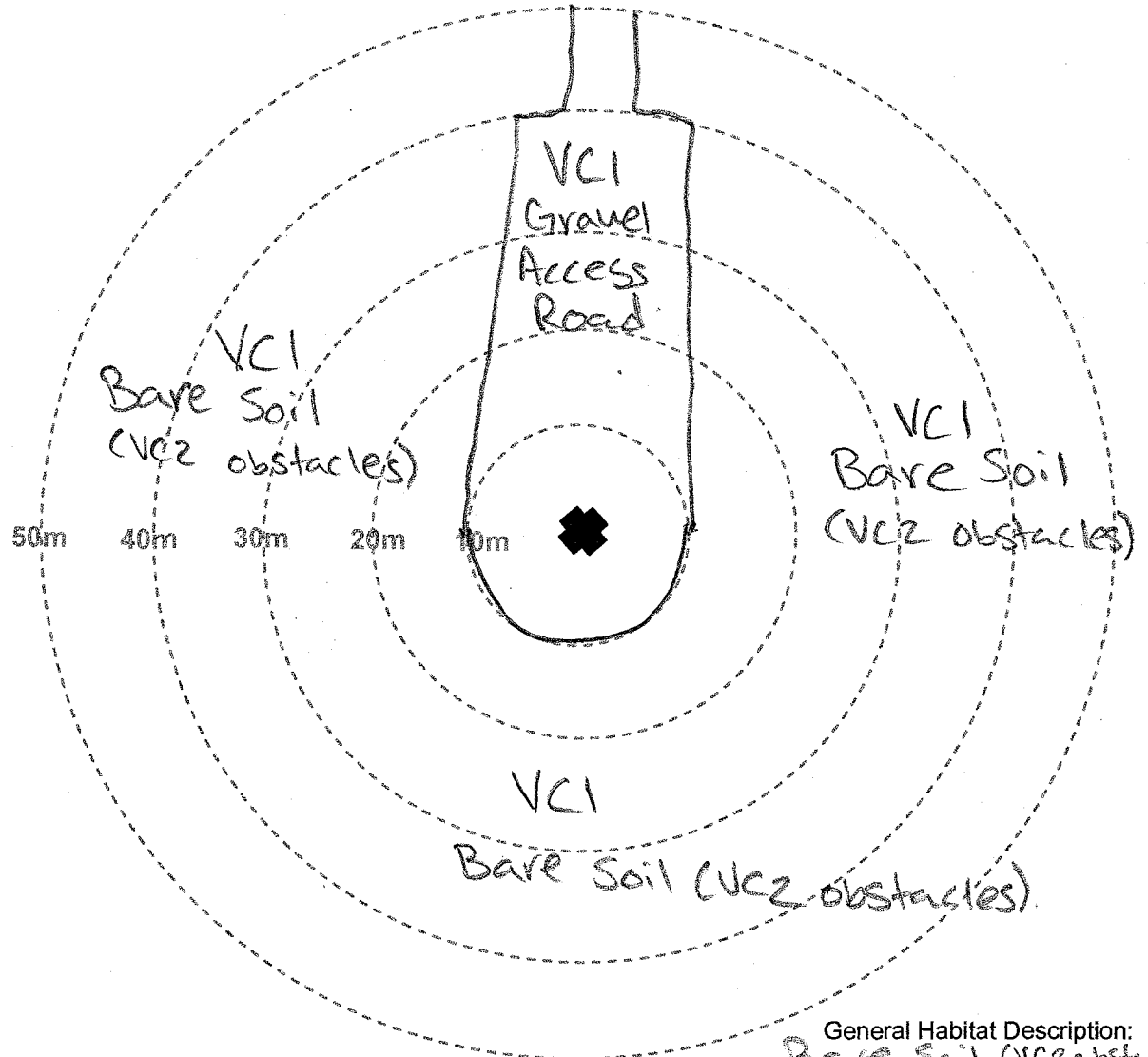
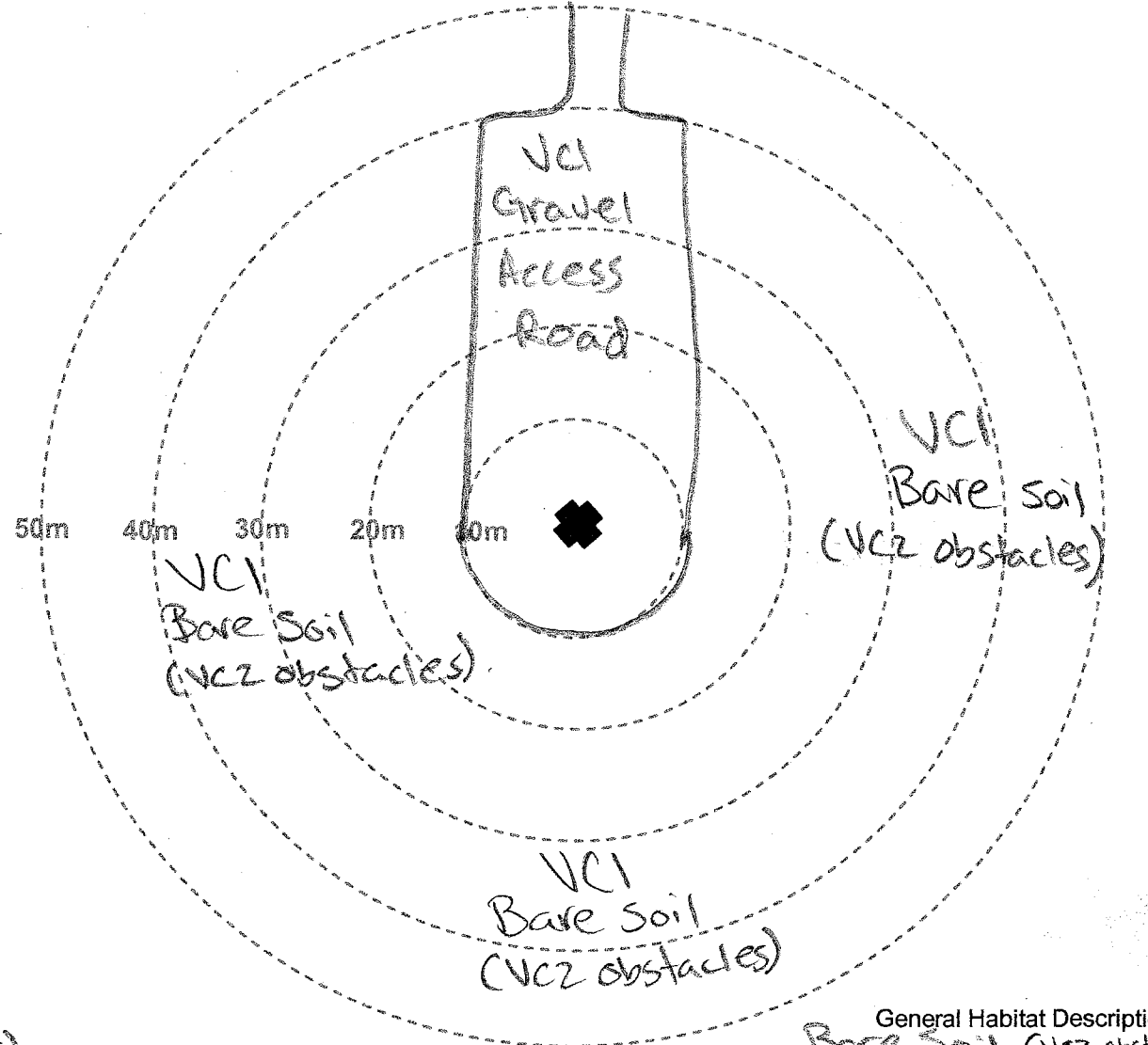


Photo Numbers (from turbine base)
 Facing North: 8758
 Facing East: 8759
 Facing South: 8760
 Facing West: 8761
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/08/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Turbine Habitat Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T31

Photo Numbers (from turbine base)
 Facing North: 9086
 Facing East: 9087
 Facing South: 9088
 Facing West: 9089
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/09/21
 Observer: ACU, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m

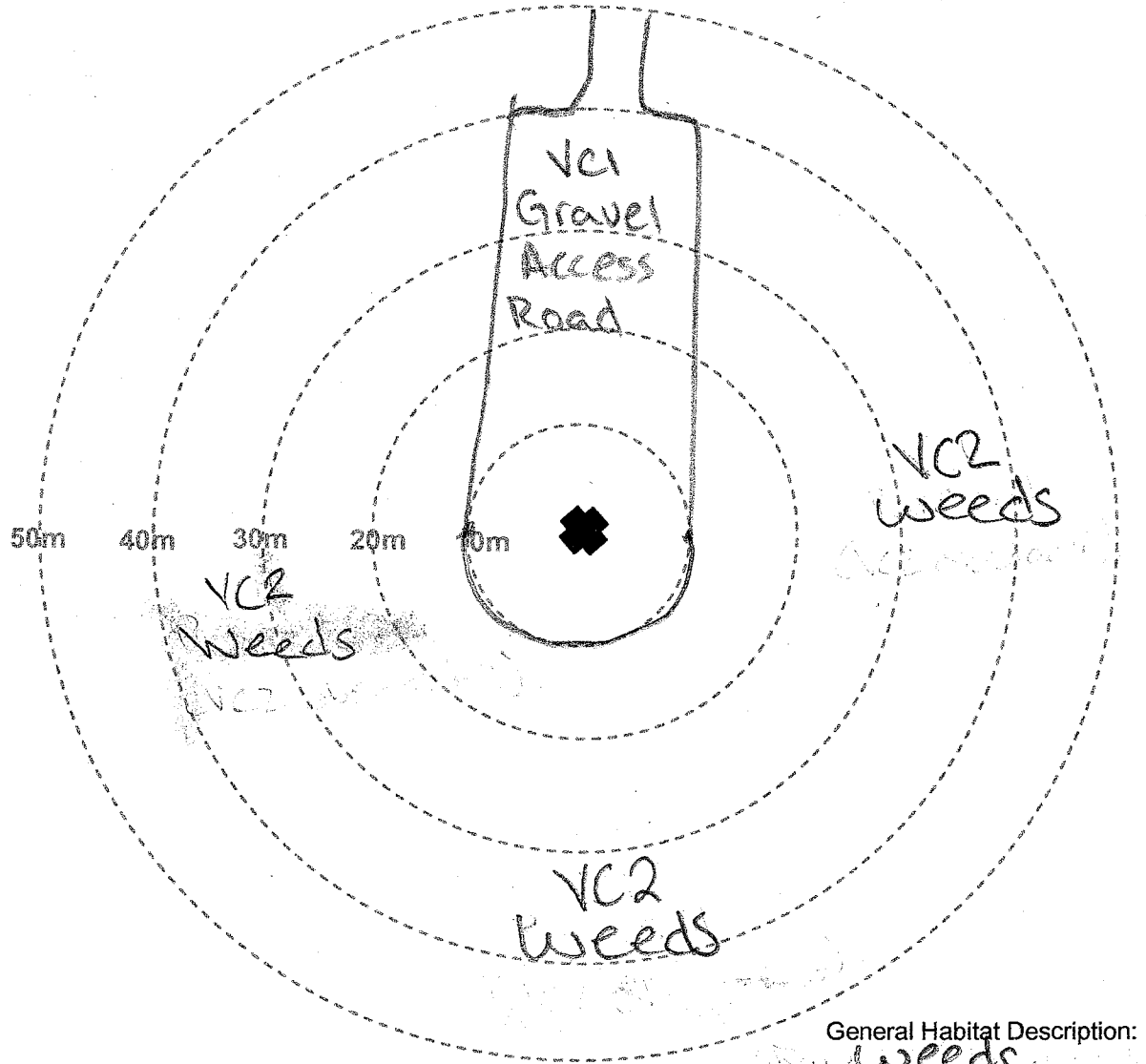
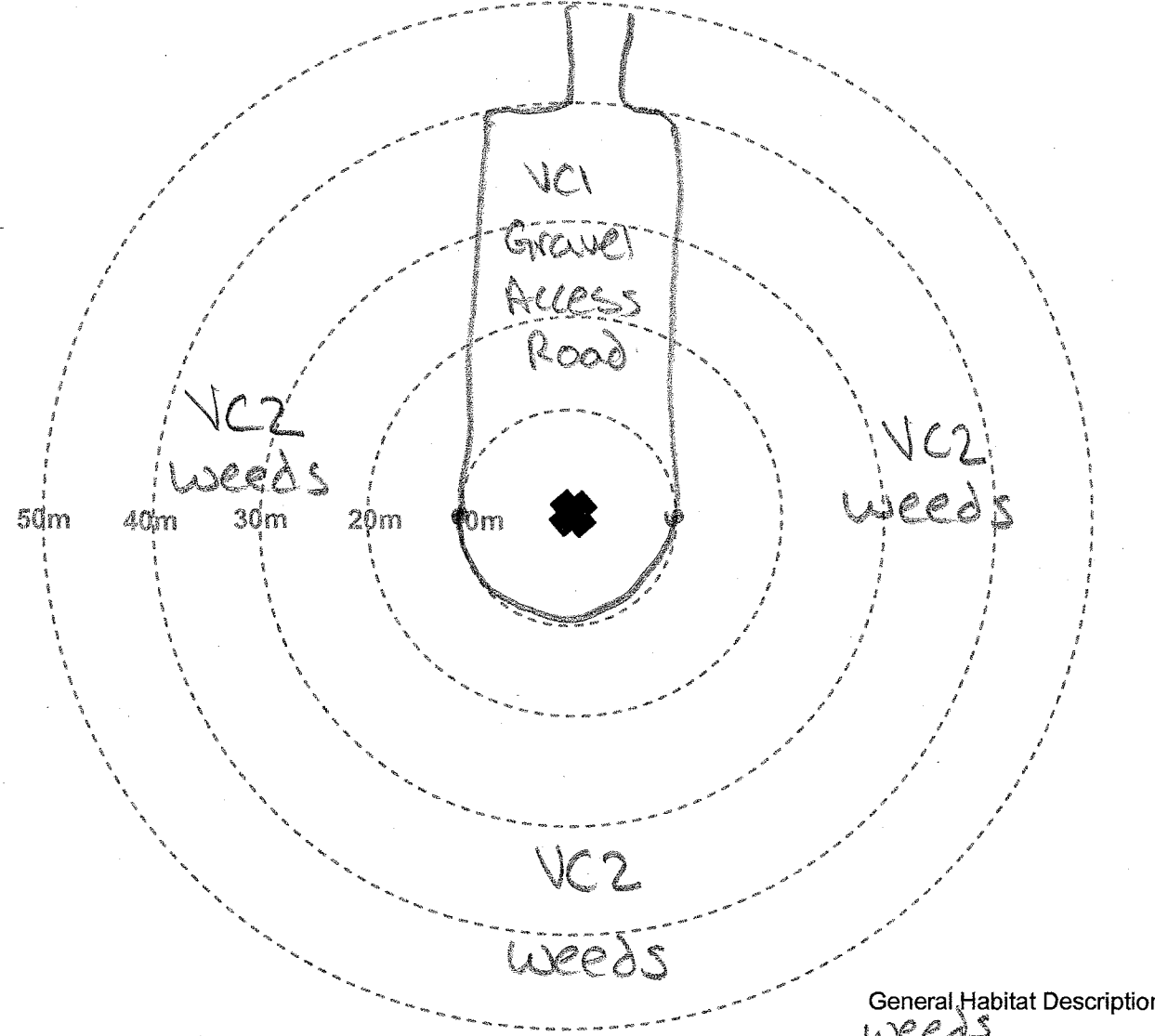


Photo Numbers (from turbine base)
 Facing North: 9431
 Facing East: 9432
 Facing South: 9433
 Facing West: 9434
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 01/10/21
 Observer: ACU, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend Wind Farm Project #: 24088 Turbine #: T33 Degree of Slope 0 degrees Slope Orientation — (e.g. SSW)

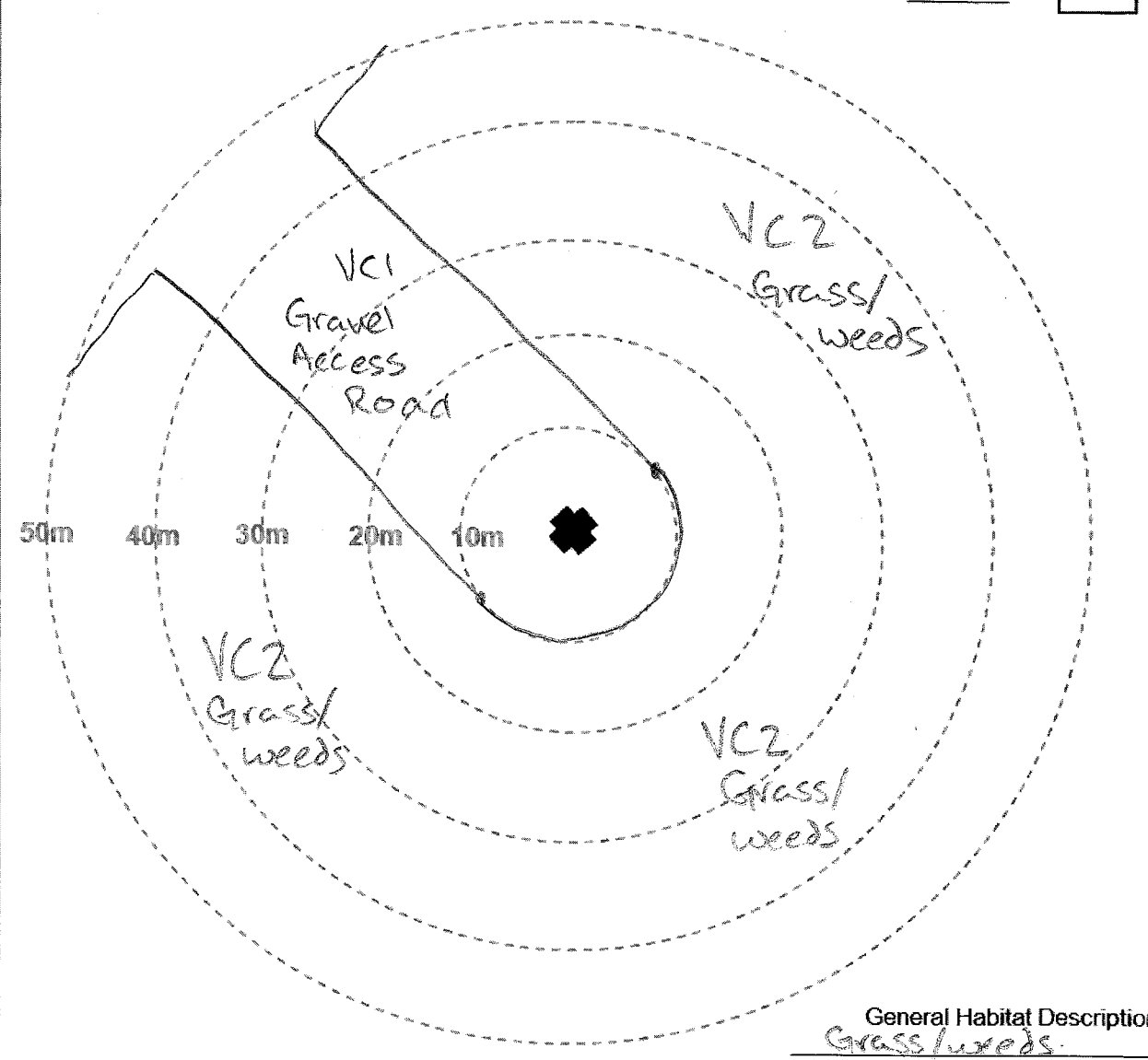
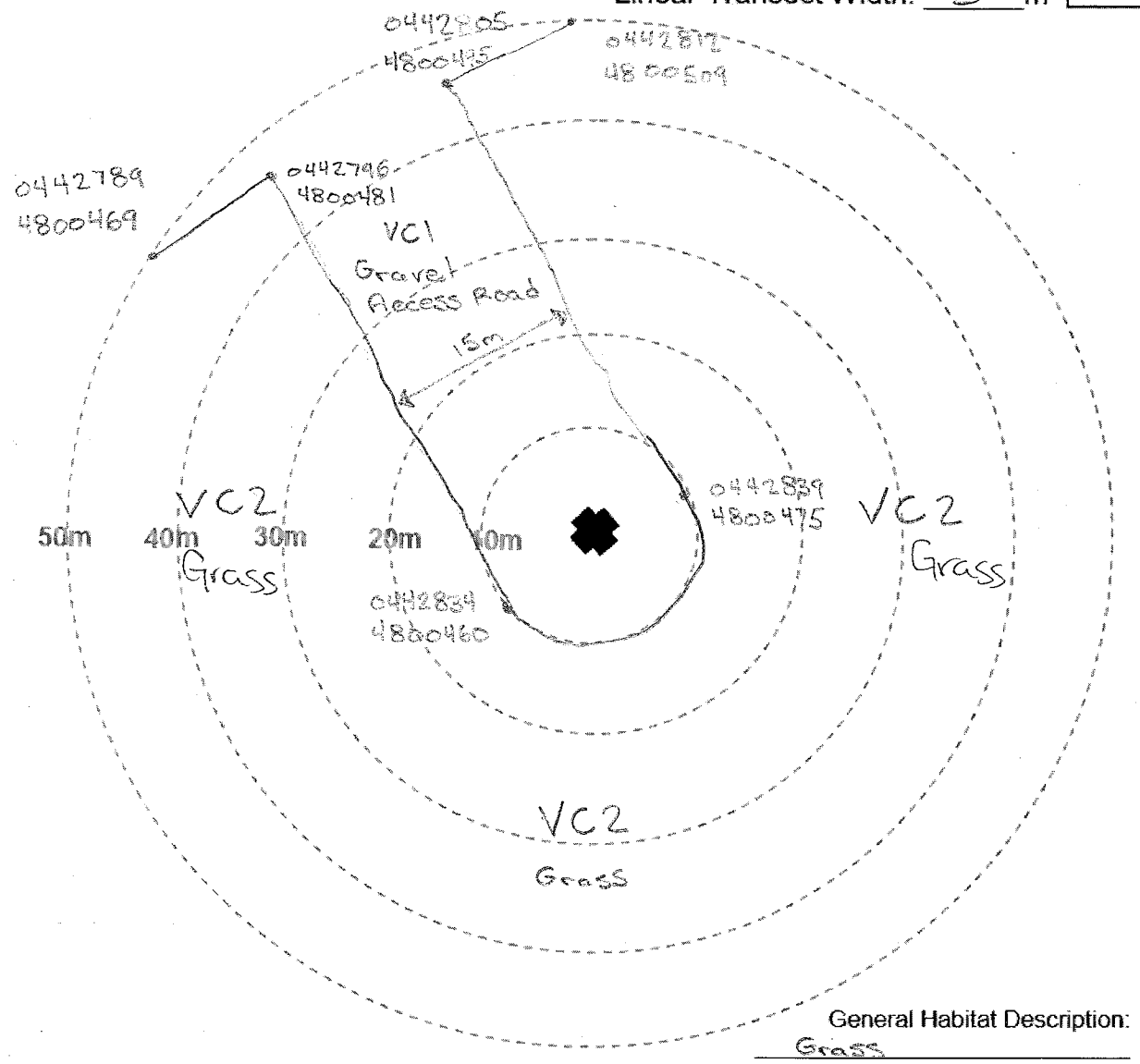
Photo Numbers (from turbine base)
 Facing North: 8052
 Facing East: 8053
 Facing South: 8054
 Facing West: 8055
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 04/05/21
 Observer: ACV, MGB
 Monthly/Seasonal Linear Transect Width: 3 m



Photo Numbers (from turbine base)
 Facing North: 8284
 Facing East: 8285
 Facing South: 8286
 Facing West: 8287
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 01/06/21
 Observer: A. Vanderpas
M. BOSCO
 Monthly/Seasonal Linear Transect Width: 3 m



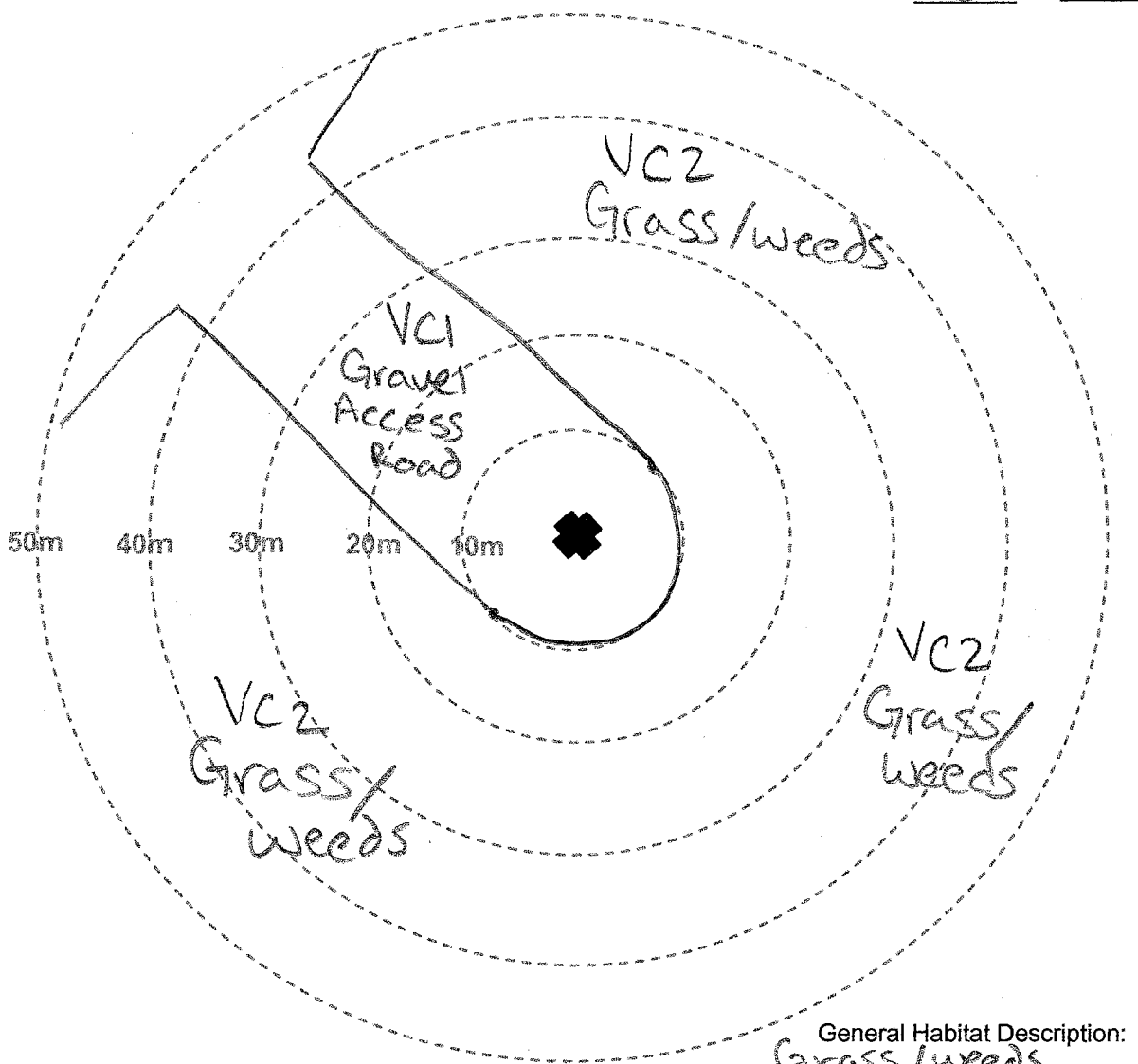
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Turbine Habitat Map

Project Name: Grand Bend WF Project #: 24088 Turbine #: T33

Photo Numbers (from turbine base)
 Facing North: 8548
 Facing East: 8549
 Facing South: 8550
 Facing West: 8551
 (sketch habitat and visibility classes)

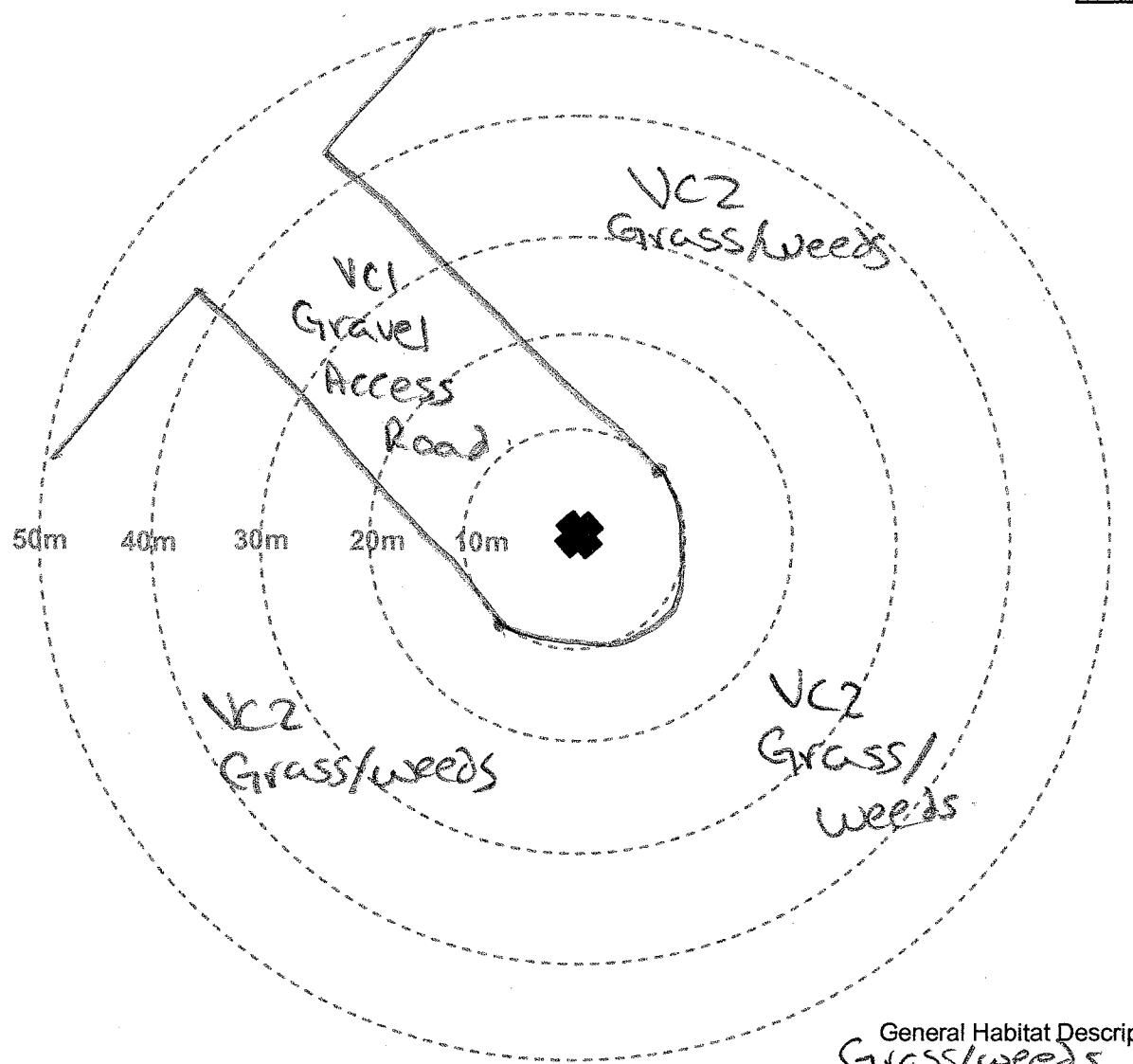
Date (DD/MM/YY): 04/07/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Grass/weeds

Photo Numbers (from turbine base)
 Facing North: 8753
 Facing East: 8754
 Facing South: 8755
 Facing West: 8756
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/08/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Grass/weeds

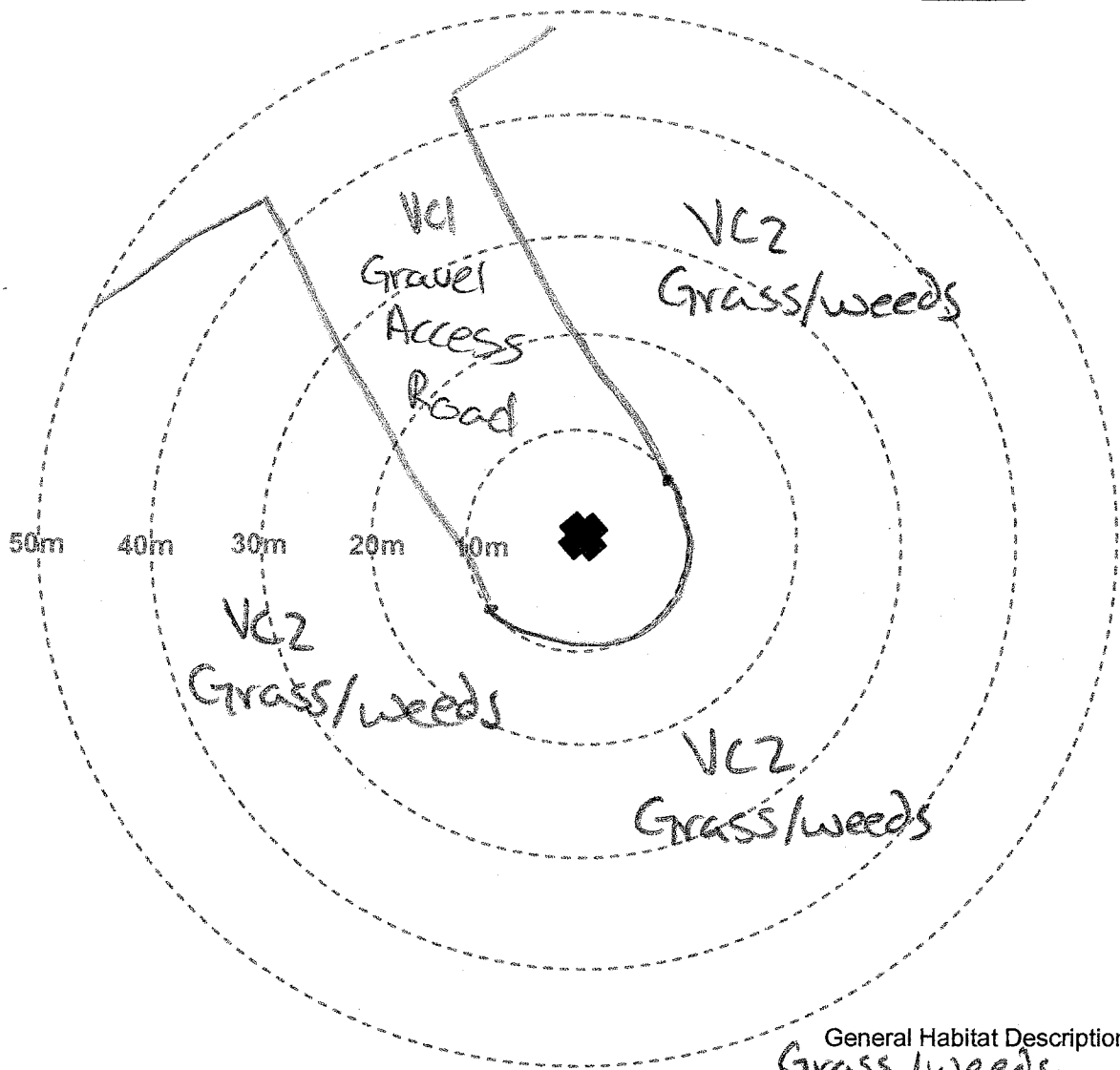
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Turbine Habitat Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T33

Photo Numbers (from turbine base)
 Facing North: 9082
 Facing East: 9083
 Facing South: 9084
 Facing West: 9085
 (sketch habitat and visibility classes)

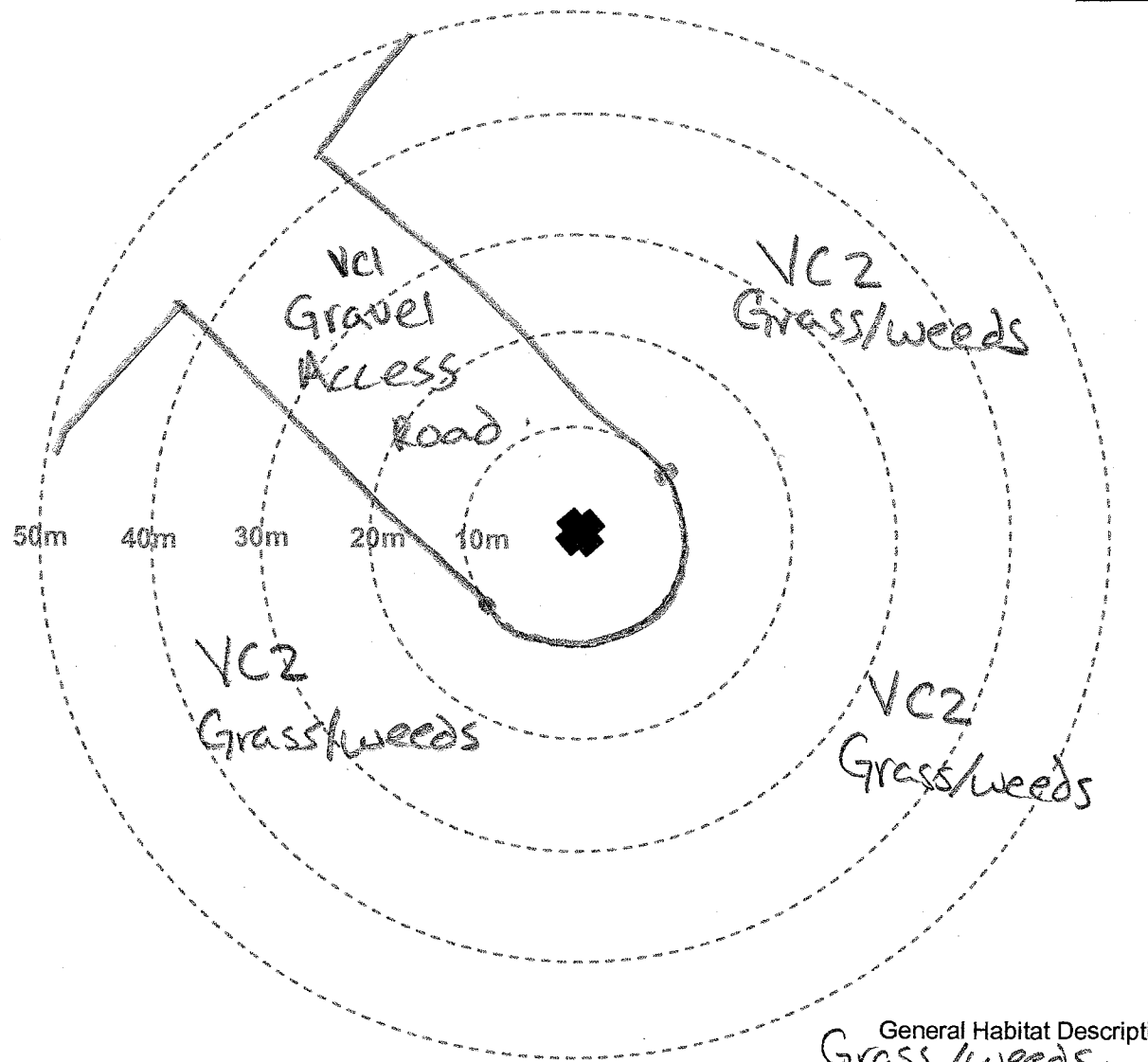
Date (DD/MM/YY): 03/09/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Grass/weeds.

Photo Numbers (from turbine base)
 Facing North: 9426
 Facing East: 9477
 Facing South: 9428
 Facing West: 9492
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 01/16/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Grass/weeds.

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend Wind Farm Project #: 2408B Turbine #: T38 Degree of Slope 0 degrees Slope Orientation — (e.g. SSW)

Photo Numbers (from turbine base)
 Facing North: 8048
 Facing East: 8049
 Facing South: 8050
 Facing West: 8051
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 04/05/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m

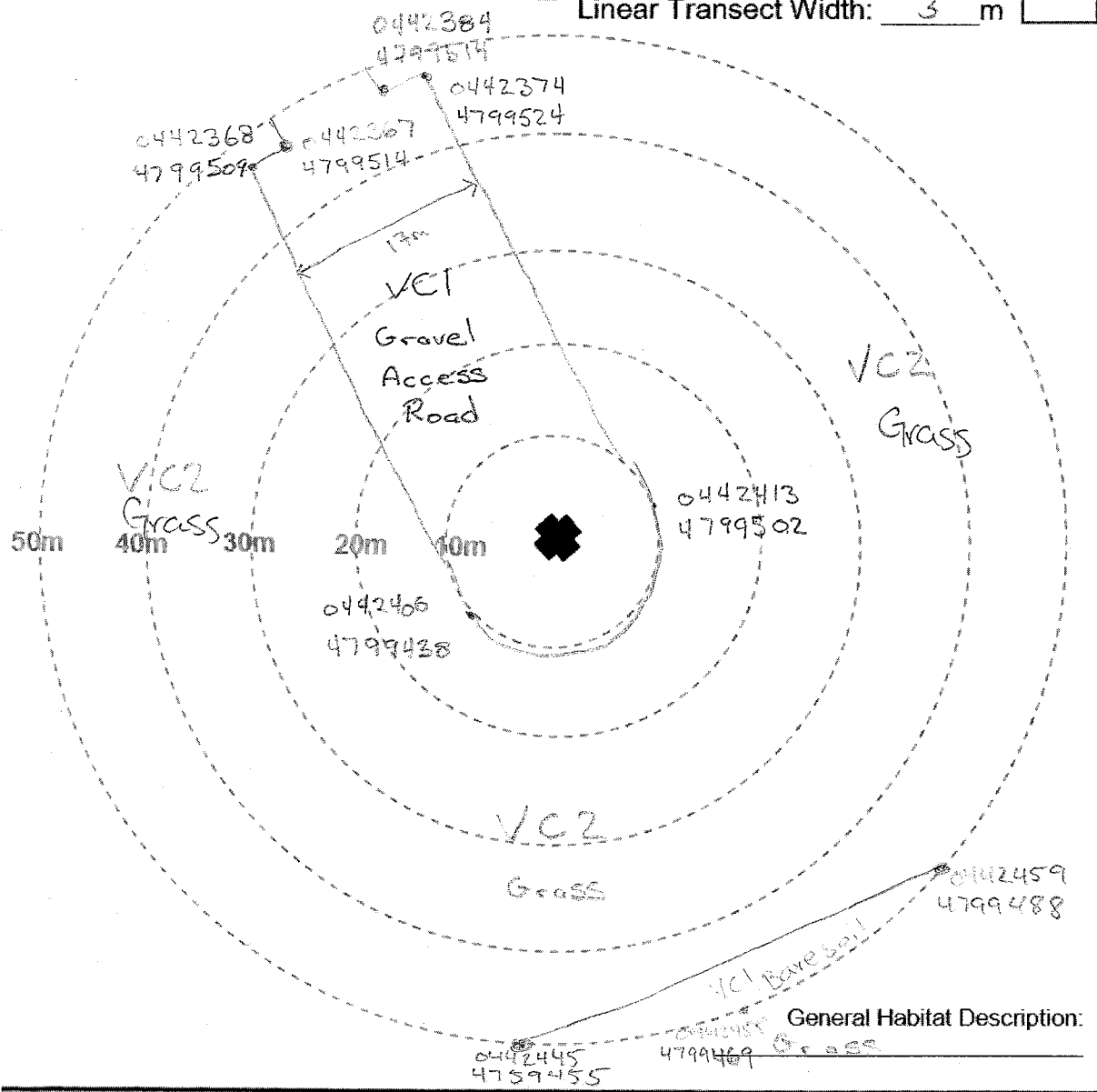
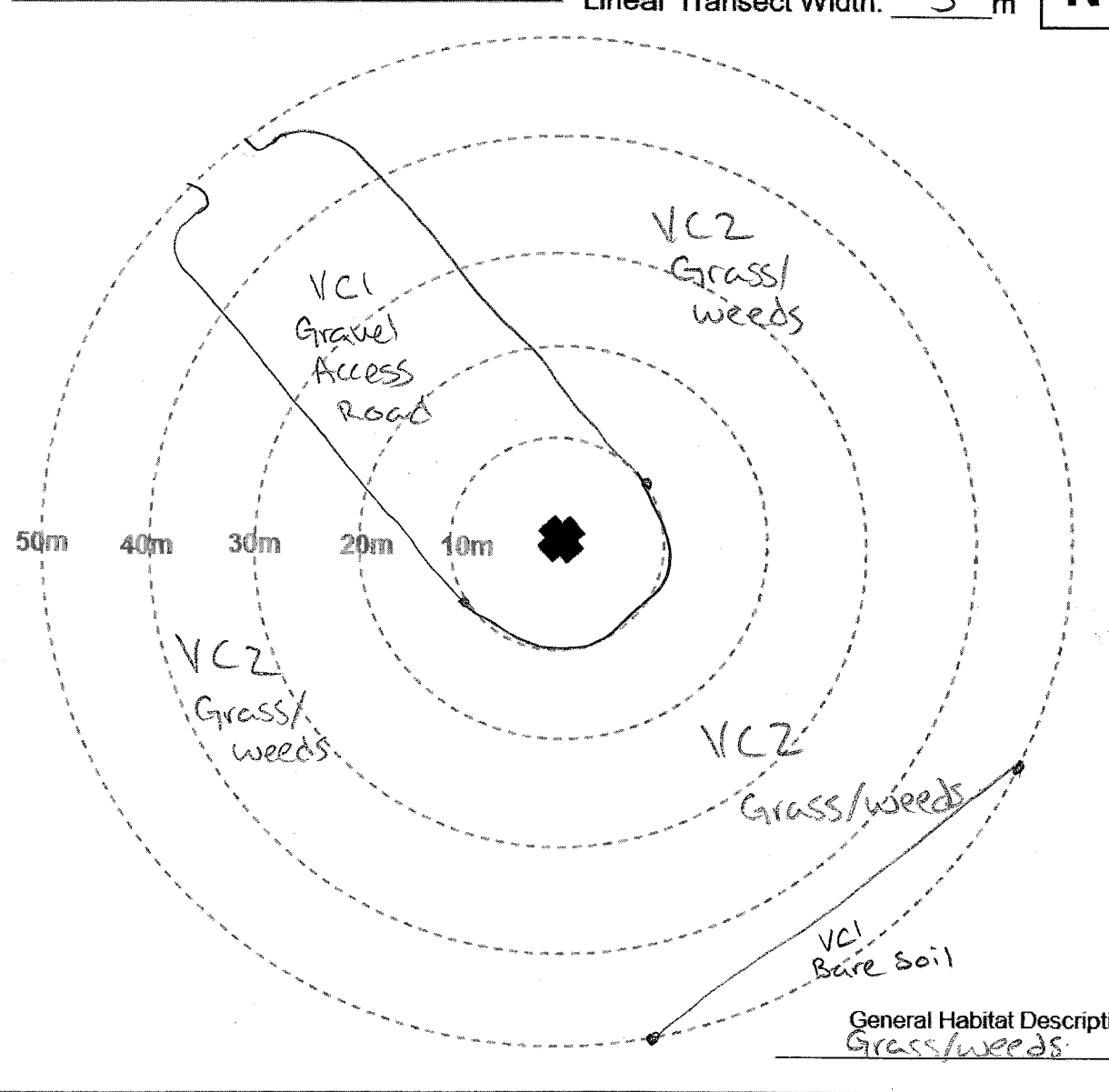


Photo Numbers (from turbine base)
 Facing North: 8280
 Facing East: 8281
 Facing South: 8282
 Facing West: 8283
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 01/06/21
 Observer: A. Vanderpas
 M. Bos co.
 Monthly/Seasonal
 Linear Transect Width: 3 m



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Turbine Habitat Map

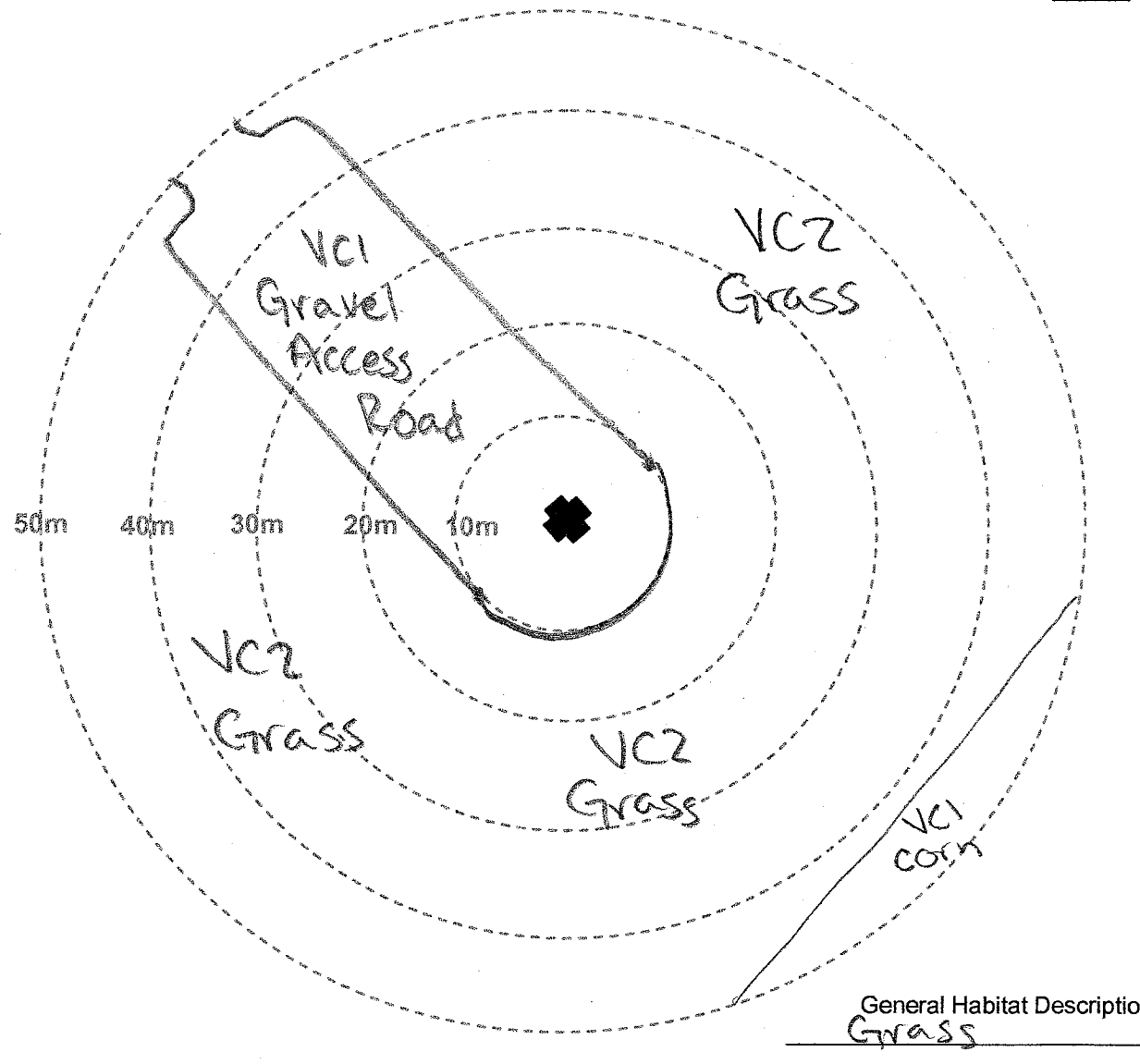
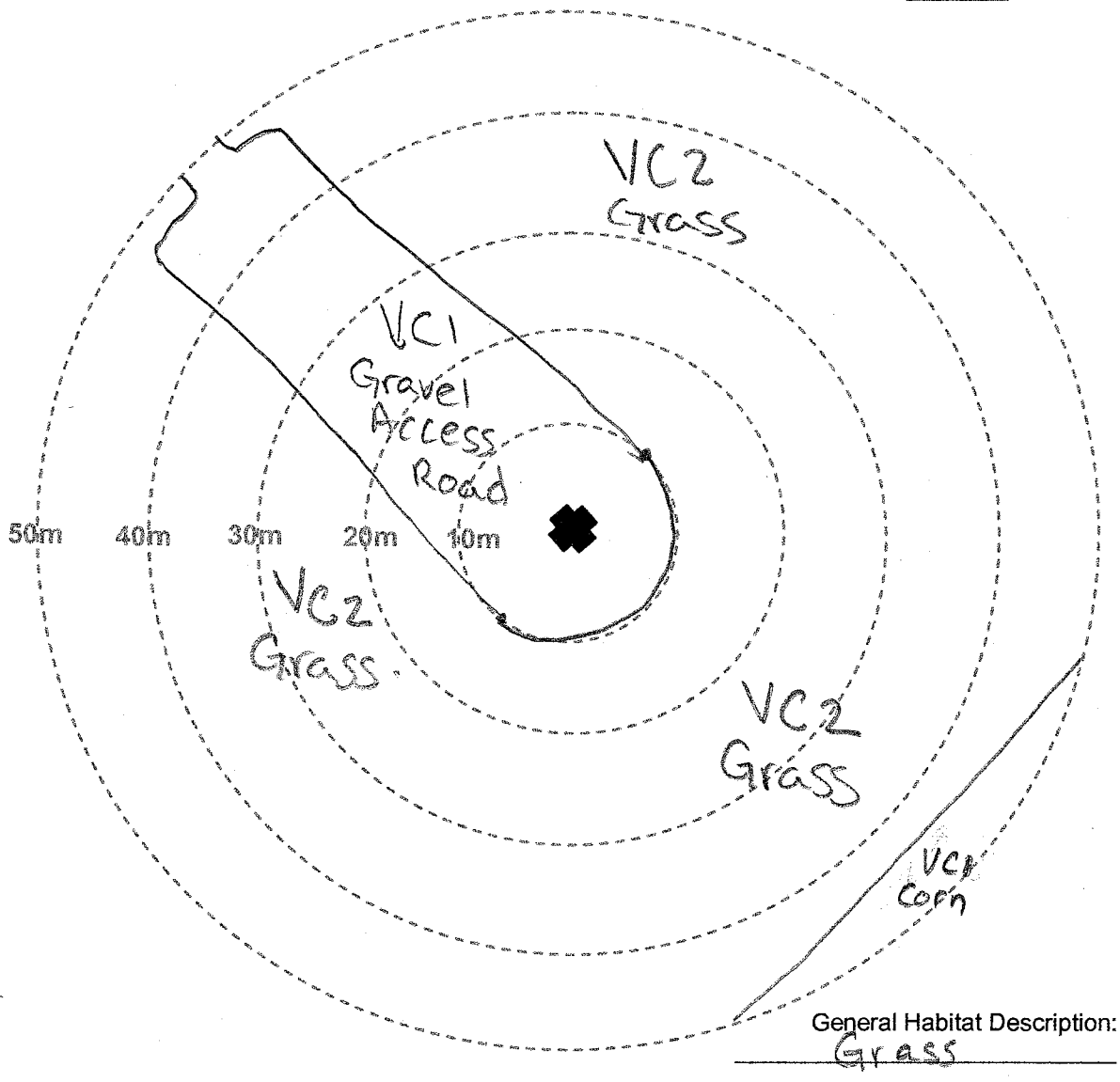
Project Name: Grand Bend WF Project #: 2408B Turbine #: T38

Photo Numbers (from turbine base)
 Facing North: 8544
 Facing East: 8545
 Facing South: 8546
 Facing West: 8547
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 04/07/21 ↑
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m ↑
N

Photo Numbers (from turbine base)
 Facing North: 8748
 Facing East: 8749
 Facing South: 8750
 Facing West: 8751
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/08/21 ↑
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m ↑
N



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Turbine Habitat Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T38

Photo Numbers (from turbine base)
 Facing North: 9078
 Facing East: 9079
 Facing South: 9080
 Facing West: 9081
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/09/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m

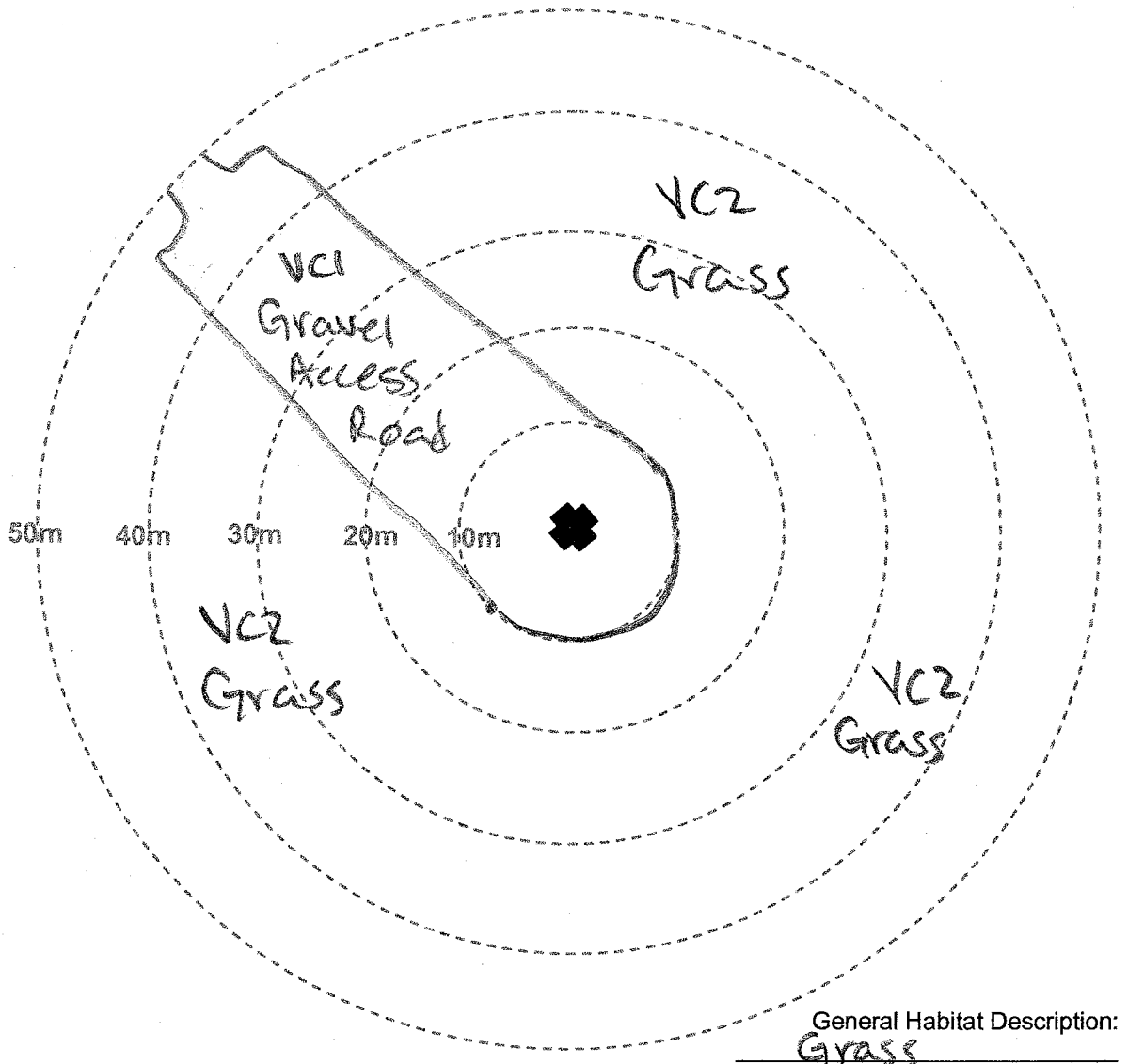
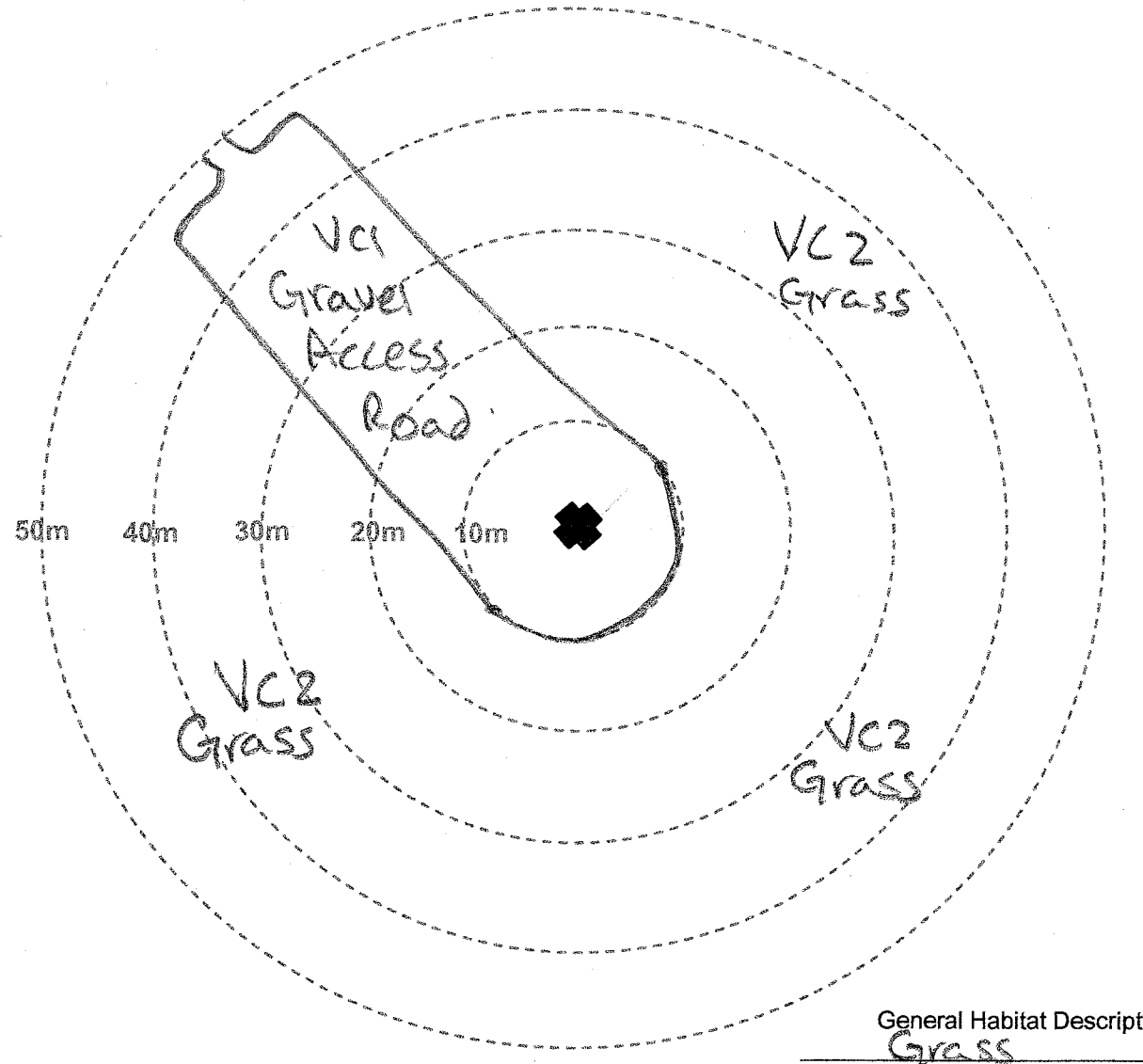


Photo Numbers (from turbine base)
 Facing North: 9421
 Facing East: 9422
 Facing South: 9423
 Facing West: 9424
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 01/10/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend Wind Farm Project #: 2408B Turbine #: 42 Degree of Slope 0 degrees Slope Orientation - (e.g. SSW)

Photo Numbers (from turbine base)
 Facing North: 8044
 Facing East: 8045
 Facing South: 8046
 Facing West: 8047
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 04/05/21
 Observer: ACV, MGR
 Monthly/Seasonal
 Linear Transect Width: 3 m

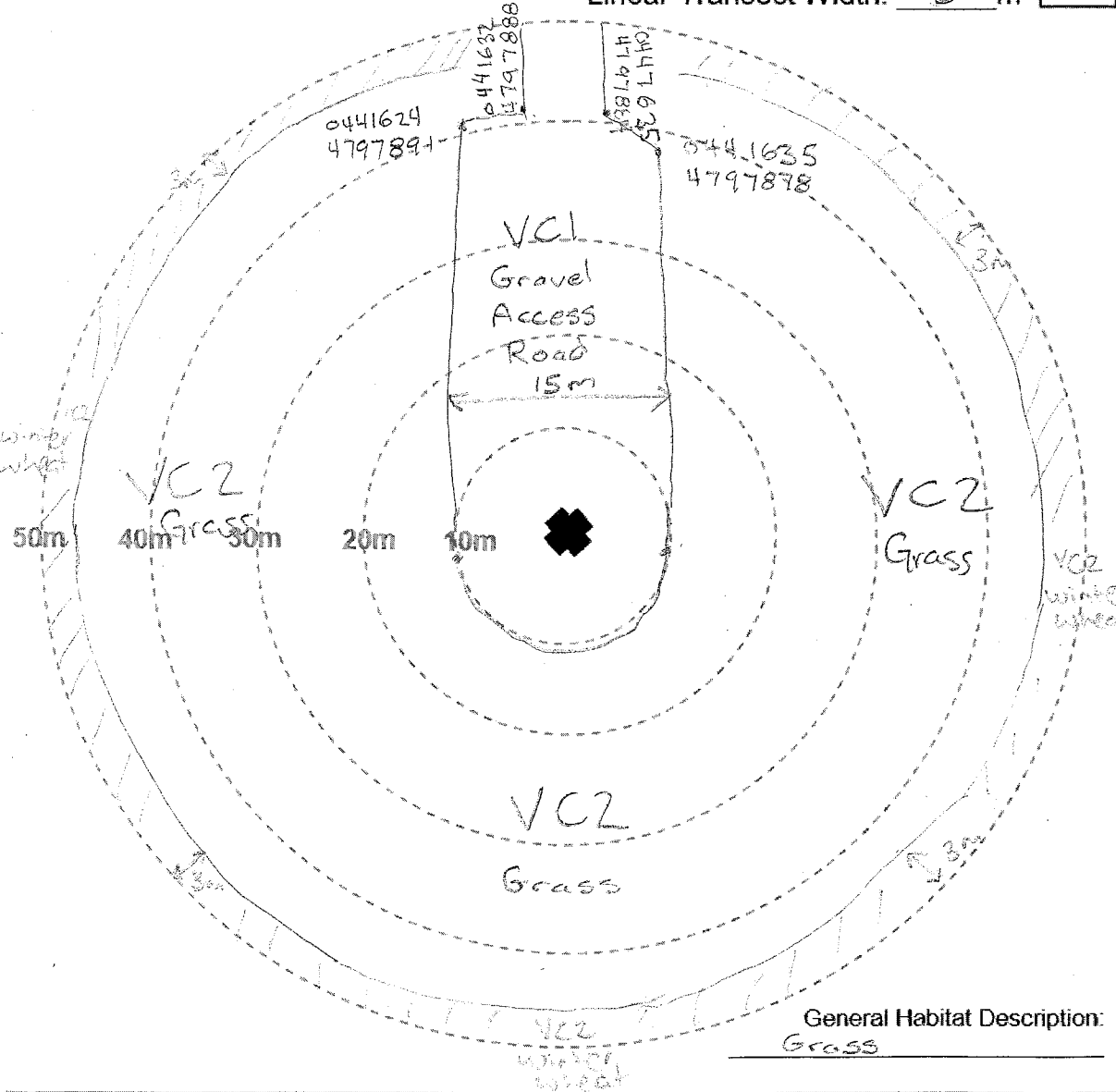
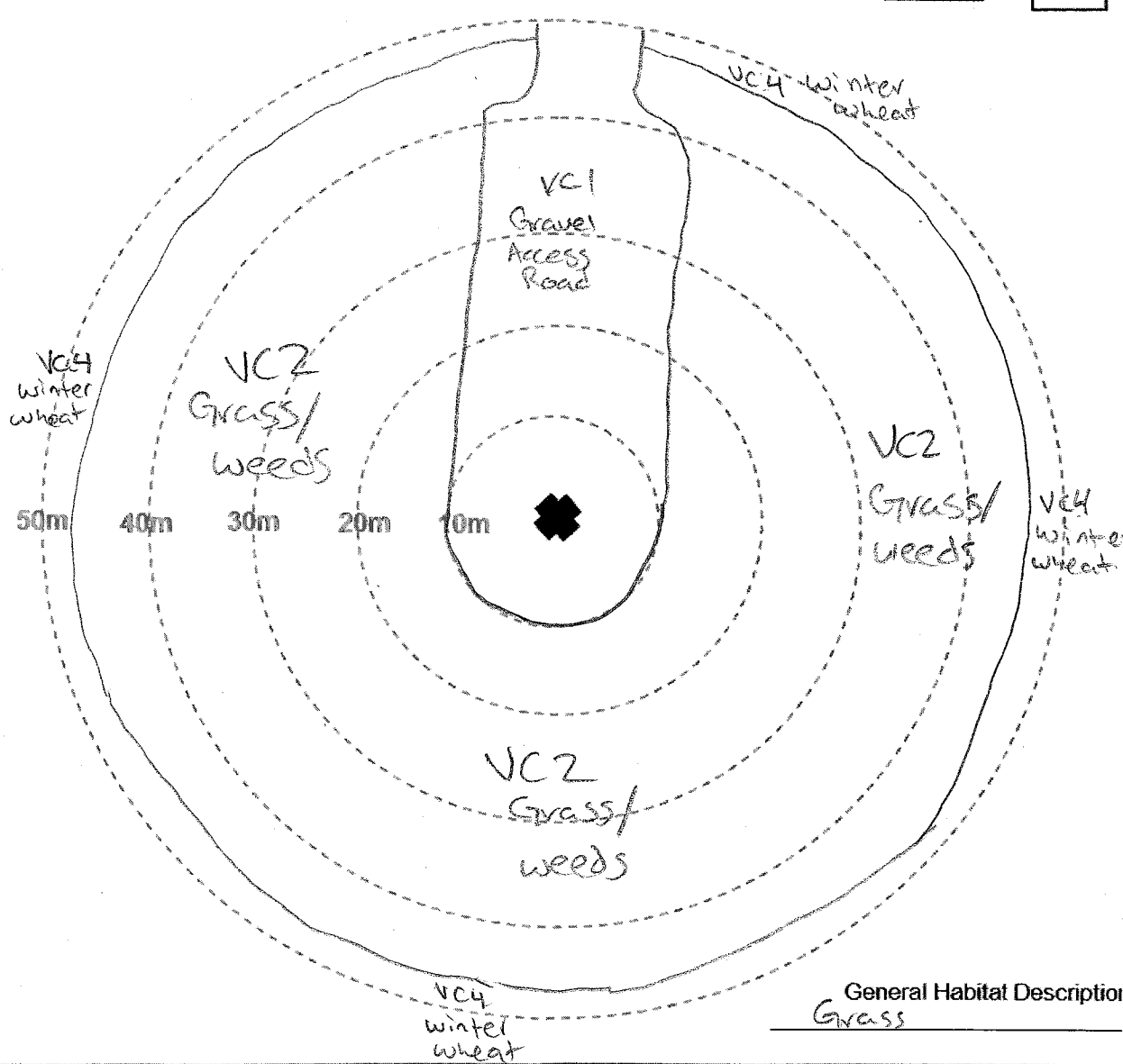


Photo Numbers (from turbine base)
 Facing North: 8275
 Facing East: 8276
 Facing South: 8277
 Facing West: 8278
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 01/06/21
 Observer: A. Vanderpas, M. Bosco
 Monthly/Seasonal
 Linear Transect Width: 3 m



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T42

Photo Numbers (from turbine base)
 Facing North: 8540
 Facing East: 8541
 Facing South: 8542
 Facing West: 8543
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 04/07/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m

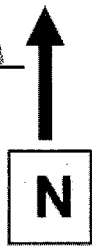
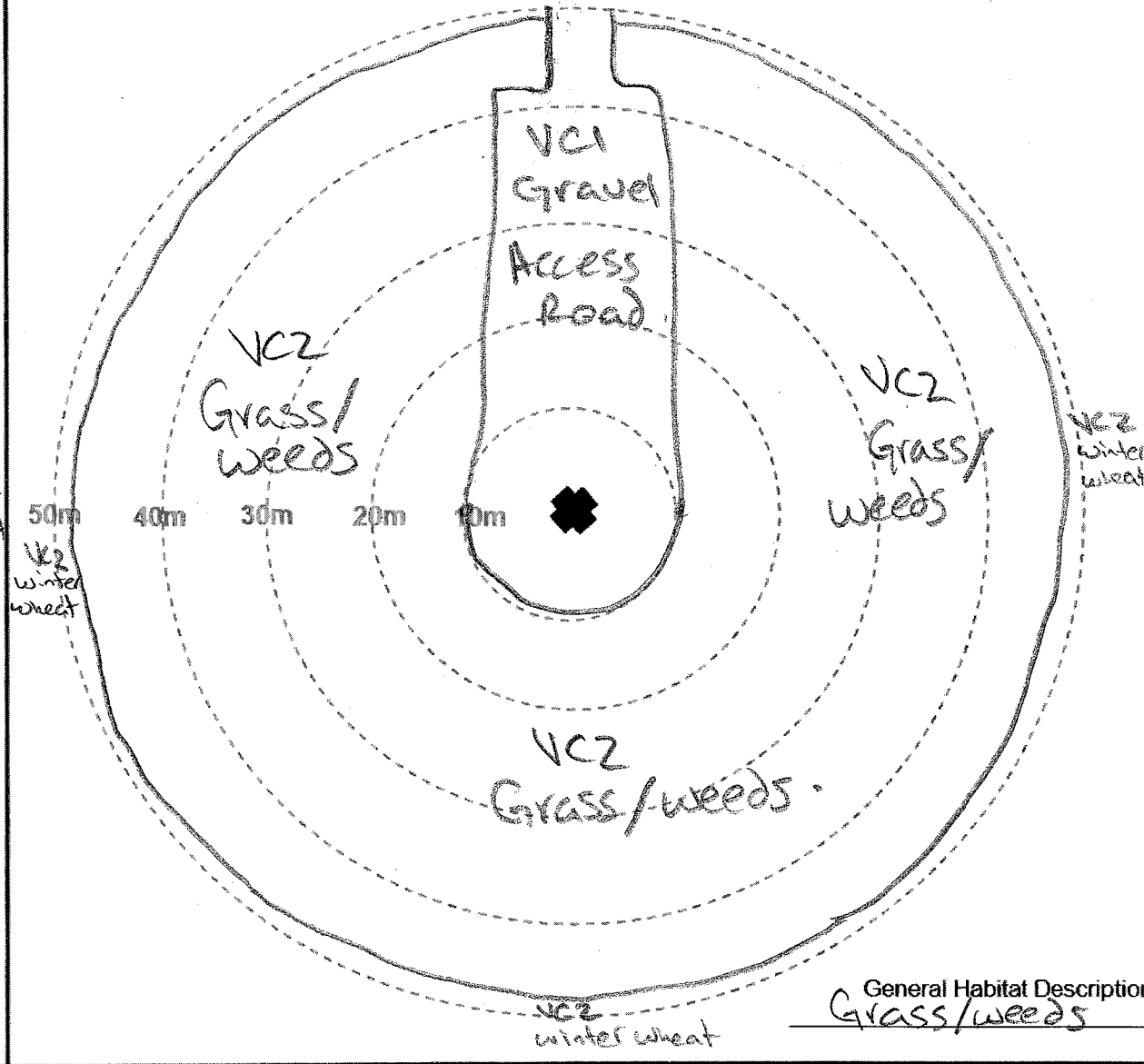
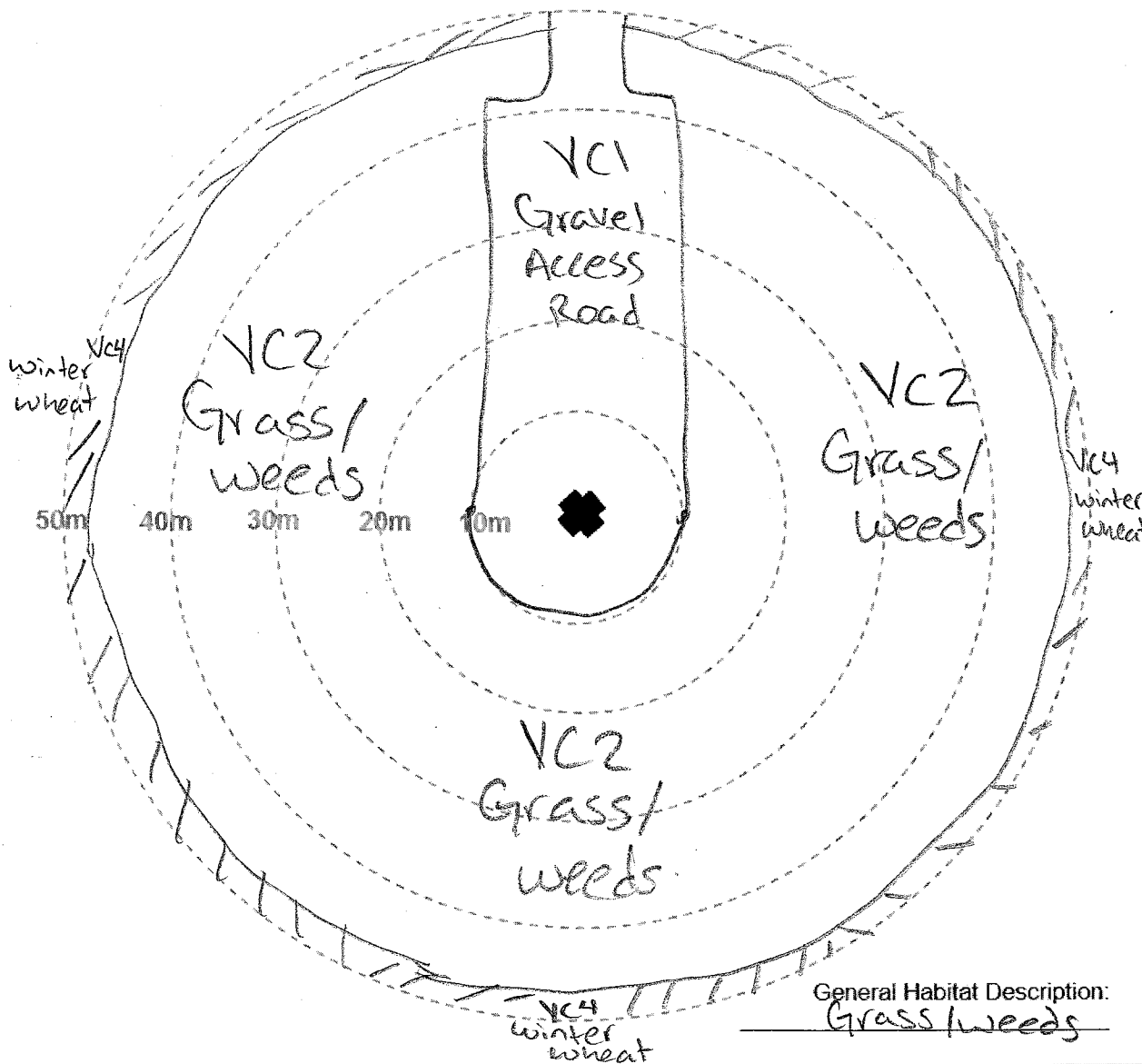


Photo Numbers (from turbine base)
 Facing North: 8774
 Facing East: 8775
 Facing South: 8776
 Facing West: 8777
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/08/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grant Bend WF Project #: 24088 Turbine #: T42

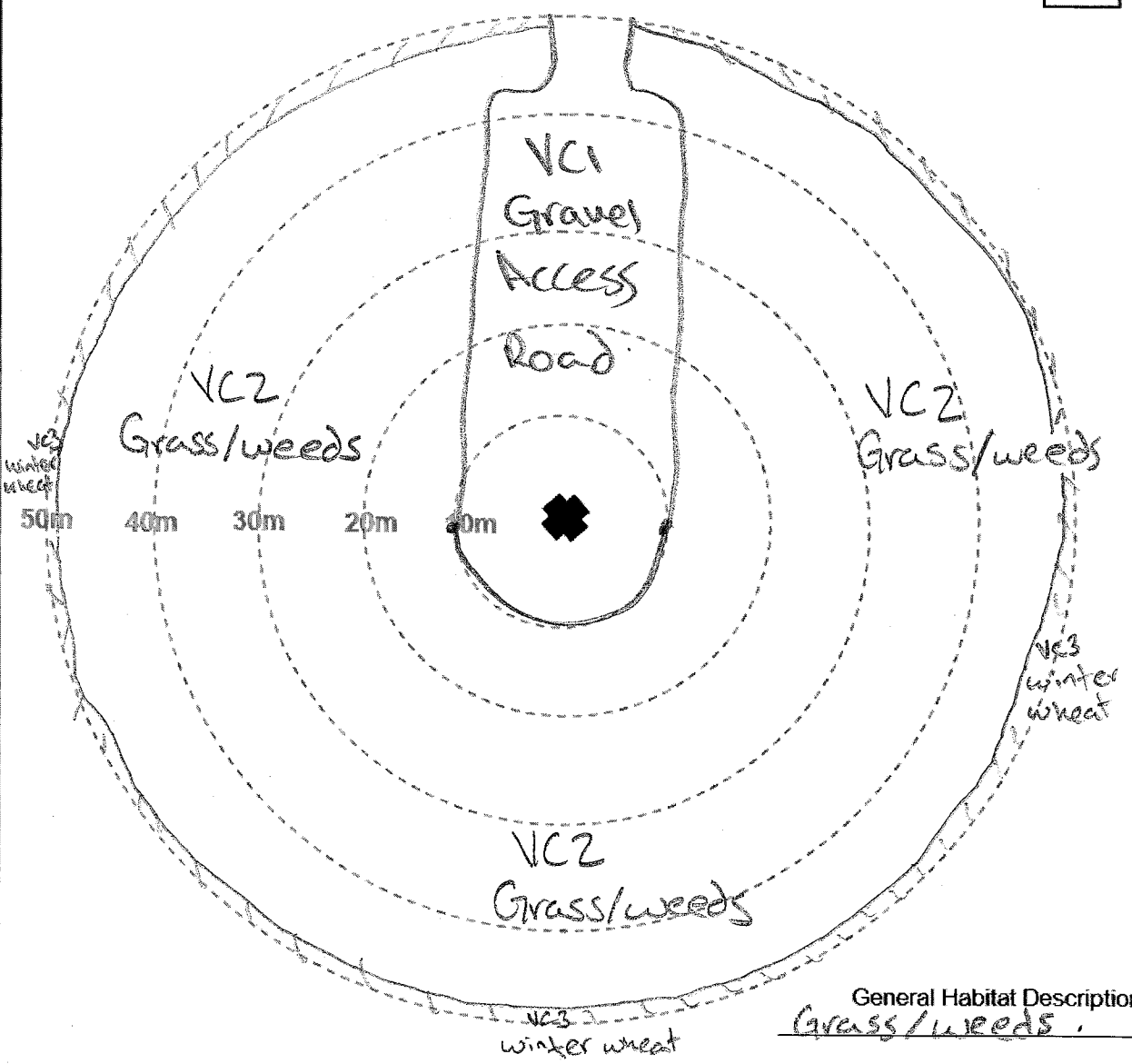
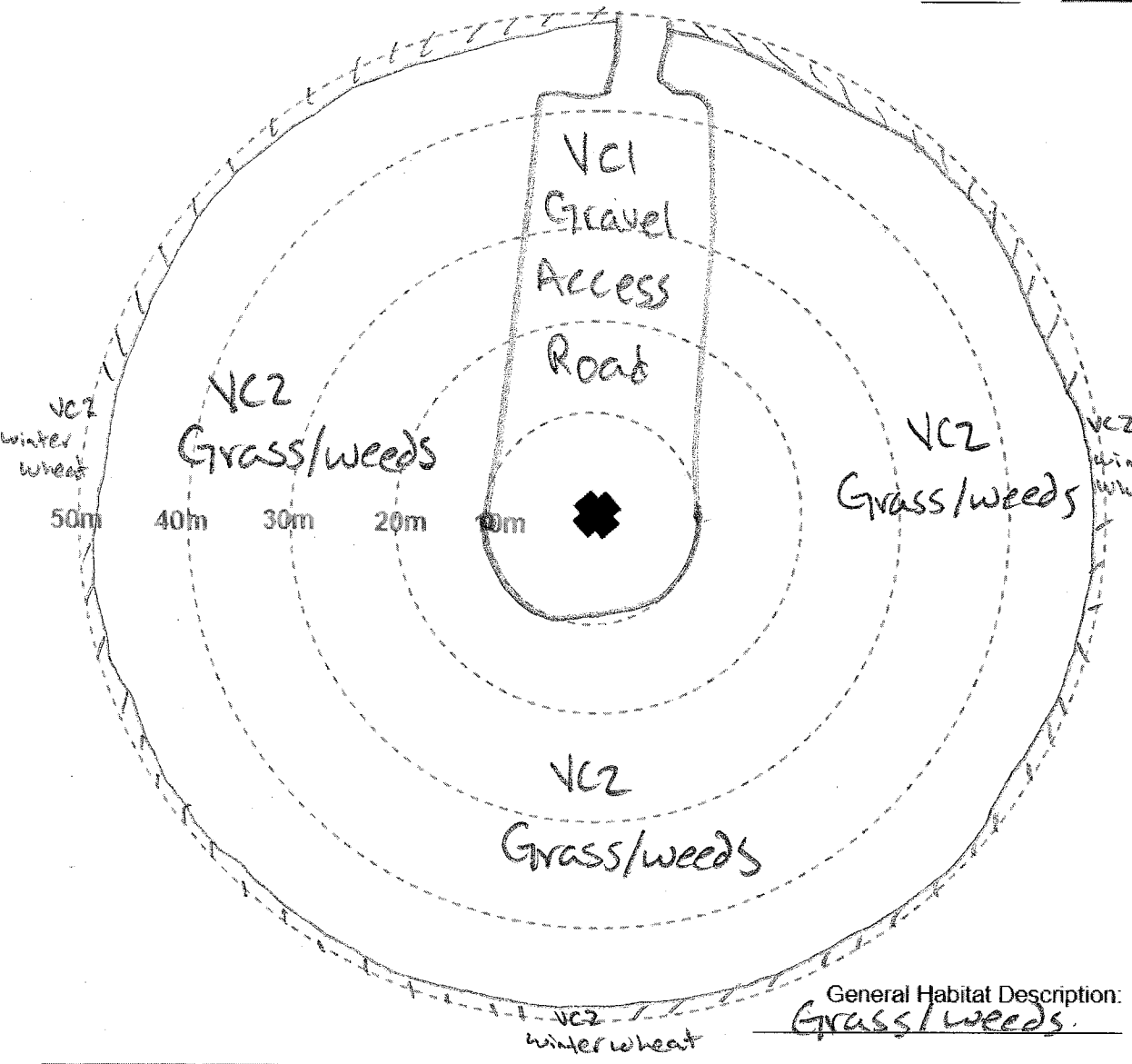
Photo Numbers (from turbine base)
 Facing North: 9074
 Facing East: 9075
 Facing South: 9076
 Facing West: 9077
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/09/21
 Observer: ACU, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



Photo Numbers (from turbine base)
 Facing North: 9416
 Facing East: 9417
 Facing South: 9418
 Facing West: 9419
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 01/10/21
 Observer: ACU, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T48 Degree of Slope 3 degrees Slope Orientation S (e.g. SSW)

Photo Numbers (from turbine base)
 Facing North: 8040
 Facing East: 8041
 Facing South: 8042
 Facing West: 8043
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 04/05/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m

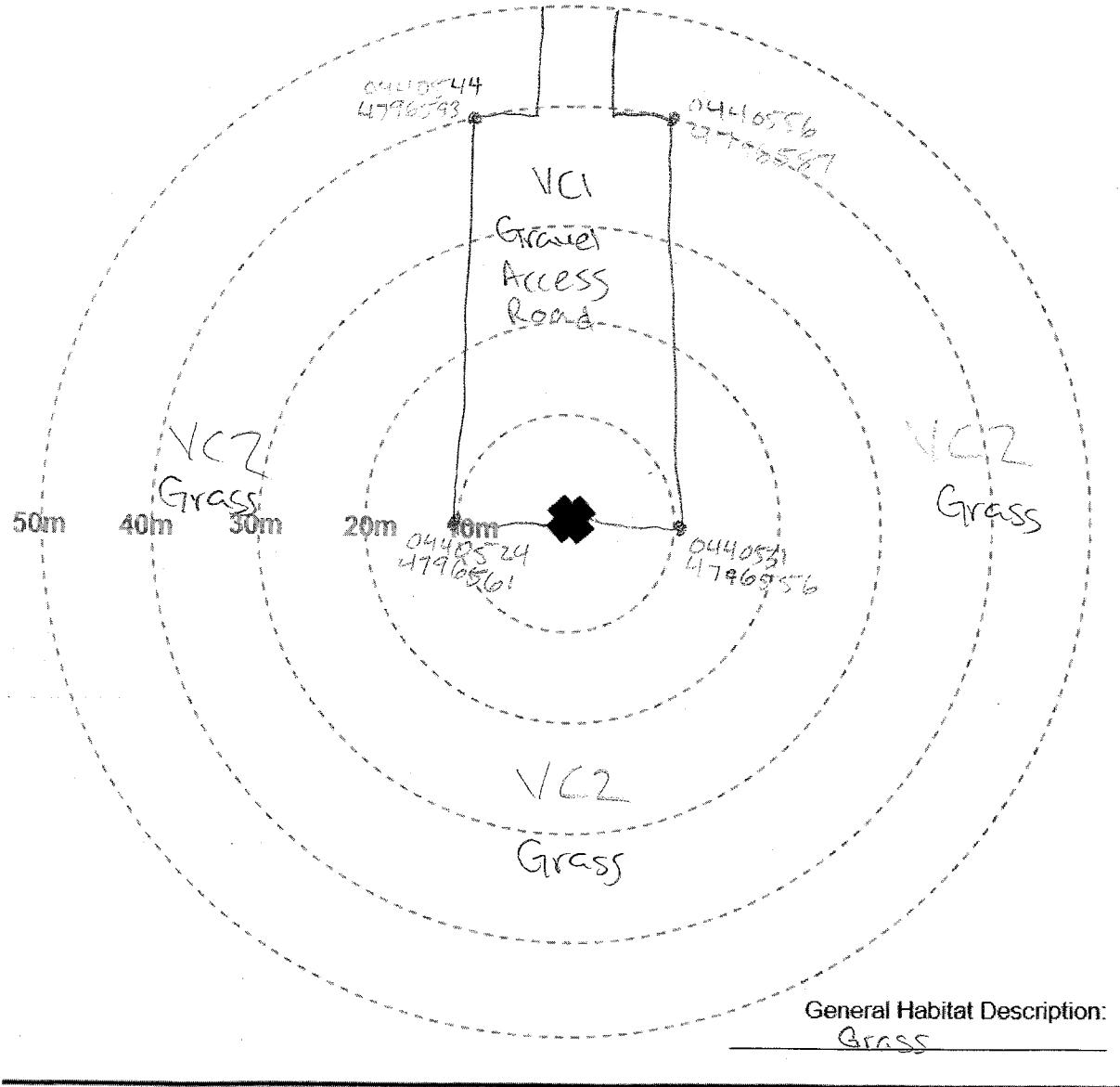
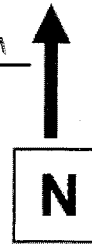
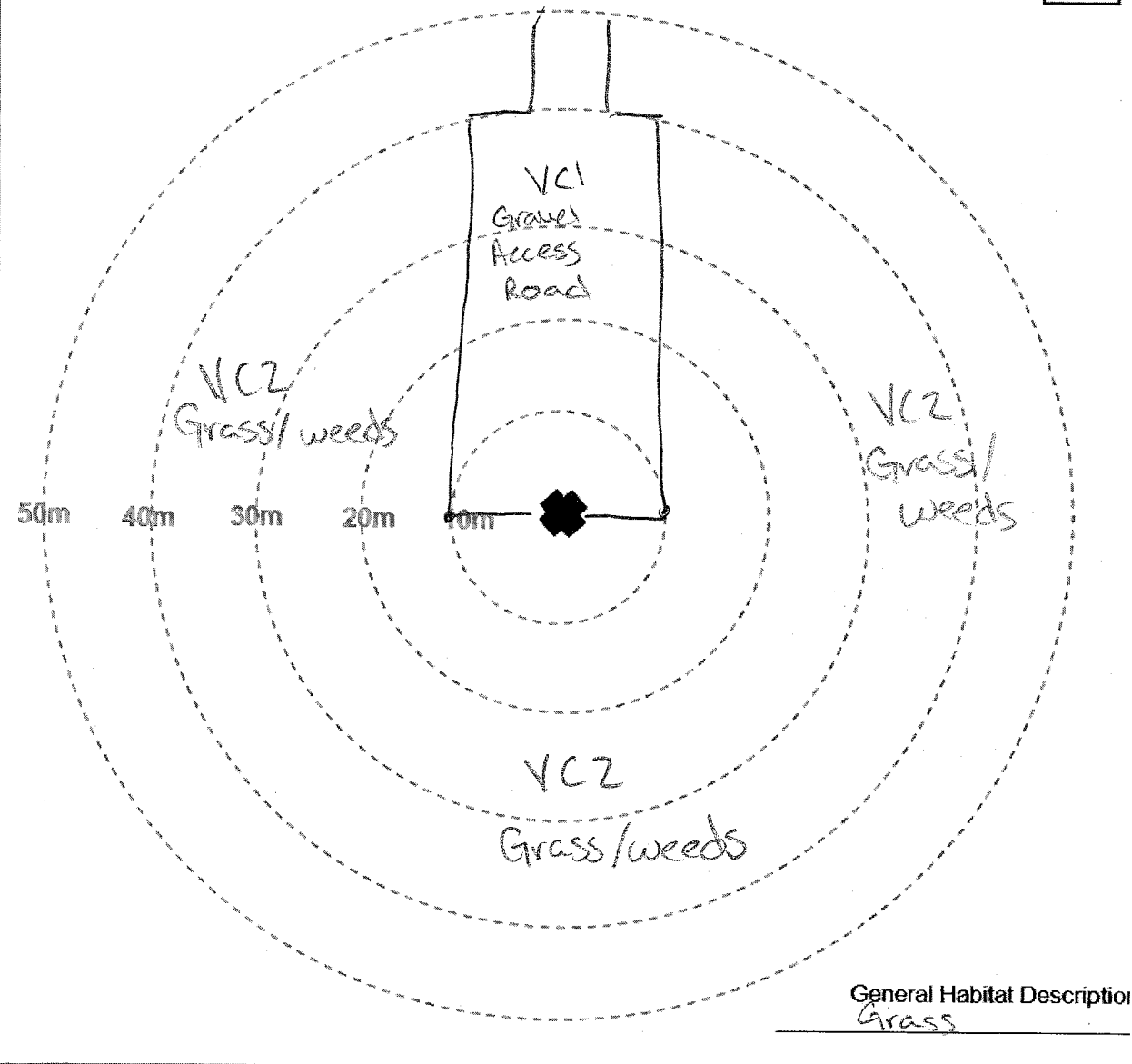
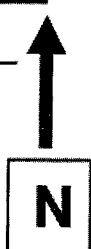


Photo Numbers (from turbine base)
 Facing North: 8270
 Facing East: 8271
 Facing South: 8272
 Facing West: 8273
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 01/06/21
 Observer: A. Vanderpas, M. Bosco
 Monthly/Seasonal
 Linear Transect Width: 3 m



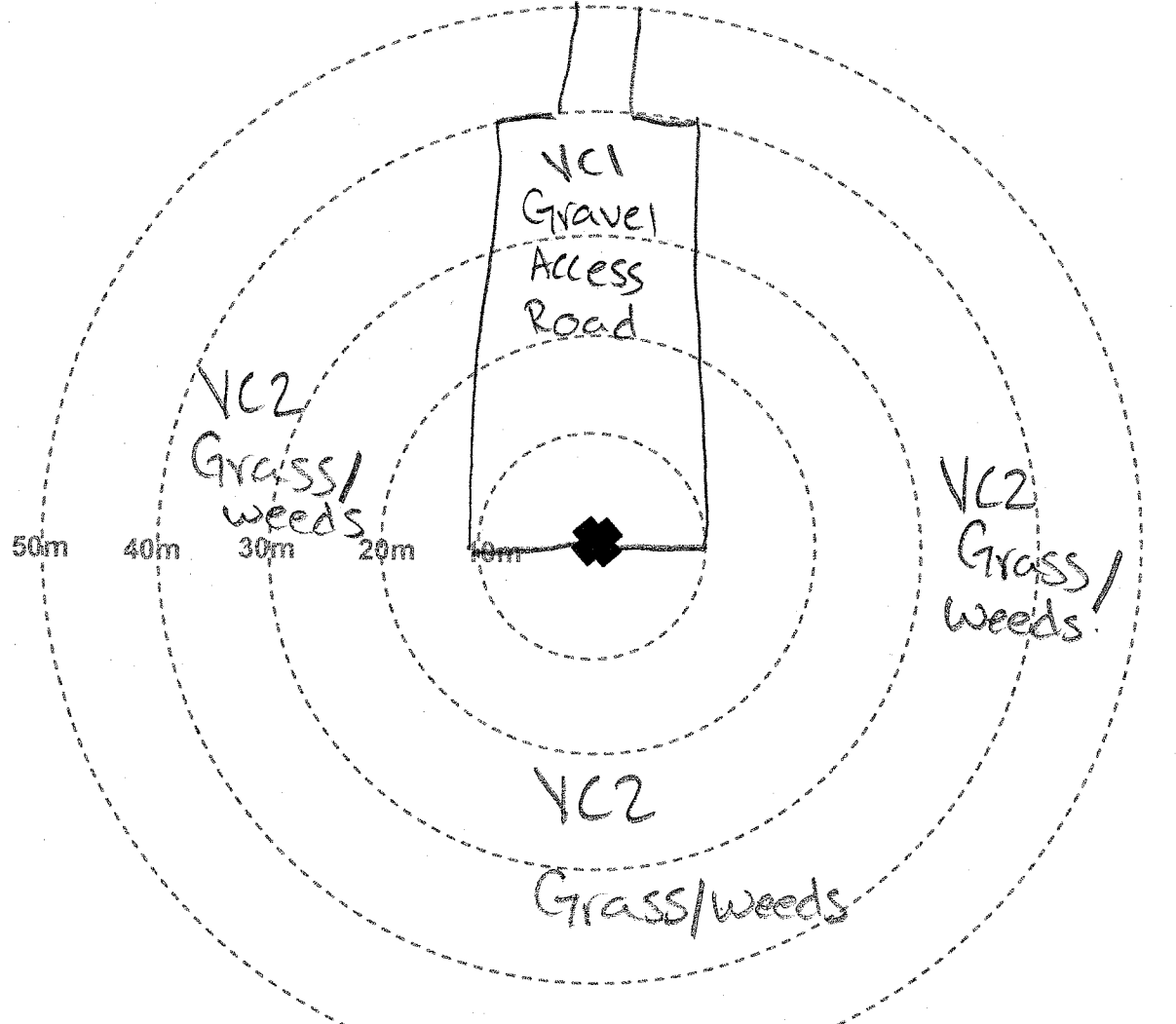
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Turbine Habitat Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T48

Photo Numbers (from turbine base)
 Facing North: 8534
 Facing East: 8535
 Facing South: 8536
 Facing West: 8537
 (sketch habitat and visibility classes)

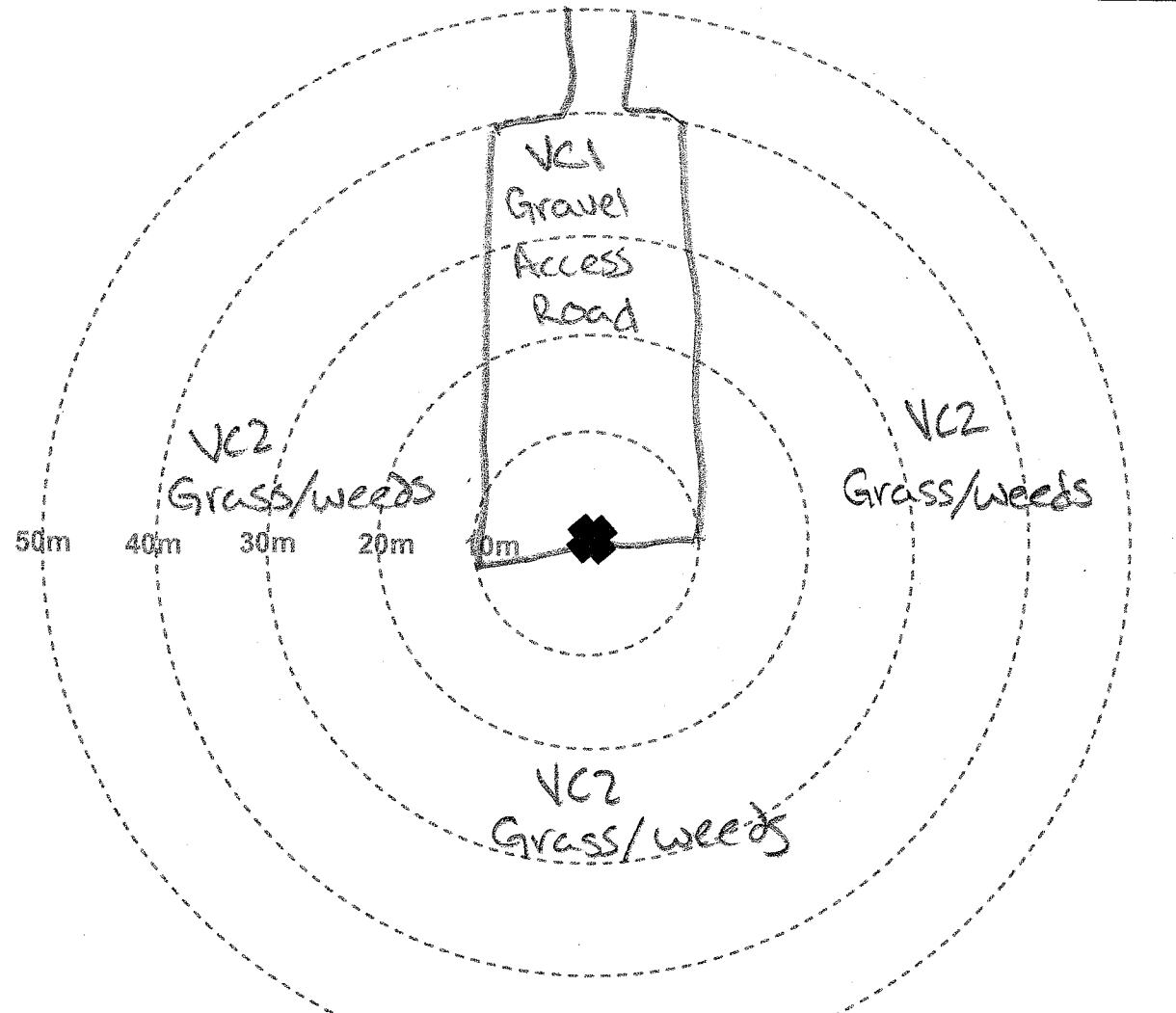
Date (DD/MM/YY): 04/07/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Grass/weeds

Photo Numbers (from turbine base)
 Facing North: 8743
 Facing East: 8744
 Facing South: 8745
 Facing West: 8746
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 03/08/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Grass/weeds

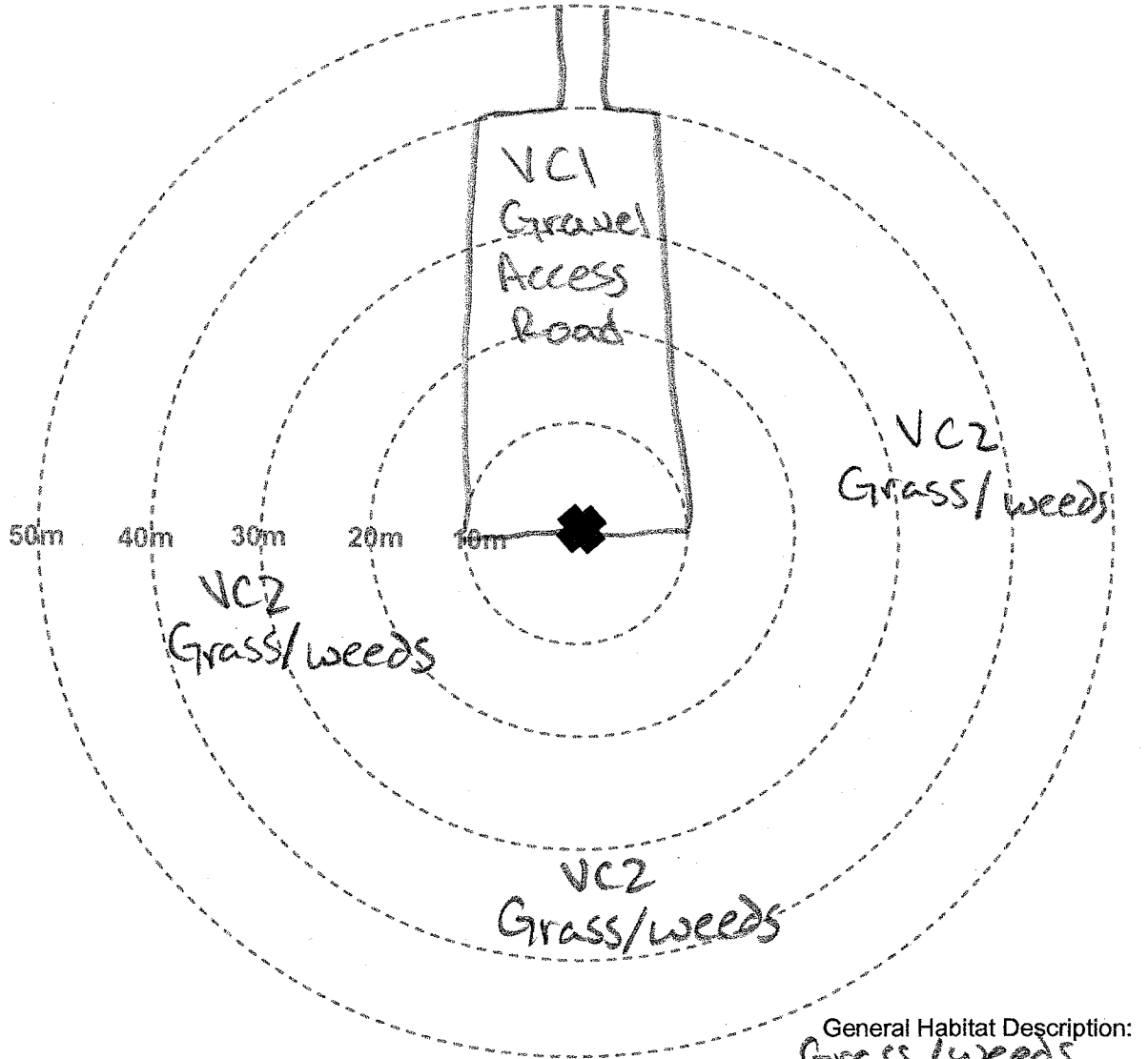
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Turbine Habitat Map

Project Name: Grand Bend WF Project #: 2408B Turbine #: T48

Photo Numbers (from turbine base)
 Facing North: 9070
 Facing East: 9071
 Facing South: 9072
 Facing West: 9073
 (sketch habitat and visibility classes)

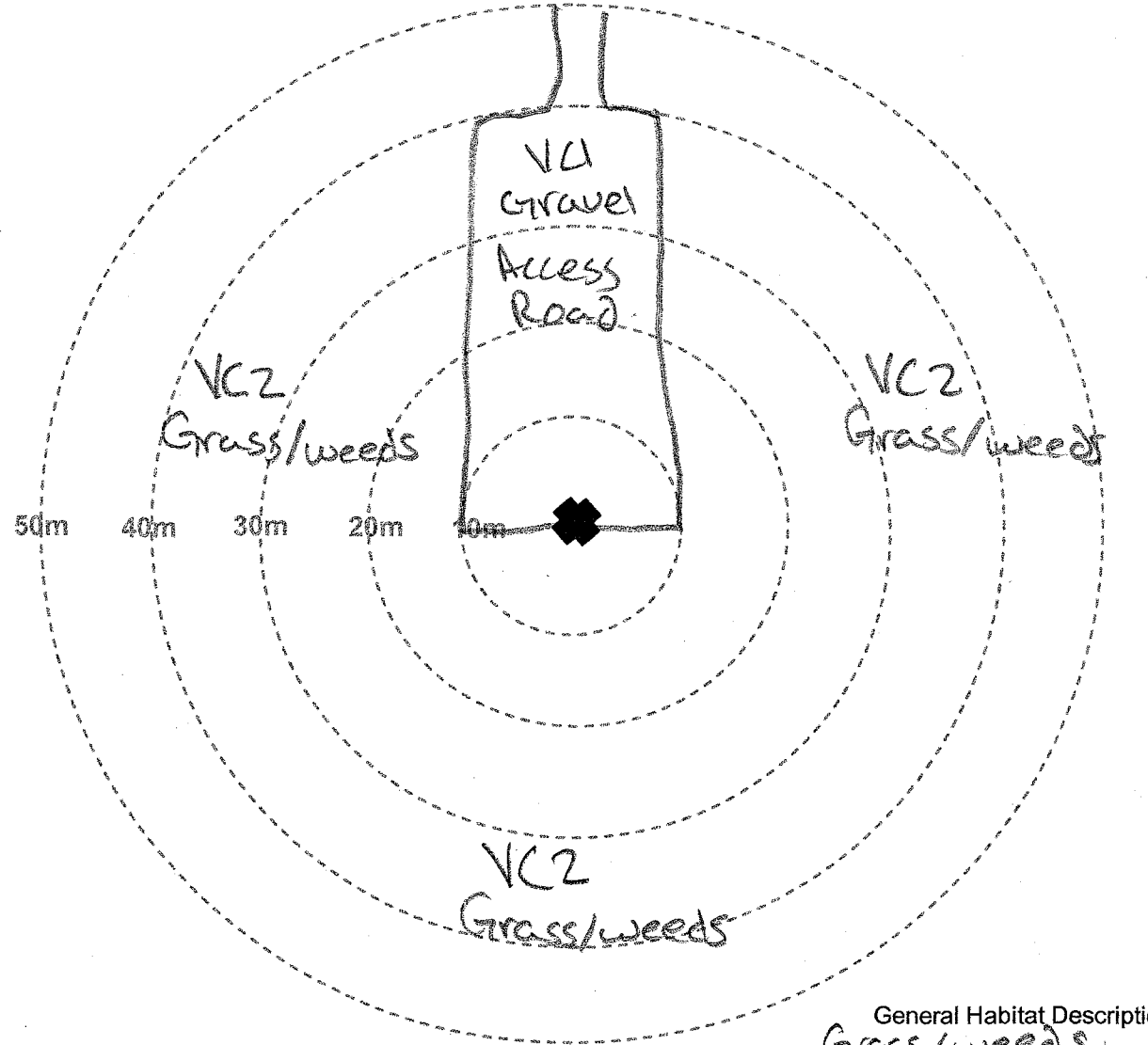
Date (DD/MM/YY): 03/09/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Grass/weeds

Photo Numbers (from turbine base)
 Facing North: 9411
 Facing East: 9412
 Facing South: 9413
 Facing West: 9414
 (sketch habitat and visibility classes)

Date (DD/MM/YY): 01/10/21
 Observer: ACV, MGB
 Monthly/Seasonal
 Linear Transect Width: 3 m



General Habitat Description:
Grass/weeds

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Appendix V
Bat Mortalities

Appendix V
2408B Grand Bend Wind Farm
2021 Bat Mortalities

Date	Turbine	Start Time	End Time	Dog Used (Y/N)	Days Since Last Search	Temp.	Cloud Cover (%)	Precipitation	Wind Speed (Beaufort Scale)	Wind Direction	Species	Sample ID	Bat FA (mm)	Sex (M/F/U)	Easting	Northing	Distance from Turbine (m)	Direction from Turbine (°)	Condition Code	Estimated Time Since Death (hrs)	Observed Injuries	Substrate/Habitat	Visibility Class
13-05-2021	T07	9:35	10:05	N	3	11	0	None	3	NW	Silver-haired Bat	2408B-130521-T07-01	42	F	443949	4809135	14	195	F	12	Laceration on left leg and on right wing	Bare soil	1
21-05-2021	T42	9:15	9:45	N	3	23	95	None	3	SW	Bat sp.	2408B-210521-T42-01	43	U	441625	4797874	27	40	S	12	Only wings remain	Gravel	1
24-05-2021	T20	12:50	13:20	N	4	18	80	None	6	SE	Hoary Bat	2408B-240521-T20-01	55	M	446938	4804827	27	90	E	36	Laceration on neck	Bare soil	1
08-06-2021	T38	10:20	10:50	N	4	25	40	None	3	SW	Silver-haired Bat	2408B-080621-T38-01	42	M	442420	4799523	31	30	F	12	Laceration on right side of torso under wing	Grass	2
18-06-2021	T33	11:45	12:15	N	3	18	100	Rain	3	SW	Silver-haired Bat	2408B-180621-T33-01	42	M	442817	4800442	29	230	E	36	Swelling on left leg	Grass	2
29-06-2021	T38	10:15	10:45	N	4	26	15	None	3	S	Hoary Bat	2408B-290681-T38-01	56	U	442403	4799497	5	340	S	60	Only wings remain	Grass	2
16-07-2021	T27	12:30	13:00	N	3	20	100	None	3	E	Silver-haired Bat	2408B-160721-T27-01	41	M	443609	4803723	48	340	E	36	Right leg broken	Bare soil	1
27-07-2021	T42	9:30	11:35	N	4	24	100	None	3	NW	Hoary Bat	2408B-270721-T42-01	55	M	441604	4797852	2	345	F	12	None apparent	Gravel	1
02-08-2021	T18	10:55	11:25	N	4	19	5	None	3	N	Eastern Red Bat	2408B-020821-T18-01	40	M	443742	4805314	34	130	F	12	None apparent	Bare soil	1
02-08-2021	T18	10:55	11:25	N	4	19	5	None	3	N	Big Brown Bat	2408B-020821-T18-02	47	F	443706	4805138	11	320	F	12	Left wing broken at shoulder	Bare soil	1
03-08-2021	T27	12:10	12:40	N	4	18	0	None	2	E	Hoary Bat	2408B-030821-T27-01	50	M	443656	4803688	18	90	E	36	Both forearms broken; laceration on left side of skull and body	Weeds	2
06-08-2021	T42	9:30	10:00	N	3	21	0	None	3	SW	Eastern Red Bat	2408B-060821-T42-01	43	F	441628	4797863	24	60	F	12	None apparent	Grass	2
10-08-2021	T42	9:20	9:50	N	4	23	100	None	4	S	Eastern Red Bat	2408B-090821-T42-01	42	M	441612	4797870	18	10	F	12	None apparent	Weeds	2
10-08-2021	T38	11:05	11:35	N	4	23	100	None	4	S	Hoary Bat	2408B-090821-T38-01	55	F	442430	4799509	25	50	F	12	None apparent	Grass	2
10-08-2021	T31	13:00	13:30	N	4	23	100	None	4	S	Big Brown Bat	2408B-090821-T31-01	46	U	443538	4801094	17	190	E	36	Laceration on stomach	Bare soil	1
10-08-2021	T17	14:40	15:10	N	4	23	100	None	4	S	Eastern Red Bat	2408B-090821-T17-01	42	M	443343	4805382	40	340	F	12	None apparent	Bare soil	1
17-08-2021	T38	10:55	11:25	N	4	21	100	None	1	NE	Hoary Bat	2408B-170821-T38-01	55	U	442389	4799489	20	260	Alive	N/A	None apparent	Grass	2
19-08-2021	T02	8:40	9:10	N	3	22	10	None	4	NE	Silver-haired Bat	2408B-190821-T02-01	42	F	444407	4811754	31	100	F	12	Left humerus broken; laceration on lower right back	Bare soil	1
20-08-2021	T38	10:10	10:40	N	3	19	5	None	2	NE	Silver-haired Bat	2408B-200821-T38-01	43	M	442433	4799473	31	150	E	36	Swelling on legs	Grass	2
24-08-2021	T42	11:30	12:00	N	4	22	20	None	4	W	Hoary Bat	2408B-240821-T42-01	54	M	441606	4797826	28	180	E	36	Laceration on back	Grass	2
26-08-2021	T07	9:30	10:00	N	3	25	100	Fog	2	SW	Hoary Bat	2408B-260821-T07-01	54	U	443989	4809181	45	50	E	36	Both forearms broken; laceration on stomach	Bare soil	1
30-08-2021	T17	10:45	11:15	N	4	24	50	None	3	NW	Little Brown Myotis	2408B-300821-T17-01	40	U	443387	4805364	12	40	E	36	Large laceration on abdomen; tear in right wing	Bare soil	1
31-08-2021	T33	10:40	11:10	N	4	20	5	None	3	NE	Hoary Bat	2408B-310821-T33-01	54	M	442851	4800483	20	40	E	36	Laceration on abdomen	Grass	2
31-08-2021	T31	11:25	11:55	N	4	20	5	None	3	NE	Silver-haired Bat	2408B-310821-T31-01	42	F	443564	4801127	28	60	E	36	Laceration on right side of back	Bare soil	1
06-09-2021	T16	10:00	10:30	N	4	19	40	None	6	NW	Eastern Red Bat	2408B-060921-T16-01	39	M	443917	4807569	47	160	F	12	Laceration on left eye; right forearm broken; left humerus broken	Grass	2
06-09-2021	T18	11:15	11:45	N	4	19	40	None	6	NW	Hoary Bat	2408B-060921-T18-01	56	M	443741	4805328	27	110	F	12	None apparent	Bare soil	1
07-09-2021	T42	9:10	9:40	N	4	16	5	None	4	SW	Hoary Bat	2408B-070921-T42-01	56	F	441629	4797857	21	80	F	12	Both humeri broken	Grass	2
07-09-2021	T31	11:45	12:15	N	4	16	5	None	4	SW	Silver-haired Bat	2408B-070921-T31-01	38	U	443573	4801128	37	50	E	36	Wings broken; head decapitated; body missing	Weeds	2
09-09-2021	T02	8:50	9:20	N	3	16	100	Rain	6	NW	Silver-haired Bat	2408B-090921-T02-01	U	U	444378	4811762	0	10	Alive	N/A	Tick under right ear was removed	Gravel	1
09-09-2021	T07	10:25	10:55	N	3	16	100	Rain	6	NW	Hoary Bat	2408B-090921-T07-01	55	M	443958	4809185	37	20	F	12	None apparent	Bare soil	1
09-09-2021	T16	11:20	11:50	N	3	16	100	Rain	6	NW	Silver-haired Bat	2408B-090921-T16-01	44	U	443862	4807815	32	290	E	36	Left humerus broken; laceration on lower jaw	Grass	2
13-09-2021	T17	11:15	11:45	N	4	16	95	None	1	NE	Hoary Bat	2408B-130921-T17-01	58	F	443384	4805355	11	100	F	12	None apparent	Bare soil	1
17-09-2021	T31	10:35	11:05	N	3	19	40	None	3	SW	Silver-haired Bat	2408B-170921-T31-01	43	M	443523	4801159	48	0	E	36	Left forearm broken; laceration on right side of abdomen	Grass	2
20-09-2021	T18	11:00	11:30	N	4	18	20	None	4	SE	Silver-haired Bat	2408B-170921-T18-01	43	U	443695	4805325	24	280	M	60	Major damage to head, body and left wing	Bare soil	1
21-09-2021	T42	9:15	9:45	N	4	20	80	None	6	S	Silver-haired Bat	2408B-210921-T42-01	43	U	441618	4797868	15	20	A	60	Forearm broken	Gravel	1
21-09-2021	T33	10:55	11:25	N	4	20	80	None	6	S	Silver-haired Bat	2408B-210921-T33-01	44	F	442801	4800450	40	265	E	36	Laceration on neck	Grass	2
21-09-2021	T27	13:00	13:30	N	4	20	80	None	6	S	Little Brown Myotis	2408B-210921-T27-01	37	F	443614	4803692	25	310	F	12	None apparent	Bare soil	1
28-09-2021	T38	10:00	10:30	N	4	13	25	None	3	NE	Silver-haired Bat	2408B-280921-T38-01	42	M	442430	4799528	40	40	F	12	None apparent	Grass	2
28-09-2021	T31	12:10	12:40	N	4	13	25	None	3	NE	Silver-haired Bat	2408B-280921-T31-01	44	M	443531	4801126	18	330	F	12	None apparent	Bare soil	1
28-09-2021	T31	12:10	12:40	N	4	13	25	None	3	NE	Silver-haired Bat	2408B-280921-T31-01	44	M	443548	4801138	27	10	F	12	None apparent	Bare soil	1
28-09-2021	T31	12:10	12:40	N	4	13	25	None	3	NE	Hoary Bat	2408B-280921-T31-01	57	F	443536	4801140	45	60	F	12	Left forearm broken	Bare soil	1
28-09-2021	T27	13:25	13:55	N	4	13	25	None	3	NE	Silver-haired Bat	2408B-280921-T27-01	42	F	443633	4803702	18	20	F	12	None apparent	Bare soil	1
04-10-2021	T16	10:05	10:35	N	4	17	100	None	3	SE	Hoary Bat	2408B-041021-T16-01	54	U	443885	4807600	18	220	S	36	Only wings remain	Weeds	2
04-10-2021	T20	12:50	13:20	N	4	17	100	None	3	SE	Hoary Bat	2408B-041021-T20-01	57	M	446888	4804794	40	240	E	36	None apparent	Weeds	2
15-10-2021	T38	10:40	11:10	N	3	15	100	None	2	N	Silver-haired Bat	2408B-151021-T38-01	U	U	442387	4799474	27	250	Alive	N/A	None apparent	Grass	2

Visibility Class: 1 ≥90% bare ground, vegetation ≤15cm tall
2 ≥25% bare ground, vegetation ≤15cm tall
3 ≤25% bare ground, ≤25% of vegetation is >30cm tall
4 little or no bare ground, ≥ 25% of vegetation is >30cm tall

Condition Code: I Injured or dying
F Fresh
E Early decomposition
M Moderate decomposition
A Advanced decomposition
C Complete decomposition
S Scavenged

Appendix VI
Locations of Bat Mortalities

444325

444350

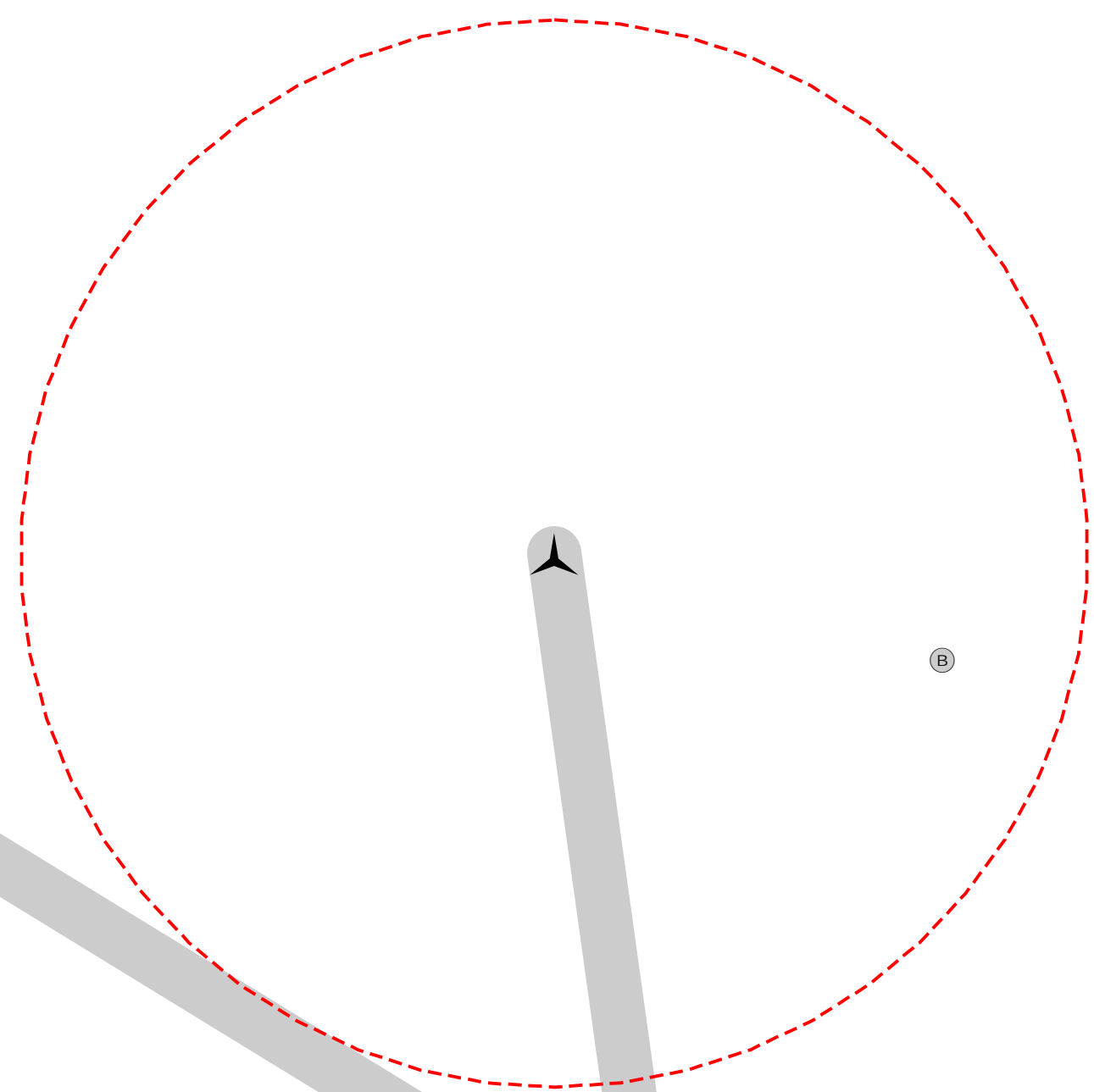
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444425

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4811800
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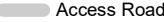
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Legend

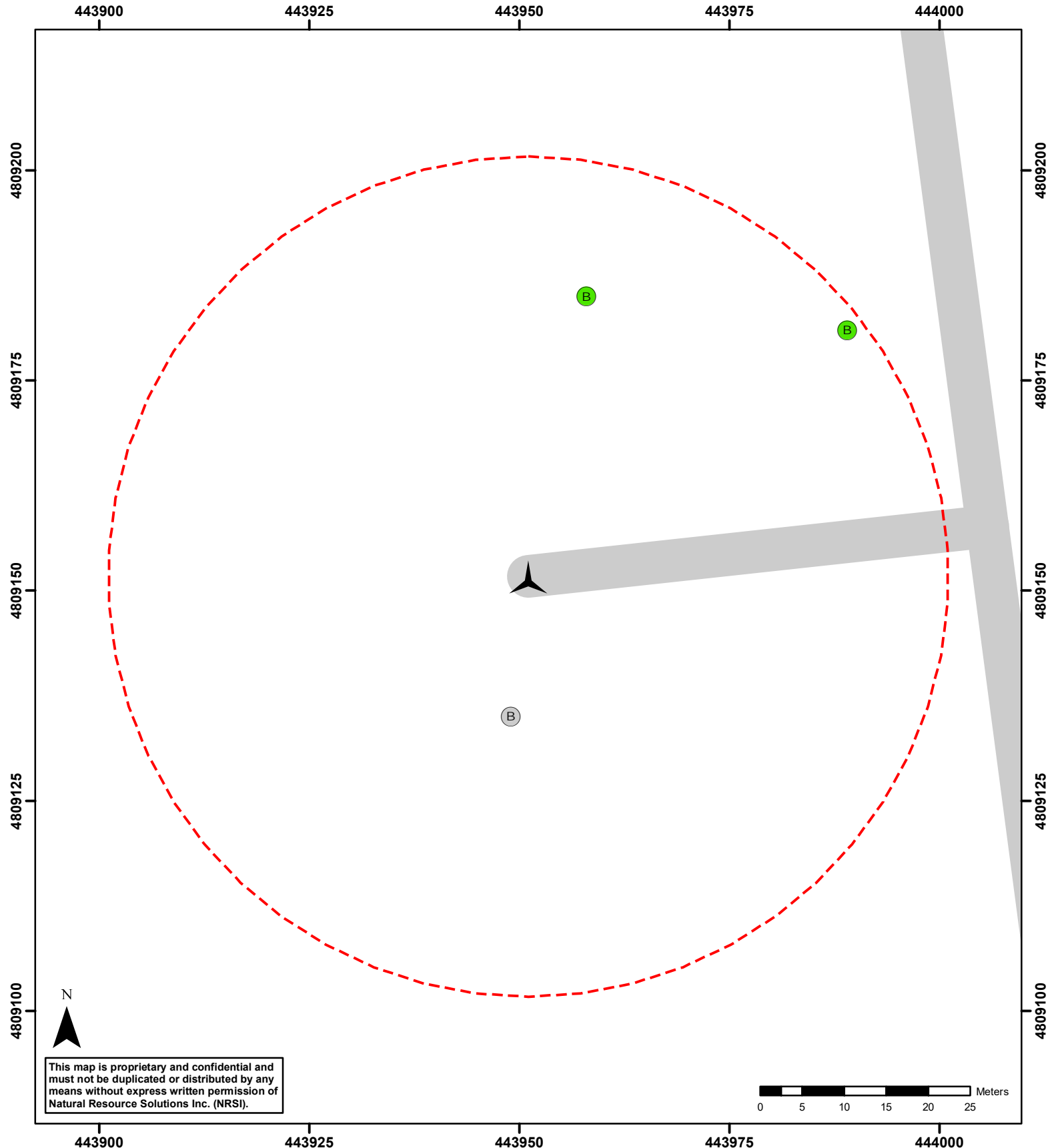
-  Turbine
-  Silver-haired Bat
-  Search Radius (50m)
-  Access Road

Appendix VI
 Grand Bend
 Wind Farm
Turbine T02 Mortalities 2021

NAD83 - UTM Zone 17
 Scale: 1:600 (8.5x11")

Date: January 5, 2022
 Project: 2408B





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- Legend**
- Turbine
 - Search Radius (50m)
 - Access Road
 - Hoary Bat
 - Silver-haired Bat

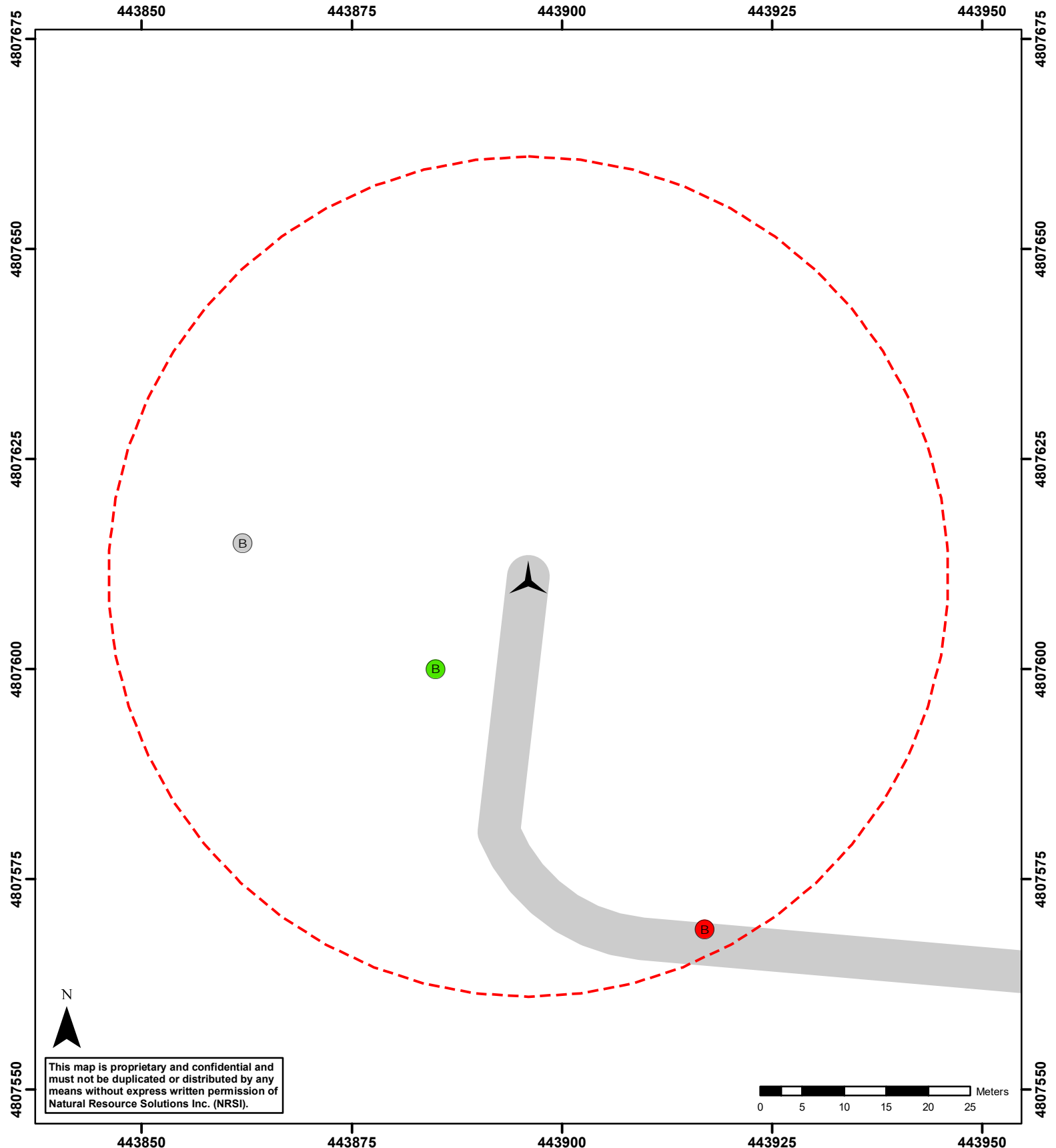
Appendix VI

**Grand Bend
Wind Farm**

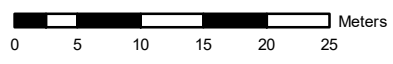
Turbine T07 Mortalities 2021

NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2022 Project: 2408B
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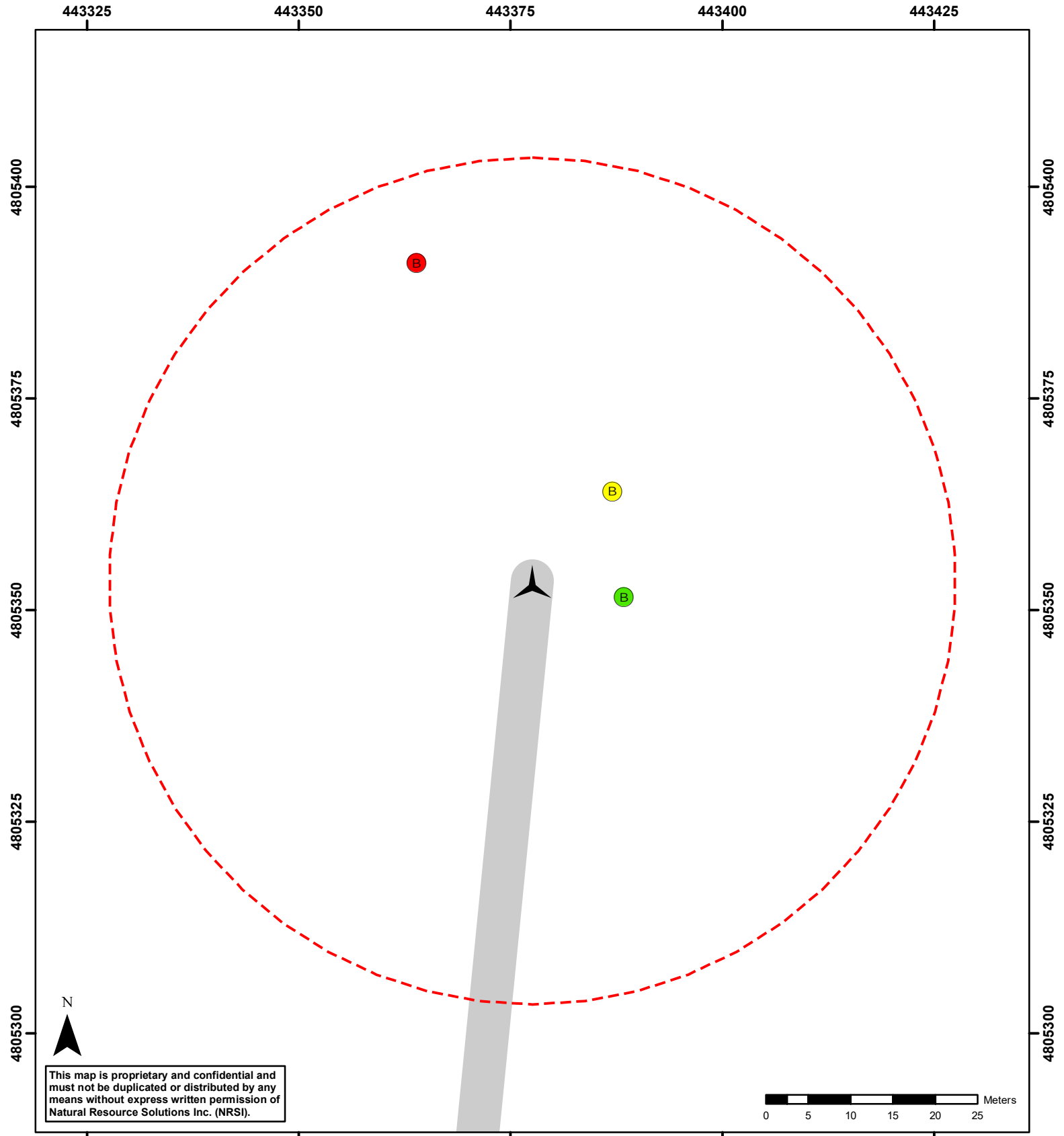
- Legend**
- Turbine
 - Search Radius (50m)
 - Access Road
 - Eastern Red Bat
 - Hoary Bat
 - Silver-haired Bat

Appendix VI
 Grand Bend
 Wind Farm
Turbine T16 Mortalities 2021

NAD83 - UTM Zone 17
 Scale: 1:600 (8.5x11")

Date: January 5, 2022
 Project: 2408B





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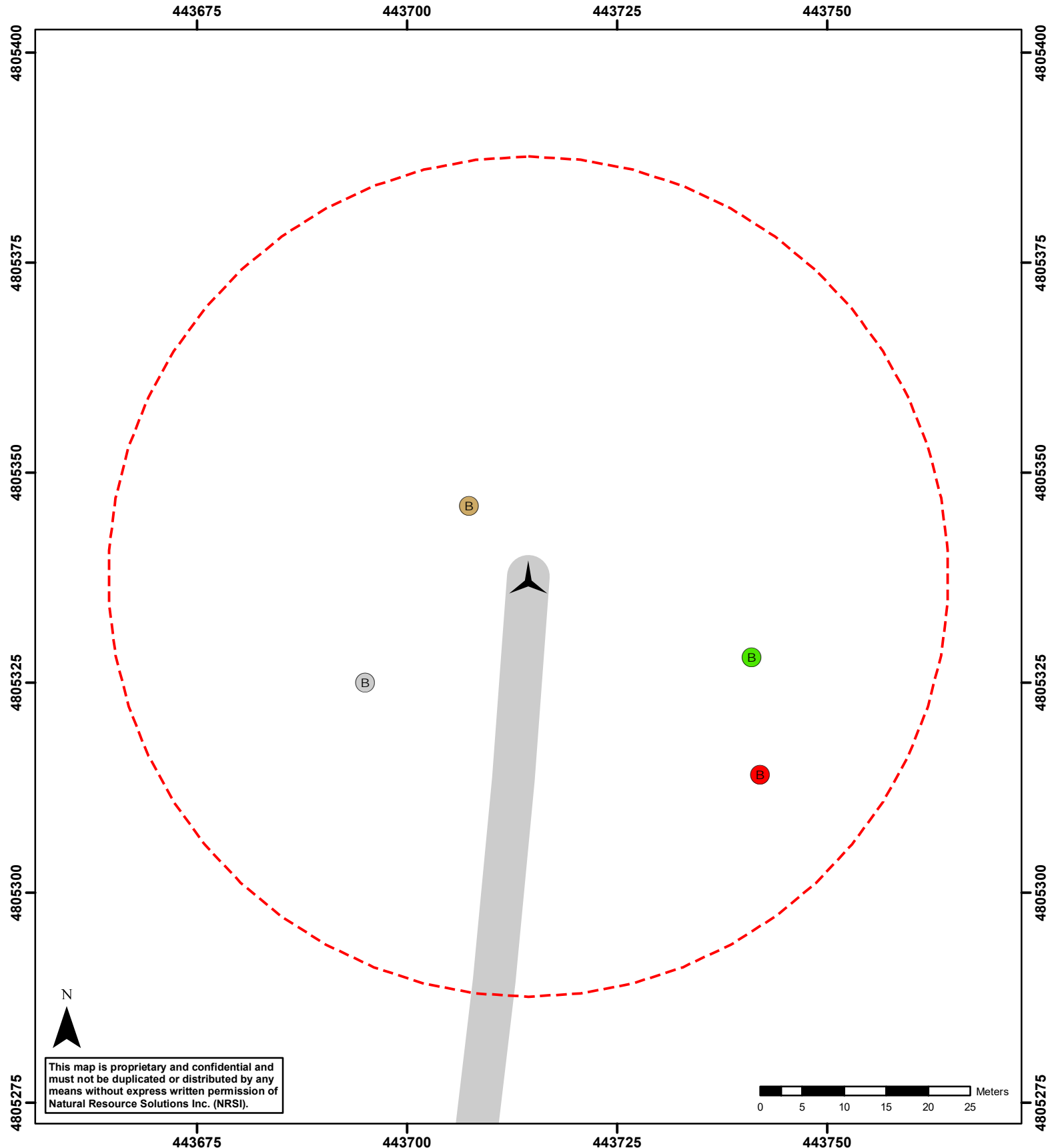
- Legend**
- Turbine
 - Search Radius (50m)
 - Access Road
 - Eastern Red Bat
 - Hoary Bat
 - Little Brown Myotis

Appendix VI
 Grand Bend
 Wind Farm
Turbine T17 Mortalities 2021

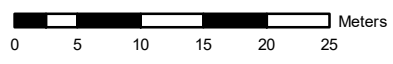
NAD83 - UTM Zone 17
 Scale: 1:600 (8.5x11")

Date: January 5, 2022
 Project: 2408B





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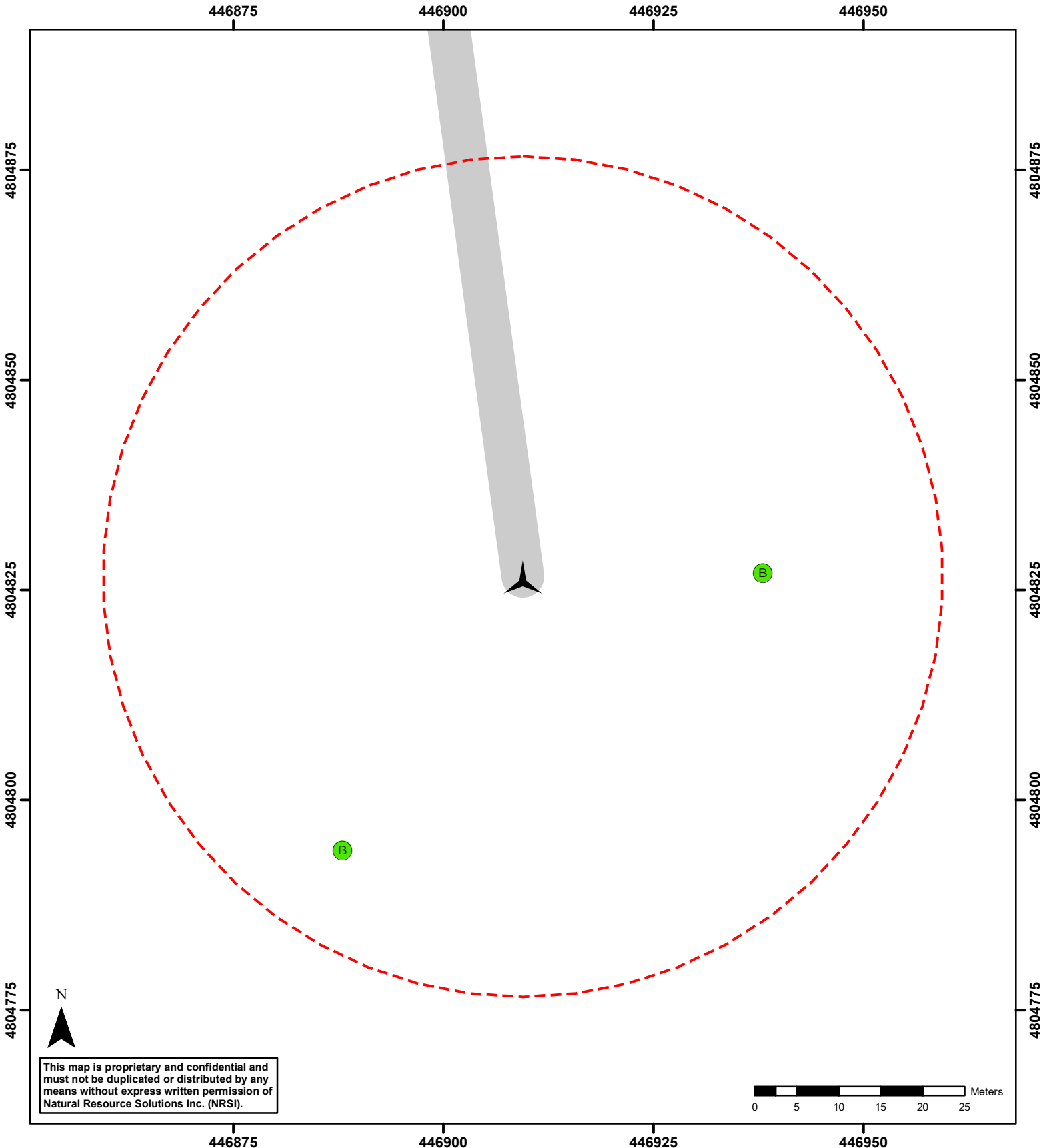
- Legend**
- Turbine
 - Search Radius (50m)
 - Access Road
 - Big Brown Bat
 - Eastern Red Bat
 - Hoary Bat
 - Silver-haired Bat

Appendix VI
 Grand Bend
 Wind Farm
Turbine T18 Mortalities 2021

NAD83 - UTM Zone 17
 Scale: 1:600 (8.5x11")





Date: January 5, 2022
 Project: 2408B





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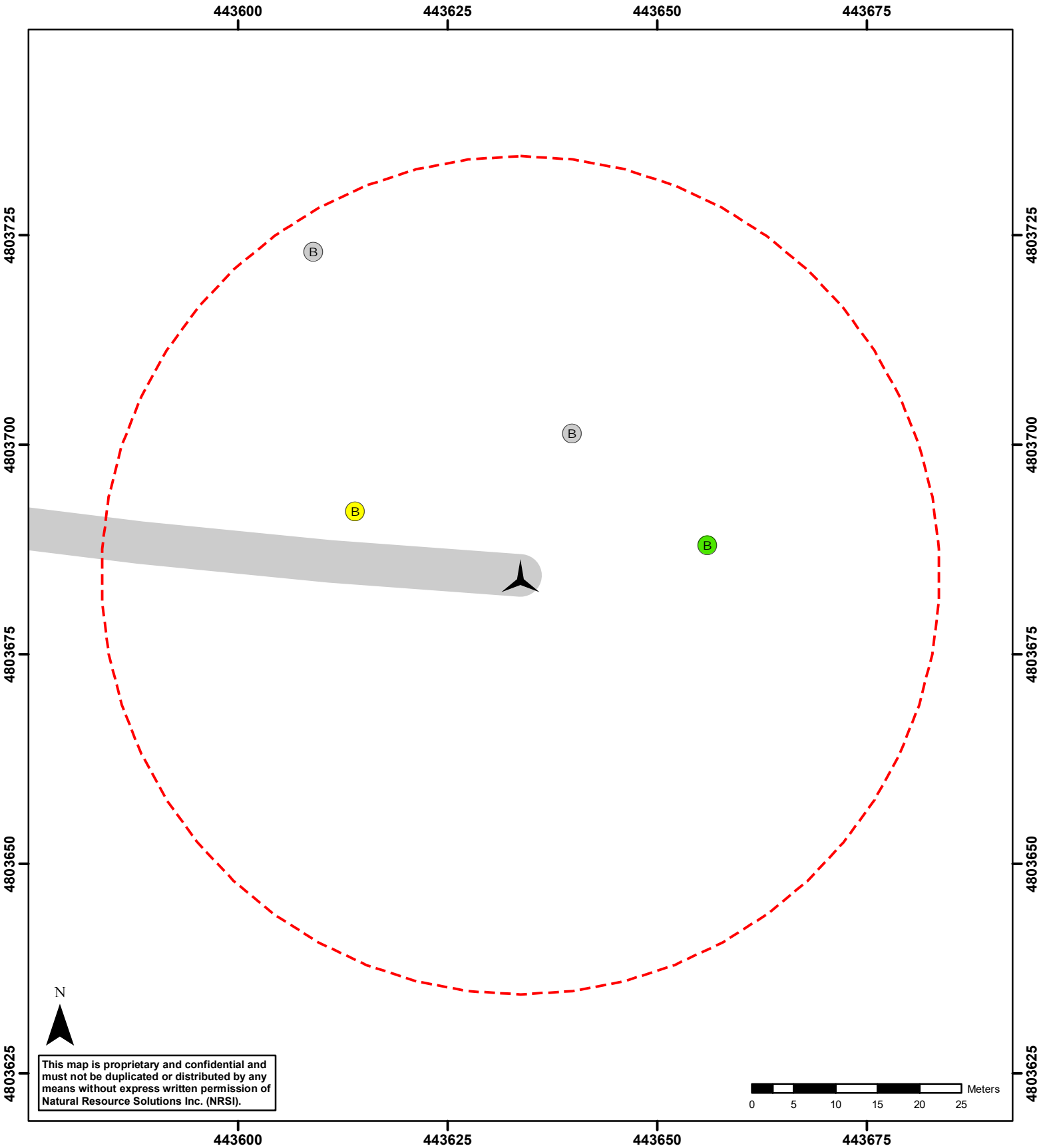
- Legend**
-  Turbine
 -  Hoary Bat
 -  Search Radius (50m)
 -  Access Road

Appendix VI
 Grand Bend
 Wind Farm
Turbine T20 Mortalities 2021

NAD83 - UTM Zone 17
 Scale: 1:600 (8.5x11")







Date: January 5, 2022
 Project: 2408B





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Legend


-  Turbine
-  Search Radius (50m)
-  Access Road
-  Hoary Bat
-  Little Brown Myotis
-  Silver-haired Bat

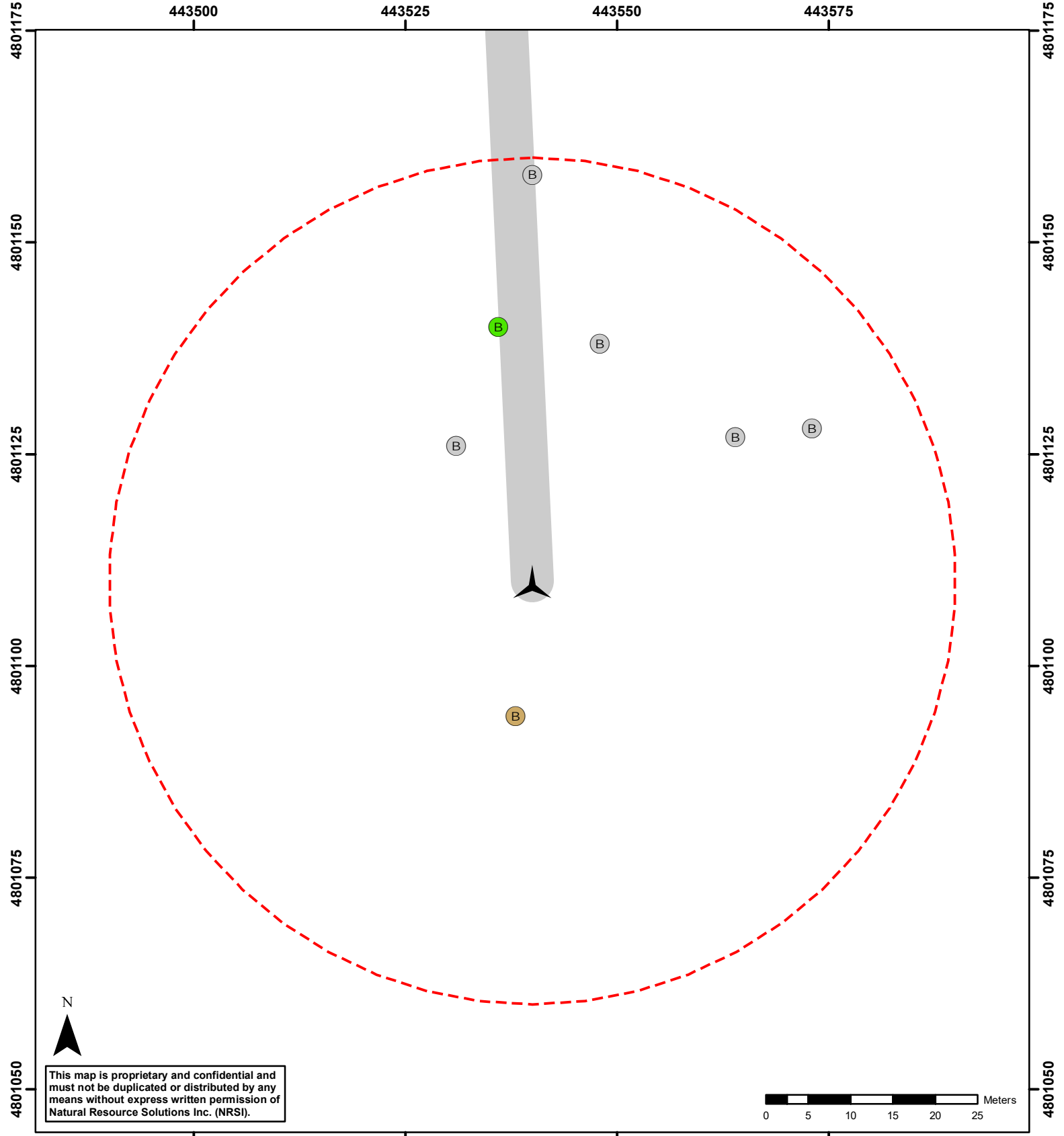
Appendix VI

**Grand Bend
Wind Farm**

Turbine T27 Mortalities 2021

NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2022 Project: 2408B
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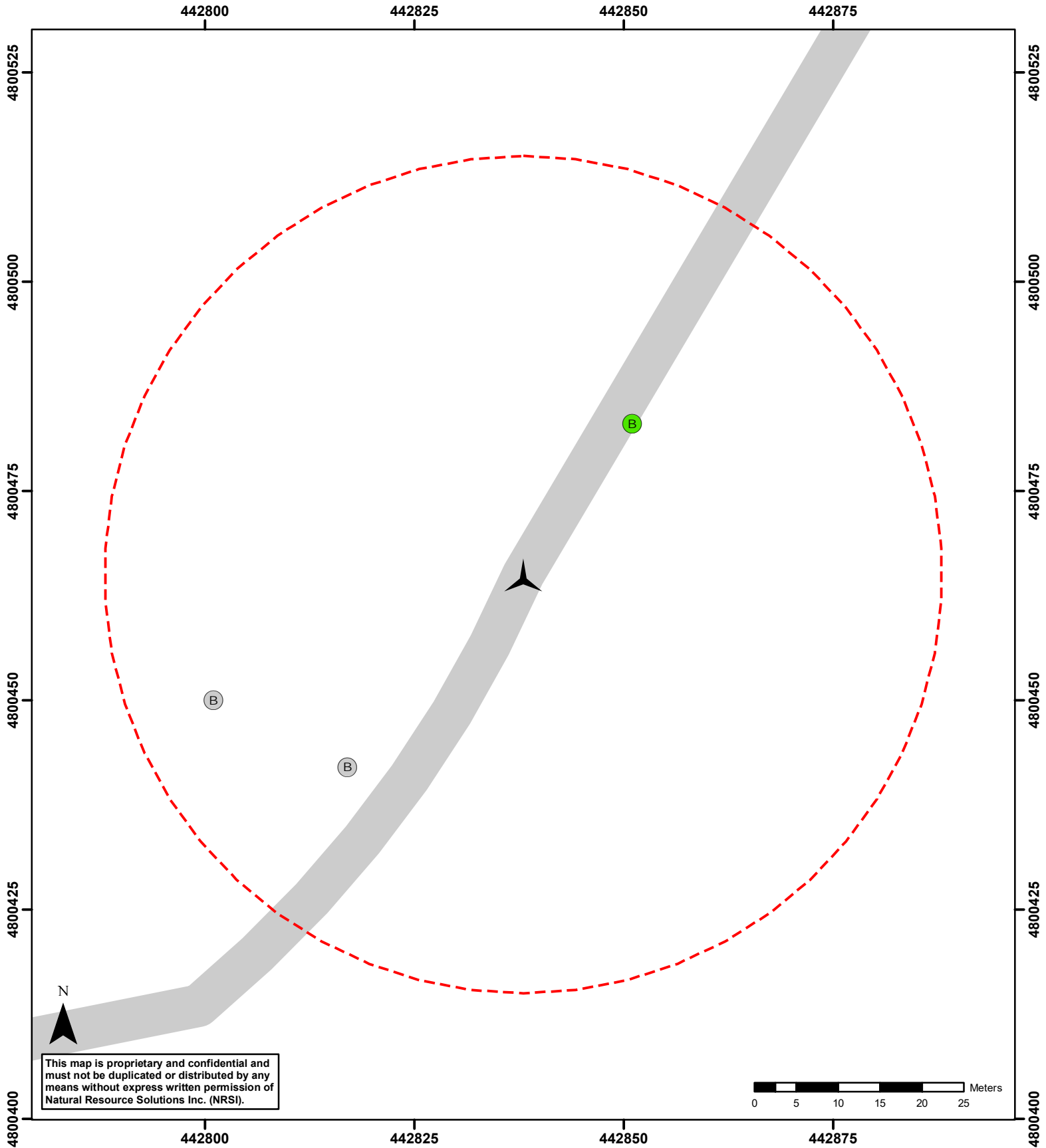
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Aquatic, Terrestrial and Wetland Biologists



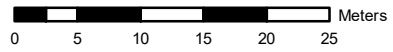
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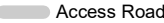




Legend Turbine Search Radius (50m) Access Road		Big Brown Bat Hoary Bat Silver-haired Bat	Appendix VI <h3>Grand Bend Wind Farm</h3> <h4>Turbine T31 Mortalities 2021</h4>
		NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2022 Project: 2408B
		NATURAL RESOURCE SOLUTIONS INC. <small>Aquatic, Terrestrial and Wetland Biologists</small>	



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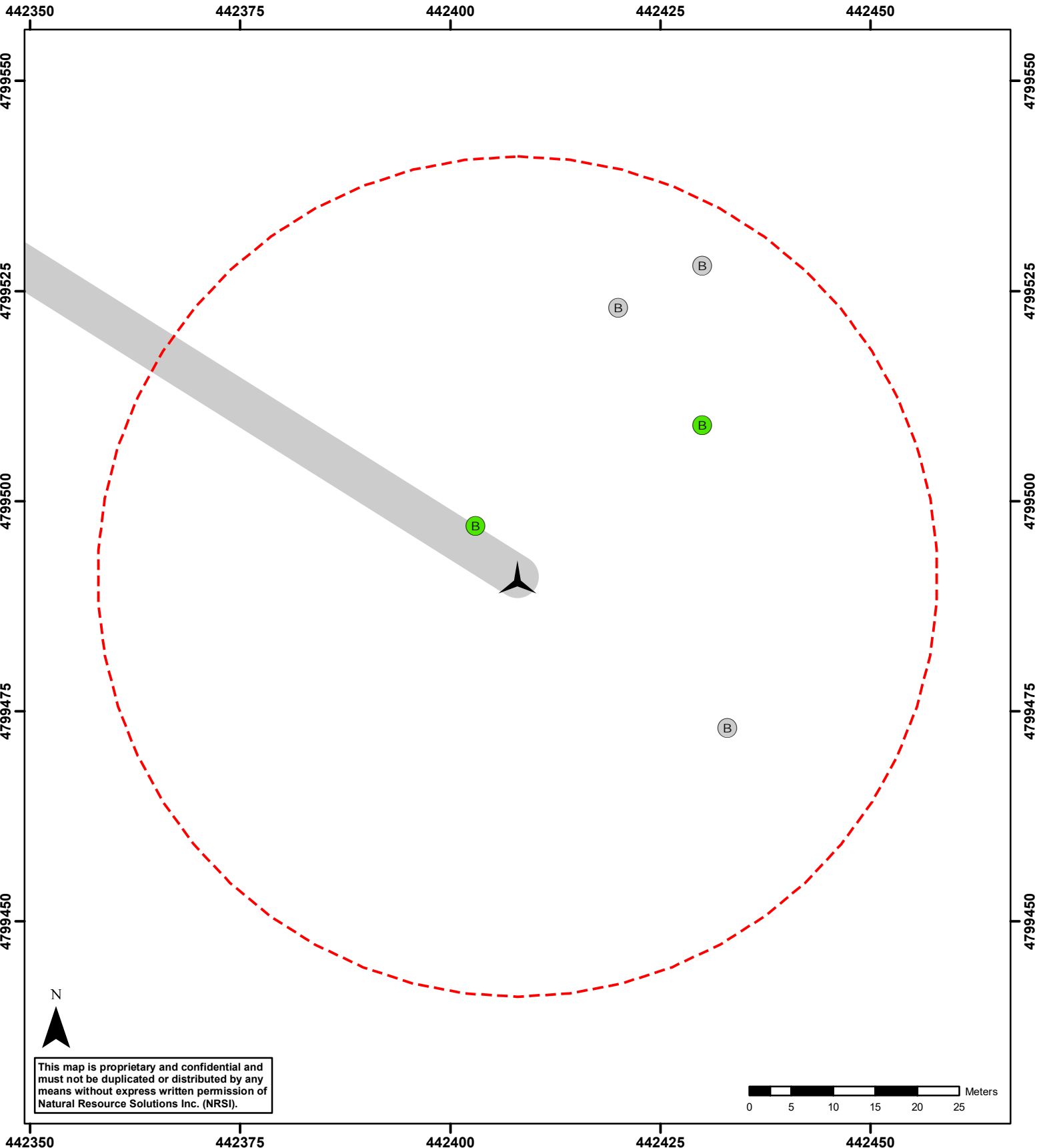
- Legend**
-  Turbine
 -  Search Radius (50m)
 -  Access Road
 -  Hoary Bat
 -  Silver-haired Bat

Appendix VI
 Grand Bend
 Wind Farm
Turbine T33 Mortalities 2021

NAD83 - UTM Zone 17
 Scale: 1:600 (8.5x11")

Date: January 5, 2022
 Project: 2408B





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Legend

- Turbine
- Search Radius (50m)
- Access Road
- Hoary Bat
- Silver-haired Bat

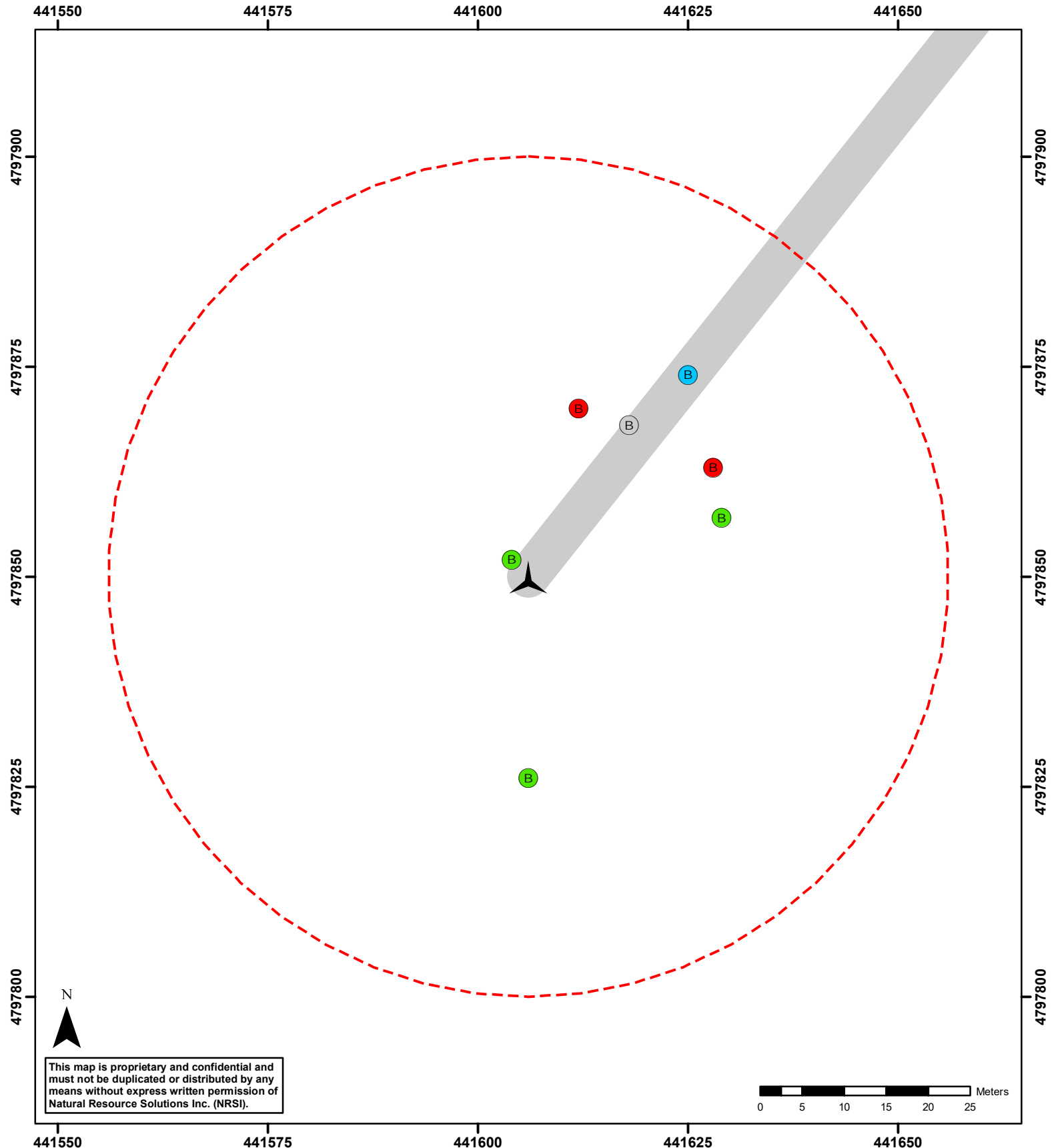
Appendix VI

**Grand Bend
Wind Farm**

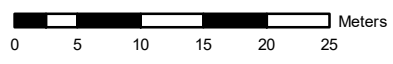
Turbine T38 Mortalities 2021

NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2022 Project: 2408B
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- Legend**
- Turbine
 - Search Radius (50m)
 - Access Road
 - Bat sp.
 - Eastern Red Bat
 - Hoary Bat
 - Silver-haired Bat

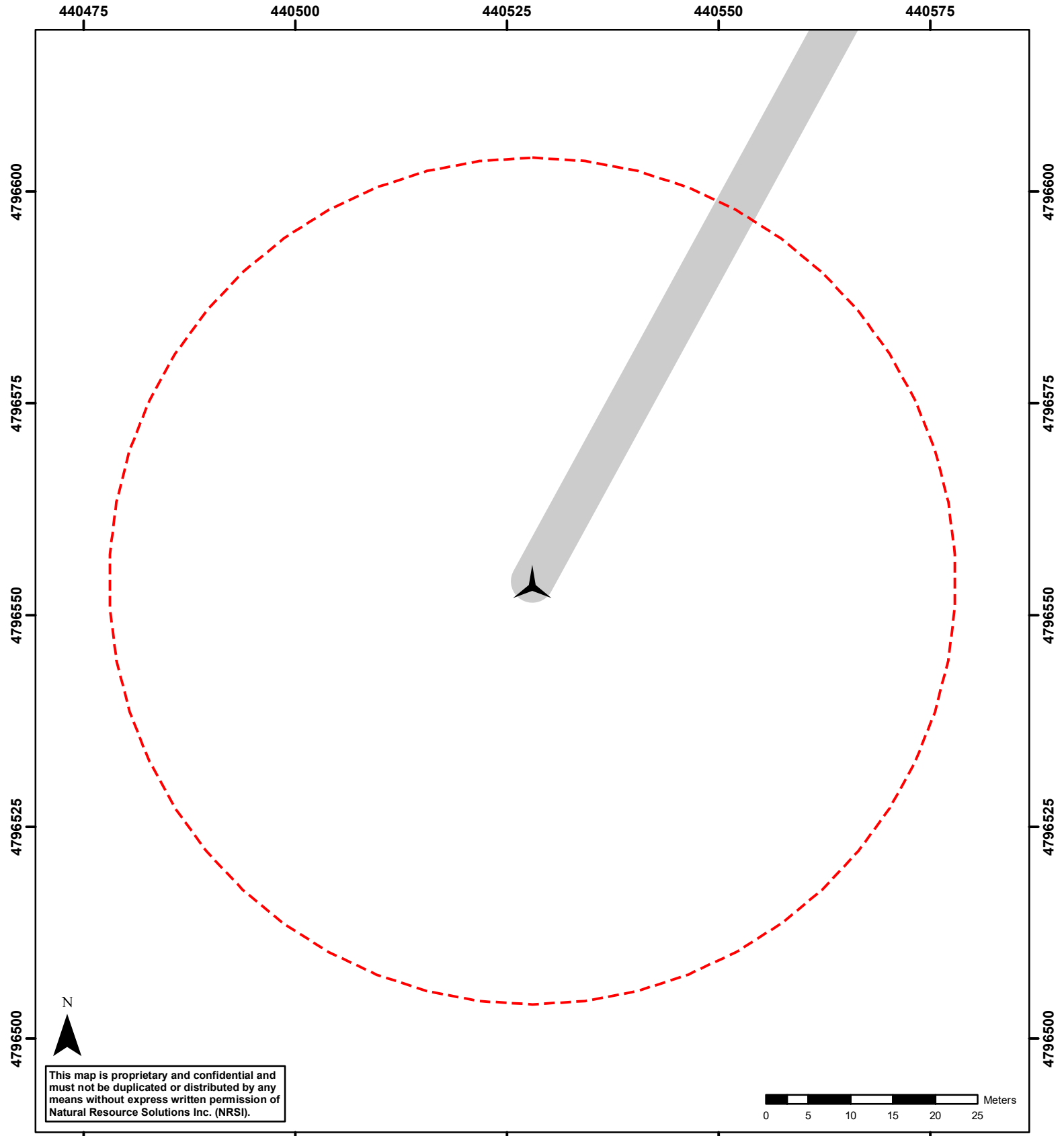
Appendix VI

**Grand Bend
Wind Farm**




Turbine T42 Mortalities 2021

NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2022 Project: 2408B
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Legend

-  Turbine
-  Search Radius (50m)
-  Access Road

Appendix VI
 Grand Bend
 Wind Farm
Turbine T48 Mortalities 2021

NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2022 Project: 2408B
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