



Memo

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To: Jon Gumtow
Stantec Consulting Services Inc.

From: Sara Viernum, Terry VanDeWalle
Stantec Consulting Services Inc.

File: [REDACTED] Survey,
Kohler Golf Course Project, Town of Wilson
Sheboygan County, Wisconsin
Project No.: 193703078

Date: September 15, 2015

Reference: [REDACTED] Survey, Kohler Golf Course Project, Town of Wilson
Sheboygan County, Wisconsin

INTRODUCTION

In support of the proposed Kohler Golf Course Project (Project), Stantec Consulting Services Inc. (Stantec) performed an acoustic presence/absence survey for the [REDACTED]

The proposed Kohler Golf Course (Project Area) is located in the Town of Wilson, Sheboygan County, Wisconsin.

The purpose of this report is to summarize the results of the presence/absence survey for the [REDACTED] and to determine the presence or probable absence the [REDACTED] within the Project Area. This memorandum presents the project description, methods, and results of the acoustic survey effort.

PROJECT DESCRIPTION

The Project Area consists of one 247-acre parcel located adjacent to Lake Michigan which is owned by the Kohler Company (Figure 1). The Project Area is located between Lake Michigan and the Black River.

Based on previous site evaluations, the Project Area consists of a mix of upland and wetland habitats including, [REDACTED] old field, and pine plantations.

METHODS

The methods for this survey followed those outlined in the [REDACTED]. The [REDACTED] guidelines' minimum survey effort requires one survey site for every [REDACTED] of suitable habitat. Two sampling locations within each survey site should then be surveyed for a [REDACTED]. As such, two survey sites with two detectors each for [REDACTED] were utilized (Figure 1).

Reference: [REDACTED] Survey, Kohler Golf Course Project, Town of Wilson Sheboygan County, Wisconsin

Stantec utilized existing information to identify areas for deployment of detectors in suitable summer habitat for the [REDACTED] within the Project Area, including a desktop review of publicly available GIS natural resources data, aerial photograph interpretation, and examination of botanical communities previously mapped by Stantec.

Stantec biologists conducted passive acoustic [REDACTED] surveys using four [REDACTED] acoustic detectors [REDACTED] at two suitable habitat areas within the 247-acre parcel owned by the Kohler Company on 23 June and 24 June, 2015. Detectors were programmed to begin monitoring at [REDACTED] to assure data collection began at least 30 minutes [REDACTED] and concluded monitoring at [REDACTED] to assure data collection ended at least 30 minutes [REDACTED]. Detectors were positioned approximately 1-meter above the ground, with the microphone placed downward at a 45° angle. The audio sensitivity setting of each [REDACTED] system was set to 6 (on a scale of 1 to 10) to maximize sensitivity while limiting ambient background noise and interference. Detectors were powered by internal AA batteries.

Over the course of the [REDACTED] conditions met [REDACTED] protocol requirements (i.e., there was no persistent rain (greater than 30 minutes), strong winds (greater than 9 miles per hour for greater than 30 minutes) or persistent cold temperatures (below 10°C [50°F] for greater than 30 minutes)).

Acoustic data were downloaded to a laptop computer using [REDACTED] software (version 4.3s) with default settings in place. All acoustic data were run through two of the [REDACTED] approved acoustic ID programs, [REDACTED]. These programs filter out background noise (e.g., insects, leaves, wind) and identify [REDACTED] calls to the species level when possible. [REDACTED] evaluate the various components of all collected calls and determine whether they may represent a [REDACTED]. The automated programs attempt to identify each call file to species level, and output a p-value for the null hypothesis that a species is falsely identified at a given site on a given [REDACTED] given the error rates for identification. Therefore, a low p-value indicates that a species is likely present at a site.

Because possible [REDACTED] were identified by one or more of the acoustic ID programs at all of the detector locations, acoustic data were qualitatively analyzed using [REDACTED] software (Windows version 20.9.12.31) by qualified Stantec biologists. Calls recorded at a site were visually analyzed beginning with the first call on the first [REDACTED]. Analysis continued until a confirmed [REDACTED] call was identified or until all calls recorded at the site had been analyzed. A presence determination was made as soon as a [REDACTED] call was identified and no further analysis of calls at that site was conducted. Probable absence was assumed once all calls recorded at a site had been analyzed and no confirmed [REDACTED] calls were found.

RESULTS

[REDACTED]

[REDACTED] The majority of the Project Area contains [REDACTED] habitat which is suitable for [REDACTED]. With the exception of the Lake Michigan coastal area [REDACTED] tree species included sugar maple (*Acer saccharum*), ash (*Fraxinus* spp.), black cherry (*Prunus serotina*), basswood (*Tilia americana*), white birch (*Betula papyrifera*), and white pine (*Pinus strobus*). Several [REDACTED] trees with suitable [REDACTED] characteristics were observed. These trees were [REDACTED].

Reference: [REDACTED] Survey, Kohler Golf Course Project, Town of Wilson Sheboygan County, Wisconsin

[REDACTED] Additionally, suitable [REDACTED] habitat were observed in the Project Area, including the Black River corridor, [REDACTED] forest edges along the transitional habitats and the existing trails. Attached is a photo log showing the habitat observed on the Project Area during the field survey.

A total of eight detector [REDACTED] were recorded, four at each survey site. The microphone direction and detector locations for the acoustic sites are shown in **Table 1 and Figure 1**. Habitats sampled consisted of open areas (e.g. wetland/forest edge, forest opening, and wetland swell/forest edge) with adjacent forest.

Table 1. Acoustic Sites Descriptions

Acoustic Site	Microphone Direction	Location of Detector Sites	
		Latitude	Longitude
1	North / Northeast	43.676746	-87.716038
2	South / Southwest	43.677187	-87.715984
3	Southwest	43.684213	-87.706226
4	Northeast	43.682835	-87.706566

The results of the quantitative analysis based on the [REDACTED] acoustic programs are shown in **Table 2**. The acoustic programs preliminarily identified six species of [REDACTED] at the survey sites; [REDACTED]

[REDACTED] It is important to note that the Project Area falls outside of the geographic ranges of the [REDACTED]. Therefore, these call identifications are false positives, but these calls were included in the qualitative analysis as potential [REDACTED] calls.

Qualitative analysis conducted by Stantec biologists to screen for [REDACTED] calls confirmed the presence of [REDACTED] at three of the detector locations and the probable absence of [REDACTED] at the fourth detector location (**Table 3**). No qualitative analysis to confirm the identification was completed for any species other than the [REDACTED]

Table 2. Preliminary Analysis of [REDACTED] Files

Acoustic Site	[REDACTED]											
1	0	7	10	0	0	0	0	1	0	12	0	0
2	1	22	11	2	0	0	0	4	6	5	0	0
3	0	0	4	2	1	0	0	2	0	2	1	0
4	0	1	1	0	0	0	0	1	0	4	1	0

*Note - Project Area does not fall within these species' geographic ranges

Reference: [REDACTED] Survey, Kohler Golf Course Project, Town of Wilson Sheboygan County, Wisconsin

Table 3. [REDACTED] Presence/Absence Results

Acoustic Site	[REDACTED] Identified (Yes/No)
1	Yes Confirmed presence
2	Yes Confirmed presence
3	Yes Confirmed presence
4	No Probable absence

Based upon the results of the acoustic survey and analysis, Stantec determined that there is a **confirmed presence** of [REDACTED] at Kohler Golf Course Project. The Project Area contains suitable summer habitat including [REDACTED]. Winter [REDACTED] habitat is not expected within the Project Area. Suitable habitat is also likely to exist on the neighboring residential and State Park lands. Additional agency coordination is recommended to establish conservation measures for the development of this Project in accordance with [REDACTED] guidelines.

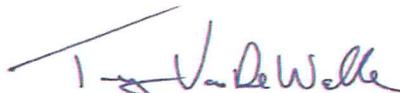
If you have questions or require additional information, please contact Jon Gumtow at 920-592-8400.

Regards,

STANTEC CONSULTING SERVICES INC.



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Attachment: Figure 1
Photo Log

Cc. Jon Gumtow, Stantec

E:\Working\PC\151010108 Final Data Labels_Golf\151010108 Final Data Labels_Coverage.mxd - Resolved 2015-07-25 by jgpc/chr



- Legend**
- Approximate Project Area
 - Approximate State Property Area
 - Existing Trail
 - Acoustic Detectors
 - DNR 24k Hydrography
 - Perennial Stream
 - Intermittent Stream
 - Waterbody

Figure No. **1**

Title **Acoustic Detector Locations**

Client/Project
Kohler Company
Proposed Golf Course - Town of Wilson

Project Location
 T14N, R23E, S11, 14, 23
 T. of Wilson, Sheboygan Co., WI

193703076
 Prepared by MCP on 2015-06-25
 Technical Review by SV on 2015-07-06
 Independent Review by JG on 2015-07-06



Notes

- Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
- Data Sources Include: Stantec, WDOT
- Orthophotography: 2010 WROC

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.





Photo 1. General habitat near the Black River, view west.



Photo 2. General habitat and example of two-track road, view east.



Photo 3. General habitat [REDACTED] view north.



Photo 4. General habitat, view south.