
Glen Tomkinson
Penn Energy Renewables, LTD
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October 30, 2013

Dear Mr. Tomkinson:

RE: Pre-Construction Results for Ridgefield Solar Facility

The Natural Heritage Assessment – Environmental Impact Study Report for the Penn Energy – Ridgefield Solar Energy Facility prepared by Bowfin Environmental Consulting Inc. (Bowfin) indicated that pre-construction surveys were required for four candidate significant wildlife habitat (SWH). These were:

1. Reptile Hibernacula
2. Turtle Overwintering Habitat
3. Amphibian Breeding Habitat (woodland)
4. Amphibian Breeding Habitat (marsh)

The pre-construction surveys were to take place during the 2013 field season. If the site meets the *SWH Ecoregion 6E Criterion Schedule (SWHECS)*; then post-construction monitoring will be required for that particular SWH.

The following letter report provides a summary of pre-construction monitoring methodologies, results and a conclusion to the presence/absence of each of the four candidate SWH.

METHODOLOGY

Each of the four candidate SWH required multiple site visits:

- Reptile Hibernacula (Snake) 3 visits
- Turtle Wintering 2 visits
- Amphibian Woodland 2 visits
- Amphibian Marsh 2 visits (nighttime)

The protocols followed were those agreed to in the Natural Heritage Assessment Report (NHAR) summarized below. The locations of the areas surveys are identified on Figure

1. All surveys were visual and included the recording of the following information:

- Date
- Name of observer(s) conducting field work
- Time (start and end time, duration)
- Weather conditions (temperature, % cloud cover, wind)
- GPS location
- Species presence and abundance information

Reptile Hibernacula (Snake)

Areas to be searched: Fencerows 2-5 and portions of communities 6 and 7

Timing: Spring of 2013

Protocol: The snake surveys would consist of three visual surveys from within 50 m, inwards towards each rock pile. The surveys would be completed between late March and late April on warm sunny days (>14°C) during peak daylight hours (10:00 – 15:00) when the snakes are most likely to be congregated outside the feature within 30m of the candidate habitat. Surveys will include 5-10 min stationary observations followed by intensive area search of flipping and checking inside logs and debris as well as searching in or along rocky outcrops or ledges. A map will be produced that identifies the location of the snakes in relation to the rock piles.

Turtle Wintering Habitat

Areas to be searched: Community 15 (Wetland 2)

Timing: Spring 2013

Protocol:

Monitoring Frequency and Timing:

- 2 visits to candidate turtle over-wintering areas
 - 1st visit will occur in late March
 - 2nd visit will occur in late April
- Visits will be on warm sunny days when the turtles are most likely basking

Amphibian Breeding Habitat (Woodland and Marsh)

Areas to be searched: Communities associated with amphibian breeding habitat on the south side of Snug Harbour Road (Communities 13-15)

Timing: Spring 2013

Protocol:

Amphibian Breeding Habitat (woodland) Survey Protocol

Monitoring Frequency and Timing:

- Conduct 2 amphibian egg mass searches for each candidate amphibian breeding habitat during daylight hours in early spring with the first visit in March after the first warm rain and the second visit in early April.

Survey Methods:

Egg Mass Surveys

- Surveys will be focused on egg mass searches

- Egg mass surveys will need to target non-vocalizing amphibians (i.e. Salamanders) that are laying eggs in this habitat
- Area searches will include walking within or along the perimeter of each wetland/vernal pool looking for egg masses; however, visual surveys may be required in some instances because of water depth.
- A minimum search effort of 30 minutes will be applied for each site, in each candidate habitat.

Amphibian Breeding Surveys (Marsh Monitoring Protocol)

Monitoring Frequency and Timing:

- Conduct 2 night time visits. One in May when air temperature is >10°C (usually between May 15-30th) and the second during June when air temperatures are above 17°C (typically between June 15-30)

Survey Methods

- Evaluation methods to follow the Marsh Monitoring Protocol
- Monitoring Station 5 is to be used as this station is located within 500m of Communities 13 and 14 (candidate habitat on the south side of Snug Harbour Road)

RESULTS

Seven visits were completed between April and June 2013 (Table 1). All visits were completed by Michelle Lavictoire (M. Sc. Natural Resources). Note that overall the timelines were slightly delayed due to a late melt of the snow and cold and wet start to spring. MNR confirmed that this was appropriate on March 8th, 2013. The results are summarized below and depicted on Figure 2.

Table 1 Site Visit Summary

Date	Time (h)	Air Temperature (Min-Max) °C	Weather	Purpose
April 9, 2013	1015-1215	7.0 (3.1-12.0)	overcast, light air	Amphibian Woodland Survey

Date	Time (h)	Air Temperature (Min-Max) °C	Weather	Purpose
April 18, 2013	0830-1015	6.0 (3.3-12.2)	overcast, short periodic rain showers, moderate breeze with some gust,	
May 1, 2013	1000-1300	13.0-25.0 (8.3-22.9)	clear skies, moderate breeze	Snake and Turtle Surveys and additional check on Amphibian woodland habitat
May 7, 2013	0945-1330	21.0-28.0 (2.9-26.3)	clear skies, light breeze	Snake and Turtle Surveys
May 7, 2013	2015-2115	16.0 (2.9-26.3)	clear skies, no wind	Night time Amphibian Marsh Breeding Survey
May 16, 2013	2145-2200	11.0 (7.0-19.7)	5% cloud cover, light air	Amphibian Marsh Breeding Survey
May 17, 2013	1030-1300	15.0 (2.8-20.7)	less than 5% cloud cover, light air, hazy	Snake Survey (additional turtle visit)
June 24, 2013	2145-2200	24.0 (18.5-31.7)	no wind, rained earlier in the evening	Amphibian Marsh Breeding Survey

Reptile Hibernacula (Snake)

The snake surveys were delayed from March/April to May in response to the cold air temperatures. The three visits were completed during May (May 1st, 7th and 17th). One eastern garter snake was observed sunning on bare soil on the edge of the field within a few meters of the rock piles of Fencerow 3 on May 7th (Figure 2). Once approached it retreated to the rock pile (Photo 1).



Photo 1 Garter Snake, May 7th, 2013.

Turtle Wintering

Two turtle surveys were conducted during May (May 1st and 7th). The habitat was also visited on April 18th (however conditions were still cold; water temperature of 4°C and air temperature of 6°C) and on May 17th. No turtles were observed on the April 18th. All subsequent sightings consisted of painted turtles (Table 2, Photo 2). The maximum number observed at one time was five (on May 1st).



Photo 2 Small painted turtle, May 1st, 2013

Amphibian Breeding (Woodland)

Again, due to the cold spring the visits were delayed and an additional visit was conducted to err on the side of caution. The visits were completed on April 9th and 18th and May 1st. There was still some snow on the ground during the April 9th visit. During this first visit there were a few vernal pools, with water depths of 5 cm, noted within Community 14. The pools were all dry by the April 18th visit. No amphibians, spermatophores or egg masses were observed within the study area during any visit. Note that spermatophores were identified in a vernal pool outside of the study area (no egg masses were ever found) indicating that the timing of the site visits was appropriate.

Amphibian Breeding (Marsh)

The nighttime visits for the marsh amphibian surveys took place during the evening of May 7th and June 24th. Three spring peppers were heard calling on May 7th and two green frog and three tree frogs on June 24th (Table 2).

Table 2 Summary of Observations

Date	Species	Number/Comments
Snake Surveys		
May 7 th , 2013	Eastern Garter Snake	1
Reptile (Turtle) Surveys		
May 1 st , 2013	Painted Turtle	5 (± 5 cm)
May 7 th , 2013	Painted Turtle	4 (two ± 5 cm and two ± 13 cm)
May 17 th , 2013	Painted Turtle	1 (± 13 cm)
Amphibian Surveys		
May 7 th (evening)	Spring Peepers	3
June 24 th (evening)	Green Frog	2
	Gray Treefrog	3

Figure 1 Location of Survey Areas

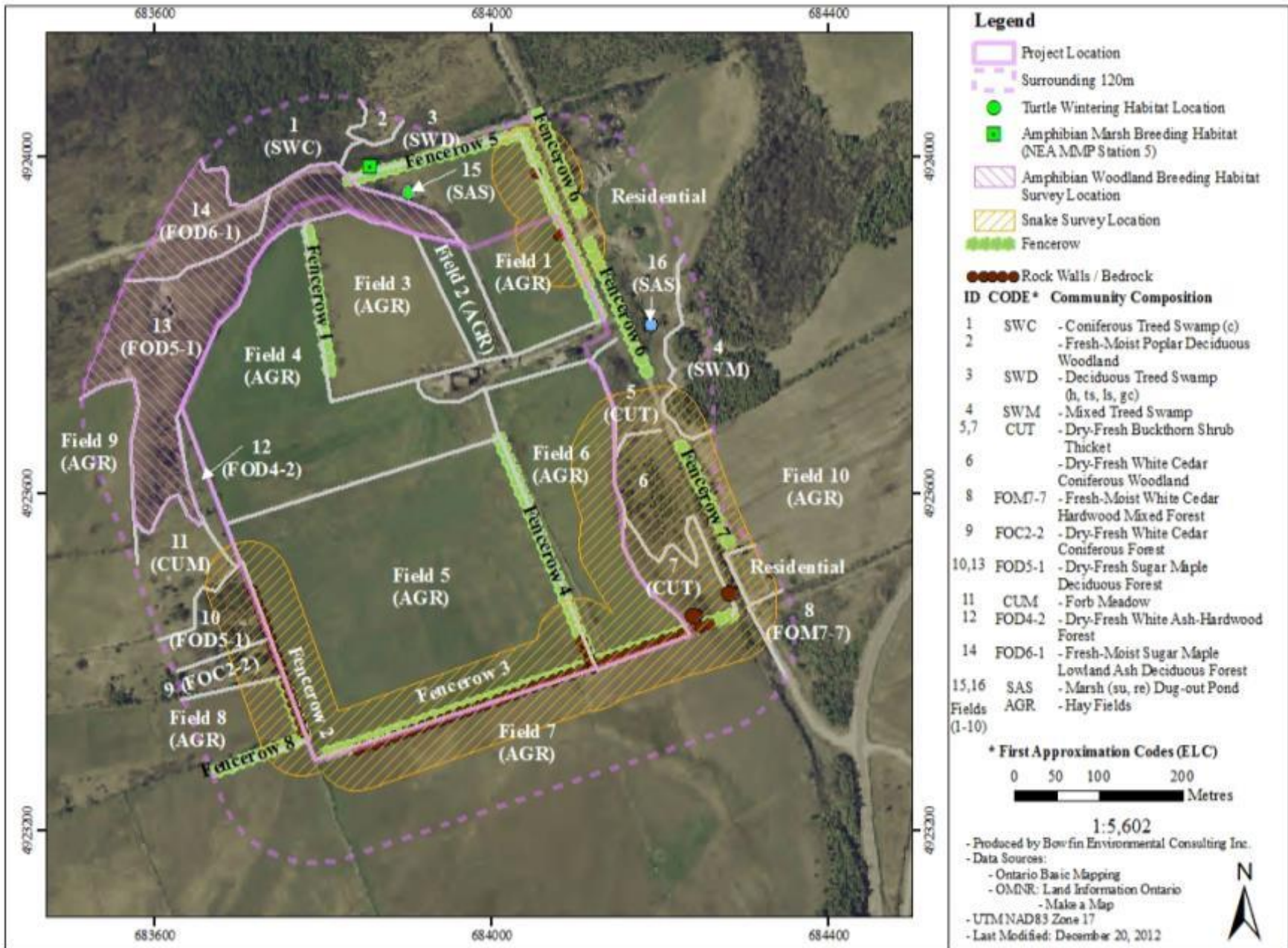
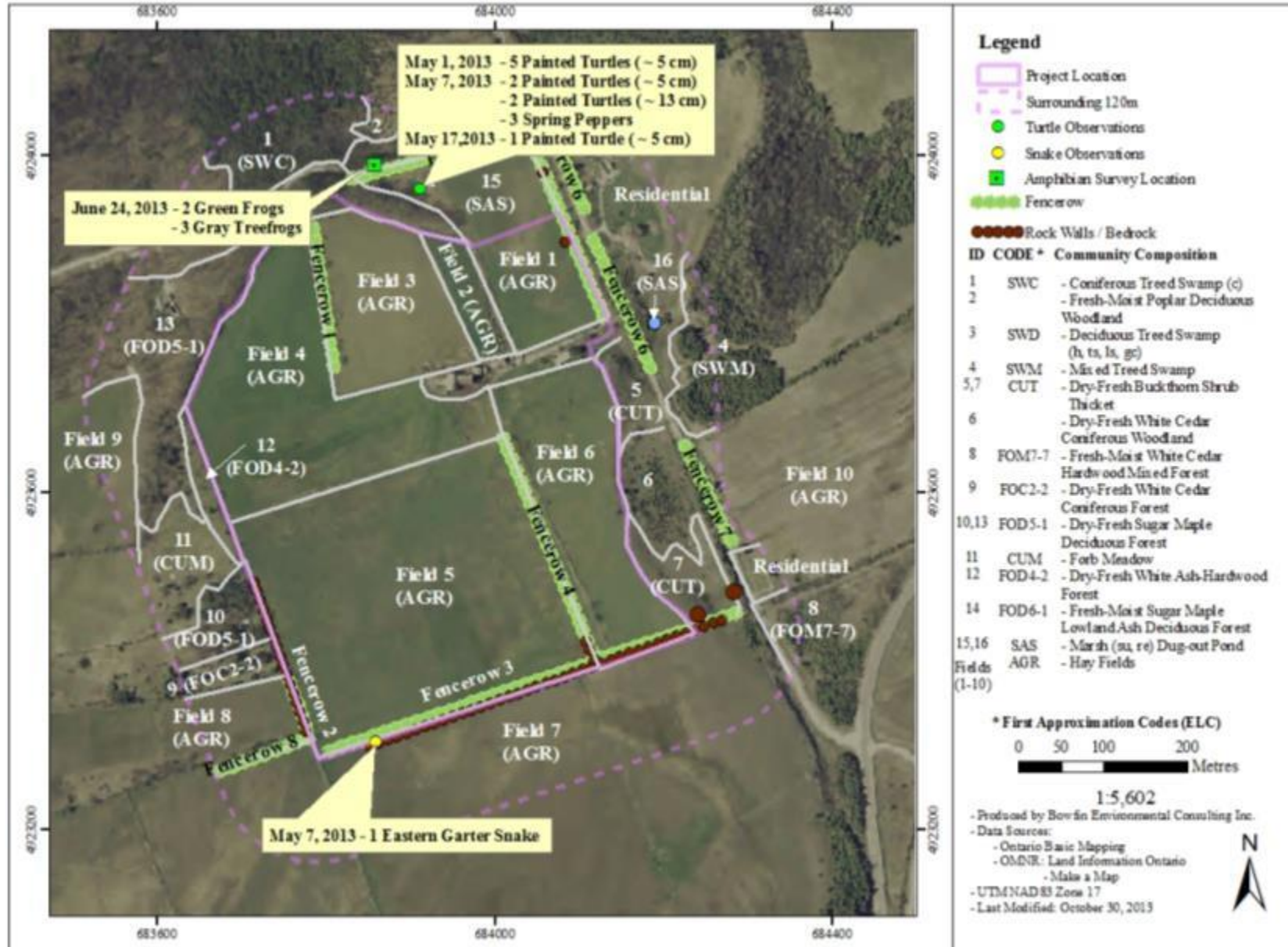


Figure 2 Results



CONCLUSION

In order for an area to be confirmed as a SWH it must meet the appropriate SWHECS defining criteria which are described for each feature below. Of the four features only the turtle wintering habitat was found to be significant.

1. Reptile Hibernacula are confirmed significant if the following criteria are met:
 - Surveys must confirm the presence of congregations of a minimum of 5 individuals of a snake species or individuals of two or more snake species at or near the potential hibernacula
 - If there are special concern species, then the site is significant wildlife habitat
 - Species to be considered include: Eastern Gartersnake, Northern Watersnake, Northern Red-bellied Snake, Northern Brownsnake, Smooth Green Snake, northern Ring-necked Snake, Milksnake (Special Concern), Eastern Ribbonsnake (Special Concern), Five-lined Skink (Southern Shield population is Special Concern)

Only 1 Eastern Garter Snake was observed. No SWH – Reptile Hibernacula were present

2. Turtle Wintering Habitat is confirmed significant if the following criteria is met:
 - Presence of 5 overwintering midland painted turtles is significant wildlife habitat
 - Presence of ≥ 1 northern map OR snapping turtle overwintering within a wetland is significant
 - The mapped ELC ecosite area with the overwintering turtles is considered the SWH.

Five painted turtles were observed during the May 1st visit indicating that this pond provides SWH for Turtle Wintering Habitat

3. Amphibian Breeding Habitat (woodland) is confirmed if the following criteria is met:
 - Presence of breeding population of 1 or more of the listed species with at least 20 individuals (adults, juvenile, larval masses)

- Eastern Newt
- Blue-spotted Salamander
- Spotter Salamander
- Gray Tree frog
- Spring Peeper
- Western Chorus Frog
- Wood Frog

No salamander or frog individuals were found within the woodland.

4. Amphibian Breeding Habitat (marsh)

- Presence of breeding population of 1 or more of the listed salamander species or 2 or more of the listed frog or toad species and with at least 20 breeding individuals (adults, juvenile, egg/larval masses); **OR**
 - Eastern Newt
 - Blue-spotted Salamander
 - Spotter Salamander
 - Gray Tree frog
 - Spring Peeper
 - Western Chorus Frog
 - Wood Frog
- Confirmed breeding bullfrogs

No salamanders or bullfrogs were present and only a few (<20 individuals) of Gray Tree Frog and Spring Peeper were heard calling during the surveys.

As such, it is concluded that the only SWH is that of **Turtle Wintering in Community**
15. Mitigation measures and post-construction monitoring for this feature are described below.

No SWH – reptile hibernacula (snake), amphibian breeding (woodland) or amphibian breeding (marsh) were present and no further monitoring or mitigation measures are required.

Note that as no SWH Reptile Hibernacula were found, the rock piles may be removed.

ADDITIONAL MONITORING/MITIGATION MEASURES

Turtle Wintering

The dug-out pond located in Community 15 has been confirmed as wintering habitat for painted turtles. As such the construction mitigation measures listed below and in Table 3 (and taken from the NHA) will remain in place and post-construction monitoring will be required.

Mitigation Measures:

- Construction crew would be educated about the location and significance of this feature and will be trained to avoid turtles by conducting a visual inspection of the work site prior to the commencement of the daily activities. The crew would be made aware that they need to avoid harming turtles. Workers will be provided with an ID manual of turtles and protocol of what to do if s are present (i.e. wait for turtles to pass, avoid turtles). The contact information of a SAR biologist who will be responsible for safely transporting turtles will be provided. Construction crew will record the number and species of any turtles observed.
- The access road use and vehicular speeds will be minimized during mid-October to November (when turtles are moving towards the wintering area) and early spring (i.e. after ice melt till mid-end of June, when turtles leave the wintering area for nesting sites). During these same periods a thorough sweep of the work areas within 100m of the wintering area will be performed daily prior to any work commencing within this area.

Post-construction Monitoring:

The same protocol as followed for the pre-construction monitoring will be used to determine impacts to use of the habitat by turtles. Monitoring will be completed beginning the first spring following the completion of the construction works and will continue for an additional 2 years (total of 3 years of post-monitoring). A report outlining the findings will be provided to MNR by the end of that year.

Contingency:

If the post-monitoring results find that a negative impact occurred, then the proponent will contact MNR to discuss additional measures.

Should you have any questions or comments, please do not hesitate to contact me at 613.935.6139.

Yours Sincerely,



Michelle Lavictoire
Biologist/Principal

Table 3 Summary of Mitigation Measures for Turtle Wintering Habitat (from NHA Table 12)

Feature ID	Distance to Project Location	Potential Negative Effects	Mitigation Measures	Objectives, Post-Construction Monitoring, and Contingency Plans
Wetland 2	41m	<ul style="list-style-type: none"> Sedimentation and/or erosion (construction) 	<ul style="list-style-type: none"> Design and implement a sediment and erosion control plan prior to any removal of vegetation or grading. Install, monitor, and maintain erosion and sediment control measures (i.e. silt fences) around the periphery of the construction area. This will also serve to demarcate boundaries to keep workers and equipment out of these features. 	<p>Performance Objectives:</p> <ul style="list-style-type: none"> Maintain vegetated buffers between wetland and project location. Minimize impacts to natural features and associated wildlife habitats. <p>Monitoring:</p> <ul style="list-style-type: none"> Construction monitoring to ensure proper installation and maintenance of erosion control measures. Monitoring of silt fencing daily in areas where work is taking place and prior to and after any storm events. Correcting silt fencing that is not working properly. <p>Contingency Measures: None required.</p>
		<ul style="list-style-type: none"> Spills (i.e. oil, gasoline, grease, etc.) (construction and operation) 	<ul style="list-style-type: none"> All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30m from any significant natural feature in a designated area where proper precautions (i.e. tarps) have been installed to ensure that no contamination of the soil occurs. Develop a spill response plan and train staff on appropriate procedures. Keep emergency spill kits on site. Dispose of waste material by authorized and approved offsite vendors. 	<p>Performance Objectives:</p> <ul style="list-style-type: none"> Minimize impacts to natural features and associated wildlife habitats. <p>Monitoring: None required.</p> <p>Contingency Measures: None required.</p>
		<ul style="list-style-type: none"> Changes in soil moisture and compaction (construction and 	<ul style="list-style-type: none"> Implement infiltration techniques to the maximum extent possible. 	<p>Performance Objectives:</p> <ul style="list-style-type: none"> Minimize impact to soil moisture regime and

Feature ID	Distance to Project Location	Potential Negative Effects	Mitigation Measures	Objectives, Post-Construction Monitoring, and Contingency Plans
		operation)	<ul style="list-style-type: none"> Minimize paved surfaces and design roads to promote infiltration. Limit work activities to the area outside of the drip line of the woodland. 	<p>vegetation species composition.</p> <p>Monitoring: None required.</p> <p>Contingency Measures: None required.</p>
		<ul style="list-style-type: none"> Changes to surface water hydrology (construction) 	<ul style="list-style-type: none"> Limit changes in land contours. Maintain direction and quantity of surface flow. Minimize construction of impermeable surfaces. 	<p>Performance Objectives:</p> <ul style="list-style-type: none"> Maintain existing surface water flow patterns. <p>Monitoring: None required.</p> <p>Contingency Measures: None required.</p>
		<ul style="list-style-type: none"> Contamination of runoff water by herbicides (operational) 	<ul style="list-style-type: none"> The vegetation within the project location will be mowed on a regular basis. This will minimize and possibly eliminate the need for herbicides thereby reducing/eliminating the potential to create poor water quality of the runoff. Minimize herbicide application. Herbicide application will not exceed the manufacturer's directions. 	<p>Performance Objectives:</p> <ul style="list-style-type: none"> Minimize indirect impacts on wetland habitat and their communities. <p>Monitoring: Monitor operational activities to ensure any herbicide application follows safe practices.</p> <p>Contingency Measures: None required.</p>

April 9 2013
Ridgefield

onsite @ 1015
100% cloudy
light wind

comm. 15 3pic

little bit of snow on banks
& still ice cover (thin) on

2/3 of pond

blue jays, RWB (comm), ^{on} song sparrow, robins, starlings, crow

at 1040

air temp 7°C

water (pond)

8.0 ppt 81 yrs 48 ppm

4.3°C

dog pellets - lots
robin pellets

mk 7 15' v. pond since comm 5

3pic

5m deep, full of logs
1.1 ft \emptyset

2 pic - nuts
2 pic - near house
2 pic @ road

Mk 8 4 pic (last one N side)
commonly 3 pic
10cm deep trap little
+ branches
sh // some snow

lichen 1 p

Mk 9 outside of laom
spermatophytes > 10
Several pits
3m²

Mk 10 4 pic away from
road often only sm r-pods
is v. little water

cardinals
mourning doves
house finches

Put Mk 9
Back on @ 5
Or Next
Visit
end of visit
12.15

April 18 2013

①

ML
Roa Ridgefield Monitoring
on site @ 0830

100% cloud, mod wind w gusts
& periodic rain showers
(branded morning)

air temp 6°C

MK50 - 4 pic } pond } eggs

MK51 - 2 pic }

flock of DE juncos, robins, & gold finch
song sparrows

MK52 - 3pc of v. fods

MK53 - 2pc of v. fods

closer to house = pair w/ 2 chicks
MK54 - 1 pair some up to about 10m deep

MK55 - 2p at outside of 120

MK56 - spermatozoa
still some but fewer than 9
singlets some fall off
birds

② April 18 2013 Ridgefield
man

MK57 3pc pond outside of study area

266 1015

①

May 1 2013
Ridgefield monitoring

13°C Air → 25°C at end of day
leaves moving at twilight
no clouds
Breeze

onsite @ 1000

Snake Enclosures 2-5
comm 6d7 w/n 5m
Turtle comm 15

mk58 4p N.E.S.W
mk59 1p neighboring fields
Ploughed to Sdr SW
& have standing water
in them

- incidentals
- junco
 - brown thrasher
 - song sp
 - cowbird
 - flicker
 - T. Wren
 - rabbit
 - bluejay
 - crow

J.L. DARLING CORP. TACOMA, WA
www.jldarling.com

②

May 1 2013
Ridgefield monitoring

chickadee
chipping sparrow

mk60 most v. pools dry or nearly
so 3p 5cm of water
no egg masses

5 2" paints } Pond
1 bullfrog } comm 15
turtle

onsite 1300 no snakes

May 7 2013

Rea Monitoring Ridgefield ML

Snake #1, Turtle #2

onsite @ 0945

21 C No clouds, light wind

@ MK58 (Cam previous visit)

5p N E S SW W

Incidentals onsite → song sparrow

→ white-throated sparrow

- vesper sparrow

MK138 1 Garter snake sunning

on edge of grass/ploughed

field. ID confirmed photograph

P8319 looking @ habitat

@ 1120

- sou. sparrow, w. turkey

MK139 4p N E S W

- field sp

- common yellowthroat - owl

- chipping sparrow

MK140 1p of ditch dry dog off-site

May 7 2013 (2)

nocturnals heard calling from edge or outside of site

- vesper sparrow
- brown thrasher
- crow
- cardinal
- tree frog
- goldfinch
- sparrow
- chickadee
- brown headed cowbird
- robin
- blue jay
- WB nuthatch
- eastern phoebe

@ Pond 2 little 2" & 2 mid 5" ponds


M&L pond photos (5p)

~~on site~~ off site @ 1300

Amp. Night Survey 28°C

Marsh Monitoring Program - Amphibian Data Form

Return by 31 July
Please write legibly (in pen).



VISIT INFORMATION

Route #: _____ Route Name: Rea-Monitoring-Field

Observer #: _____ Observer Name: Michelle Lachance

Visit #: 2 Day: 7 Month: May Year: 2013

Cloud Cover (10th): 0 Temperature (C) or (F): 16 Beaufort Wind Scale (0-6): 0

Precipitation (check one): None/Dry Damp/Haze/Fog Drizzle Rain

CALL LEVEL CODES

Code 1: Calls not simultaneous, number of individuals can be accurately counted

Code 2: Some calls simultaneous, number of individuals can be reliably estimated

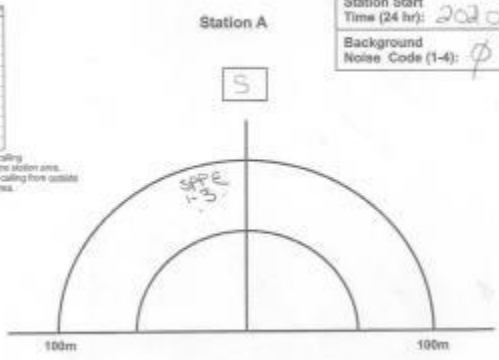
Code 3: Full chorus, calls continuous and overlapping, number of individuals cannot be reliably estimated

Species	Obs?
AMTB	
ACFR	
BOUL	
COFR	
COGR	
COPO	
GRTE	
GRTR	
HEFR	
HEGR	
HOPE	
WOPR	

* Check if species is calling from 100-metre station area.
** Check if species is calling from outside 100-metre station area.

Station A

5



Station Start Time (24 hr): 2020

Background Noise Code (1-4): 0

Marsh Monitoring Program - Amphibian Data Form
 Return by 31 July
 Please write legibly (in pen).



VISIT INFORMATION

Route #: _____ Route Name: Reo Monitoring, Ridgefield
 Observer #: _____ Observer Name: Michelle Lavatche
 Visit #: 2 (repeated) Day: 16 Month: 05 Year: 2013
 Cloud Cover (10th): 51 Temperature (C or *F): 11C Beaufort Wind Scale (0-6): 1
 Precipitation (check one): None/Dry Damp/Haze/Fog Drizzle Rain

CALL LEVEL CODES

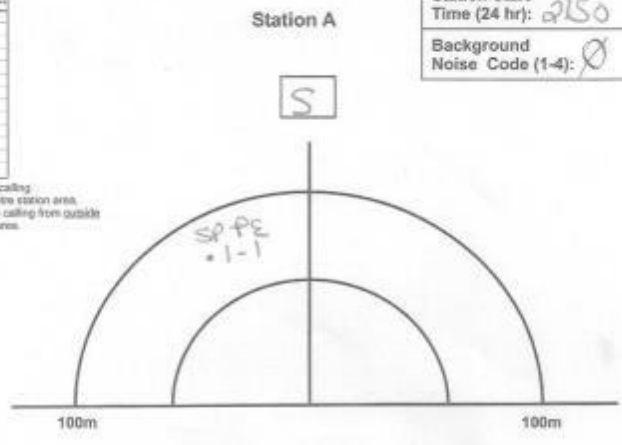
- Code 1: Calls not simultaneous, number of individuals can be accurately counted
 Code 2: Some calls simultaneous, number of individuals can be reliably estimated
 Code 3: Full chorus, calls continuous and overlapping, number of individuals cannot be reliably estimated

Amphibian 2008 v4b, rev 02/2009

Species	In*	Out**
AMTO		
BCFR		
BULL		
CHFR		
CDTR		
FOTO		
GRTR		
GRFR		
LEFR		
NLFR		
PLFR		
SPPE		
WQFR		

* Check if species is calling from inside 100-metre station area.
 ** Check if species is calling from outside 100-metre station area.

Station Start Time (24 hr): 2150
 Background Noise Code (1-4): 0



May 17 2013

Rea monitoring snakes
on site 1025

15°C & little wind hazy; 158
obs.

Mk 6 2pc - rock pile held

Mk 7 4p

american gold flycatcher
red squirrel

Mk 8 owl pellets

song sparrow

morning dove

eastern kingbird

br thrasher

chipping sp

bird warbler

Mk 9 2p: roadside
cleared for veg

brown headed cowbird

i Mk 10 1p cleared

i Mk 11 Pond 3p 1 painted turtle
owlbird calling in comm B

ebb at 1250

Marsh Monitoring Program - Amphibian Data Form

Return by 31 July
Please write legibly (in pen).



VISIT INFORMATION

Route #: _____ Route Name: Redoubt Marsh, Redoubt National Park
 Observer #: _____ Observer Name: Michelle Anderson
 Visit #: 3 Day: 24 Month: June Year: 2013
 Cloud Cover (10th): 10 Temperature (°C or °F): 24 Beaufort Wind Scale (0-6): 0
 Precipitation (check one): None/Dry Damp/Haze/Fog Drizzle Rain
round to nearest in tenths

CALL LEVEL CODES

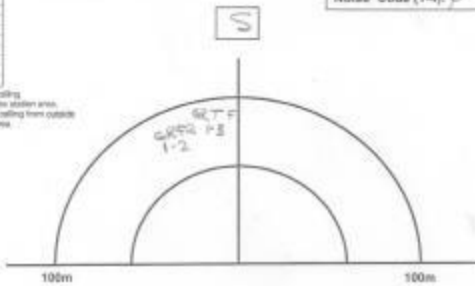
Code 1: Calls not simultaneous, number of individuals can be accurately counted
 Code 2: Some calls simultaneous, number of individuals can be reliably estimated
 Code 3: Full chorus, calls continuous and overlapping, number of individuals cannot be reliably estimated

Species	Code
AMPH	
BLP	
BLU	
CHS	
COG	
FOO	
GRY	
GRN	
WPS	
WTR	
SPR	
WDR	

* Check if species is calling from inside 100-meter station area.
 ** Check if species is calling from outside 100-meter station area.

Station A

Station Start Time (24 hr): 2150
 Background Noise Code (1-4): 0



Glen Tomkinson

From: Kingdon, Lindsay (MNR) <Lindsay.Kingdon@ontario.ca>
Sent: Thursday, December 05, 2013 2:56 PM
To: Michelle Lavictoire
Cc: Glen Tomkinson; Max Frable; Halloran, Joe (MNR); Santos, Narren (ENE); Romic, Zeljko (ENE)
Subject: Ridgefield Solar Facility EEMP and Pre-Construction Survey Results

Hello Michelle,

MNR has reviewed the Pre-Construction Results for Ridgefield Solar Facility dated December 5th, 2013. This email confirms that the report meets the pre-construction commitments for the Ridgefield Solar Facility detailed in the Natural Heritage Assessment and Environmental Impact Study dated October 2012.

This email also confirms that MNR has reviewed the Ridgefield Solar Facility Environmental Effects Monitoring Plan (EEMP) sent to Amy Cameron and Joe Halloran on November 26, 2013. MNR has no concerns with the EEMP, and it is consistent with the information detailed in the Penn Energy Ridgefield Solar Facility Natural Heritage Assessment and Environmental Impact Study dated October 2012.

Sincerely,

Lindsay Kingdon
A\Planning Ecologist
Regional Resources Section
Southern Region
Ministry Of Natural Resources
705-755-3215