

ACOUSTIC SURVEY FINAL REPORT

Northern Long-eared Bat Presence/Absence Surveys Number Nine Wind Resource Area July 15 – July 21, 2014



Prepared for:

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REPORT REFERENCE

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PICTURES OF ACOUSTIC SURVEY SITES (PROVIDED ON CD DUE TO NUMBER OF PHOTOS)

INTRODUCTION

Number Nine Wind Farm LLC, a subsidiary of EDPR Renewables North America LLC, (EDPR) has proposed a wind energy facility in Aroostook County, Maine, referred to as the Number Nine Wind Energy Project (Project) (Figure 1). To better understand wildlife use within the proposed Project area and to comply with recommendations from the U.S. Fish and Wildlife Service (USFWS), EDPR requested that Western Ecosystems Technology, Inc. (WEST) conduct pre-construction acoustic presence/absence surveys for the northern long-eared bat (*Myotis septentrionalis*; [NLEB]) within the Project. The northern long-eared bat has been proposed to be listed as endangered by USFWS (2013), and a final decision is expected on April 2, 2015. The objective of the surveys was to determine presence or probable absence of the NLEB within the Project via acoustic surveys. This report summarizes the methods and results of the acoustic surveys within the Project area.

TECHNICAL APPROACH

Northern Long-eared Bat Presence/Absence Summer Acoustic Surveys

Acoustic surveys followed the USFWS 2014 Revised Range-Wide Indiana Bat Summer Survey Guidelines issued on January 13, 2014 (USFWS 2014a), per the *Northern Long-Eared Bat Interim Conference and Planning Guidance* (USFWS 2014b). The USFWS guidelines' minimum survey effort is one survey site per kilometer (km) of disturbance through suitable habitat for a minimum of 2 detector nights (USFWS 2014a).

Initial desktop assessment conducted by WEST identified approximately 78 km of potential summer habitat that would be disturbed due to activities such as road development and electrical connector lines, in addition to habitat disturbance for turbine pad construction, which equated to 84 survey sites. A qualified WEST bat biologist chose 84 sites within and/or adjacent to forested habitat within the Project (Figure 1) based on aerial imagery of the site (GoogleEarth). Survey sites were selected to meet USFWS guidance and to spread effort across the entire project area that WEST had land access for. The survey protocol and potential survey sites were provided to the USFWS Maine Field Office for review and approval prior to initiating field surveys. On site, WEST biologists deployed 25 detectors at suitable sites throughout the Project area for two to five detector nights, keeping the geographic layout of points as close to the desktop assessment as possible, but modifying the exact locations based on habitat conditions on site. WEST surveyed the 84 sites for a total of 207 detector nights. This report summarizes the results of acoustic surveys at 84 sites conducted from July 15 – July 21, 2014.

Acoustic surveys were conducted from July 15 – July 21, 2014 consistent with USFWS guidelines (USFWS 2014a). Bats were surveyed using SD2 AnaBat™ ultrasonic detectors (Titley Electronics Pty Ltd., NSW, Australia). Acoustic monitoring began before sunset and continued for the entire night. Survey duration at each site was two to five nights depending on weather and researcher access. If weather conditions such as persistent rain (> 30 minutes), strong winds (> 9 mph for > 30 minutes), or persistent cold temperatures (below 10°C [50°F] for > 30 minutes) occurred during the first five hours of a survey night, then that site was surveyed

for an additional night (USFWS 2014). Similarly, if a detector was found to have been disturbed in such a way as to compromise the data collection during the survey night (e.g., knocked over by moose), the detector was left in place for an additional night. To maximize the quality of recorded echolocation calls, detectors were positioned approximately 2 meters off the ground, at $\geq 45^\circ$ angle, and with PVC tube weatherproofing (Britzke et al. 2010, USFWS 2014a). Sensitivity was set to 6 on all detectors.

Per USFWS (2014a), bat calls recorded during the surveys were identified to species using two ‘candidate’ acoustic bat ID programs: Bat Call Identification (BCID; Allen 2012) and EchoClass version 2.0 (Dr. Eric Britzke, U.S. Army Research and Development Center). All calls identified by either bat ID program as probable NLEB were visually reviewed by a qualified bat biologist. If either ID program indicated that presence of NLEB was likely at a given site during a night (i.e., P-value for Maximum Likelihood Estimate of probable absence < 0.05), then visual review (qualitative analysis) was also conducted for all the calls recorded at the site on the night to determine if NLEB were present or absent at the site. Qualitative echolocation call analysis was conducted by a qualified biologist experienced with acoustic identification (Jeff Gruver of WEST; USFWS 2014a). During qualitative analysis, potential NLEB echolocation call sequences identified by BCID or EchoClass were reclassified if they were not characteristic of NLEB, contained distinct calls produced by species other than NLEB, or were of insufficient quality. Per USFWS guidelines, NLEB were considered present at sites with probable calls verified by qualitative analysis. NLEB were considered absent from sites with no probable NLEB calls or from sites with probable NLEB calls that were not verified by qualitative analysis (Table 1).

Table 1. Summary and interpretation of possible outcomes of acoustic analysis

Potential Analysis Outcome	Source of Outcome	Interpretation
<ul style="list-style-type: none"> Species not detected 	<ul style="list-style-type: none"> Species ID Software 	Species not Present
<ul style="list-style-type: none"> Species potentially detected, but presence not considered likely 	<ul style="list-style-type: none"> Species ID Software 	Species not Present
<ul style="list-style-type: none"> Species potentially detected and presence considered likely 	<ul style="list-style-type: none"> Species ID Software 	Species not Present
<ul style="list-style-type: none"> Classification(s) deemed to be incorrect 	<ul style="list-style-type: none"> Acoustic Expert 	
<ul style="list-style-type: none"> Species potentially detected and presence considered likely 	<ul style="list-style-type: none"> Species ID Software 	Species Present
<ul style="list-style-type: none"> Classification(s) deemed to be correct 	<ul style="list-style-type: none"> Acoustic Expert 	

RESULTS

AnaBat detectors surveyed 84 acoustic survey sites, consisting of one detector station per site, from July 15 – July 21, 2014. UTM coordinates and brief site descriptions for each site are listed

in Table 2. Site pictures are found in Appendix A. WEST checked weather at the Presque Isle weather station¹. Wind, rain and/or foggy conditions did not meet the criteria established by the USFWS (2014a), during the first 2 survey nights, and sampling therefore continued at those sites until minimum survey effort was achieved.

Acoustic surveys were completed at 84 sites for a total of 207 detector nights (Tables 3 and 4). BCID identified a total of 4,077 bat call files and identified 3,847 files (94.4%) to species. EchoClass identified 5,384 bat call files and identified 576 files (10.7%) to species (Table 3). Average number of bat calls per detector-night ranged from 19.7 for BCID to 26.0 for EchoClass. Table 3 summarizes the number of detector nights, number of bat call files, and number of bat calls identified to species at each site. Table 4 provides information on species identifications for each site.

EchoClass did not identify any northern long-eared bat calls. BCID identified 2 calls as potential northern long-eared bats. Based on a single call at 2 stations, BCID indicated potential presence of northern long-eared bat 2 nights. These calls and all calls from those nights and stations were reviewed by a qualified analyst (J. Gruver, WEST) (USFWS 2014a). Neither of the calls identified as northern long-eared bat by BCID were confirmed during qualitative analysis. One call was from an eastern red bat (*Lasiurus borealis*) and the other had characteristics consistent with little brown bat (*Myotis lucifugus*). No qualitatively identified calls were determined to be NLEB.

The presence of NLEB was not verified at any sites surveyed within the Project. Surveys are considered complete for all 84 stations at the Number Nine Wind Energy Project area and no further action is recommended to confirm NLEB presence (Table 6).

LITERATURE CITED

- Allen, C.R. 2012. BCID East 2012 Manual: Bat Call Identification, Inc. Version 2.4p.
- Britzke, E.R., B.A. Slack, M.P. Armstrong, and S.C. Loeb. 2010. Effects of orientation and weatherproofing on the detection of bat echolocation calls. *Journal of Fish and Wildlife Management* 1: 136-141.
- U.S. Fish and Wildlife Service (USFWS). 2013. Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List the Eastern Small-Footed Bat and the Northern Long-Eared Bat as Endangered or Threatened Species; Listing the Northern Long-Eared Bat as an Endangered Species. *Federal Register* 78: 61046-61080.
- U.S. Fish and Wildlife Service (USFWS). 2014a. 2014 Revised Range-Wide Indiana Bat Summer Survey Guidelines (January 2014). USFWS Endangered Species Program: Midwest Region.

¹ http://www.wunderground.com/weather-forecast/US/ME/Presque_Isle.html

U.S. Fish and Wildlife Service (USFWS). 2014b. Northern Long-eared Bat Interim Conference and Planning Guidance. January 6, 2014. USFWS Regions 2, 3, 4, 5, & 6. <http://www.fws.gov/northeast/virginiafield/pdf/NLEBinterimGuidance6Jan2014.pdf>

Table 2. Location and site description of 84 acoustic survey stations at Number Nine Wind Resource Area.

Station ID	Zone	Easting†	Northing†	Site Description
001	19T	577740	5148440	Young deciduous forest next to spruce plantation
002	19T	577658	5148519	Young deciduous with logged openings
003	19T	580086	5147706	Linear corridor in relatively mature mixed deciduous/evergreen forest
004	19T	576159	5150080	Gap near linear opening in young-mid deciduous forest
005	19T	575563	5150505	Gap near linear opening in young-mid deciduous forest
006	19T	576354	5148581	Gap opening facing relatively mature mixed deciduous/evergreen forest
007	19T	574100	5148174	Gap opening facing young-mid mixed deciduous/evergreen forest
008	19T	575115	5147179	Linear corridor mid-aged mixed deciduous/evergreen forest; facing water feature on road
009	19T	577189	5146322	Linear corridor mid-aged mixed deciduous/evergreen forest; water feature along road
010	19T	577548	5144053	Young-mid mixed forest with logged openings
011	19T	580624	5146085	Young-mid mixed forest with logged openings
012	19T	580362	5146981	Young-mid deciduous forest with logged gaps
013	19T	572900	5142875	Young-mid mixed forest with logged openings
014	19T	572742	5144584	Young-mid mixed forest with logged openings
015	19T	571410	5144516	Marshy area with linear corridor and potential roost trees in young mixed forest stand
016	19T	575755	5144570	Young deciduous with logged openings
017	19T	575593	5141575	Young deciduous with logged openings
018	19T	573892	5141514	Beaver pond area with potential roost trees in young-mid mixed forest
019	19T	571851	5140007	Young-mid mixed forest with logged openings

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Station ID	Zone	Easting†	Northing†	Site Description
020	19T	573076	5138339	Young deciduous forest
021	19T	574445	5138457	Opening in stand of young-mid aged snags
022	19T	573984	5139250	Opening in young-mid aged stand mixed with snags
023	19T	571727	5141635	Small gap near edge in young-mid mixed deciduous forest
024	19T	569767	5143243	Logging gap and linear corridor in young deciduous forest
025	19T	569749	5144362	Opening in young-mid deciduous forest
026	19T	568910	5144807	Young-mid deciduous forest
027	19T	572743	5133251	Quarry opening with young-mid deciduous forest
028	19T	572585	5128845	Mid-age deciduous forest gap
029	19T	568709	5128395	Young-mid deciduous forest opening
030	19T	565273	5127840	Young-mid mixed forest with gap of standing dead
031	19T	565221	5129538	Young, dense mixed stand with some large trees and gaps
032	19T	567361	5134075	Young deciduous stand with openings and corridors
033	19T	570531	5139307	Young-mid deciduous corridor
034	19T	569108	5138442	Young-mid mixed forest gap
035	19T	569794	5134899	Young-mid mixed forest gap
036	19T	570429	5137100	Young deciduous forest opening with potential roost trees
037	19T	570405	5138393	Mid-aged mixed forest stand with gap near potential roosts
038	19T	569623	5132370	Young-mid mixed forest gap in dense forest
039	19T	567558	5131869	Mid-aged mixed deciduous forest with some snags
040	19T	565524	5133828	Young deciduous forest

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Station ID	Zone	Easting†	Northing†	Site Description
041	19T	579441	5146781	Young-mid deciduous forest recently logged with some remaining older trees
042	19T	579291	5146334	Mid-mature deciduous forest gap and corridor
043	19T	572955	5139902	Young mixed forest gap and corridor
044	19T	571704	5139393	Young-mid deciduous forest gap and corridor
045	19T	572295	5138716	Mid-mature deciduous forest stand
046	19T	571163	5146260	Young-mid mixed forest with recent corridor cut
047	19T	569375	5140432	Young-mid mixed stand with logging corridor
048	19T	570691	5129579	Young-mid deciduous forest with gaps and corridors from logging
049	19T	567994	5129271	Mid-age pine stand with some young conifer trees and older deciduous snags
050	19T	580145	5146953	Mid-mature mixed forest stand with road corridor
051	19T	579673	5147394	Young-mid deciduous forest stand gap and logging corridors
052	19T	578793	5144571	Young-mid deciduous forest with road corridor
053	19T	576947	5145438	Young deciduous forest with road corridor
054	19T	577037	5148442	Young-mid deciduous forest with logging corridor
055	19T	574974	5148128	Young-mid mixed forest with logging gap along road corridor with some snags
056	19T	573817	5149513	Young deciduous forest with some remnant larger deciduous and conifer trees
057	19T	573579	5150042	Young deciduous forest road with remnant deciduous and conifer trees
058	19T	573423	5143957	Young-mid deciduous forest logging corridor with mature trees up-slope
059	19T	575176	5144333	Young deciduous forest logging gap near wetland area with remnant mature conifers
060	19T	572209	5143181	Young mixed forest logging gap with nearby beaver pond and remnant mature conifers

Station ID	Zone	Easting†	Northing†	Site Description
061	19T	571591	5145392	Young-mid mixed pine-deciduous forest along road
062	19T	569535	5142944	Dense young-mid deciduous forest with small gap
063	19T	569833	5140752	Gap along road with young-mid mixed forest on one side and large trees on the other
064	19T	572849	5142094	Mid-mature mixed forest with road and stream running through
065	19T	571414	5140775	Mid-aged deciduous logging corridor with stream down slope
066	19T	572571	5141519	Young-mid forest with road corridor and some larger remnant trees
067	19T	572646	5140722	Young-mid deciduous forest with road corridor
068	19T	572693	5140323	Young deciduous forest with road corridor
069	19T	572337	5138364	Young-mid mixed forest with remnant larger trees with some water and snags
070	19T	574028	5139784	Young-mid forest with narrow road and remnant larger trees and forest gap
071	19T	576656	5143161	Mid-mature deciduous forest with canopy gap
072	19T	576901	5143204	Mid-aged mixed forest with large gap in drainage with nearby water
073	19T	579729	5144234	Young-mid aged forest with some mid-story openings and remnant older trees
074	19T	572883	5130311	Young-mid aged deciduous forest with corridors leading to old clear cut
075	19T	571616	5127618	Young-mid aged mixed forest with road along beaver flooded area
076	19T	570735	5128027	Young-mid aged mixed forest with corridor running through with nearby large water body with mature large snags
077	19T	568896	5127573	Old slash cut through young-mid aged mixed forest
078	19T	567450	5127545	Young-mid aged deciduous forest
079	19T	566353	5128890	Young-mid aged mixed forest with old logging corridor
080	19T	565099	5130564	Young-mid aged mixed forest stand with old logging corridor with nearby wetland area

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Station ID	Zone	Easting†	Northing†	Site Description
081	19T	566019	5133239	Young-mid aged mixed forest road
082	19T	570981	5135493	Old logging cut in young-mid aged deciduous forest
083	19T	571750	5137479	Young deciduous forest recently cut
084	19T	574183	5140748	Young-mid aged mixed deciduous-conifer forest with old logging corridor

† = WGS84

Table 3. Number of bat calls recorded at each acoustic survey station determined by BCID and EchoClass for Number Nine Wind Resource Area.

Acoustic Survey Station	ID program	Total Bat Calls	Calls Identified	Detector Nights	Bat Calls/ Detector Night
001	BCID	0	0 (0%)	2	0
	EchoClass	2	0 (0%)	2	1.0
002	BCID	1	1 (100%)	3	0.3
	EchoClass	2	0 (0%)	3	0.7
003	BCID	14	14 (100%)	3	4.7
	EchoClass	24	0 (0%)	3	8.0
004	BCID	144	142 (98.6%)	4	36.0
	EchoClass	307	46 (15%)	4	76.8
005	BCID	25	23 (92%)	2	12.5
	EchoClass	31	2 (6.5%)	2	15.5
006	BCID	2	2 (100%)	4	0.5
	EchoClass	6	1 (16.7%)	4	1.5
007	BCID	58	46 (79.3%)	4	14.5
	EchoClass	230	14 (6.1%)	4	57.5
008	BCID	17	16 (94.1%)	4	4.3
	EchoClass	27	13 (48.1%)	4	6.8
009	BCID	18	18 (100%)	4	4.5
	EchoClass	27	10 (37%)	4	6.8
010	BCID	36	32 (88.9%)	4	9.0
	EchoClass	59	8 (13.6%)	4	14.8
011	BCID	47	47 (100%)	5	9.4
	EchoClass	82	13 (15.9%)	5	16.4
012	BCID	380	357 (93.9%)	4	95.0
	EchoClass	456	85 (18.6%)	4	114.0
013	BCID	4	4 (100%)	4	1.0
	EchoClass	7	2 (28.6%)	4	1.8
014	BCID	356	281 (78.9%)	4	89.0
	EchoClass	481	93 (19.3%)	4	120.3
015	BCID	3	2 (66.7%)	4	0.8
	EchoClass	6	1 (16.7%)	4	1.5
016	BCID	207	204 (98.6%)	4	51.8
	EchoClass	301	45 (15.0%)	4	75.3

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Acoustic Survey Station	ID program	Total Bat Calls	Calls Identified	Detector Nights	Bat Calls/ Detector Night
017	BCID	0	0 (0%)	2	0
	EchoClass	12	0 (0%)	2	6
018	BCID	6	6 (100%)	3	2.0
	EchoClass	8	1 (12.5%)	3	2.7
019	BCID	1	1 (100%)	2	0.5
	EchoClass	3	1 (33.3%)	2	1.5
020	BCID	1	1 (100%)	2	0.5
	EchoClass	1	1 (100%)	2	0.5
021	BCID	0	0 (0%)	0	0
	EchoClass	0	0 (0%)	0	0
022	BCID	6	6 (100%)	3	2.0
	EchoClass	10	5 (50%)	3	3.3
023	BCID	1	1 (100%)	2	0.5
	EchoClass	1	0 (0%)	2	0.5
024	BCID	3	3 (100%)	2	1.5
	EchoClass	3	1 (33.3%)	2	1.5
025	BCID	2	2 (100%)	3	0.7
	EchoClass	377	96 (25%)	3	94.3
026	BCID	0	0 (0%)	2	0
	EchoClass	0	0 (0%)	2	0
027	BCID	7	6 (85.7%)	3	2.3
	EchoClass	8	0 (0%)	3	2.7
028	BCID	1	1 (100%)	2	0.5
	EchoClass	2	0 (0%)	2	1.0
029	BCID	64	62 (96.9%)	4	16.0
	EchoClass	83	41 (49.4%)	4	20.8
030	BCID	12	11 (91.7%)	4	3.0
	EchoClass	23	5 (21.7%)	4	5.8
031	BCID	3	3 (100%)	3	1.0
	EchoClass	3	1 (33.3%)	3	1.0
032	BCID	1	1 (100%)	4	0.3
	EchoClass	5	0 (0%)	4	1.3

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Acoustic Survey Station	ID program	Total Bat Calls	Calls Identified	Detector Nights	Bat Calls/ Detector Night
033	BCID	3	3 (100%)	2	1.5
	EchoClass	5	2 (40%)	2	2.5
034	BCID	0	0 (0%)	2	0
	EchoClass	0	0 (0%)	2	0
035	BCID	0	0 (0%)	2	0
	EchoClass	1	0 (0%)	2	0.5
036	BCID	8	7 (87.5%)	3	2.7
	EchoClass	11	7 (63.6%)	3	3.7
037	BCID	6	6 (100%)	3	2.0
	EchoClass	13	8 (61.5%)	3	4.3
038	BCID	5	5 (100%)	3	1.7
	EchoClass	14	2 (14.3%)	3	4.7
039	BCID	3	3 (100%)	3	1.0
	EchoClass	4	0 (0%)	3	1.3
040	BCID	0	0 (0%)	2	0
	EchoClass	0	0 (0%)	2	0
041	BCID	9	9 (100%)	3	3.0
	EchoClass	15	4 (26.7%)	3	5.0
042	BCID	6	6 (100%)	3	2.0
	EchoClass	13	1 (7.7%)	3	4.3
043	BCID	1	1 (100%)	2	0.5
	EchoClass	2	0 (0%)	2	1.0
044	BCID	0	0 (0%)	2	0
	EchoClass	1	0 (0%)	2	0.5
045	BCID	2	1 (50%)	2	1.0
	EchoClass	2	1 (50%)	2	1.0
046	BCID	4	2 (50%)	3	1.3
	EchoClass	14	0 (0%)	3	4.7
047	BCID	1814	1760 (97%)	4	453.5
	EchoClass	2070	19 (0.9%)	4	517.5
048	BCID	2	2 (100%)	2	1.0
	EchoClass	6	3 (50%)	2	3.0
049	BCID	0	0 (0%)	2	0
	EchoClass	0	0 (0%)	2	0

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Acoustic Survey Station	ID program	Total Bat Calls	Calls Identified	Detector Nights	Bat Calls/ Detector Night
050	BCID	43	40 (93%)	2	21.5
	EchoClass	54	10 (18.5%)	2	27.0
051	BCID	6	6 (100%)	2	3.0
	EchoClass	8	3 (37.5%)	2	4.0
052	BCID	29	25 (86.2%)	2	14.5
	EchoClass	32	6 (18.8%)	2	16
053	BCID	409	390 (95.4%)	2	204.5
	EchoClass	443	27 (6.1%)	2	221.5
054	BCID	2	2 (100%)	2	1.0
	EchoClass	4	1 (25%)	2	2.0
055	BCID	9	7 (77.8%)	2	4.5
	EchoClass	10	3 (30%)	2	5.0
056	BCID	70	69 (98.6%)	2	35.0
	EchoClass	81	6 (7.4%)	2	40.5
057	BCID	94	91 (96.8%)	2	47.0
	EchoClass	136	35 (25.7%)	2	68.0
058	BCID	12	10 (83.3%)	2	6.0
	EchoClass	27	7 (25.9%)	2	13.5
059	BCID	4	3 (75%)	2	2.0
	EchoClass	16	0 (0%)	2	8.0
060	BCID	5	5 (100%)	2	2.5
	EchoClass	6	1 (16.7%)	2	3.0
061	BCID	2	2 (100%)	2	1.0
	EchoClass	3	0 (3%)	2	1.5
062	BCID	0	0 (0%)	2	0
	EchoClass	1	0 (0%)	2	0.5
063	BCID	0	0 (0%)	2	0
	EchoClass	1	0 (0%)	2	0.5
064	BCID	9	8 (88.9%)	2	4.5
	EchoClass	13	3 (23.1%)	2	6.5
065	BCID	9	9 (100%)	2	4.5
	EchoClass	11	5 (45.5%)	2	5.5

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Acoustic Survey Station	ID program	Total Bat Calls	Calls Identified	Detector Nights	Bat Calls/ Detector Night
066	BCID	13	13 (100%)	2	6.5
	EchoClass	14	6 (42.9%)	2	7.0
067	BCID	3	3 (100%)	2	1.5
	EchoClass	5	2 (40.0%)	2	2.5
068	BCID	0	0 (0%)	2	0
	EchoClass	3	2 (66.7%)	2	1.5
069	BCID	2	2 (100%)	2	1.0
	EchoClass	2	0 (0%)	2	1.0
070	BCID	11	10 (90.9%)	2	5.5
	EchoClass	15	6 (40%)	2	7.5
071	BCID	4	4 (100%)	2	2.0
	EchoClass	12	0 (0%)	2	6.0
072	BCID	14	13 (92.9%)	2	7.0
	EchoClass	22	7 (31.8%)	2	11.0
073	BCID	5	5 (100%)	2	2.5
	EchoClass	12	1 (8.3%)	2	6.0
074	BCID	6	6 (100%)	2	3.0
	EchoClass	8	1 (12.5%)	2	2.0
075	BCID	20	14 (70%)	2	10.0
	EchoClass	24	4 (16.7%)	2	12.0
076	BCID	1	1 (100%)	2	0.5
	EchoClass	1	0 (0%)	2	0.5
077	BCID	0	0 (0%)	2	0
	EchoClass	2	0 (0%)	2	1.0
078	BCID	2	2 (100%)	2	1.0
	EchoClass	7	1 (14.3%)	2	3.5
079	BCID	4	4 (100%)	2	2.0
	EchoClass	18	0 (0%)	2	9.0
080	BCID	1	1 (100%)	2	0.5
	EchoClass	1	1 (100%)	2	0.5
081	BCID	3	3 (100%)	2	1.5
	EchoClass	3	0 (0%)	2	1.5
082	BCID	0	0 (0%)	2	0
	EchoClass	0	0 (0%)	2	0

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Acoustic Survey Station	ID program	Total Bat Calls	Calls Identified	Detector Nights	Bat Calls/ Detector Night
083	BCID	1	0 (0%)	2	0.5
	EchoClass	1	1 (100%)	2	0.5
084	BCID	1	1 (100%)	2	0.5
	EchoClass	4	0 (0%)	2	2.0
Total	BCID	4,077	3,847 (94.4%)	207	19.7
	EchoClass	5,384	576 (10.7%)	207	26.0

Table 4. Summary of BCID and EchoClass echolocation call identifications for Number Nine Resource Wind Area

Station ID	ID Program	EPFU	LANO	LABO	LACI	MYLE	MYLU	MYSE	PESU	UNK	Total
001	BCID	0	0	0	0	0	0	0	0	0	0
	EchoClass	0	0	0	0	0	0	0	0	2	2
002	BCID	1	0	0	0	0	0	0	0	0	1
	EchoClass	0	0	0	0	0	0	0	0	2	2
003	BCID	0	7	0	7	0	0	0	0	0	14
	EchoClass	0	0	0	0	0	0	0	0	24	24
004	BCID	0	133	0	9	0	0	0	0	2	144
	EchoClass	0	45	0	1	0	0	0	0	261	307
005	BCID	1	12	2	7	0	0	0	1	2	25
	EchoClass	0	2	0	0	0	0	0	0	29	31
006	BCID	1	1	0	0	0	0	0	0	0	2
	EchoClass	1	0	0	0	0	0	0	0	5	6
007	BCID	7	10	7	6	0	0	0	16	12	58
	EchoClass	0	1	9	0	0	0	0	4	216	230
008	BCID	0	4	3	9	0	0	0	0	1	17
	EchoClass	0	1	3	9	0	0	0	0	14	27
009	BCID	1	6	0	10	0	1	0	0	0	18
	EchoClass	1	0	1	8	0	0	0	0	17	27
010	BCID	2	23	0	7	0	0	0	0	4	36
	EchoClass	3	3	0	2	0	0	0	0	51	59
011	BCID	4	36	3	4	0	0	0	0	0	47
	EchoClass	1	8	1	2	0	0	0	1	69	82
012	BCID	32	277	0	48	0	0	0	0	23	380
	EchoClass	1	82	0	1	0	0	0	1	371	456
013	BCID	0	2	1	1	0	0	0	0	0	4
	EchoClass	0	1	1	0	0	0	0	0	5	7
014	BCID	0	3	34	1	0	237	0	6	75	356
	EchoClass	0	1	68	1	0	14	0	1	388	481
015	BCID	1	1	0	0	0	0	0	0	1	3
	EchoClass	0	0	1	0	0	0	0	0	5	6
016	BCID	32	158	2	12	0	0	0	0	3	207
	EchoClass	10	26	5	4	0	0	0	0	256	301
017	BCID	0	0	0	0	0	0	0	0	0	0
	EchoClass	0	0	0	0	0	0	0	0	12	12
018	BCID	0	4	1	1	0	0	0	0	0	6
	EchoClass	0	0	0	1	0	0	0	0	7	8
019	BCID	0	1	0	0	0	0	0	0	0	1
	EchoClass	0	0	0	1	0	0	0	0	2	3

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Station ID	ID Program	EPFU	LANO	LABO	LACI	MYLE	MYLU	MYSE	PESU	UNK	Total
020	BCID	0	0	0	1	0	0	0	0	0	1
	EchoClass	0	0	0	1	0	0	0	0	0	1
021	BCID	0	0	0	0	0	0	0	0	0	0
	EchoClass	0	0	0	0	0	0	0	0	0	0
022	BCID	0	4	0	1	0	0	0	1	0	6
	EchoClass	0	3	1	1	0	0	0	0	5	10
023	BCID	0	0	0	1	0	0	0	0	0	1
	EchoClass	0	0	0	0	0	0	0	0	1	1
024	BCID	0	2	0	1	0	0	0	0	0	3
	EchoClass	0	1	0	0	0	0	0	0	2	3
025	BCID	0	1	1	0	0	0	0	0	0	2
	EchoClass	0	0	1	0	0	0	0	0	2	3
026	BCID	0	0	0	0	0	0	0	0	0	0
	EchoClass	0	0	0	0	0	0	0	0	0	0
027	BCID	4	0	0	1	0	0	0	1	1	7
	EchoClass	0	0	0	0	0	0	0	0	8	8
028	BCID	1	0	0	0	0	0	0	0	0	1
	EchoClass	0	0	0	0	0	0	0	0	2	2
029	BCID	0	1	6	45	0	10	0	0	2	64
	EchoClass	0	0	3	34	0	4	0	0	42	83
030	BCID	0	4	1	6	0	0	0	0	1	12
	EchoClass	0	0	0	5	0	0	0	0	18	23
031	BCID	0	1	1	0	0	1	0	0	0	3
	EchoClass	0	0	1	0	0	0	0	0	2	3
032	BCID	0	1	0	0	0	0	0	0	0	1
	EchoClass	0	0	0	0	0	0	0	0	5	5
033	BCID	1	1	0	0	0	1	0	0	0	3
	EchoClass	1	0	0	1	0	0	0	0	3	5
034	BCID	0	0	0	0	0	0	0	0	0	0
	EchoClass	0	0	0	0	0	0	0	0	0	0
035	BCID	0	0	0	0	0	0	0	0	0	0
	EchoClass	0	0	0	0	0	0	0	0	1	1
036	BCID	0	3	0	4	0	0	0	0	1	8
	EchoClass	0	2	0	5	0	0	0	0	4	11
037	BCID	0	3	0	3	0	0	0	0	0	6
	EchoClass	0	0	0	8	0	0	0	0	5	13
038	BCID	0	4	0	1	0	0	0	0	0	5
	EchoClass	0	2	0	0	0	0	0	0	12	14
039	BCID	0	2	0	1	0	0	0	0	0	3
	EchoClass	0	0	0	0	0	0	0	0	4	4
040	BCID	0	0	0	0	0	0	0	0	0	0
	EchoClass	0	0	0	0	0	0	0	0	0	0

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Station ID	ID Program	EPFU	LANO	LABO	LACI	MYLE	MYLU	MYSE	PESU	UNK	Total
041	BCID	1	6	0	1	0	0	1	0	0	9
	EchoClass	0	3	0	1	0	0	0	0	11	15
042	BCID	1	4	0	0	0	1	0	0	0	6
	EchoClass	0	0	0	0	0	0	0	1	12	13
043	BCID	1	0	0	0	0	0	0	0	0	1
	EchoClass	0	0	0	0	0	0	0	0	2	2
044	BCID	0	0	0	0	0	0	0	0	0	0
	EchoClass	0	0	0	0	0	0	0	0	1	1
045	BCID	0	0	0	1	0	0	0	0	1	2
	EchoClass	0	0	0	1	0	0	0	0	1	2
046	BCID	0	1	1	0	0	0	0	0	2	4
	EchoClass	0	0	0	0	0	0	0	0	14	14
047	BCID	11	389	0	1359	0	1	0	0	54	1814
	EchoClass	0	0	0	5	0	0	0	14	2051	2070
048	BCID	0	1	0	1	0	0	0	0	0	2
	EchoClass	0	0	0	3	0	0	0	0	3	6
049	BCID	0	0	0	0	0	0	0	0	0	0
	EchoClass	0	0	0	0	0	0	0	0	0	0
050	BCID	2	24	2	10	0	0	0	2	3	43
	EchoClass	0	2	2	3	0	0	0	3	44	54
051	BCID	2	3	0	0	0	1	0	0	0	6
	EchoClass	1	1	1	0	0	0	0	0	5	8
052	BCID	9	15	0	1	0	0	0	0	4	29
	EchoClass	2	2	0	2	0	0	0	0	26	32
053	BCID	56	318	3	11	0	0	0	2	19	409
	EchoClass	2	8	4	7	0	0	0	6	416	443
054	BCID	1	1	0	0	0	0	0	0	0	2
	EchoClass	1	0	0	0	0	0	0	0	3	4
055	BCID	0	2	0	5	0	0	0	0	2	9
	EchoClass	0	1	2	0	0	0	0	0	7	10
056	BCID	3	65	0	1	0	0	0	0	1	70
	EchoClass	0	5	0	1	0	0	0	0	75	81
057	BCID	13	64	0	14	0	0	0	0	3	94
	EchoClass	0	6	0	28	0	0	0	1	101	136
058	BCID	1	8	0	1	0	0	0	0	2	12
	EchoClass	0	5	1	1	0	0	0	0	20	27
059	BCID	0	2	0	1	0	0	0	0	1	4
	EchoClass	0	0	0	0	0	0	0	0	16	16
060	BCID	0	1	0	4	0	0	0	0	0	5
	EchoClass	0	0	0	1	0	0	0	0	5	6
061	BCID	0	0	0	2	0	0	0	0	0	2
	EchoClass	0	0	0	0	0	0	0	0	3	3

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Station ID	ID Program	EPFU	LANO	LABO	LACI	MYLE	MYLU	MYSE	PESU	UNK	Total
062	BCID	0	0	0	0	0	0	0	0	0	0
	EchoClass	0	0	0	0	0	0	0	0	1	1
063	BCID	0	0	0	0	0	0	0	0	0	0
	EchoClass	0	0	0	0	0	0	0	0	1	1
064	BCID	2	3	0	3	0	0	0	0	1	9
	EchoClass	0	0	0	2	0	0	0	1	10	13
065	BCID	0	4	0	5	0	0	0	0	0	9
	EchoClass	0	0	0	5	0	0	0	0	6	11
066	BCID	0	13	0	0	0	0	0	0	0	13
	EchoClass	0	6	0	0	0	0	0	0	8	14
067	BCID	1	1	0	0	0	1	0	0	0	3
	EchoClass	1	0	0	1	0	0	0	0	3	5
068	BCID	0	0	0	0	0	0	0	0	0	0
	EchoClass	0	0	2	0	0	0	0	0	1	3
069	BCID	0	2	0	0	0	0	0	0	0	2
	EchoClass	0	0	0	0	0	0	0	0	2	2
070	BCID	0	1	5	1	0	0	0	3	1	11
	EchoClass	0	0	3	3	0	0	0	0	9	15
071	BCID	0	2	0	2	0	0	0	0	0	4
	EchoClass	0	0	0	0	0	0	0	0	12	12
072	BCID	0	3	5	5	0	0	0	0	1	14
	EchoClass	0	0	2	5	0	0	0	0	15	22
073	BCID	0	2	0	3	0	0	0	0	0	5
	EchoClass	0	0	0	1	0	0	0	0	11	12
074	BCID	1	4	0	1	0	0	0	0	0	6
	EchoClass	0	0	0	1	0	0	0	0	7	8
075	BCID	1	3	2	0	0	7	1	0	6	20
	EchoClass	0	0	3	0	0	0	0	1	20	24
076	BCID	1	0	0	0	0	0	0	0	0	1
	EchoClass	0	0	0	0	0	0	0	0	1	1
077	BCID	0	0	0	0	0	0	0	0	0	0
	EchoClass	0	0	0	0	0	0	0	0	2	2
078	BCID	0	0	0	0	0	2	0	0	0	2
	EchoClass	0	0	1	0	0	0	0	0	6	7
079	BCID	1	0	0	3	0	0	0	0	0	4
	EchoClass	0	0	0	0	0	0	0	0	18	18
080	BCID	0	1	0	0	0	0	0	0	0	1
	EchoClass	0	1	0	0	0	0	0	0	0	1
081	BCID	0	1	0	0	0	1	0	1	0	3
	EchoClass	0	0	0	0	0	0	0	0	3	3
082	BCID	0	0	0	0	0	0	0	0	0	0
	EchoClass	0	0	0	0	0	0	0	0	0	0

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Station ID	ID Program	EPFU	LANO	LABO	LACI	MYLE	MYLU	MYSE	PESU	UNK	Total
083	BCID	0	0	0	0	0	0	0	0	1	1
	EchoClass	0	0	1	0	0	0	0	0	0	1
084	BCID	0	1	0	0	0	0	0	0	0	1
	EchoClass	0	0	0	0	0	0	0	0	4	4

¹ EPFU = Big Brown Bat; LANO = Silver-haired Bat; LABO = Eastern Red Bat; LACI = Hoary Bat; MYLE = Eastern Small-footed Bat; MYLU = Little Brown Bat; MYSE = Northern Long-eared Bat; PESU = Tri-colored bat; UNK = Unknown.

Table 5. Summary of potential NLEB call identifications by BCID, EchoClass and qualitative analysis by station at the Number Nine Resource Wind Area.

Station ID	Dates	Identification Method	MYSE (NLEB)
001	July 15-18	BCID	0
		EchoClass	0
		Qualitative	0
002	July 15-18	BCID	0
		EchoClass	0
		Qualitative	0
003	July 15-18	BCID	0
		EchoClass	0
		Qualitative	0
004	July 15-18	BCID	0
		EchoClass	0
		Qualitative	0
005	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
006	July 15-20	BCID	0
		Echoclass	0
		Qualitative	0
007	July 15-18	BCID	0
		EchoClass	0
		Qualitative	0
008	July 15-18	BCID	0
		EchoClass	0
		Qualitative	0
009	July 15-18	BCID	0
		EchoClass	0
		Qualitative	0
010	July 15-18	BCID	0
		EchoClass	0
		Qualitative	0
011	July 15-20	BCID	0
		EchoClass	0
		Qualitative	0
012	July 15-18	BCID	0
		EchoClass	0
		Qualitative	0
013	July 15-18	BCID	0
		EchoClass	0
		Qualitative	0
014	July 15-18	BCID	0
		EchoClass	0
		Qualitative	0
015	July 15-18	BCID	0
		EchoClass	0

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Station ID	Dates	Identification Method	MYSE (NLEB)
		Qualitative	0
016	July 15-18	BCID	0
		EchoClass	0
		Qualitative	0
017	July 16-18	BCID	0
		EchoClass	0
		Qualitative	0
018	July 16-18	BCID	0
		EchoClass	0
		Qualitative	0
019	July 16-18	BCID	0
		EchoClass	0
		Qualitative	0
020	July 16-18	BCID	0
		EchoClass	0
		Qualitative	0
021	July 16-18	BCID	0
		EchoClass	0
		Qualitative	0
022	July 16-18	BCID	0
		EchoClass	0
		Qualitative	0
023	July 16-18	BCID	0
		EchoClass	0
		Qualitative	0
024	July 16-18	BCID	0
		Echoclass	0
		Qualitative	0
025	July 16-18	BCID	0
		EchoClass	0
		Qualitative	0
026	July 16-18	BCID	0
		EchoClass	0
		Qualitative	0
027	July 16-19	BCID	0
		EchoClass	0
		Qualitative	0
028	July 16-19	BCID	0
		EchoClass	0
		Qualitative	0
029	July 16-19	BCID	0
		EchoClass	0
		Qualitative	0
030	July 16-19	BCID	0
		EchoClass	0
		Qualitative	0
031		BCID	0

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Station ID	Dates	Identification Method	MYSE (NLEB)
	July 16-19	EchoClass	0
		Qualitative	0
032	July 16-19	BCID	0
		EchoClass	0
		Qualitative	0
033	July 17-18	BCID	0
		EchoClass	0
		Qualitative	0
034	July 17-18	BCID	0
		EchoClass	0
		Qualitative	0
035	July 17-19	BCID	0
		EchoClass	0
		Qualitative	0
036	July 17-19	BCID	0
		EchoClass	0
		Qualitative	0
037	July 17-19	BCID	0
		EchoClass	0
		Qualitative	0
038	July 17-19	BCID	0
		EchoClass	0
		Qualitative	0
039	July 17-19	BCID	0
		EchoClass	0
		Qualitative	0
040	July 17-19	BCID	0
		EchoClass	0
		Qualitative	0
041	July 18-20	BCID	1
		EchoClass	0
		Qualitative	0
042	July 18-20	BCID	0
		Echoclass	0
		Qualitative	0
043	July 18-19	BCID	0
		EchoClass	0
		Qualitative	0
044	July 18-19	BCID	0
		EchoClass	0
		Qualitative	0
045	July 18-19	BCID	0
		EchoClass	0
		Qualitative	0
046	July 18-20	BCID	0
		EchoClass	0
		Qualitative	0

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Station ID	Dates	Identification Method	MYSE (NLEB)
047	July 18-21	BCID	0
		EchoClass	0
		Qualitative	0
048	July 18-19	BCID	0
		EchoClass	0
		Qualitative	0
049	July 18-19	BCID	0
		EchoClass	0
		Qualitative	0
050	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
051	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
052	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
053	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
054	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
055	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
056	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
057	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
058	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
059	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
060	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
061	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
062	July 19-20	BCID	0
		EchoClass	0

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Station ID	Dates	Identification Method	MYSE (NLEB)
		Qualitative	0
063	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
064	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
065	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
066	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
067	July 17-18	BCID	0
		EchoClass	0
		Qualitative	0
068	July 19-21	BCID	0
		EchoClass	0
		Qualitative	0
069	July 20-21	BCID	0
		EchoClass	0
		Qualitative	0
070	July 20-21	BCID	0
		EchoClass	0
		Qualitative	0
071	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
072	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
073	July 19-20	BCID	0
		EchoClass	0
		Qualitative	0
074	July 20-21	BCID	0
		EchoClass	0
		Qualitative	0
075	July 20-21	BCID	1
		EchoClass	0
		Qualitative	0
076	July 20-21	BCID	0
		EchoClass	0
		Qualitative	0
077	July 20-21	BCID	0
		EchoClass	0
		Qualitative	0
078		BCID	0

Number Nine NLEB Acoustic Survey Final Report

Station ID	Dates	Identification Method	MYSE (NLEB)
	July 20-21	EchoClass	0
		Qualitative	0
079	July 20-21	BCID	0
		EchoClass	0
		Qualitative	0
080	July 20-21	BCID	0
		EchoClass	0
		Qualitative	0
081	July 20-21	BCID	0
		EchoClass	0
		Qualitative	0
082	July 20-21	BCID	0
		EchoClass	0
		Qualitative	0
083	July 20-21	BCID	0
		EchoClass	0
		Qualitative	0
084	July 20-21	BCID	0
		EchoClass	0
		Qualitative	0
Totals	July 15-21	BCID	2
		EchoClass	0
		Qualitative	0

Table 6. Summary of actions at each acoustic survey site for Number Nine Resource Area.

Station ID	Potential NLEB Calls	Probable NLEB Presence (P < 0.05)	NLEB Qualitatively Verified	Recommended Action
001	No	No	No	Survey complete
002	No	No	No	Survey complete
003	No	No	No	Survey complete
004	No	No	Np	Survey complete
005	No	No	No	Survey complete
006	No	No	No	Survey complete
007	No	No	No	Survey complete
008	No	No	No	Survey complete
009	No	No	No	Survey complete
010	No	No	No	Survey complete
011	No	No	No	Survey complete
012	No	No	No	Survey complete
013	No	No	No	Survey complete
014	No	No	No	Survey complete
015	No	No	No	Survey complete
016	No	No	No	Survey complete
017	No	No	No	Survey complete
018	No	No	No	Survey complete
019	No	No	No	Survey complete
020	No	No	No	Survey complete
021	No	No	No	Survey complete
022	No	No	No	Survey complete
023	No	No	No	Survey complete
024	No	No	No	Survey complete
025	No	No	No	Survey complete
026	No	No	No	Survey complete
027	No	No	No	Survey complete
028	No	No	No	Survey complete
029	No	No	No	Survey complete
030	No	No	No	Survey complete
031	No	No	No	Survey complete
032	No	No	No	Survey complete
033	No	No	No	Survey complete
034	No	No	No	Survey complete
035	No	No	No	Survey complete
036	No	No	No	Survey complete
037	No	No	No	Survey complete
038	No	No	No	Survey complete
039	No	No	No	Survey complete
040	No	No	No	Survey complete
041	Yes	Yes	No	Survey complete
042	No	No	No	Survey complete
043	No	No	No	Survey complete
044	No	No	No	Survey complete
045	No	No	No	Survey complete
046	No	No	No	Survey complete
047	No	No	No	Survey complete
048	No	No	No	Survey complete
049	No	No	No	Survey complete
050	No	No	No	Survey complete
051	No	No	No	Survey complete

Number Nine NLEB Acoustic Survey Final Report

Station ID	Potential NLEB Calls	Probable NLEB Presence (P < 0.05)	NLEB Qualitatively Verified	Recommended Action
052	No	No	No	Survey complete
053	No	No	No	Survey complete
054	No	No	No	Survey complete
055	No	No	No	Survey complete
056	No	No	No	Survey complete
057	No	No	No	Survey complete
058	No	No	No	Survey complete
059	No	No	No	Survey complete
060	No	No	No	Survey complete
061	No	No	No	Survey complete
062	No	No	No	Survey complete
063	No	No	No	Survey complete
064	No	No	No	Survey complete
065	No	No	No	Survey complete
066	No	No	No	Survey complete
067	No	No	No	Survey complete
068	No	No	No	Survey complete
069	No	No	No	Survey complete
070	No	No	No	Survey complete
071	No	No	No	Survey complete
072	No	No	No	Survey complete
073	No	No	No	Survey complete
074	No	No	No	Survey complete
075	Yes	Yes	No	Survey complete
076	No	No	No	Survey complete
077	No	No	No	Survey complete
078	No	No	No	Survey complete
079	No	No	No	Survey complete
080	No	No	No	Survey complete
081	No	No	No	Survey complete
082	No	No	No	Survey complete
083	No	No	No	Survey complete
084	No	No	No	Survey complete

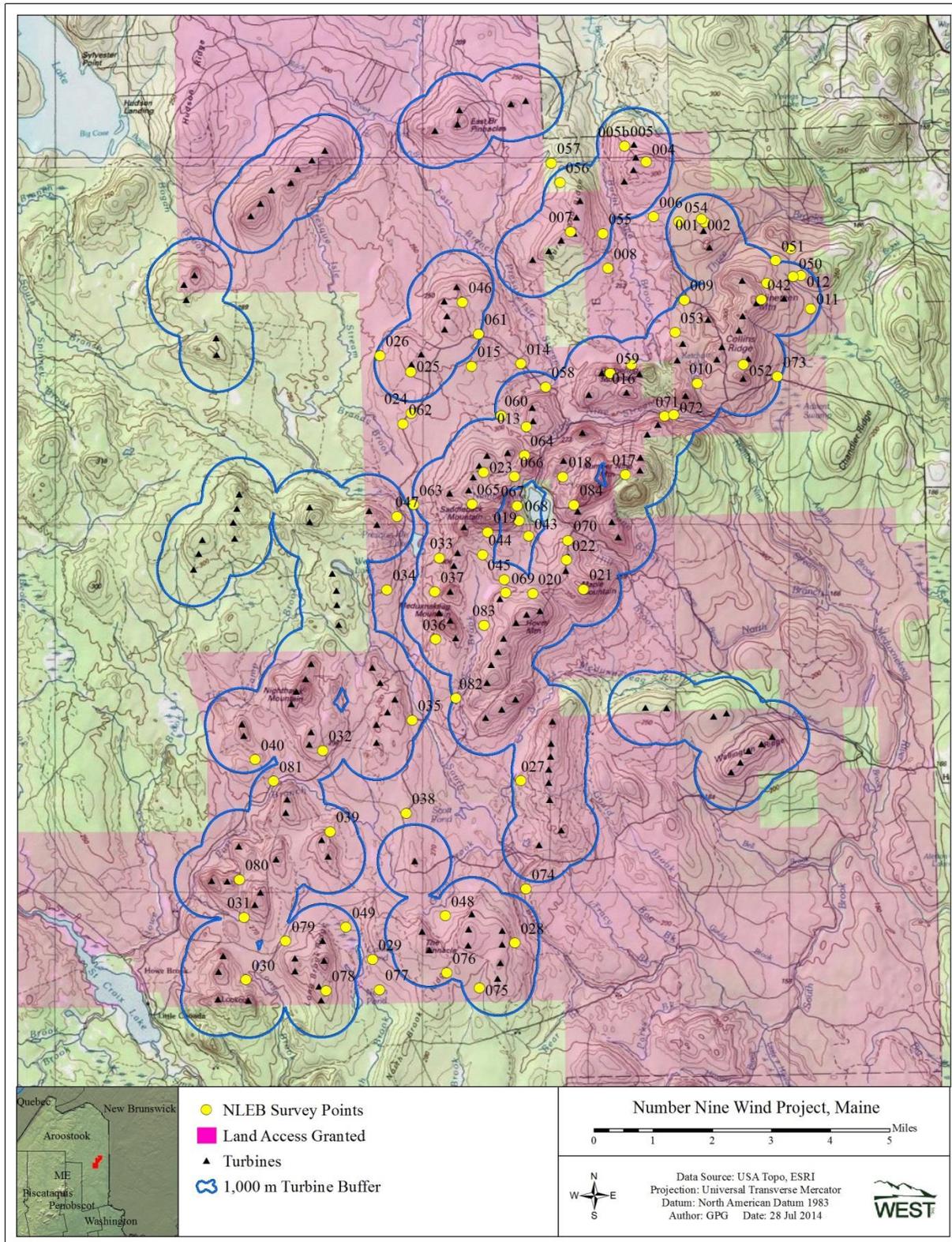


Figure 1. Locations of acoustic stations at Number Nine Wind Resource Area. Survey locations were placed based on land access and presence of suitable habitat.

**Pictures of Acoustic Survey Sites provided on
Compact Disc due to the large number of files**