

**2006 Vernal Pool Survey
Report for the
Kibby Wind Power Project**

Prepared for:

TransCanada Maine Wind Development Inc.

8th Floor, 55 Yonge Street
Toronto, Ontario M5E 1J4

Prepared by:

TRC Environmental Corporation

249 Western Avenue
Augusta, Maine 04330

December 2006

TABLE OF CONTENTS

1.0 INTRODUCTION..... 1-1

2.0 STUDY METHODOLOGY..... 2-1

3.0 RESULTS AND DISCUSSION 3-1

 3.1 Vernal Pool Sampling..... 3-1

 3.1.1 Non-Vernal Pools..... 3-1

 3.1.2 Functional Vernal Pools (Meeting Both USACE and Maine DEP Definitions) . 3-5

 3.1.3 USACE Vernal Pools..... 3-6

 3.1.4 Rare Threatened and Endangered Species..... 3-8

4.0 SUMMARY OF FINDINGS 4-1

5.0 REFERENCES..... 5-1

TABLES

Table 1: Non-Vernal Pools 3-9

Table 2: Natural, Functional Vernal Pools in the Proposed Project Area 3-10

FIGURES

Figure 1a 1-2

Figure 1b 1-3

Figure 2a 3-3

Figure 2b 3-4

APPENDIX

Appendix A Vernal Pool Survey and Assessment Protocol (with Data Form and Instructions)

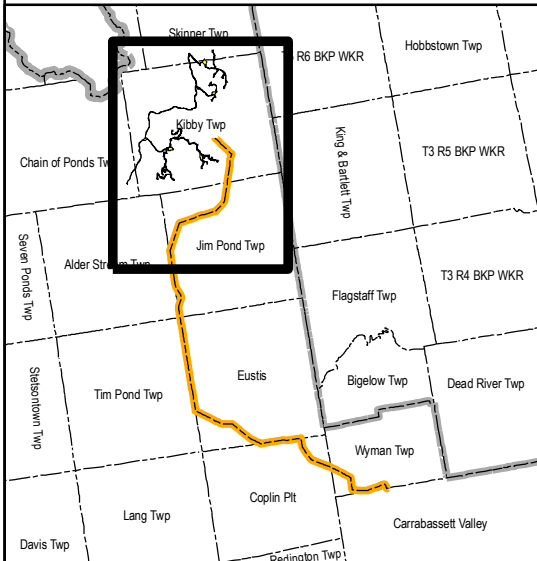
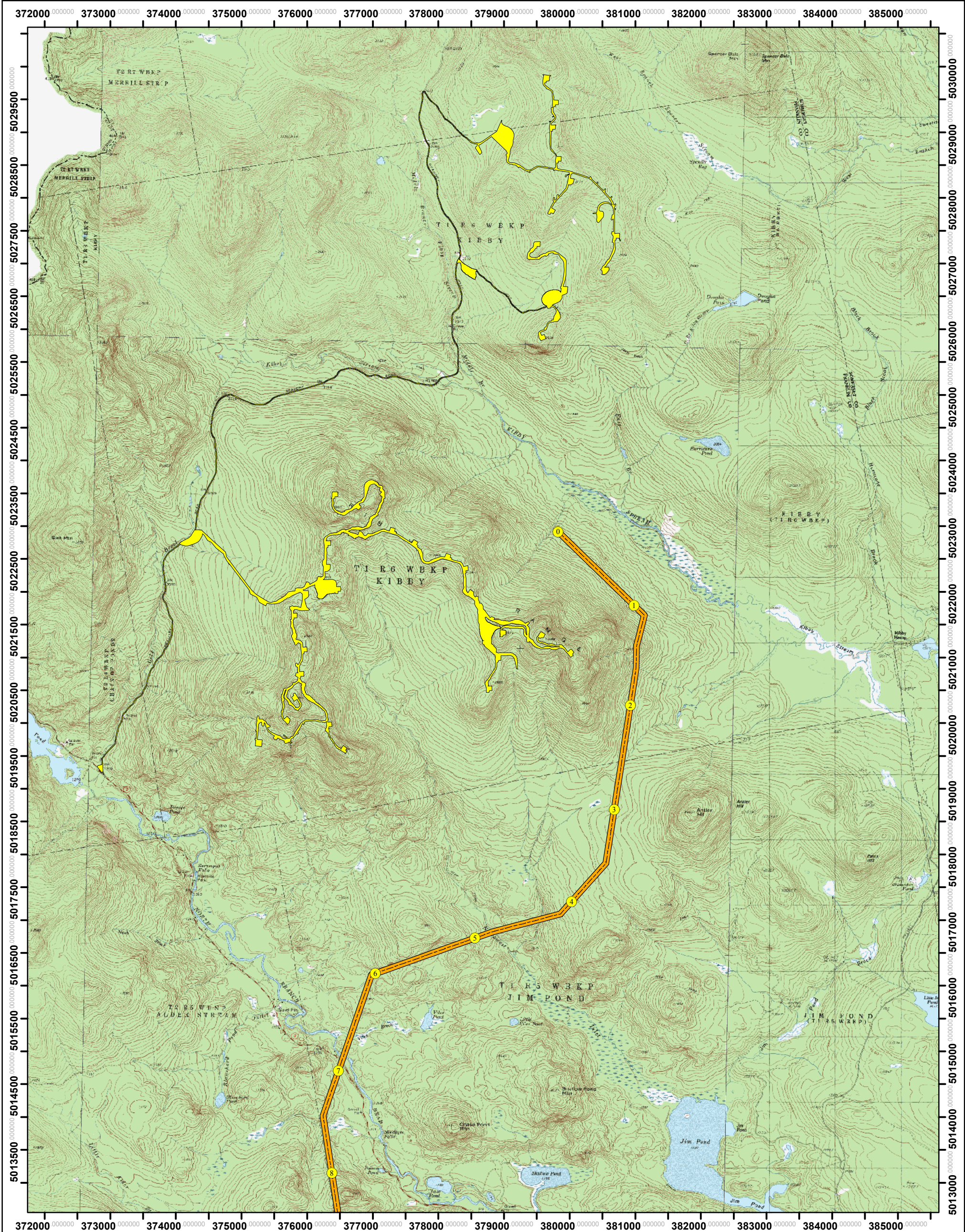
Appendix B Completed Data Forms for Verified Vernal Pools

1.0 INTRODUCTION

TransCanada Maine Wind Development Inc. (TransCanada) is proposing to develop, own and operate a 132 megawatt (MW) wind power generating facility in the Boundary Mountains of Western Maine known as the Kibby Wind Power Project. A vernal pool survey was conducted during the spring of 2006 where project elements are likely to occur. Survey areas included the potential locations for wind turbines along two ridgelines located in Kibby and Skinner Townships (Figure 1) that are within commercial forest lands owned by Plum Creek, a project substation, and a transmission line corridor that would extend from the project substation through commercial forest lands to the existing Bigelow Substation in Carrabassett Valley (Figure 2).

The specific objectives of vernal pool surveys were to: 1) identify potential vernal pools within the project area; 2) determine if the identified pools were being used by breeding amphibians; and, 3) determine if any of the pools meet the criteria for designation as Significant Vernal Pools in accordance with the Maine Department of Environmental Protection (MDEP) Natural Resources Protection Act (NRPA) Chapter 335, using accepted agency protocols.

The purpose of this report is to document the findings of vernal pool identification and assessment surveys performed in the spring of 2006.



Legend

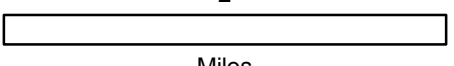
- Proposed Wind Turbine and Road Construction Area
- Proposed Kibby Transmission Line
- Proposed Transmission Line Survey Area

Notes: Base map: USGS 24k Topographic Map.
Coordinate Grid: NAD83 UTM Zone 19N, Meters

INFORMATION DEPICTED HEREON IS FOR REFERENCE PURPOSES ONLY AND IS COMPILED FROM BEST AVAILABLE SOURCES. EPRO Engineering and Environmental Consulting, LLC ASSUMES NO RESPONSIBILITY FOR ERRORS ARISING FROM MISUSE OF THIS MAP.



2



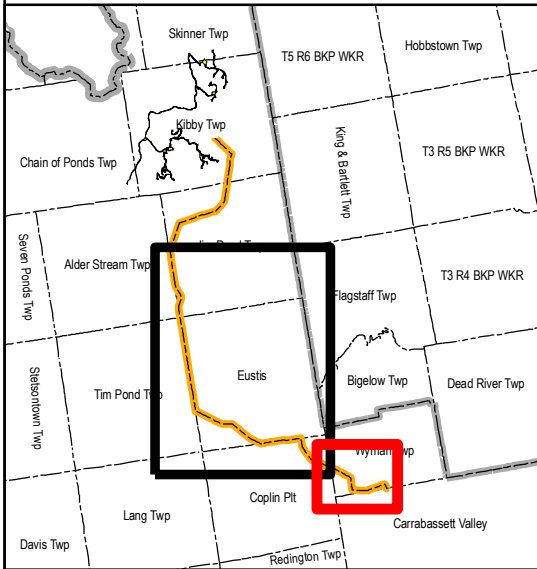
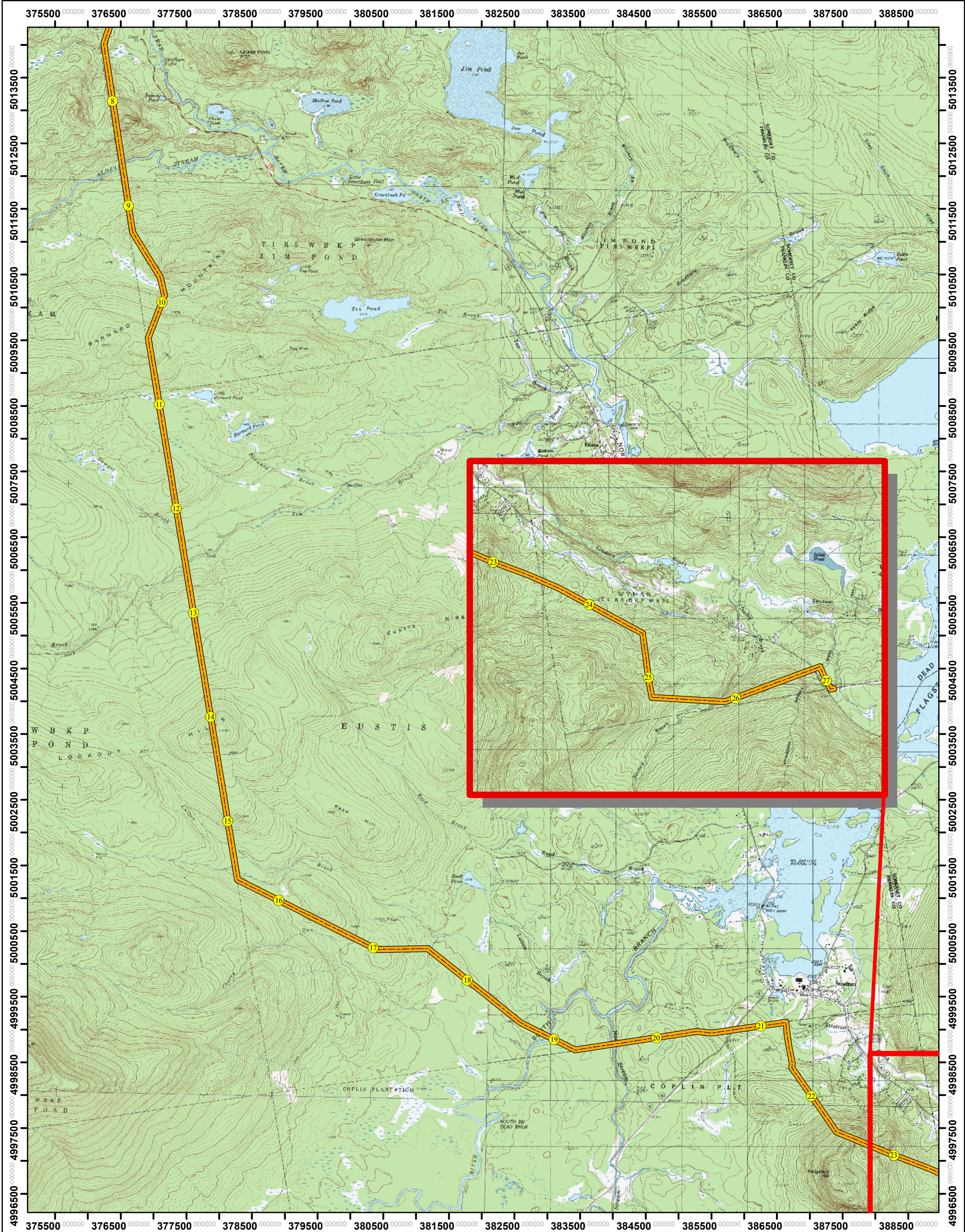
Miles



249 Western Ave
Augusta, ME 04330

Kibby Wind Power Project
Vernal Pool Study Location

Figure 1




Legend

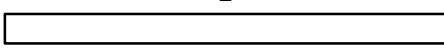
- Proposed Wind Turbine and Road Construction Area
- Proposed Kibby Transmission Line
- Proposed Transmission Line Survey Area

Notes: Base map: USGS 24k Topographic Map.
Coordinate Grid: NAD83 UTM Zone 19N, Meters


INFORMATION DEPICTED HEREON IS FOR REFERENCE PURPOSES ONLY AND IS COMPILED FROM BEST AVAILABLE SOURCES.
EPRO Engineering and Environmental Consulting, LLC ASSUMES NO RESPONSIBILITY FOR ERRORS ARISING FROM MISUSE OF THIS MAP.



2



Miles



249 Western Ave
Augusta, ME 04330

Kibby Wind Power Project
Vernal Pool Study Location

Figure 2

2.0 STUDY METHODOLOGY

A draft protocol for this effort was prepared and submitted to the Maine Department of Inland Fisheries and Wildlife (MDIFW), the Land Use Regulation Commission (LURC), and the U.S. Fish and Wildlife Service (USFWS) on April 27, 2006. Information and procedures utilized for this protocol were consistent with current agency consensus, and all comments received on the draft protocol were incorporated into the final version. This final version of the protocol is provided in Appendix A,

Consistent with protocol requirements, all field efforts for the vernal pool surveys were conducted between May 3, 2006 and May 19, 2006, and within appropriate conditions for such survey efforts.

3.0 RESULTS AND DISCUSSION

3.1 Vernal Pool Sampling

Using existing information and the sampling methodology described in the protocol, a total of 43 areas were identified and assessed to determine if they functioned as vernal pools. The following are the general results of the vernal pool sampling and assessment effort:

- Twenty-three of the areas sampled were determined to not meet either the federal or state definitions of vernal pools. These are discussed in Section 3.1.1;
- Eighteen of the areas were determined to be natural, functional vernal pools (they met both the federal and state definitions of vernal pools), but were not classified as significant vernal pools, per Chapter 335 criteria. These are discussed in Section 3.1.2;
- One area was determined to be a significant vernal pool, as described in Chapter 335. This area is discussed in Section 3.1.2; and
- One area met the United States Army Corps of Engineers (USACE) definition of a vernal pool, but did not meet the MDEP definition. This area is discussed on Section 3.1.3.

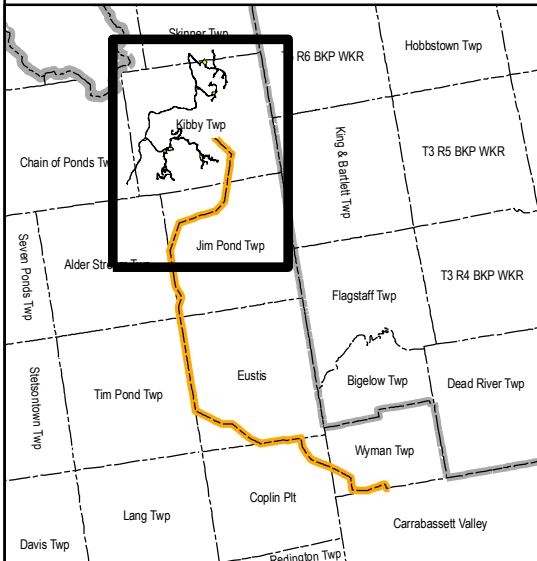
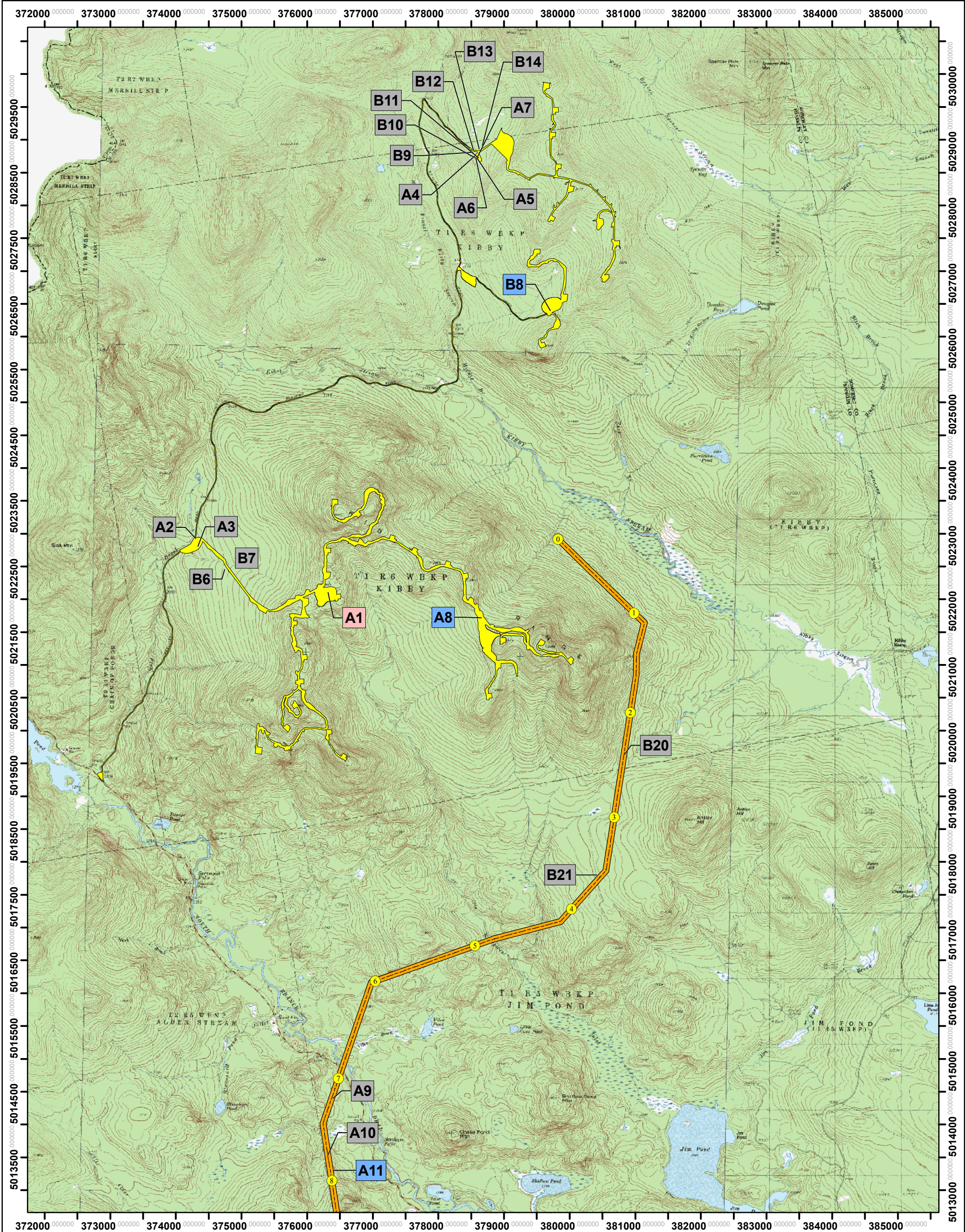
The results of the overall assessment effort are fully described in the following sections. Figures 3 and 4 depict the approximate locations of all the areas that were assessed. For purposes of this study and as reflected in this report, each area assessed as a potential vernal pool was identified and labeled based on the sequence that it was encountered and assessed, as well as on the field crew by which it was assessed. For example, the 8th area encountered and assessed by Team B was labeled B8. There were three vernal pool survey crews; Teams A, B, and C.

3.1.1 Non-Vernal Pools

As mentioned in Section 3.1, 43 potential vernal pool areas were examined in the spring of 2006 (see Table 1). Of this total, 23 contained egg masses, primarily wood frog (*Rana sylvatica*), but were determined not to be vernal pools. These 23 areas are color-coded as gray on Figures 3 and 4 and are listed in Table 1. Twenty-two of these areas were deemed not to be vernal pools because they were man-made rather than natural pools. The remaining area (labeled C1 on Figure 4) was not a vernal pool because it occurred in a large beaver (*Castor canadensis*) complex with an inlet stream with high water quality. The high water quality indicates that the stream and beaver dam are likely to contain a viable population of predatory fish such as eastern brook trout (*Salvelinus fontinalis*). Most of the man-made areas were ruts made by skidders or other forest harvesting equipment in harvested forest, and ditches next to logging roads. An example of one of the man-made areas is depicted in Photo 1.



Photo 1: View of typical non-vernal pool (A16) that contained egg masses.



Legend	Survey Results
Proposed Wind Turbine and Road Construction Area	B21 Non-Vernal Pools
Proposed Kibby Transmission Line	B21 Vernal Pool
Proposed Transmission Line Survey Area	B21 Significant Vernal Pool
	B21 Vernal Pool (USACE Only)

Notes: Base map: USGS 24k Topographic Map.
 Coordinate Grid: NAD83 UTM Zone 19N, Meters

INFORMATION DEPICTED HEREON IS FOR REFERENCE PURPOSES ONLY AND IS COMPILED FROM BEST AVAILABLE SOURCES.
 EPRO Engineering and Environmental Consulting, LLC ASSUMES NO RESPONSIBILITY FOR ERRORS ARISING FROM MISUSE OF THIS MAP.

2

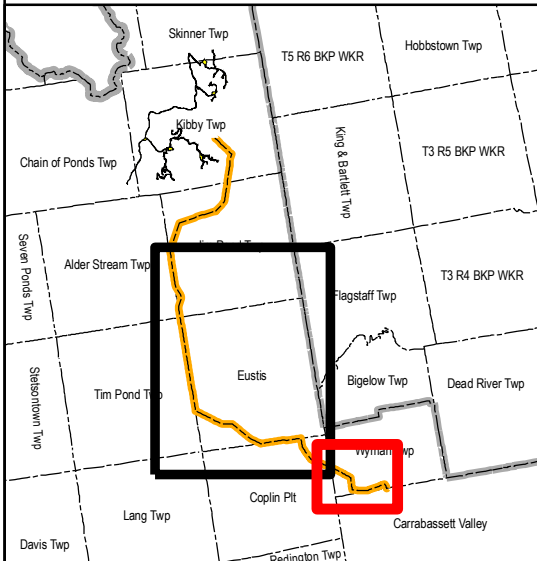
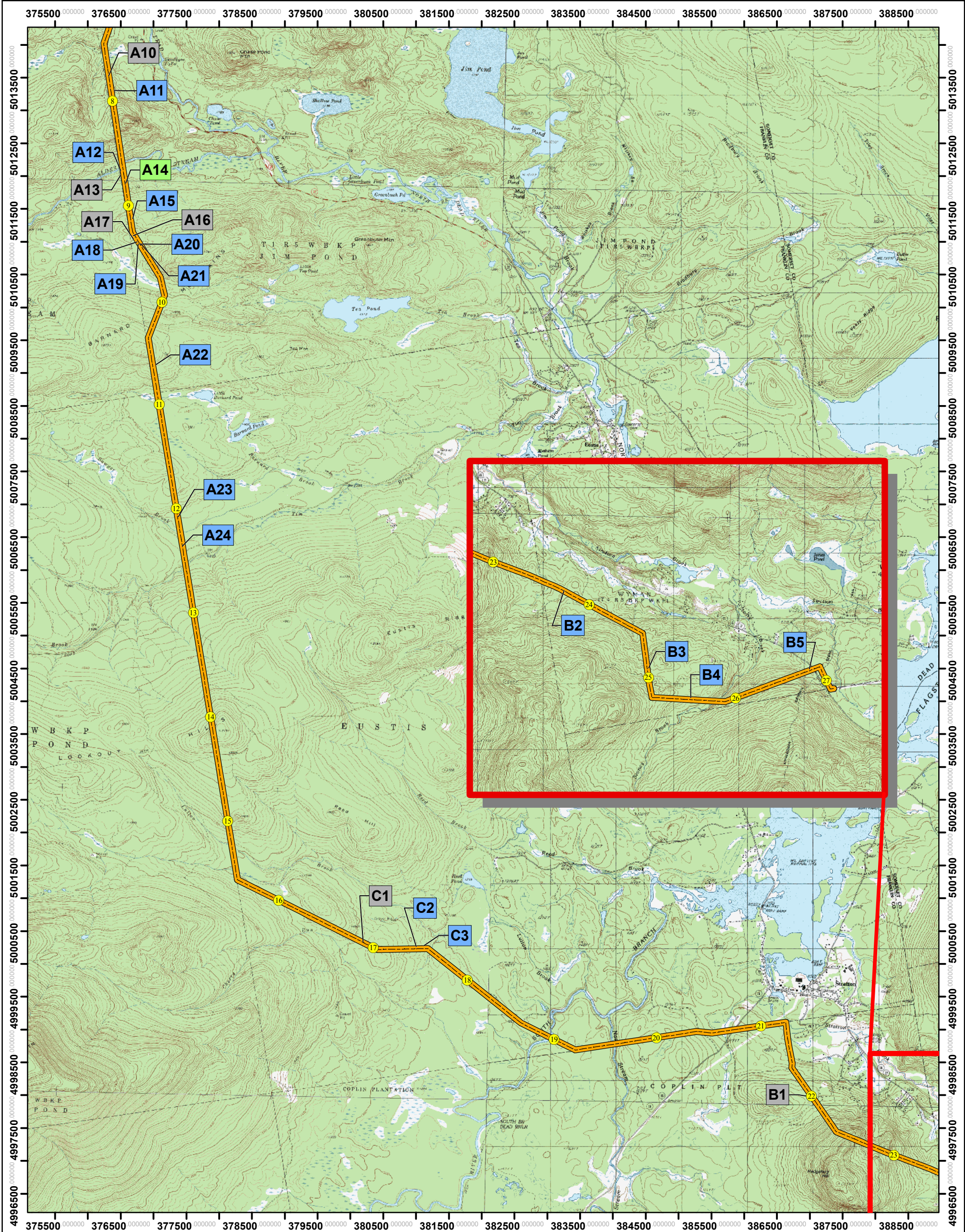
Miles

249 Western Ave
 Augusta, ME 04330

Kibby Wind Power Project

Vernal Pool Study Results

Figure 3



Legend

- Proposed Wind Turbine and Road Construction Area
- Proposed Kibby Transmission Line
- Proposed Transmission Line Survey Area

Survey Results

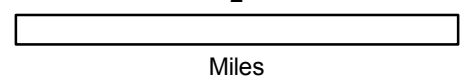
- B21 Non-Vernal Pools
- B21 Vernal Pool
- B21 Significant Vernal Pool
- B21 Vernal Pool (USACE Only)

Notes: Base map: USGS 24k Topographic Map.
Coordinate Grid: NAD83 UTM Zone 19N, Meters

INFORMATION DEPICTED HEREON IS FOR REFERENCE PURPOSES ONLY AND IS COMPILED FROM BEST AVAILABLE SOURCES. EPRO Engineering and Environmental Consulting, LLC ASSUMES NO RESPONSIBILITY FOR ERRORS ARISING FROM MISUSE OF THIS MAP.



2



249 Western Ave
Augusta, ME 04330

Kibby Wind Power Project
Vernal Pool Study Results

Figure 4

3.1.2 Functional Vernal Pools (Meeting Both USACE and MDEP Definitions)

In accordance with both the USACE and MDEP NRPA Chapter 355 definitions, a total of 19 natural, functional vernal pools were identified and assessed during the spring of 2006. These are listed in Table 2. Of this total, 18 were not significant vernal pools and one (designated as A14) met the minimum the criteria for designation as a significant vernal pool as described in Chapter 335. Specifically, A14 was determined to be a significant vernal pool because it contained 28 spotted salamander (*Ambystoma maculatum*) egg masses. This vernal pool is located within the proposed project transmission line corridor at approximate milepost 10.7, and is approximately 20 feet long and 10 feet wide. The 18 natural, functional pools that did not meet the threshold criteria for designation as significant vernal pools are color-coded as blue on Figures 3 and 4; whereas the single significant vernal pool is color-coded as green on Figure 4.

Based on field observations, none of these vernal pools appeared to be man-made and all were functioning as vernal pool habitat. Of the 19 vernal pools (1 significant, 18 not significant), ten contained wood frog and spotted salamander egg masses (significant vernal pool A14 is included in this category), seven contained wood frog egg masses, and three contained spotted salamander egg masses. The majority of these vernal pools occurred as part of larger wetland complexes and they ranged in size from several feet in diameter to several acres. Photo 2 is a typical depiction of the 18 vernal pools that were determined not to be significant (in accordance with Chapter 335); whereas Photo 3 depicts significant vernal pool A14.



Photo 2: View of vernal pool A8 (located on the ridgelines), an area with 15 wood frog egg masses.



Photo 3: View of significant vernal pool A14.

3.1.3 USACE Vernal Pools

One area (identified as A1 on Figure 2a and Table 2) met the USACE definition of a vernal pool, but did not meet the definition of a vernal pool as described in Chapter 335. This area is color-coded in pink on Figure 2a.

The USACE and Chapter 335 definitions are as follows:

USACE Programmatic General Permit

“Temporary to permanent bodies of water occurring in shallow depressions that fill during the spring and fall and may dry during the summer. Vernal pools have no permanent or viable populations of predatory fish. Vernal pools provide the primary breeding habitat for wood frogs, spotted salamanders, blue-spotted salamanders, and fairy shrimp, and provide habitat for other wildlife including several endangered and threatened species.”

Chapter 335

“A vernal pool, also referred to as a seasonal forest pool, is a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet and no viable

populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (Rana sylvatica), spotted salamander (Ambystoma maculatum), blue-spotted salamanders (Ambystoma laterale), and fairy shrimp (Eubranchipus sp.), as well as valuable habitat for other plants and wildlife including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition.”

Consistent with the USACE definition, A1 is a permanent body of water with no permanent or viable populations of predatory fish (it is very shallow [2-3 feet deep] and therefore likely freezes solid during most winters, and has poor water quality) and, in spring 2006, was a breeding habitat for wood frog (600+ egg masses), spotted salamander (70+ egg masses), and blue-spotted salamander (2 egg masses).

A1 did not meet the definition of a vernal pool under Chapter 335 because 1) it is permanent rather than semi-permanent body of water and, 2) it has three permanent inlets. However, consistent with Chapter 305 of the Natural Resources Protection Act, A1 is a freshwater wetland of special significance because it contains >20,000 square feet of open water habitat. A1 is depicted in Photo 4 below.



Photo 4: View of area A1.

3.1.4 Rare Threatened and Endangered Species

No federal- or state-listed rare, threatened, or endangered species used as indicators of significant vernal pools were observed during field surveys. Species that field crews were instructed to document if encountered included:

- | | |
|--|------------------------------|
| ▪ Ringed Boghaunter (<i>Williamsonia lintneri</i>) | State-listed Endangered |
| ▪ Spotted Turtle (<i>Clemmys guttata</i>) | State-listed Threatened |
| ▪ Blanding's Turtle (<i>Emydoidea blandingi</i>) | State-listed Endangered |
| ▪ Ribbon Snake (<i>Thamnophis sauritur</i>) | State-listed Special Concern |
| ▪ Wood Turtle (<i>Clemmys insculpta</i>) | State-listed Special Concern |

Table 1: Non-Vernal Pools

I.D. Label	Setting	How Created (if man-made)	Forested Buffer¹	Located on Ridgeline or Transmission Line	Transmission Line Milepost
A2	Man-made	Old logging road	No, clear cut	Ridgeline	
A3	Man-made	Old logging road	No, clear cut	Ridgeline	
A4	Man-made	Skidder ruts	Sparse (5%)	Ridgeline	
A5	Man-made	Skidder ruts	Sparse (5%)	Ridgeline	
A6	Man-made	Skidder ruts	Sparse (5%)	Ridgeline	
A7	Man-made	Skidder ruts	Sparse (5%)	Ridgeline	
A9	Man-made	Old logging road	Dense (95%)	Transmission	7.2
A10	Man-made	Skidder ruts	Dense (90%)	Transmission	7.8
A13	Man-made	Old gravel pit	No, electrical ROW	Transmission	7.9
A16	Man-made	Skidder ruts	Moderate (40%)	Transmission	9.3
A17	Man-made	Old logging road	No, clear cut	Transmission	9.35
B1	Man-made	Vehicle tracks in electrical ROW	Moderate (50%)	Transmission	22.05
B6	Man-made	Ditch next to logging road	Dense (90%)	Ridgeline	
B7	Man-made	Borrow pit next to woods road	Dense (90%)	Ridgeline	
B9	Man-made	Ditch next to logging road	No	Ridgeline	
B10	Man-made	Skidder ruts	No	Ridgeline	
B11	Man-made	Skidder ruts	No	Ridgeline	
B12	Man-made	Skidder ruts	No	Ridgeline	
B13	Man-made	Skidder ruts	No	Ridgeline	
B14	Man-made	Skidder ruts	No	Ridgeline	
B20	Man-made	Skidder ruts	Dense (70%)	Transmission	2.4
B21	Man-made	Skidder ruts	Moderate (50%)	Transmission	3.55
C1	Natural, Beaver Flowage		Moderate (30%)	Transmission	16.95

¹ When present, forested buffer given as percent of total critical upland/wetland habitat around the assessed area.

Table 2: Natural, Functional Vernal Pools in the Proposed Project Area

I.D. Label	Setting (Isolated Upland, Wetland Complex², Beaver Dam, Floodplain)	Size (in feet)³	Locations (Transmission Line or Ridgeline)	Transmission Line Milepost	Significant Vernal Pool (Chapter 335)
A1 ⁴	Wetland Complex	Several acres	Ridgeline		No
A8	Wetland C06-165	80' x 30'	Ridgeline		No
A11	Wetland B06-115	8' x 8'	Transmission line	8	No
A12	Floodplain, Wetland B06-113	125' x 35'	Transmission line	8.55	No
A14	Wetland B06-112	20' x 10'	Transmission line	8.8	Yes, contained 28 spotted salamander egg masses
A15	Isolated Upland	75' x 50'	Transmission line	9.1	No
A18	Wetland B06-108	15' x 5'	Transmission line	9.4	No
A19	Wetland B06-108	12' x 4'	Transmission line	9.45	No
A20	Wetland B06-108	6' x 4'	Transmission line	9.45	No
A21	Wetland B06-108	20' x 5'	Transmission line	9.5	No
A22	Isolated Upland	150' x 100'	Transmission line	10.6	No
A23	Wetland B06-97	30' x 12'	Transmission line	12	No
A24	Wetland B06-95	15' x 10'	Transmission line	12.4	No
B2	Wetland B06-84	15' x 10'	Transmission line	23.7	No
B3	Wetland A06-130	10' x 4'	Transmission line	24.9	No
B4	Wetland A06-123	12' x 5'	Transmission line	25.5	No
B5	Wetland B06-1	60' x 50'	Transmission line	26.75	No
B8	Wetland D06-35	20' x 15'	Ridgeline		No
C2	Wetland A06-159	15' x 10'	Transmission line	17.4	No
C3	Wetland A06-157	60' x 45'	Transmission line	17.5	No

² When a vernal pool is associated with a wetland complex, the wetland, as identified and labeled during wetland mapping conducted in 2006, is referenced.

³ Vernal pool dimensions are presented in feet, with the exception of A25, which is up to several acres in size.

⁴ Meets USACE vernal pool definition only, not the Chapter 335 definition.

4.0 SUMMARY OF FINDINGS

The following is a summary of results from vernal pool surveys conducted during the spring of 2006.

- A total of 43 potential vernal pools were identified and assessed during the spring of 2006;
- Of this total, 23 contained egg masses of several vernal pool indicator species. However, 22 of these areas were man-made and were not vernal pools as defined in the Department of the Army Programmatic General Permit – State of Maine (USACE 2005) and the MDEP Chapter 335 – Significant Wildlife Habitat (MDEP 2005). The remaining area was part of a beaver flowage with a perennial inlet stream with high water quality. As a result, this area likely contains a permanent predatory fish population;
- A total of 19 natural, functional vernal pools that met both the USACE and Chapter 335 definitions of vernal pools were identified during 2006 surveys. Two occurred on the ridgelines and 16 occurred within the proposed transmission line corridor;
- Of these 19 vernal pools, one (A14), which is located along the potential electrical transmission line corridor, was confirmed as a significant vernal pool in accordance with the criteria presented in Chapter 335;
- One area, labeled as A1, met the USACE definition of a vernal pool, but did not meet the definition of a vernal pool as described in Chapter 335 as it is a permanent body of water with three permanent inlets and one outlet;
- No rare, threatened, or endangered (RTE) species indicative of vernal pools were observed during the spring 2006 surveys.

5.0 REFERENCES

Maine Department of Environmental Protection. 2005. Chapter 335: Significant Wildlife Habitat – Draft Revision.

U.S. Army Corps of Engineers. 2005. Department of the Army Programmatic General Permit – State of Maine: NAE-2005-2164. 25 pp.

APPENDIX A

**Vernal Pool Sampling and Verification Protocol
For the Kibby Wind Power Project**

KIBBY WIND POWER PROJECT

VERNAL POOL SURVEY AND ASSESSMENT PROTOCOL

Prepared for:

TransCanada Energy Ltd.

Prepared by:

TRC

TRC Environmental Corporation

April 2006

TABLE OF CONTENTS

1.0 INTRODUCTION 1

 1.1 KIBBY WIND POWER PROJECT SUMMARY 1

 1.2 VERNAL POOL RESOURCE DEFINITIONS AND CRITERIA 1

2.0 PRELIMINARY IDENTIFICATION TOOLS AND METHODS 6

 2.1 AERIAL PHOTOGRAPH, USGS TOPOGRAPHIC MAP, NWI MAP, AND SOIL SURVEY MAP REVIEW 6

 2.2 GIS DATABASE REVIEW 6

 2.3 COMPILATION OF A TABLE OF POTENTIAL VERNAL POOLS..... 6

3.0 2006 VERNAL POOL SURVEYS 6

 3.1 GENERAL PROTOCOL 6

 3.2 VERNAL POOL FIELD SURVEYS..... 7

 3.2.1 *General Approach* 7

 3.2.2 *Wood Frog Chorusing Survey* 8

 3.2.3 *Amphibian Egg Mass Sampling*..... 8

 3.2.4 *Fairy Shrimp Sampling*..... 9

 3.2.5 *Decontamination Procedures* 9

4.0 REFERENCES 10

APPENDICES

A - Vernal Pool Sampling Data Form

1.0 INTRODUCTION

1.1 Kibby Wind Power Project Summary

TransCanada Energy Ltd. (TransCanada) is proposing to develop, own and operate a 100–200 megawatt (MW) wind power generating facility in the Boundary Mountains of Western Maine known as the Kibby Wind Power Project. The project is in a location for which a similar project proposal by U.S. Windpower was previously approved by the Land Use Regulation Commission (LURC).

The project will be located in an unincorporated area of Franklin County, Maine. Proposed turbines would be located along two ridgelines within the project area. Other project components include a substation and associated transmission line interconnect with the Central Maine Power Company (CMP) electrical grid (Figures 1 and 2). The property is owned by Plum Creek, and the surrounding areas are currently actively managed for forest products. The Kibby Wind Power Project can take advantage of existing logging roads and cleared areas to access the ridgelines, and forestry activities can continue in a complementary fashion with the project in place. The project will utilize the superior wind resource found in this vicinity to create clean, renewable power generation.

1.2 Vernal Pool Resource Definitions and Criteria

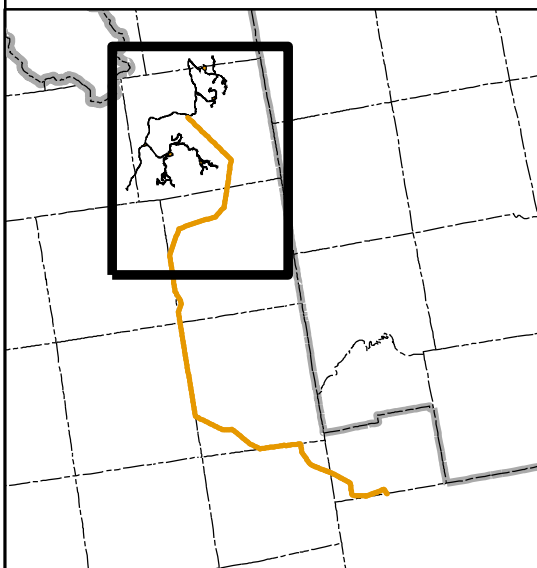
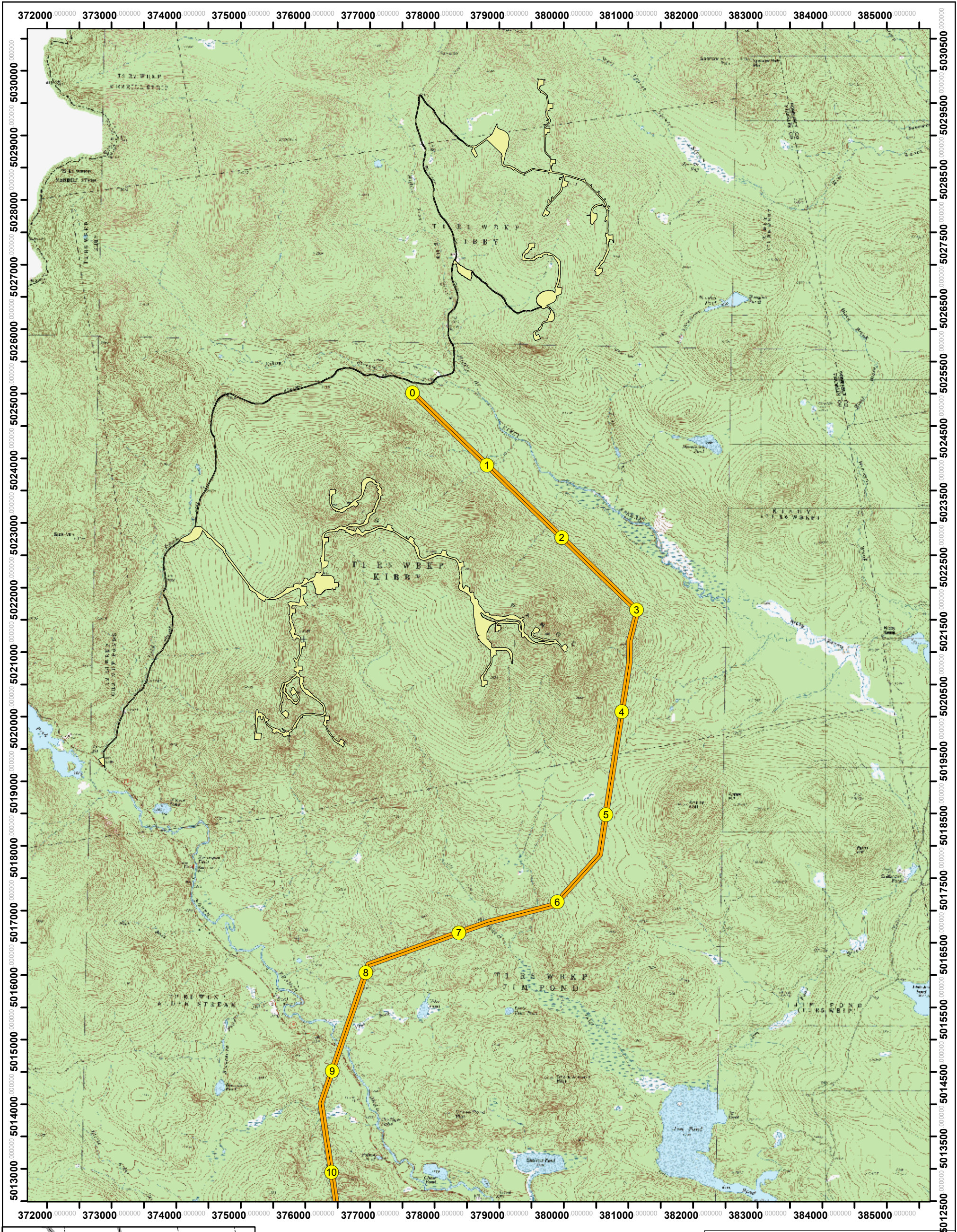
TRC, TransCanada’s environmental consultant supporting the Kibby Wind Power Project, is evaluating the potential presence of vernal pools (also known as seasonal forest pools) within and in proximity to the proposed project component locations in order to evaluate potential impacts and avoid and minimize disturbance where possible. For the purposes of this effort, TRC has adopted the vernal pool definition as described in the Department of the Army Programmatic General Permit – State of Maine (USACE 2005) and the draft revision of the Maine Department of Environmental Protection (MDEP) Chapter 335 – Significant Wildlife Habitat (MDEP 2005). With the exception of minor differences, the above-referenced documents have similar definitions of vernal pools. Each respective definition is provided below.

According to the Programmatic General Permit, vernal pools are described as follows:



“Temporary to permanent bodies of water occurring in shallow depressions that fill during the spring and fall and may dry during the summer. Vernal pools have no permanent or viable populations of predatory fish. Vernal pools provide the primary breeding habitat for wood frogs, spotted salamanders, blue-spotted salamanders, and fairy shrimp, and provide habitat for other wildlife including several endangered and threatened species.”

Within Chapter 335, vernal pools are defined as follows:

“A vernal pool, also referred to as a seasonal forest pool, is a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet and no viable




Legend


-  Proposed Transmission Corridor
-  Proposed Construction Area


Notes: Base map: USGS 24k Topographic Map

INFORMATION DEPICTED HEREON IS FOR REFERENCE PURPOSES ONLY AND IS COMPILED FROM BEST AVAILABLE SOURCES. EPRO Engineering and Environmental Consulting, LLC ASSUMES NO RESPONSIBILITY FOR ERRORS ARISING FROM MISUSE OF THIS MAP.



3,000
Meters



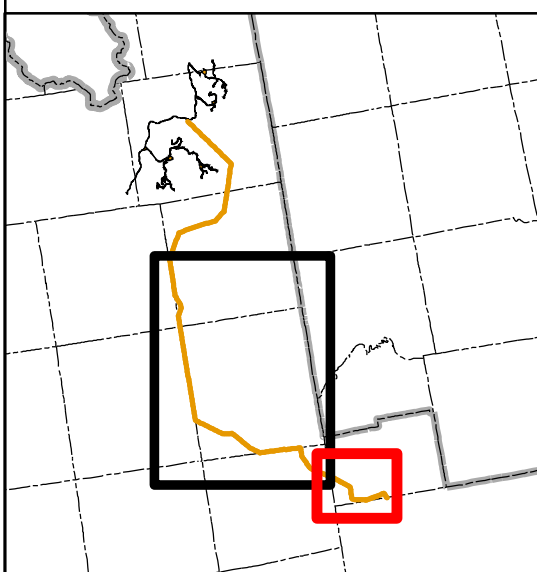
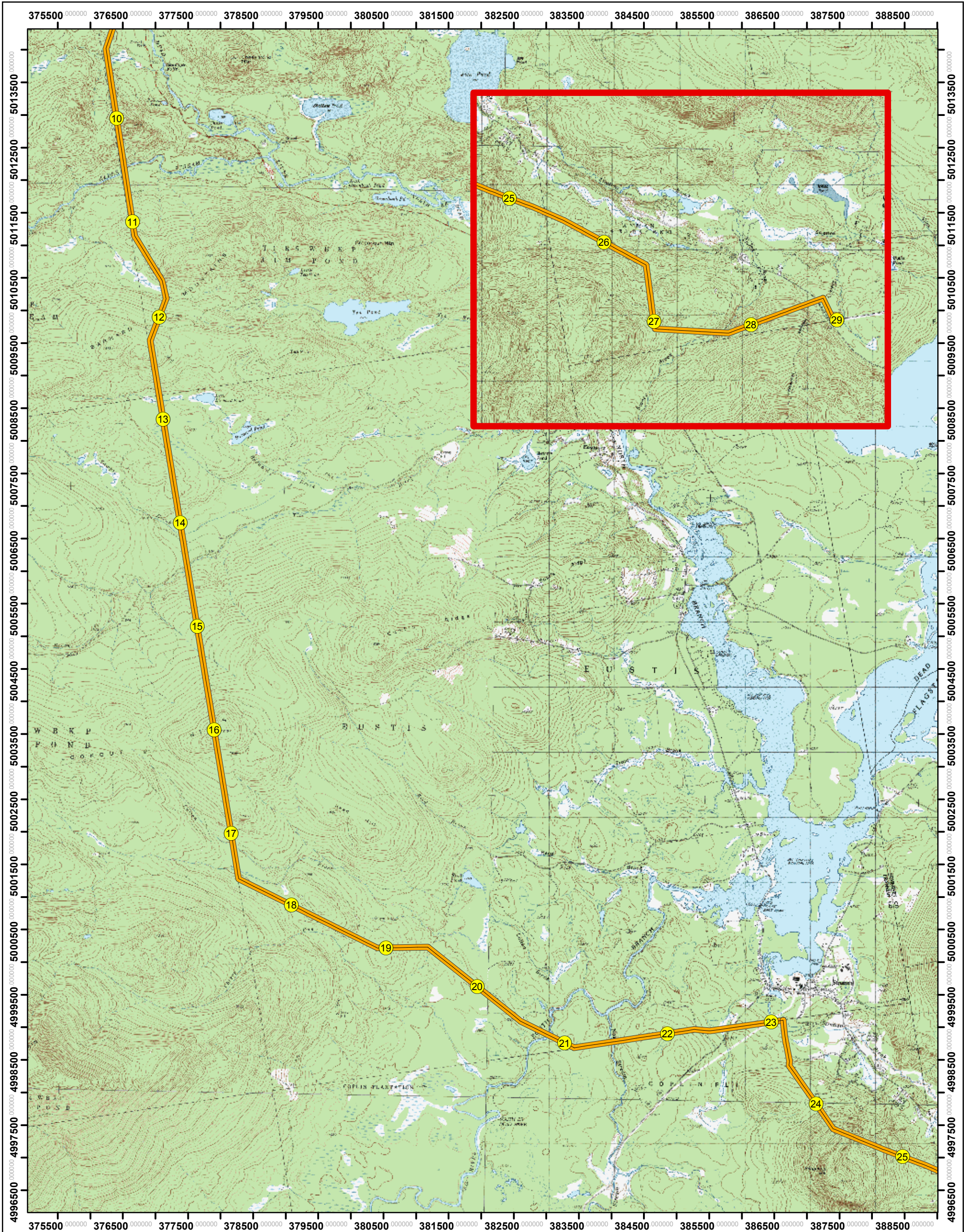


249 Western Ave
Augusta, ME 04330



Vernal Pool Study

Kibby Wind Power Project

Figure: 1




Legend

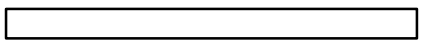
-  Proposed Transmission Corridor
-  Proposed Construction Area


Notes: Base map: USGS 24k Topographic Map

INFORMATION DEPICTED HEREON IS FOR REFERENCE PURPOSES ONLY AND IS COMPILED FROM BEST AVAILABLE SOURCES. EPRO Engineering and Environmental Consulting, LLC ASSUMES NO RESPONSIBILITY FOR ERRORS ARISING FROM MISUSE OF THIS MAP.



3,000
Meters





249 Western Ave
Augusta, ME 04330

Vernal Pool Study

Kibby Wind Power Project

Figure: 2

populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (Rana sylvatica), spotted salamander (Ambystoma maculatum), blue-spotted salamanders (Ambystoma laterale), and fairy shrimp (Eubranchipus sp.), as well as valuable habitat for other plants and wildlife including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition.”

Under the proposed draft revisions of Chapter 335, once a resource has been identified as a vernal pool, it must also be assessed to determine if it is “significant.” Significant vernal pool habitat consists of the following: the vernal pool depression and an additional 250 feet defined as critical terrestrial habitat around the vernal pool depression.

The three criteria (which are discussed further in the following sections) for identifying a significant vernal pool include:

1. Species abundance (number of egg masses);
2. Presence of fairy shrimp (presence in any life stage);
3. Use of the pool by one or more state-listed threatened (T) or endangered (E) species that commonly require a vernal pool to complete a critical life stage.

If any one of these criteria is met, the pool is considered significant.

The general timeframes within which to identify egg masses, and the egg mass abundance thresholds and other indicators that are used for determining if a pool is significant are described below.

Identification Period for Egg Masses

Surveys for counting wood frog egg masses must be conducted just after the peak breeding period. This occurs about two weeks after they start full choruses. Salamanders take longer to lay their eggs, and their eggs do not hatch as quickly as wood frog eggs. Therefore, surveys to count salamander egg masses can be conducted slightly later in the breeding season. Chapter 335 presents the following timeframe guidelines for counting egg masses.

<u>Geographic Region</u> ¹	<u>Wood Frogs</u>	<u>Spotted and Blue Spotted Salamanders</u>
Northern Maine	May 1 – May 21	May 10 – May 31
Southern Maine	April 7 – April 21	April 20 – May 21

Seasonal and weather conditions should be considered when applying these approximate survey timeframes. According to Chapter 335, breeding can begin as much as two weeks later during an exceptionally cold spring than a warm, wet spring. Also, these timeframes do not necessarily imply that each pool should be examined more than once. In general, multiple visits to each pool would only need to be conducted if none or very few egg masses are observed in a pool that,

¹ The northern Maine region is considered to be that part of the state north of a line extending from Fryeburg to Auburn to Skowhegan to Calais. The southern Maine region is the part of the state south of that same line.

based upon physical characteristics, would be expected to support an abundance of egg masses. In these situations, pools should be revisited under appropriate conditions. This project, which is located in the Northern Maine geographic region, will initiate surveys in early May based on observations of local field conditions.

It is important to note that surveys conducted during an identification period for any one given year are sufficient to establish if a pool is significant or not. Therefore, multi-year surveys are not required.

Species Abundance Criteria

The following abundance criteria will be utilized in order to determine if a vernal pool is significant. In order to properly count egg masses, surveys will be conducted during the spring identification period as described above.

<u>Species</u>	<u>Abundance Criteria</u>
Blue spotted salamanders	Presence of 10 or more egg masses ²
Spotted salamanders	Presence of 20 or more egg masses
Wood frogs	Presence of 40 or more egg masses

Other Vernal Pool Indicators

Outside of the egg mass identification period, the presence of fairy shrimp (individuals or eggs) or the documented use of a pool by a state-listed threatened or endangered species (limited to those that commonly require vernal pools to complete at least one critical life stage) can be used to determine if the pool is significant. In Maine, state-listed threatened or endangered species known to use vernal pools for a least one critical life stage include the following:

<u>Species</u>	<u>Listing</u>	<u>Life Stage(s)</u>
Ringed Boghaunter (dragonfly)	Endangered	Egg laying, Larval Development, Larval Emergence
Spotted Turtle	Threatened	Foraging, Courtship, Mating
Blanding's Turtle	Endangered	Foraging, Hibernation
Ribbon Snake	Special Concern	Foraging
Wood Turtle	Special Concern	Foraging

It should be noted that, although ringed boghaunter, spotted turtle, Blanding's turtle, and ribbon snake are considered to be indicators of significant vernal pools, they are generally known to occur in the southern-most portion of the state and are unlikely to be found in the project area. However, vernal pool survey crews will be instructed to document occurrences of these species if they are encountered.

² An egg mass is defined as three or more individuals eggs clumped in a gelatinous matrix.

2.0 PRELIMINARY IDENTIFICATION TOOLS AND METHODS

2.1 Aerial Photograph, USGS Topographic Map, NWI Map, and Soil Survey Map Review

TransCanada will utilize existing available information during the initial identification of potential vernal pools in the vicinity of the proposed wind turbines, substation, construction and operation access roads, and the anticipated transmission line route (hereafter referred to as the Project Area). The most significant of these resources is recent aerial photography. TransCanada has recent 2005/2006 vintage aerial photos of the entire Project Area during leaf-off conditions. The photos were taken at a height sufficient to produce a scale of 1:7,200 (1"=600'). Aerial photography can be a useful tool to identify potential vernal pools and 1:12,000 scale photographs allow for fairly small vernal pools (<100 feet in diameter) to be identified (MNHESP 2001). The larger the scale (e.g., 1:4,800 is a larger scale than 1:12,000), the easier it is to identify small ground features. Generally, scales at least 1:4,800 to 1:12,000 should be obtained to identify small pools (Calhoun, Klemens, 2002).

The project aerial photos, combined with existing USGS, National Wetland Inventory (NWI), and NRCS soil maps, will be reviewed to facilitate the identification of potential basins, pools, and changes in vegetative cover types that suggest potential pools. This information can also be utilized to preliminarily identify potential vernal pools that may occur outside of the Project Area but with overlapping buffers.

2.2 GIS Database Review

TransCanada will examine readily available GIS databases including those maintained by the MDEP, the Maine Department of Inland Fisheries and Wildlife (MDIFW), and the Maine Natural Areas Program (MNAP) for information on the presence of vernal pools in the vicinity of the proposed Project Area.

2.3 Compilation of a Table of Potential Vernal Pools

Using the above existing information, a table will be compiled of potential vernal pools to be sampled. Information in this table may include how each potential pool was identified (e.g., aerial photos and/or topo maps), approximate milepost locations, estimated pool sizes (in square feet and acres), location of each potential pool relative to the proposed Project Area components (including centerlines for the transmission line and access roads and turbines sites), and land-use/terrestrial vegetation cover types around each pool.

3.0 2006 VERNAL POOL SURVEYS

3.1 General Protocol

The spring 2006 field survey effort for potential vernal pools will begin in May of 2006. This will involve the following tasks:

- ◆ Review the gathered data identifying potential vernal pools;
- ◆ Conduct site-specific training for biologists including an overview of field data collection methods and data management/organization;
- ◆ Conduct wood frog and/or salamander egg mass surveys, as appropriate, within the Project Area;
- ◆ Search for the presence of fairy shrimp and state-listed threatened and endangered species;
- ◆ Verify if potential candidate areas function as vernal pools;
- ◆ Verify if any vernal pools are significant as defined by the MDEP;
- ◆ Compile data and prepare a final report.

3.2 Vernal Pool Field Surveys

3.2.1 *General Approach*

Field surveys will be conducted by teams of two biologists familiar with vernal pool resources of New England. Each team will be responsible for keeping track of wood frog chorusing and will schedule field surveys to coincide with the end of the peak breeding season. The field teams will walk the proposed Project Area, search for and assess new vernal pools as well as the potential pools preliminarily identified from existing information. Multiple visits to a given pool would only be conducted in the following situations:

- The first visit is conducted outside the recommended egg mass identification period as described in Section 1.2;
- The first visit is conducted within the recommended identification period and yields none or very few egg masses in a pool that, based upon physical characteristics, should support an abundance of egg masses.

In these situations, pools will be revisited by May 31 of the same year or identified as pools for which future visits recommended are recommended.

Field crews will typically be equipped with the following items (this may vary depending on site specific conditions):

- ◆ Hip or chest waders;
- ◆ Polarized sunglasses;
- ◆ Binoculars;
- ◆ View tube/bucket;
- ◆ GPS unit;
- ◆ Dipnet for fairy shrimp sampling;
- ◆ Small clear plastic storage bin (used for temporarily holding animals for identification purposes);
- ◆ Digital camera;
- ◆ Thermometer; and
- ◆ Vernal pool determination data forms (Appendix A).

For the segments of proposed Project Area that will be sited next to an existing Central Maine Power (CMP) transmission line, vernal pool crews will search for and assess pools within an approximately 125-foot-wide corridor south of the CMP right-of-way (ROW). For the remaining portion of the proposed transmission line and access roads, crews will search for and assess pools within a 300-foot-wide corridor (generally 150 feet on either side of a flagged centerline). For the proposed turbine locations, crews will examine all areas within the general vicinity with little or no slope. Surveys of potential vernal pools located outside of the 125- and 300-foot corridors will be limited to visual and auditory observations conducted from the edge of the study corridors. These observations will be used to determine if areas preliminarily identified as potential vernal pools contain water and appear to have other physical characteristics typically associated with vernal pools. If an area lacks water and other known vernal pool characteristics, it will be removed from the potential vernal pool table. Sampling data forms will be completed for these areas as well.

Photographs will be taken of all vernal pools (within the proposed Project Area study corridors) and all potential vernal pools (outside of the Project Area study corridors). All information will be recorded on a standardized sampling data form.

Within the Project Area study corridors, once it has been determined that an area is functioning as a vernal pool, further assessment will be conducted to determine if it is significant (per Chapter 335). This further assessment will include amphibian egg mass sampling, fairy shrimp sampling, and rare indicator species observations. Vernal pools will be placed into one of three categories: (1) Verified Vernal Pool; (2) Verified Significant Vernal Pool; and (3) Indeterminate³.

3.2.2 Wood Frog Chorusing Survey

This survey will be conducted in conjunction with the overall vernal pool assessment effort. This survey will help biologists focus on potential vernal pools both within and outside the Project Area study corridors. The wood frog chorusing survey will consist of field crews walking within the Project Area study corridor, while conducting other field survey efforts, and recording information about chorusing wood frogs.

3.2.3 Amphibian Egg Mass Sampling

Egg mass surveys will be conducted during the day when the sun is out (9 am - 3 pm) to the extent that it is possible. Polarized glasses will be used to minimize sun glare and to aid in detection of egg masses. Two field biologists will conduct the sample effort at each potential pool. Both biologists will start at one end of the pool and thoroughly search the entire pool together as they wade along the margin. The entire pool will be searched (including the center) to ensure that all egg masses are counted (Crouch and Paton 2000). To reduce the possibility of overlooking or misidentifying egg masses, the two biologists will work together to observe, identify, and count egg masses. When agreement is reached regarding the number and types of egg masses within an individual pool, the field crew will complete a data form, take photographs

³ This will include any potential pools that could not be assessed during the identification period for egg masses and for which additional observations are recommended.

as appropriate, and continue walking down the Project Area corridor until another potential vernal pool is encountered.

Acknowledging the potential for disturbing breeding amphibians and egg masses during wading surveys in vernal pools, observers will only enter and stay within the pools long enough to collect the necessary data for verification. Observers will exercise caution while surveying the pools making efforts not to dislodge egg masses from attachment sites.

3.2.4 Fairy Shrimp Sampling

As with the egg mass surveys, surveys to document the presence/absence of fairy shrimp will be conducted during the day when the sun is out (9 am - 3 pm) whenever possible. When it is darker, it is harder to see into vernal pools, particularly those that are stained by tannic acid from decaying leaves. Field crews will use dipnets (and possibly the plastic storage bins), view tubes, and general observation to search for fairy shrimp. If possible, sampling efforts may be focused on sunny patches in the pool, as fairy shrimp often congregate in these areas. Fairy shrimp surveys will be conducted jointly with the egg mass surveys.

3.2.5 Decontamination Procedures

TransCanada will implement decontamination procedures for all field crews conducting vernal pool surveys. The primary disease organism of concern is a fungus, *Batrachochytrium dendrobatidis*. Between pools and at the end of each day, crews will spray down waders, boots, and nets with a 3 percent solution of bleach in water. The fungus (*B. dendrobatidis*) has been shown to be easily killed by bleach.

4.0 REFERENCES

- Calhoun, A. 2003. Maine Citizen's Guide to Locating and Documenting Vernal Pools. Maine Audubon Society. 96 pp.
- Calhoun, A. 1999. Maine Citizen's Guide to Locating and Documenting Vernal Pools. Maine Audubon Society. 98 pp.
- Callhoun, A. and deMaynadier, P. 2004. Forestry Habitat Management Guidelines for Vernal Pool Wildlife.
- Callhoun, A. and Klemens, M. 2002. Best Development Practices, Conserving Pool-Breeding Amphibians in Commercial Developments in the Northeastern United States, Appendix B Using Aerial Photography to Locate Vernal Pools.
- Clay, D. 1997. The effects of temperature and acidity on spawning of the spotted salamander, *Ambystoma maculatum*, in Fundy National Park. Pp. 226-232 in D.M. Green (ed.), *Amphibians in Decline: Canadian Studies of a Global Problem*. SSAR, St. Louis, MO.
- Cook, R.D., and J.O. Jacobson. 1979. A design for estimating visibility bias in aerial surveys. *Biometrics* 35:735-742.
- Crouch, W.B., and P.W.C. Paton. 2000. Using egg-mass counts to monitor wood frog populations. *Wildlife Society Bulletin* 28:895-901.
- Hunter, M. L., Jr., A. J. K. Calhoun, and M. McCollough. 1999. *Maine Amphibians and Reptiles*. The University of Maine Press, Orono, Maine.
- Kenney, L.P. 1995. *Wicked big puddles: A guide to the study and certification of vernal pools*. U.S. Government Printing Office, Washington, D.C.
- Kenney, L.P., and M.R. Burne. 2000. *A field guide to the animals of vernal pools*. Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program and Vernal Pool Association. Westborough, MA.
- Maine Department of Environmental Protection. 2005. Chapter 335: Significant Wildlife Habitat – Draft Revision.
- Massachusetts Natural Heritage and Endangered Species Program, May2001. *The Massachusetts Aerial Photo Survey of Potential Vernal Pools*. Westborough, MA
- Thoms, C., C. C. Corkran, and D. H. Olson. 1997. Basic amphibian survey for inventory and monitoring in lentic habitats. *Northwest Fauna* 4:35-46.
- U.S. Army Corps of Engineers. 2005. Department of the Army Programmatic General Permit – State of Maine: NAE-2005-2164. 25 pp.

Appendix A

Vernal Pool Sampling Data Form

Kibby Wind Power Project Vernal Pool Documentation Form

****SECTION A - GENERAL INFORMATION****

Wetland ID: _____	Milepost: _____	Facility: _____			
Date: _____	Time of Observation: _____	Visit #: _____			
Observers: _____					
Weather Conditions:	<input type="checkbox"/> Sunny	<input type="checkbox"/> Partly Sunny	<input type="checkbox"/> Overcast	<input type="checkbox"/> Raining	<input type="checkbox"/> Snowing
Photos Taken?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Photo Info: _____		
Pool Dimensions (feet):	Maximum length _____	Maximum width _____			
Water Depth (inches):	Maximum when observed _____				
	Estimated spring maximum _____				
Type of Wetland:	<input type="checkbox"/> forested	<input type="checkbox"/> shrub	<input type="checkbox"/> marsh	<input type="checkbox"/> open water	
<i>(classify by vegetation in tallest class that covers 30% or more of the pool)</i>					

****SECTION B – VERNAL POOL SETTING****

Site Type:	<input type="checkbox"/> upland-isolated (<i>pool not part of a larger wetland</i>) <input type="checkbox"/> wetland complex (<i>pool associated with a larger wetland habitat</i>) <input type="checkbox"/> bottomland-isolated (<i>pool part of a river or lake floodplain</i>)
-------------------	---

Habitat Around the Pool:		
<i>(Estimate % of each within 100 feet of the pool, excluding cover directly over pool. Estimates should total 100%)</i>		
_____ % Woodland (check most dominant type) <input type="checkbox"/> hardwood (>75% deciduous) <input type="checkbox"/> softwood (>75% coniferous) <input type="checkbox"/> mixed (all others)	➔	For woodland habitat, is the overstory? <input type="checkbox"/> heavy (>50% canopy cover of trees and shrubs >6' tall) <input type="checkbox"/> moderate (25-50% canopy cover of trees/shrubs >6' tall) <input type="checkbox"/> sparse (<25 % canopy cover of trees/shrubs >6' tall)
_____ % Utility ROW (check most dominant type) <input type="checkbox"/> Pipeline <input type="checkbox"/> Electric <input type="checkbox"/> Other	➔	For Utility ROW, identify dominant vegetation type <input type="checkbox"/> shrubs <input type="checkbox"/> grass/forb <input type="checkbox"/> mixed - shrub/grass/forb <input type="checkbox"/> bare ground
_____ % Open Land (check most dominant type) <input type="checkbox"/> active agriculture <input type="checkbox"/> fields/pastures <input type="checkbox"/> lawn <input type="checkbox"/> other		
_____ % Residential		
_____ % Roads		
_____ % Other		

Comments:	
------------------	--

**Kibby Wind Power Project
Vernal Pool Documentation Form**

SECTION B – VERNAL POOL SETTING (continued)

Level of Existing Disturbance to Pool:

Level of Disturbance:

- high
- medium
- low
- none

Type of Disturbance (check dominant type):

- logging
- utility ROW
- development
- garbage/trash
- brush
- ditches
- ATV

Level of Existing Disturbance to Surrounding Habitat:

Level of disturbance:

- high
- medium
- low
- none

Type of Disturbance (check dominant type):

- logging
- utility ROW
- development
- garbage/trash
- brush
- ditches
- ATV

Pool Location: *(Provide a sketch of the vernal pool together with any local reference points or features).*

Comments:

**Kibby Wind Power Project
Vernal Pool Documentation Form**

****SECTION C – VERNAL POOL BIOLOGICAL DATA****

General Information:					
Wetland I.D. _____		Visit #: _____		Date: _____	
Observers: _____			Time of Observation: _____		
Weather Conditions: <input type="checkbox"/> Sunny <input type="checkbox"/> Partly Sunny <input type="checkbox"/> Overcast <input type="checkbox"/> Raining <input type="checkbox"/> Snowing					

Pool Characteristics:					
Water level: <input type="checkbox"/> full <input type="checkbox"/> ¾ full <input type="checkbox"/> ½ full <input type="checkbox"/> ¼ full <input type="checkbox"/> < ¼ or dry					
Water temperature: _____ °F (around egg masses, 3-5 inches below surface)					
Plant Cover: (estimate % cover within the pool at +/- 5% ** note the total can be > 100%**) <ul style="list-style-type: none"> _____ % trees _____ % shrubs _____ % woody debris (branches/twigs) _____ % emergent vegetation (<i>cattails, grasses, sedges, rushes</i>) _____ % floating vegetation (<i>water lily, duckweed, etc.</i>) _____ % submergent vegetation (<i>vegetation submerged at egg-laying</i>) _____ % other 					
Dominant Plant Species within the Pool:					
Trees _____		Shrubs _____		Herbaceous _____	
Dominant Cover on Pool Bottom: (estimate % cover within the pool at +/- 5% - note the total can be > 100%) <ul style="list-style-type: none"> _____ % leaves _____ % moss _____ % exposed soil/mud _____ % rocks/boulders _____ % other 					
Egg Attachment Sites: (rate from most used sites to the least used sites, 1 = most used)					
_____ Live woody branches		_____ dead wood		_____ grasses/sedges	
_____ other					

Comments:

Kibby Wind Power Project Vernal Pool Documentation Form

SECTION C – VERNAL POOL BIOLOGICAL DATA (continued)

INDICATOR SPECIES STATUS *(Record the estimated number of each of place a check mark in box where present)*

Species	Adult	Vocalization	Amplexus	Spermatophores	Egg masses	Tad/larvae	Juvenile
wood frog							
spotted salamander							
blue-spotted salamander							
fairy shrimp							

INDICATOR SPECIES VERIFICATION *(check all boxes that apply)*

Species	Heard or seen	Identified in hand	Photographed
wood frog			
spotted salamander			
blue-spotted salamander			
fairy shrimp			

FACULTATIVE SPECIES STATUS *(record the estimated number of each or place a check mark in box where present)*

Species	Adult	Vocalization	Amplexus	Spermatophores	Egg masses	Tad/larvae	Juvenile
Spring Peepers							
Gray Tree Frogs							
Green Frog							
American Toad							
Four-Toed Salamander							
Red-Spotted Newts							
Spotted Turtle							
Painted Turtle							
Snapping Turtle							
Wood Turtle							
Blanding's turtle							
Ribbon Snake							
Water Scorpion							
Predaceous Diving Beetle							
Fingernail clam							
Amphibious snail							
Whirligig Beetle							
Dobsonfly							
Caddisfly							
Dragonfly							
Damselfly							
Leeches							

Comments:

Does this pool qualify as a "significant wildlife habitat" under draft revisions of the MDEP Chapter 335?

YES NO

Does this pool meet the vernal pool definition in the ACOE Programmatic General Permit for the State of Maine?

YES NO

APPENDIX B

Completed Data Forms for Verified Vernal Pools

**Kibby Wind Power Project
Vernal Pool Documentation Form**

****SECTION A - GENERAL INFORMATION****

Wetland ID: A016-VP25 Milepost: Facility: Kibby Staging area
 Date: 5-11-06 Time of Observation: 1030 Visit #: 1
 Observers: ME DD JB SS
 Weather Conditions: Sunny Partly Sunny Overcast Raining Snowing
 Photos Taken? Yes No Photo Info: 7
 Pool Dimensions (feet): Maximum length See aerial Maximum width
 Water Depth (inches): Maximum when observed 242'
 Estimated spring maximum
 Type of Wetland: forested shrub marsh open water
(classify by vegetation in tallest class that covers 30% or more of the pool)

****SECTION B - VERNAL POOL SETTING****

Site Type:
 upland-isolated (pool not part of a larger wetland)
 wetland complex (pool associated with a larger wetland habitat)
 bottomland-isolated (pool part of a river or lake floodplain)

Habitat Around the Pool:
(Estimate % of each within 100 feet of the pool, excluding cover directly over pool. Estimates should total 100%)

100 % **Woodland** (check most dominant type) →
 hardwood (>75% deciduous)
 softwood (>75% coniferous)
 mixed (all others)
 For woodland habitat, is the overstory?
 heavy (>50% canopy cover of trees and shrubs >6' tall)
 moderate (25-50% canopy cover of trees/shrubs >6' tall)
 sparse (<25 % canopy cover of trees/shrubs >6' tall)

6 % **Utility ROW** (check most dominant type) →
 Pipeline
 Electric
 Other
 For Utility ROW, identify dominant vegetation type
 shrubs
 grass/forb
 mixed - shrub/grass/forb
 bare ground

0 % **Open Land** (check most dominant type)
 active agriculture
 fields/pastures
 lawn
 other

0 % **Residential**

0 % **Roads**

0 % **Other**

Comments:

**Kibby Wind Power Project
Vernal Pool Documentation Form**

SECTION B – VERNAL POOL SETTING (continued)

<u>Level of Existing Disturbance to Pool:</u>	
Level of Disturbance: <input type="checkbox"/> high <input type="checkbox"/> medium <input type="checkbox"/> low <input checked="" type="checkbox"/> none	Type of Disturbance (check dominant type): <input type="checkbox"/> logging <input type="checkbox"/> utility ROW <input type="checkbox"/> development <input type="checkbox"/> garbage/trash <input type="checkbox"/> brush <input type="checkbox"/> ditches <input type="checkbox"/> ATV

<u>Level of Existing Disturbance to Surrounding Habitat:</u>	
Level of disturbance: <input type="checkbox"/> high <input type="checkbox"/> medium <input type="checkbox"/> low <input checked="" type="checkbox"/> none	Type of Disturbance (check dominant type): <input type="checkbox"/> logging <input type="checkbox"/> utility ROW <input type="checkbox"/> development <input type="checkbox"/> garbage/trash <input type="checkbox"/> brush <input type="checkbox"/> ditches <input type="checkbox"/> ATV

<u>Pool Location:</u>	<i>(Provide a sketch of the vernal pool together with any local reference points or features).</i>
<u>Comments:</u>	

Kibby Wind Power Project
Vernal Pool Documentation Form

****SECTION C - VERNAL POOL BIOLOGICAL DATA****

General Information:

Wetland I.D. A06-UP25 Visit #: 1 Date: 5-11-06
Observers: ML DD TG SS Time of Observation: 10:30
Weather Conditions: Sunny Partly Sunny Overcast Raining Snowing

Pool Characteristics:

Water level: full $\frac{3}{4}$ full $\frac{1}{2}$ full $\frac{1}{4}$ full $< \frac{1}{4}$ or dry
Water temperature: 46 °F (around egg masses, 3-5 inches below surface)

Plant Cover:

(estimate % cover within the pool at +/- 5% ** note the total can be > 100%**)

0 % trees
10 % shrubs
0 % woody debris (branches/twigs)
10 % emergent vegetation (cattails, grasses, sedges, rushes)
0 % floating vegetation (water lily, duckweed, etc.)
5 % submergent vegetation (vegetation submerged at egg-laying)
~ % other OPEN WATER

Dominant Plant Species within the Pool:

Trees Shrubs leatherleaf Herbaceous sedges

Dominant Cover on Pool Bottom:

(estimate % cover within the pool at +/- 5% - note the total can be > 100%)

~ % leaves
~ % moss
100 % exposed soil/mud
~ % rocks/boulders
~ % other

Egg Attachment Sites:

(rate from most used sites to the least used sites, 1 = most used)

~ Live woody branches ~ dead wood 1 grasses/sedges ~ other

Comments:

Beaver activity - dammed at outlet on NW side of pond.
egg masses located on edge of pond.

**Kibby Wind Power Project
Vernal Pool Documentation Form**

SECTION C - VERNAL POOL BIOLOGICAL DATA (continued)

INDICATOR SPECIES STATUS (Record the estimated number of each or place a check mark in box where present)

Species	Adult	Vocalization	Amplexus	Spermatophores	Egg masses	Tad/larvae	Juvenile
wood frog					600+		
spotted salamander					70+		
blue-spotted salamander					2		
fairy shrimp							

INDICATOR SPECIES VERIFICATION (check all boxes that apply)

Species	Heard or seen	Identified in hand	Photographed
wood frog			
spotted salamander			
blue-spotted salamander			
fairy shrimp			

FACULTATIVE SPECIES STATUS (record the estimated number of each or place a check mark in box where present)

Species	Adult	Vocalization	Amplexus	Spermatophores	Egg masses	Tad/larvae	Juvenile
Spring Peepers		✓					
Gray Tree Frogs							
Green Frog							
American Toad							
Four-Toed Salamander							
Red-Spotted Newts							
Spotted Turtle							
Painted Turtle							
Snapping Turtle							
Wood Turtle							
Blanding's turtle							
Ribbon Snake							
Water Scorpion							
Predaceous Diving Beetle							
Fingernail clam							
Amphibious snail							
Whirligig Beetle							
Dobsonfly							
Caddisfly							
Dragonfly							
Damselfly							
Leeches							

Comments:

WF
SS
BSB
Egg mass counts recorded by GRS

Does this pool qualify as a "significant wildlife habitat" under draft revisions of the MDEP Chapter 335?

YES NO

Does this pool meet the vernal pool definition in the ACOE Programmatic General Permit for the State of Maine?

YES NO

**Kibby Wind Power Project
Vernal Pool Documentation Form**

****SECTION A - GENERAL INFORMATION****

Wetland ID: <u>B06-VPS</u>	Milepost: _____	Facility: <u>Kibby</u>
Date: <u>5-15-06</u>	Time of Observation: <u>1115</u>	Visit #: <u>1</u>
Observers: <u>ML DD JB SS</u>		
Weather Conditions:	<input type="checkbox"/> Sunny	<input type="checkbox"/> Partly Sunny
	<input type="checkbox"/> Overcast	<input type="checkbox"/> Raining
	<input type="checkbox"/> Snowing	
Photos Taken? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Photo Info: <u>1-NE</u>	
Pool Dimensions (feet):	Maximum length <u>20</u>	Maximum width <u>15</u>
Water Depth (inches):	Maximum when observed <u>6"</u>	Estimated spring maximum <u>10"</u>
Type of Wetland:	<input type="checkbox"/> forested	<input type="checkbox"/> shrub
	<input checked="" type="checkbox"/> marsh	<input type="checkbox"/> open water
<i>(classify by vegetation in tallest class that covers 30% or more of the pool)</i>		

****SECTION B - VERNAL POOL SETTING****

Site Type:	<input type="checkbox"/> upland-isolated (pool not part of a larger wetland)
	<input checked="" type="checkbox"/> wetland complex (pool associated with a larger wetland habitat)
	<input type="checkbox"/> bottomland-isolated (pool part of a river or lake floodplain)

Habitat Around the Pool:	
<i>(Estimate % of each within 100 feet of the pool, excluding cover directly over pool. Estimates should total 100%)</i>	
<u>0</u> % Woodland (check most dominant type) → <input type="checkbox"/> hardwood (>75% deciduous) <input type="checkbox"/> softwood (>75% coniferous) <input type="checkbox"/> mixed (all others)	For woodland habitat, is the overstory? <input type="checkbox"/> heavy (>50% canopy cover of trees and shrubs >6' tall) <input type="checkbox"/> moderate (25-50% canopy cover of trees/shrubs >6' tall) <input type="checkbox"/> sparse (<25 % canopy cover of trees/shrubs >6' tall)
<u>0</u> % Utility ROW (check most dominant type) → <input type="checkbox"/> Pipeline <input type="checkbox"/> Electric <input type="checkbox"/> Other	For Utility ROW, identify dominant vegetation type <input type="checkbox"/> shrubs <input type="checkbox"/> grass/forb <input type="checkbox"/> mixed - shrub/grass/forb <input type="checkbox"/> bare ground
<u>0</u> % Open Land (check most dominant type) <input type="checkbox"/> active agriculture <input type="checkbox"/> fields/pastures <input type="checkbox"/> lawn <input type="checkbox"/> other	
<u>0</u> % Residential	
<u>30</u> % Roads	
<u>70</u> % Other <u>cutover</u>	

Comments:

Kibby Wind Power Project
Vernal Pool Documentation Form

SECTION B - VERNAL POOL SETTING (continued)

Level of Existing Disturbance to Pool:

Level of Disturbance:

- high
- medium
- low
- none

Type of Disturbance (check dominant type):

- logging
- utility ROW
- development
- garbage/trash
- brush
- ditches
- ATV

Level of Existing Disturbance to Surrounding Habitat:

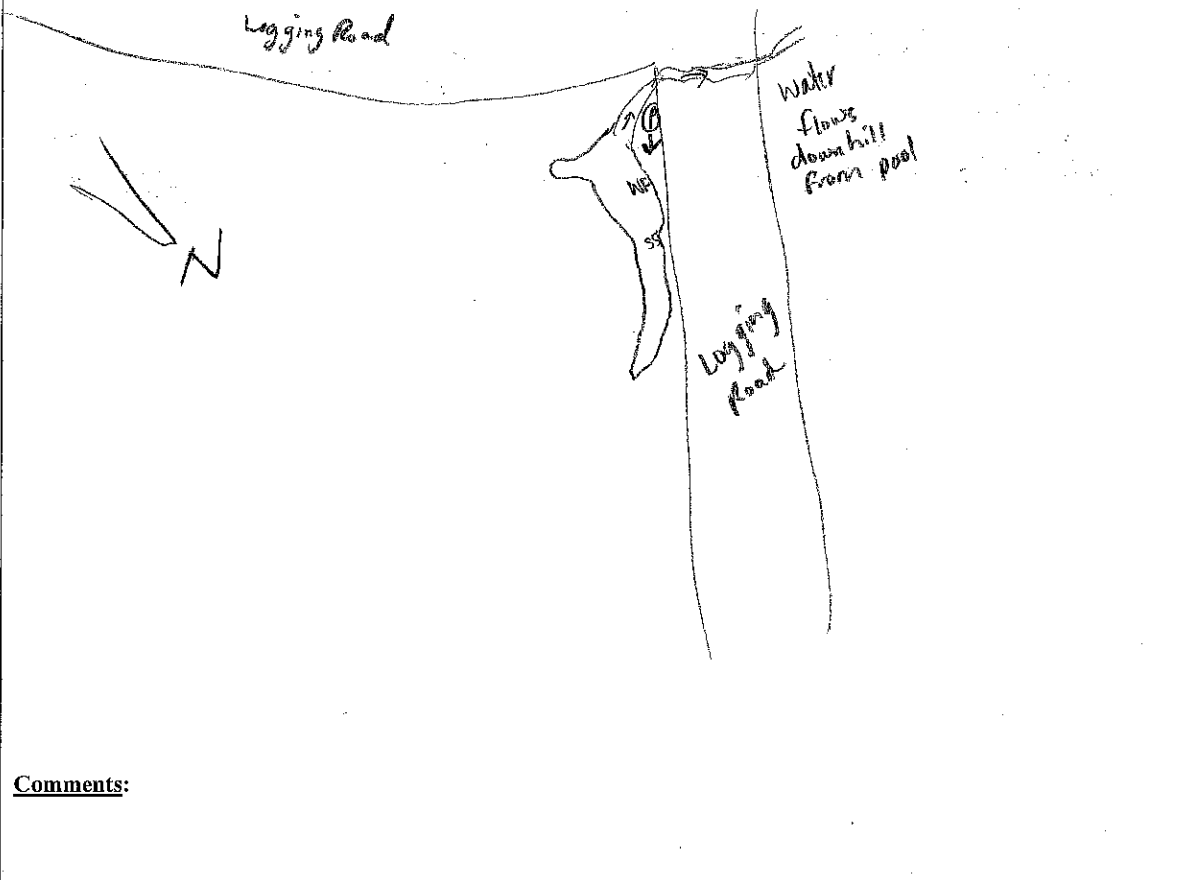
Level of disturbance:

- high
- medium
- low
- none

Type of Disturbance (check dominant type):

- logging
- utility ROW
- development
- garbage/trash
- brush
- ditches
- ATV - ROAD

Pool Location: (Provide a sketch of the vernal pool together with any local reference points or features).



Comments:

**Kibby Wind Power Project
Vernal Pool Documentation Form**

****SECTION C – VERNAL POOL BIOLOGICAL DATA****

General Information:

Wetland I.D. Bog-VP8 Visit #: 1 Date: 5/15/06
Observers: ML DDJG SS Time of Observation: 1115
Weather Conditions: Sunny Partly Sunny Overcast Raining Snowing

Pool Characteristics:

Water level: full ¾ full ½ full ¼ full < ¼ or dry

Water temperature: _____ °F (around egg masses, 3-5 inches below surface)

Plant Cover:
(estimate % cover within the pool at +/- 5% ** note the total can be > 100%**)

_____ % trees
_____ % shrubs
_____ % woody debris (branches/twigs)
_____ % emergent vegetation (*cattails, grasses, sedges, rushes*)
_____ % floating vegetation (*water lily, duckweed, etc.*)
_____ % submergent vegetation (*vegetation submerged at egg-laying*)
_____ % other

Dominant Plant Species within the Pool:

Trees _____ Shrubs _____ Herbaceous _____

Dominant Cover on Pool Bottom:
(estimate % cover within the pool at +/- 5% - note the total can be > 100%)

_____ % leaves
_____ % moss
_____ % exposed soil/mud
_____ % rocks/boulders
_____ % other

Egg Attachment Sites:
(rate from most used sites to the least used sites, 1 = most used)

_____ Live woody branches _____ dead wood _____ grasses/sedges _____ other

Comments:

**Kibby Wind Power Project
Vernal Pool Documentation Form**

SECTION C – VERNAL POOL BIOLOGICAL DATA (continued)

INDICATOR SPECIES STATUS (Record the estimated number of each or place a check mark in box where present)

Species	Adult	Vocalization	Amplexus	Spermatophores	Egg masses	Tad/larvac	Juvenile
wood frog					25		
spotted salamander					12		
blue-spotted salamander							
fairy shrimp							

INDICATOR SPECIES VERIFICATION (check all boxes that apply)

Species	Heard or seen	Identified in hand	Photographed
wood frog			
spotted salamander			
blue-spotted salamander			
fairy shrimp			

FACULTATIVE SPECIES STATUS (record the estimated number of each or place a check mark in box where present)

Species	Adult	Vocalization	Amplexus	Spermatophores	Egg masses	Tad/larvae	Juvenile
Spring Peepers							
Gray Tree Frogs							
Green Frog	✓						
American Toad							
Four-Toed Salamander							
Red-Spotted Newts							
Spotted Turtle							
Painted Turtle							
Snapping Turtle							
Wood Turtle							
Blanding's turtle							
Ribbon Snake							
Water Scorpion							
Predaceous Diving Beetle							
Fingernail clam							
Amphibious snail							
Whirlgig Beetle							
Dobsonfly							
Caddisfly							
Dragonfly							
Damselfly							
Leeches							

Comments:

Does this pool qualify as a "significant wildlife habitat" under draft revisions of the MDEP Chapter 335?

YES NO

Does this pool meet the vernal pool definition in the ACOE Programmatic General Permit for the State of Maine?

YES NO

**Kibby Wind Power Project
Vernal Pool Documentation Form**

****SECTION A - GENERAL INFORMATION****

Wetland ID: <u>A06-UP32</u>	Milepost: <u>—</u>	Facility: <u>Kibby</u>
Date: <u>5.17.06</u>	Time of Observation: <u>1250</u>	Visit #: <u>1</u>
Observers: <u>ML SS</u>		
Weather Conditions:	<input type="checkbox"/> Sunny	<input type="checkbox"/> Partly Sunny
	<input type="checkbox"/> Overcast	<input checked="" type="checkbox"/> Raining
	<input type="checkbox"/> Snowing	
Photos Taken? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Photo Info: <u>1-NW 2-SE</u>	
Pool Dimensions (feet):	Maximum length <u>80</u>	Maximum width <u>30</u>
Water Depth (inches):	Maximum when observed <u>12"</u>	Estimated spring maximum <u>14"</u>
Type of Wetland:	<input checked="" type="checkbox"/> forested	<input type="checkbox"/> shrub
	<input type="checkbox"/> marsh	<input type="checkbox"/> open water
<i>(classify) by vegetation in tallest class that covers 30% or more of the pool)</i>		

****SECTION B - VERNAL POOL SETTING****

Site Type:
<input checked="" type="checkbox"/> upland-isolated (pool not part of a larger wetland)
<input type="checkbox"/> wetland complex (pool associated with a larger wetland habitat)
<input type="checkbox"/> bottomland-isolated (pool part of a river or lake floodplain)

Habitat Around the Pool:

(Estimate % of each within 100 feet of the pool, excluding cover directly over pool. Estimates should total 100%)

<p><u>100</u> % Woodland (check most dominant type) →</p> <p><input type="checkbox"/> hardwood (>75% deciduous)</p> <p><input checked="" type="checkbox"/> softwood (>75% coniferous)</p> <p><input type="checkbox"/> mixed (all others)</p> <p><u>0</u> % Utility ROW (check most dominant type) →</p> <p><input type="checkbox"/> Pipeline</p> <p><input type="checkbox"/> Electric</p> <p><input type="checkbox"/> Other</p> <p><u>0</u> % Open Land (check most dominant type)</p> <p><input type="checkbox"/> active agriculture</p> <p><input type="checkbox"/> fields/pastures</p> <p><input type="checkbox"/> lawn</p> <p><input type="checkbox"/> other</p> <p><u>0</u> % Residential</p> <p><u>0</u> % Roads</p> <p><u>0</u> % Other</p>	<p>For woodland habitat, is the overstory?</p> <p><input type="checkbox"/> heavy (>50% canopy cover of trees and shrubs >6' tall)</p> <p><input checked="" type="checkbox"/> moderate (25-50% canopy cover of trees/shrubs >6' tall)</p> <p><input type="checkbox"/> sparse (<25 % canopy cover of trees/shrubs >6' tall)</p> <p>For Utility ROW, identify dominant vegetation type</p> <p><input type="checkbox"/> shrubs</p> <p><input type="checkbox"/> grass/forb</p> <p><input type="checkbox"/> mixed - shrub/grass/forb</p> <p><input type="checkbox"/> bare ground</p>
--	---

Comments: <u>8 flags - GPS'd.</u>

**Kibby Wind Power Project
Vernal Pool Documentation Form**

SECTION B – VERNAL POOL SETTING (continued)

Level of Existing Disturbance to Pool:	
Level of Disturbance:	Type of Disturbance (check dominant type):
<input type="checkbox"/> high	<input checked="" type="checkbox"/> logging
<input type="checkbox"/> medium	<input type="checkbox"/> utility ROW
<input type="checkbox"/> low	<input type="checkbox"/> development
<input checked="" type="checkbox"/> none	<input type="checkbox"/> garbage/trash
	<input type="checkbox"/> brush
	<input type="checkbox"/> ditches
	<input type="checkbox"/> ATV

Level of Existing Disturbance to Surrounding Habitat:	
Level of disturbance:	Type of Disturbance (check dominant type):
<input type="checkbox"/> high	<input checked="" type="checkbox"/> logging
<input type="checkbox"/> medium	<input type="checkbox"/> utility ROW
<input type="checkbox"/> low	<input type="checkbox"/> development
<input checked="" type="checkbox"/> none	<input type="checkbox"/> garbage/trash
	<input type="checkbox"/> brush
	<input type="checkbox"/> ditches
	<input type="checkbox"/> ATV

Pool Location: *(Provide a sketch of the vernal pool together with any local reference points or features).*

Comments:

**Kibby Wind Power Project
Vernal Pool Documentation Form**

****SECTION C - VERNAL POOL BIOLOGICAL DATA****

General Information:					
Wetland I.D.	<u>A06-VP32</u>	Visit #:	<u>1</u>	Date:	<u>5-17-06</u>
Observers:	<u>ML JS</u>	Time of Observation:		<u>12:50</u>	
Weather Conditions:	<input type="checkbox"/> Sunny	<input type="checkbox"/> Partly Sunny	<input type="checkbox"/> Overcast	<input checked="" type="checkbox"/> Raining	<input type="checkbox"/> Snowing

Pool Characteristics:									
Water level:	<input checked="" type="checkbox"/> full	<input type="checkbox"/> ¾ full							
	<input type="checkbox"/> ½ full	<input type="checkbox"/> ¼ full							
	<input type="checkbox"/> < ¼ or dry								
Water temperature:	<u>45</u> °F (around egg masses, 3-5 inches below surface)								
Plant Cover: (estimate % cover within the pool at +/- 5% ** note the total can be > 100%**) <table style="margin-left: 20px;"> <tr><td><u>10</u> % trees</td></tr> <tr><td><u>5</u> % shrubs</td></tr> <tr><td><u>30</u> % woody debris (branches/twigs)</td></tr> <tr><td><u>20</u> % emergent vegetation (cattails, grasses, sedges, rushes)</td></tr> <tr><td><u>0</u> % floating vegetation (water lily, duckweed, etc.)</td></tr> <tr><td><u>10</u> % submergent vegetation (vegetation submerged at egg-laying)</td></tr> <tr><td><u>20</u> % other</td></tr> </table>			<u>10</u> % trees	<u>5</u> % shrubs	<u>30</u> % woody debris (branches/twigs)	<u>20</u> % emergent vegetation (cattails, grasses, sedges, rushes)	<u>0</u> % floating vegetation (water lily, duckweed, etc.)	<u>10</u> % submergent vegetation (vegetation submerged at egg-laying)	<u>20</u> % other
<u>10</u> % trees									
<u>5</u> % shrubs									
<u>30</u> % woody debris (branches/twigs)									
<u>20</u> % emergent vegetation (cattails, grasses, sedges, rushes)									
<u>0</u> % floating vegetation (water lily, duckweed, etc.)									
<u>10</u> % submergent vegetation (vegetation submerged at egg-laying)									
<u>20</u> % other									
Dominant Plant Species within the Pool:									
Trees	<u>Abi. bal.</u>	Shrubs <u>Abi. bal.</u>							
	<u>Pic. rub.</u>	Herbaceous <u>Carex spp.</u>							
	<u>Bet. cord.</u>								
Dominant Cover on Pool Bottom: (estimate % cover within the pool at +/- 5% - note the total can be > 100%) <table style="margin-left: 20px;"> <tr><td><u>40</u> % leaves</td></tr> <tr><td><u>20</u> % moss</td></tr> <tr><td><u>30</u> % exposed soil/mud</td></tr> <tr><td><u>15</u> % rocks/boulders</td></tr> <tr><td><u>0</u> % other</td></tr> </table>			<u>40</u> % leaves	<u>20</u> % moss	<u>30</u> % exposed soil/mud	<u>15</u> % rocks/boulders	<u>0</u> % other		
<u>40</u> % leaves									
<u>20</u> % moss									
<u>30</u> % exposed soil/mud									
<u>15</u> % rocks/boulders									
<u>0</u> % other									
Egg Attachment Sites: (rate from most used sites to the least used sites, 1 = most used)									
<u>1</u>	<u>1</u>	<u>1</u>							
Live woody branches	dead wood	grasses/sedges							
		other							

Comments:

**Kibby Wind Power Project
Vernal Pool Documentation Form**

SECTION C -- VERNAL POOL BIOLOGICAL DATA (continued)

INDICATOR SPECIES STATUS (Record the estimated number of each of place a check mark in box where present)

Species	Adult	Vocalization	Amplexus	Spermatophores	Egg masses	Tad/larvae	Juvenile
wood frog					15		
spotted salamander							
blue-spotted salamander							
fairy shrimp							

INDICATOR SPECIES VERIFICATION (check all boxes that apply)

Species	Heard or seen	Identified in hand	Photographed
wood frog			
spotted salamander			
blue-spotted salamander			
fairy shrimp			

FACULTATIVE SPECIES STATUS (record the estimated number of each or place a check mark in box where present)

Species	Adult	Vocalization	Amplexus	Spermatophores	Egg masses	Tad/larvae	Juvenile
Spring Peepers							
Gray Tree Frogs							
Green Frog							
American Toad							
Four-Toed Salamander							
Red-Spotted Newts							
Spotted Turtle							
Painted Turtle							
Snapping Turtle							
Wood Turtle							
Blanding's turtle							
Ribbon Snake							
Water Scorpion							
Predaceous Diving Beetle							
Fingemil clam							
Amphibious snail							
Whirligig Beetle							
Dobsonfly							
Caddisfly							
Dragonfly							
Damselfly							
Lecches							

Comments: *fairly recent egg masses*

Does this pool qualify as a "significant wildlife habitat" under draft revisions of the MDEP Chapter 335?
 YES NO

Does this pool meet the vernal pool definition in the ACOE Programmatic General Permit for the State of Maine?
 YES NO