

Kingdom Community Wind Invasive Species Monitoring and Control Plan

June, 2011

Study Area

In accordance with Condition 6 of the *Stipulation Between Green Mountain Power and the Vermont Agency of Natural Resources Regarding Mitigation for Impacts to Bear Habitat, State Significant Natural Communities and from Habitat Fragmentation* (hereafter Stipulation), Green Mountain Power Corporation (GMP) will monitor the disturbed areas along the access road, ridgeline crane path, and stormwater management facilities for any invasive plant species that become established subsequent to project construction. The focus of the effort will be areas of rock fill that will be revegetated following construction as described in the *Kingdom Community Wind Farm Construction Revegetation Plan, June, 2011*. Areas of relatively limited grading along the access road where native soil materials will be reworked and/or reapplied will also be monitored for the occurrence of invasive species. All areas where there has been soil disturbance will be included in the invasive species monitoring and control plan, including rock fill slopes to be revegetated, rock cut slopes, crane path surfaces, access road surfaces, turbine pad surfaces, and any other construction site areas within the limits of the wind farm component only, including 100 feet into the forest from the edge of disturbance.

Monitoring Plan

The entire disturbed area of the wind farm component of the Kingdom Community Wind (KCW) site and 100 feet into the adjacent undisturbed forest will be monitored at least once each growing season following construction for the presence of invasive species. Monitoring for the presence of invasive species will be carried out simultaneously with revegetation monitoring (*Kingdom Community Wind Construction Revegetation Plan, June, 2011*) using a pedestrian survey, described below.

The Vermont Agency of Agriculture Quarantine Rule (VAAFQ, 2002) will be used to identify those species known to be invasive and noxious species in Vermont. Any species included on the quarantine rule occurring on the disturbed portion of the wind farm component of the KCW site will be identified and quantified by stem counts or colony size (whichever is appropriate). The location of the occurrences of all invasive species will be noted using recreational-grade GPS. For those invasive species that form

larger colonies or where individual plants are broadly disseminated over a large area, a polygon of the colony location will be mapped using GPS units capable of sub-meter accuracy.

The means of monitoring invasive species will be for field personnel to perform a reconnaissance-level survey to identify occurrences of invasive species for all areas of disturbed soils in the wind farm component of the KCW project area. Field personnel will perform the pedestrian survey for occurrences of invasive species on all access roads, crane roads, turbine pads, rock fill and cut slopes, and any other areas of disturbed soils associated with the wind farm component of the project. Field personnel will also survey the adjoining forest up to 100 feet from the edge of disturbance in any areas where invasive species become established in adjacent disturbed areas. Stormwater management facilities will also be assessed for the presence of invasive species, particularly purple loosestrife and *Phragmites*. Field notes and GPS locations will be recorded for any invasive species identified during the pedestrian survey. Where invasive species occur in close proximity to the forest edge, field personnel will survey 100 feet into the forest to determine if the species has migrated into previously undisturbed areas.

Individual plants or small groupings of plants will also be noted and mapped using GPS. Any individual or small grouping of invasive plants identified during the course of the monitoring process will be removed by manual extraction and disposed of offsite. GMP will control larger colonies by manual removal when possible or using approved herbicides in strict accordance with State regulations for handling and application. Application of herbicides will be performed only by State-certified pesticide applicators. No application of herbicides will be carried out within 50 feet of wetlands or streams without prior consultation and approval from ANR.

Site monitoring and control will be carried out in the manner described above for a minimum of five consecutive years and not to exceed ten consecutive growing seasons following post-construction revegetation, with Year 1 being the first growing season after that during which the revegetation activities were completed. Should invasive species monitoring determine that no such plants are present within the study area during the final three consecutive growing seasons of the initial five-year period (Years 3, 4, and 5), ANR will release GMP from further monitoring obligations. Monitoring and control activities will continue until there are three consecutive years with no invasive species detected. However, GMP will not be required to perform any further invasive species monitoring or management

beyond Year 10. The possibility of release from invasive species monitoring and control will be evaluated upon review of each year's annual report (see following section).

Monitoring and control for invasive species will be carried out simultaneously with the sampling, field observations, and photo-documentation required of the *Kingdom Community Wind Farm Construction Revegetation Plan, June, 2011* and will be completed by September 1 of each year in which monitoring is required.

Annual Reporting

Annual reports presenting an analysis of the monitoring results and a summary of the remedial actions performed will be submitted to the ANR no later than 31 December of the monitoring year or as specified by any forthcoming permit. The annual report will be submitted concurrently with that for post-construction revegetation monitoring and under separate cover. The annual report will be concise in scope and contain information arranged in the following manner:

- Introduction:
 - a review of the goals and objectives for invasive species monitoring; and
 - a summary of any maintenance or remedial measures that occurred over the preceding year.
- Methods
 - a brief description of the field methodology employed to collect data.
- Results
 - map occurrences of all invasive species identified in areas of disturbed soils in the wind farm component of the KCW project area; and
 - a summary of the results of invasive species monitoring and a report on how each occurrence was controlled during that year.
- Assessment and Management Recommendations
 - Assessment of Threat: a brief summary will be included discussing the distribution and density of identified species within the project area. This analysis will consider species abundance, identification of possible vectors for species introduction, and whether or not that vector is controllable.

- Management of Invasive Species: the methods employed for invasive species control carried out during the preceding year will be discussed, as will the results of herbicide application on any identified and treated colonies. Any invasive species colonies observed within wetland areas or in close proximity to streams that cannot be controlled by mechanical extraction will be discussed, as will potential methods of future control.
- Appendices
 - tabular results of invasive species occurrences and control by location (including geographic coordinates) for the areas of disturbed soils in the wind farm component of the KCW project area; and
 - site photographs annotated with site location/number.

References

Vermont Agency of Agriculture, Farms and Markets. *Quarantine #3 - Noxious Weeds*. Division of Agricultural Resource Management and Environmental Stewardship, April 22, 2002.