

Level Spreader Monitoring Study

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Executive Summary

As required by the Vermont Department of Environmental Conservation (“DEC”) Individual Stormwater Permit 6216-INDS, a monitoring study of the Alternative Stormwater Treatment Practices (“Alternative STP”) is underway at Kingdom Community Wind (“KCW”). This report presents the results obtained during the first year of the required three-year study. The sampling and analysis described in this report was conducted between May and December 2016 in accordance with the Revised Monitoring Plan that was approved by DEC on March 17, 2016.

During the 2016 field season, collected runoff samples met quality assurance/quality control criteria for four storm events. These samples will be used, in part, to fulfill Condition 14 of 6216-INDS which requires samples from a minimum of five events to be collected over the course of three years.

Flow-weighted composite samples were collected at four locations:

- At the inlet to the level spreader. This sample was used to evaluate pollutant concentrations in untreated flows entering the stormwater system.
- At a topographic low-point downgradient from the vegetated buffer. This location was used to evaluate pollutant concentrations following treatment by the vegetated buffer area.
- At an in-stream location upstream from the level spreader. This sample was used to represent pollutant concentrations in a nearby area unaffected by flows entering the stormwater system.
- At an in-stream location downstream from the level spreader. This sample was used to represent pollutant concentrations in an area that potentially received treated flows from the stormwater system.

Samples were analyzed for concentrations of total suspended solids (“TSS”) and total phosphorous (“TP”). The removal efficiency of the level spreader for the pollutants of concern were measured by comparing the flow-weighted concentration of the pollutant at the inlet and the flow-weighted concentration of the pollutant at the downgradient location. For Total Suspended Solids the median effective removal efficiency was 99.8 percent. For Total Phosphorous, the median effective removal efficiency was 96.3 percent, but exhibited considerable variability, likely as a function of the sampling equipment design. The TSS and TP results at the upstream and downstream locations were also compared. Although the results were variable, the differences between in-stream samples collected at the upstream and downstream reaches do not show any significant changes in water quality.

Detailed photographic and video documentation was completed for the level spreader that was instrumented for sample collection during 2016 and additional photographic documentation was completed for the other two level spreaders that are included in the study.

The results from Year 1 indicate that the level spreaders are functioning as intended.