

**REPORT ON THE USE OF VOLUNTARY  
STORMWATER MANAGEMENT CREDITS FOR HIGH  
ELEVATION PROJECTS**

STATE FISCAL YEAR 2014

{Section 6A, Act 138 of the Acts of 2012}

Submitted to the Vermont General Assembly By:

Department of Environmental Conservation  
Agency of Natural Resources

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This report is prepared pursuant to Sec. 6a of Act 138 of the Acts of 2012 and reports on the effectiveness of the use of voluntary stormwater management credits to permit discharges of stormwater from renewable energy projects located at an elevation above 1,500 feet.

## **BACKGROUND**

As background, the Agency of Natural Resources was directed by the Vermont State Legislature as follows:

*“To facilitate responsible development of renewable energy projects in high-elevation settings, the Vermont department of environmental conservation shall consult with project developers and interested stakeholders / to include alternative guidance for operational-phase stormwater permitting of renewable energy projects located in high-elevation settings. Such alternative guidance shall include consideration of measures that minimize the extent and footprint of stormwater-treatment practices so as to preserve vegetation and trees and limit disturbances; that reflect the fragile ecosystems, shallow soils, and sensitive streams found in high-elevation settings; and that reflect the temporary nature and infrequent use of construction and access roads to such projects.”* (Partial excerpt from H.313 (2009), Sect. 43)

In response to this directive the Department of Environmental conservation undertook a public stakeholder process in 2009 and 2010 to develop standards in fulfillment of this requirement. The technical standard that was developed during this process, the “Watershed Hydrology Protection Credit” was subsequently adopted into the Vermont Stormwater Management Manual in 2010 via rulemaking.

## **PROJECTS IMPLEMENTING THE WATESHED HYDROLOGY PROTECTION CREDIT**

Since the adoption of the Watershed Hydrology Protection Credit, and as of December 2013, no projects have sought application for a state stormwater discharge permit that explicitly use this credit. However, the Kingdom Community Wind project, in Lowell, relies on use of best management practices (BMPs) that are similar to the credit. Because the Kingdom Community Wind (KCW) project applied before the credit was available, and because the BMPs used on that project are different than the credit, the KCW project relied on the “Alternative Treatment Practice” section of the Vermont Stormwater Management Manual whereby alternative approaches to stormwater management can be used provided they are monitored to ensure their performance meets standards. Because of the similarity of the practices used at Kingdom Community Wind to the Watershed Hydrology Protection Credit, the results on the performance of the practices at KCW will be the most informative information available regarding the effectiveness of the Watershed Hydrology Protection Credit.

Under the terms of the stormwater permit issued to KCW they need to monitor the effectiveness of their alternative stormwater treatment practices commencing one year after the project has been completed. This requirement, which is based in the Vermont Stormwater Management Manual, is intended to ensure that the monitoring assesses the ultimate, developed condition of the site. Because KCW was completed in 2013, the monitoring will go into effect in 2014. During the monitoring period sampling will take place during multiple storm events during

which flow-weighted samples will be evaluated to determine if performance standards are met. In addition to reviewing these data to determine permit compliance, the Department will evaluate the data against the broader goals of Act 54 (H.313) in protecting receiving waters in high-elevation settings. This evaluation will have the additional benefit of being aided by the ongoing biological monitoring of fish, insect, and water chemistry monitoring required in the Water Quality Certification issued to KCW.

#### **AVAILABLE NATIONAL DATA, EFFICACY OF SCIENCE AND DESIGN**

The Stormwater Program reviewed available data and information during the development of the Watershed Hydrology Credit in 2009 and 2010. This experience showed us that although other jurisdictions use components of the credit, such as level-spreaders, spacing of ditch turn-outs and culverts, preservation of undisturbed terrain and vegetation, and stream buffers, they are implemented via a large range of applications and none are equivalent to Vermont's credit. Because of the unique combination of practices, and specific requirements regarding the sizing of level-spreaders, lengths of disconnections, setbacks from receiving waters, it is difficult to assemble existing national data in meaningful way so as to be reflective of the effectiveness of Vermont's credit.

Vermont's approach in developing this credit was based on observation of existing conditions on Vermont roads that would be similar to those on projects using the credit, our experiences implementing the Acceptable Management Practices for Maintaining Water Quality on Logging Jobs (AMPs), and by review and consultation with other jurisdictions, especially Maine, that have developed standards specific to high-elevation renewable energy projects.

The efficacy of the science and design of the existing credit is best determined through direct observation. The best opportunity for this will be through the forthcoming required monitoring of the practices in place in Kingdom Community Wind, and through the ongoing stream monitoring performed by the Department.

#### **ANALYSIS OF FINANCIAL GAINS**

The Department does not have data on the financial expenditures of projects under our jurisdiction. Additionally, because no projects have used the credit explicitly, there would be no cost data regardless. However, in the case of Kingdom Community Wind, because the project was able to manage their stormwater with less infrastructure it is likely some cost savings were incurred. We expect the financial gains relative associated with their stormwater infrastructure were minor as a relative percentage of overall infrastructure expenses.

#### **ACREAGE OF SOIL IMPACTS AVOIDED**

In testimony to the Vermont Public Service Board, representatives for Green Mountain Power indicated that the approach used at Kingdom Community Wind, which is similar to the credit, resulted in a reduction of construction-related impacts of 12 acres.

#### **CONSULTATION AND RECCOMENDATION OF APPLICATION**

The Department is currently in the process of updating the Vermont Stormwater Management Manual. The Department is working with a contractor in an open, public stakeholder process to

identify ways to improve the effectiveness of the management practices in the Manual by bringing in “green stormwater infrastructure” approaches. This process has been well attended to date by a broad range of stakeholders including environmental groups, and the design, engineering, and development communities. This process will necessarily address the requirements of Act 59 whereby the Department is required to include standards that address the unique circumstances associated with high elevation projects. It is the Department’s position that the selection of practices applicable to high elevation projects, and whether these practices should be applicable to projects above or below 1,500 feet elevation, and other categories of projects, is best evaluated along with the process for evaluating, and upgrading, the entire Vermont Stormwater Management Manual.