



Case No. 20-1951-PET

July 31, 2020

Ms. Judith Whitney, Clerk  
Vermont Public Utility Commission  
112 State Street  
Montpelier, Vermont 05620-2601

Re: GMP Request for non-substantial change or amendment to CPG 7628

Dear Ms. Whitney,

Vermonters for a Clean Environment (VCE) appreciates the opportunity to comment<sup>1</sup> on Green Mountain Power's request for non-substantial change or amendment to CPG 7628 for the GMP Lowell Wind project.

Based on our limited ability to evaluate the issues raised by this expedited request regarding a tightly controlled site that has excluded independent expert review, we recommend that the PUC find that the proposed changes raise the potential for significant impact under some of the substantive criteria of Section 248(b)(5) with the potential for undue adverse impacts, as detailed below.

### **Background**

VCE's members have an ongoing interest in the GMP Lowell Wind stormwater system, both pre- and post-construction. In conjunction with Energize Vermont and Ridge Protectors, in 2011, we (attorneys, experts, group leaders) met with EPA staff in Boston, Mass. and US Army Corps of Engineers staff in Concord, Mass. prior to the issuance of the 401 Water Quality Certificate and the stormwater construction and operational permits. In each meeting, staff told us we were raising good issues -- level spreaders inappropriate for use on steep slopes, curve numbers underestimating volume and velocity of stormwater runoff, hundreds of feet of Class A1 headwater streams filled for a road which could have been relocated to avoid that impact -- but EPA and USACE staff said there was massive political pressure to issue the permits.

During the draft permit comment period in 2011, Princeton Hydro presented substantive information at the public hearing in Lowell<sup>2</sup>, and filed substantive comments with ANR on

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<sup>1</sup> VCE subscribed to the compliance case and was awaiting the Order seeking comments, but only found it in "Recent Orders" three days ago due to the PUC's creation of a new case number without notice to the compliance case list in ePUC. Therefore we have not had time to retain an expert to offer more detailed comments. One expert we contacted responded: "They did not give much time to respond with comments. I cannot complete a review by Friday."

<sup>2</sup> <https://vermontersforacleanenvironment.wordpress.com/2011/07/18/how-does-gmp-propose-to-maintain-and-protect-water-quality-on-the-lowell-mountains/>

behalf of Energize Vermont<sup>3</sup>, virtually all of which were ignored. At no time were experts other than those hired by GMP given access to ANR's stormwater division staff to discuss concerns that might have resulted in an improvement to the stormwater system design.

On March 22, 2016, Geoffrey Goll of Princeton Hydro testified to the House Natural Resources, Fish & Wildlife Committee<sup>4</sup> about the experimental stormwater system on the GMP Lowell Wind site. On April 4, 2016, Mr. Goll presented follow-up testimony<sup>5</sup> to the committee.

In the summer of 2016, VCE's field investigator, Justin Lindholm, visited the GMP Lowell Wind site on four occasions.<sup>6</sup> The resulting report<sup>7</sup> was presented to the House Natural Resources, Fish & Wildlife Committee<sup>8</sup> on January 26, 2017. Geoffrey Goll of Princeton Hydro also testified, along with Kevin Burke of ANR and Jeff Nelson of VHB.

After the project was constructed, and ever since that time, VCE and others have repeatedly asked GMP to allow independent experts access to the entire GMP Lowell Wind site to evaluate the stormwater system. One requester was a legislator. All requests were denied. However, we are aware that GMP has hosted tours of the stormwater system for legislators. These tours were likely highly controlled, without the opportunity to review areas downhill of level spreaders or look at every aspect of the stormwater treatment system.

At no time since the project became operational has GMP granted access to independent stormwater experts to fully evaluate the stormwater system, which used "experimental" devices at the time it was implemented. Although on other issues, VCE respects the high quality work of ANR staff scientists, VCE does not have confidence in the integrity of ANR's stormwater program based on our experiences with this and other industrial wind site stormwater permits. ANR and GMP's expert, VHB, have been working closely together in a manner that avoids transparency and discards opportunities for cooperation.

Due to limited access to the site, we are unable to comment on proposed changes to LS-A8, LS-A9 and LC C-16, but we do feel confident to comment on the proposed relocation of LS-A24.

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<sup>3</sup> <http://energizevermontold.flywheelsites.com/2011/07/comments-on-lowell-401-water-quality-certification/>

<sup>4</sup> <https://legislature.vermont.gov/Documents/2016/WorkGroups/House%20Fish%20and%20Wildlife/Vermonters%20for%20a%20Clean%20Environment/W~Geoff%20Goll~Vermonters%20for%20a%20Clean%20Environment%20testimony~3-22-2016.pdf>

<sup>5</sup> <https://legislature.vermont.gov/Documents/2016/WorkGroups/House%20Fish%20and%20Wildlife/Wind%20and%20Solar%20Siting/Written%20Testimony/W~Geoffrey%20Gall~Princeton%20Hydro%20Follow-up%20testimony~4-5-2016.pdf>

<sup>6</sup> The GMP Lowell Wind site is not legally posted.

<sup>7</sup> <https://vermontersforacleanenvironment.wordpress.com/2016/08/05/vces-investigation-into-the-environmental-health-of-the-lowell-mountains-with-industrial-wind-turbines-july-2016/>

<sup>8</sup> Video: [https://youtu.be/BH\\_r8zjFiQ](https://youtu.be/BH_r8zjFiQ) with VCE testimony beginning about 32 minutes.

## **Potential for Significant Impact under the Substantive Criteria of Section 248(b)(5)**

### **Headwaters, Streams, Soil Erosion**

The relocation of LS-A24 to a place west of where it is now will worsen the erosion problem already exhibited by the level spreaders on the north side of the turbine access road brought on in this area by the steep terrain directly below these spreaders. The relocation of this level spreader will worsen erosion in this area because the filtration downslope area directly below this spreader will be even steeper than the downslope at its present location. Already, the forest floor in this area has been eroded, exposing roots and root hairs, and the stream banks there have been widened, as can be seen by the exposure of roots and root hairs along these banks.

Hydrologist Geoffrey Goll warned about this problem in 2011, before construction of the GMP Lowell Wind project had been permitted.

**The trouble with level spreaders**

Level spreaders are conceptually an ideal way to release stormwater since the vegetation and soil allow for the removal of fines from runoff that cannot be removed by settling or filtration. Unfortunately, **the performance record of spreaders in the field is dismal**. They are frequently under-designed and, **despite the best installations, are rarely perfectly level, which results in the release of stormwater at a particular point. This concentrated runoff can result in catastrophic erosion downslope. Given such design failures, the use of spreaders is not encouraged**. However, where slopes are gentle and the water volume is relatively low, spreaders may still be the best method. When proposing their use, the designer shall carefully evaluate the site for possible concerns.

Source: Erosion and Sediment Control Standards of the King County, Washington Surface Water Design Manual

Princeton Hydro **PH**

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## National Level Spreader Search

| Source                 | Lip Construction                            | Upstream Sediment Removal | Inflow Conveyance and Slope            | Buffer Characteristics                                   | Maximum Buffer Slope                                      |
|------------------------|---------------------------------------------|---------------------------|----------------------------------------|----------------------------------------------------------|-----------------------------------------------------------|
| <b>NRCS</b>            | Concrete curbing for high flow applications | Pretreatment required     | Max. 1% grade over last 20 linear feet | Well-vegetated regular slope                             | <b>10%</b>                                                |
| <b>North Carolina</b>  | Concrete or metal                           | Pretreatment required     |                                        | Conducive to maintaining diffuse flow and well-vegetated | <b>4% for initial 10 feet and 6% for forested buffers</b> |
| <b>Pennsylvania</b>    | Concrete cast in place                      |                           | Max. 1% grade over last 20 linear feet | Well-vegetated and uniform slopes                        | <b>6% and 4% for initial 10 feet</b>                      |
| <b>Massachusetts</b>   | Erosion stop and matting                    |                           | Max. 1% grade over last 20 linear feet | Completely vegetated and uniform slopes                  | <b>10%</b>                                                |
| <b>King County, WA</b> | Lumber or other rigid material              |                           |                                        | Well-vegetated and uniform slopes                        | <b>20%</b>                                                |
| <b>Virginia</b>        | Rigid or vegetated                          | Pretreatment required     | Max. 1% grade over last 20 linear feet | Well-vegetated and uniform slopes                        | <b>10%</b>                                                |
| <b>New Hampshire</b>   | Rock                                        | Pretreatment required     |                                        | Well-vegetated and uniform slope                         | <b>15%</b>                                                |
| <b>Maine</b>           | Rock                                        |                           | Max. 1%                                | Vegetated and regular topography                         | <b>15% for water quality purposes</b>                     |
| <b>Vermont</b>         | Concrete                                    | <b>NA</b>                 | <b>NA</b>                              | <b>NA</b>                                                | <b>NA</b>                                                 |
| <b>Army Corps</b>      | Matting                                     |                           |                                        | Smooth and well-vegetated                                | <b>10%</b>                                                |

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The level spreaders on Lowell Mountain labeled in red would not be allowed in other states.

## Lowell Proposed Level Spreaders

| Level Spreader | Inflow Conveyance Slope | Average Buffer Slope | Maximum Buffer Slope |
|----------------|-------------------------|----------------------|----------------------|
| LS-A1          | 2%                      | 3%                   | 4%                   |
| LS-A3          | 11%                     | 12%                  | 40%                  |
| LS-A4          | Pond                    | 21%                  | 40%                  |
| LS-A6          | 19%                     | 12%                  | 20%                  |
| LS-A7          | 3%                      | 13%                  | 20%                  |
| LS-A8          | 4%                      | 18%                  | 25%                  |
| LS-A9          | 7%                      | 15%                  | 17%                  |
| LS-A10         | 33%                     | 22%                  | 23%                  |
| LS-A11         | 50%                     | 21%                  | 50%                  |
| LS-A12         | 20%                     | 14%                  | 50%                  |
| LS-A13         | 17%                     | 14%                  | 25%                  |
| LS-A14         | 17%                     | 15%                  | 25%                  |
| LS-A15         | 17%                     | 15%                  | 33%                  |
| LS-A16         | 25%                     | 21%                  | 29%                  |
| LS-A17         | 33%                     | 29%                  | 50%                  |
| LS-A18         | 33%                     | 24%                  | 50%                  |
| LS-A19         | 50%                     | 27%                  | 50%                  |
| LS-A20         | 33%                     | 19%                  | 25%                  |
| LS-A21         | 17%                     | 23%                  | 50%                  |
| LS-A22         | 33%                     | 22%                  | 50%                  |
| LS-A23         | 50%                     | 25%                  | 33%                  |
| LS-A24         | 33%                     | 19%                  | 50%                  |
| LS-A25         | 33%                     | 15%                  | 50%                  |
| LS-C1          | 33%                     | 12%                  | 20%                  |
| LS-C3          | 33%                     | 21%                  | 50%                  |
| LS-C4          | Pond                    | 23%                  | 33%                  |
| LS-C5          | 25%                     | 18%                  | 25%                  |
| LS-C7          | 14%                     | 13%                  | 50%                  |
| LS-C16         | 25%                     | 32%                  | 50%                  |
| LS-C19         | Pond                    | 19%                  | 33%                  |
| LS-C20         | 33%                     | 21%                  | 25%                  |
| LS-C21         | Pond                    | 14%                  | 17%                  |

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**Inflow conveyance channel**  
max. slope = 1%

**Level spreader buffer**  
max. slope = 15%

slides presented by Geoffrey Goll at ANR public hearing on draft stormwater permits, 2011

During VCE's site visits, erosion was seen on the downslopes from the level spreaders in this area of the access road, which will only get worse with the expected further large storm impacts. This observation of damage was brought to the attention of ANR in 2016 by VCE<sup>9</sup>, and ANR responded<sup>10</sup>.

During a subsequent visit to the site by a member of VCE, it was seen that GMP tried to stop the erosion under LS-A22, a level spreader in this immediate area, with a crude attempted remedy of laying logs perpendicular to the erosion channels being formed, and anchoring these logs down with crude pegs made from sticks. We do not know if ANR issued the required authorization under the Vermont Construction Stormwater Permit (#3-9020) for disturbance associated with construction activities.

Our investigation showed clearly that, instead of remedying the erosion situation, the water velocity increased under, around, and especially over the logs, scouring the ground directly under the downhill side of the logs by the water cascading over the logs during very heavy rains. Water velocity is the most destructive state of water, and the presence of these logs actually increases the velocity of the water, similar to curvature along the top of an airplane wing increasing air velocity there.

We found that level spread LS-A22 spreader is concentrating flow, eroding soil resulting in new stream channels in the headwater areas of the mountain, as stormwater runoff did not disperse as predicted, but is instead channelizing. See the two short videos, below, from 2017 and 2019.<sup>11</sup>

[https://vce.org/July31\\_2017.mp4](https://vce.org/July31_2017.mp4)

*(paste link into browser)* 3 minutes, 12 seconds. Turn on volume. Going downhill.



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<sup>9</sup> <https://vermontersforacleanenvironment.wordpress.com/2016/08/05/vces-investigation-into-the-environmental-health-of-the-lowell-mountains-with-industrial-wind-turbines-july-2016/>

<sup>10</sup> <https://vermontersforacleanenvironment.wordpress.com/2016/11/07/vermonts-agency-of-natural-resources-response-to-vces-investigation-of-gmps-lowell-wind/>

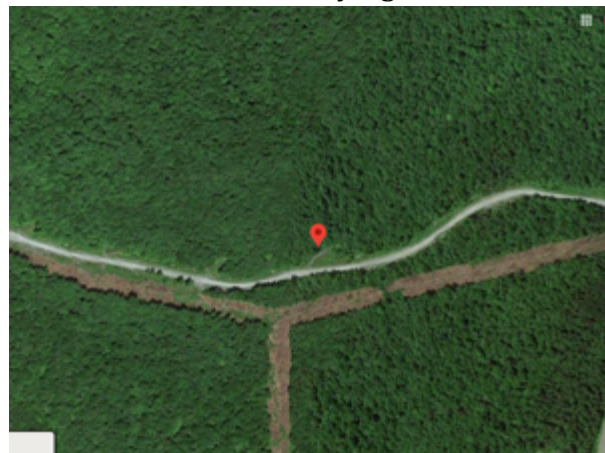
<sup>11</sup> Videos may be downloaded from this link <https://we.tl/t-6zY5ktZLqq> which expires on 8/7/20.

[https://vce.org/May12\\_2019.mp4](https://vce.org/May12_2019.mp4)

(paste link into browser) 1 minute, four seconds. Going uphill.



Photos, below, of same area as video, above, with GPS location identifying LS-A22.



Failure of level spreaders on steep slopes was identified as a potential issue prior to issuance of the stormwater permits and 401 Water Quality Certificate. GMP's proposed change to LS-A24, making it even steeper, raises the potential for failure as VCE has documented is occurring with LS-A22.

#### *Recommendation*

VCE recognizes that GMP is in a hurry to get PUC approve of the proposed changes to four level spreaders. We question what the rush is, since the problem with the mitigation areas was identified six years ago. GMP's request comes relatively late in the construction season with limited opportunity for interested parties to offer meaningful comments due to lack of site access for independent experts, and an inadequate time frame to evaluate the request. This is an excellent opportunity for the PUC to fully understand the impact of the experiment of using level spreaders on high elevation, steep slopes. Access for third party

review would provide significant benefits to advance the engineering design of these structures.

VCE recommends that the PUC find that the proposal raises substantive issues under the criteria of headwaters, streams and soil erosion. We further recommend that given the lack of cooperation exhibited by ANR, GMP and VHB over the last decade regarding stormwater issues at the GMP Lowell Wind site, that the PUC use its billback authority and hire its own independent experts to evaluate the site. While this may take some time, GMP has made no showing that there is any urgency to make the proposed changes.

### **Waste Disposal**

VCE's 2016 investigation<sup>12</sup> identified the method GMP uses to dispose of waste dug out from level spreaders. "Stormwater ponds and level spreaders receive sedimentation that is regularly cleaned out and deposited uphill and seeded." VCE is not aware of any requirement to test the sediment to determine what constituents it contains, and whether or not the practice of depositing the sediment uphill from the level spreaders is environmentally appropriate.

### *Recommendation*

VCE recommends that the PUC require an amendment to the CPG to require testing of the sediment and reporting to the PUC prior to allowing more sediment to be disposed of on-site.

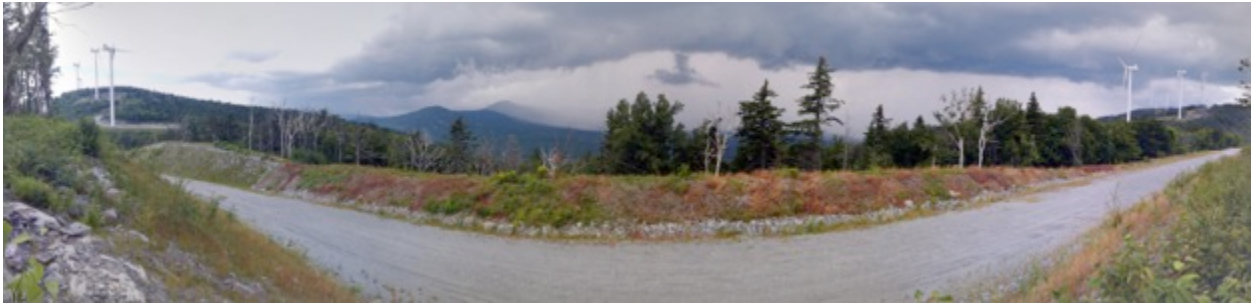
### **Invasive Species**

The plan for the proposed relocated level spreaders states that invasive species will be monitored and attacked for, "at least 5 years." Unfortunately, invasive species will have to be monitored and attacked for the life of the Lowell wind project, not just a few years, because seeds of invasive plants will be constantly spread through the open areas of the project by the wind and birds.

When a member of VCE visited the GMP Lowell Wind site soon after it was completed, he noticed that all of the extensive open areas throughout the entire project had already been inundated by invasive species, as could be seen by the blankets of dead invasive plants throughout the site that had been killed by GMP Lowell Wind with some sort of chemical spray. Annual invasive species reports reveal a shockingly high amount of herbicides have been used on the wind project site to address the large amount of invasive species.

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<sup>12</sup> <https://vermontersforacleanenvironment.wordpress.com/2016/08/05/vces-investigation-into-the-environmental-health-of-the-lowell-mountains-with-industrial-wind-turbines-july-2016/>



As a note here, the owners of strip mined mountains have discovered that the only way to get a good handle on invasive species on their mountain projects is to have an unbroken forest canopy grow back as quickly as possible after the mining stops, usually by planting trees everywhere to fill in the canopy. Unfortunately, the ridge line on Lowell Mountain will have to remain open for the efficient operation of the turbines and the transport of the extremely long replacement blades which wear down and predictably need replacement during the life of the project.

*Recommendation*

Require invasive species monitoring for the life of the project, with hand pulling rather than chemical remediation.

Thank you for this opportunity to comment on GMP's proposed changes to the stormwater system on the GMP Lowell Wind site.

Sincerely,

A handwritten signature in black ink that reads "Annette Smith". The signature is fluid and cursive.

Annette Smith  
Executive Director  
Vermonters for a Clean Environment, Inc.