

**STATE OF VERMONT
PUBLIC SERVICE BOARD**

Petition of Green Mountain Power)
Corporation for a Certificate of Public)
Good, pursuant to 30 V.S.A. § 248(j))
For authority to build a solar generation)
Unit at its Berlin #5 Facility in Berlin,)
Vermont)

Docket No. _____

**PREFILED TESTIMONY OF
JEFFREY A. NELSON
ON BEHALF OF
PETITIONER**

January 8, 2010

The purpose of the prefiled testimony of Mr. Nelson is to introduce the Natural Resources Report prepared by VHB Pioneer for the Berlin Solar Project.

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EXHIBITS

Exhibit__[JAN-1]	Resumé of Jeffrey A. Nelson
Exhibit__[JAN-2]	VHB Pioneer Memorandum titled “GMP Berlin Solar Project Natural Resources Assessment Summary”, dated September 15, 2009
Exhibit__[JAN-3]	DEC Authorization of NOI #6197-9020, August 31, 2009
Exhibit__[JAN-4]	ANR letter from Ms. Dolan, August 13, 2009
Exhibit__[JAN-5]	VHB Pioneer plan, “Green Mountain Power Corporation, Proposed Photovoltaic Solar System Project, Berlin, VT”, dated August 21, 2009

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1 **1. Introduction**

2 Q1. Please state your name, business address and employment.

3 A1. My name is Jeffrey Nelson and the business address where I am employed is 7056
4 U.S. Route 7, North Ferrisburgh Vermont. I am employed by VHB Pioneer as
5 Director of Environmental Services. My full resumé is provided as
6 Exhibit__[JAN-1].

7 Q2. Please describe your educational background and training.

8 A2. I am Director of Environmental Services with the consulting firm VHB Pioneer
9 based in North Ferrisburgh, Vermont. VHB Pioneer represents the merged entity
10 resulting from the 2008 acquisition of the firm I founded in 1996, Pioneer
11 Environmental Associates, LLC, by Vanasse Hangen Brustlin, Inc., an east-coast
12 firm specializing in engineering, land development, and environmental consulting

1 services. I hold a B.S. degree in Geology (1982) and an M.S. degree in Civil
2 Engineering (1992), both from the University of Vermont. My education and
3 training includes surface water hydrology, groundwater hydrogeology, soils, and
4 contaminant transport. The field of hydrology involves the study and evaluation
5 of the quantity and quality of surface waters, including pollutant loading and
6 transport. Hydrogeology involves the assessment of the movement of
7 groundwater, including contaminants, and the assessment of the yields of wells
8 and aquifers.

9
10 Q3. Do you hold any professional licenses or certifications?

11 A3. Yes. In 2000, based on experience, references, and successful completion of a
12 written examination, I attained the title of Certified Professional in Erosion and
13 Sediment Control from EnviroCert International, Inc., a national organization
14 which provides such accreditation. I was the second individual to attain such
15 certification in the State of Vermont. In addition, I am also certified as a Certified
16 Professional in Storm Water Quality, also from EnviroCert International, Inc., a
17 title which is based on demonstrated expertise and experience in computing,
18 analyzing, and evaluating stormwater treatment and control practices necessary to
19 protect water quality. My current resume is provided as Exhibit__[JAN-1].

1 Q4. Please describe your professional experience.

2 A4. I have worked on water quality, stormwater, soil erosion and wetland regulatory
3 issues as a practicing environmental consultant in the State of Vermont for more
4 than 20 years. I was a key participant in the development of the 2002 Vermont
5 Stormwater Management Manual, and remain an active participant in the
6 Vermont Agency of Natural Resource's (ANR) Stormwater Advisory Group,
7 which is advising the Vermont Department of Environmental Conservation
8 (DEC) on implementation of cleanup plans (TMDLs) for stormwater-impaired
9 watersheds in Vermont. I have completed numerous water resources evaluation
10 studies with respect to a wide range of projects in Vermont involved in Act 250
11 and Section 248 reviews. These studies have involved resource assessment,
12 impact evaluation, plan development, and completion of modeling simulations.
13 Additionally, my professional background includes the completion and
14 presentation of technical studies, evaluation and review of scientific data,
15 determination of compliance with various State and Federal regulatory
16 requirements, and application for various permits and authorizations. I have
17 presented the results of such analyses to numerous review bodies, including
18 District Environmental Commissions (Districts 1, 2, 3, 4, 5, 7, 8, and 9), the
19 former Vermont Water Resources Board, the former Vermont Environmental
20 Board, the Vermont Environmental Court, the Vermont Transportation Board,
21 Regional Planning Commissions, and numerous town boards. I also have testified
22 before several legislative committees on water-related issues.

1 Q5. Please describe your involvement with the Project.

2 A5. VHB Pioneer was engaged as a consultant to Green Mountain Power (GMP) to
3 perform natural resource assessments and provide permitting assistance with
4 respect to the Project. All VHB Pioneer personnel working on the Project have
5 been working under my supervision. Our work has involved gathering the
6 necessary data and completion of assessments with respect to natural-resource-
7 related criteria of 30 V.S.A. § 248(b)(5). Section 248(b)(5) provides, in pertinent
8 part, that a generation or transmission facility should not have an undue adverse
9 effect on water purity or the natural environment, with due consideration having
10 been given to the criteria specified in 10 V.S.A. § 1424a(d) (outstanding resource
11 waters) and § 6086(a)(1) through (8) and (9)(K) (various Act 250 criteria). VHB
12 Pioneer's summary memorandum dated September 15, 2009, Exhibit __[JAN-2],
13 addresses the Project's potential impacts upon outstanding resource waters (10
14 V.S.A. § 1424a(d)), headwaters, (§ 6086(a)(1)(A)), floodways (§ 6086(a)(1)(D)),
15 streams (§ 6086(a)(1)(E)), shorelines (§ 6086 (a)(1)(F)), wetlands (§
16 6086(a)(1)(G)), rare and irreplaceable natural areas (§ 6086(a)(8)), soil erosion (§
17 6086(a)(4)), and necessary wildlife habitat and endangered species (§ 6086
18 (a)(8)(A)).

1 Q6. What is the purpose of your testimony?

2 A6. The purpose of my testimony is to introduce the Natural Resources memorandum
3 prepared by VHB Pioneer in connection with the Project and to review other
4 criteria not addressed in the memorandum.

5 **2. Findings**

6 Q7. Please describe the Project's impacts on headwaters and Outstanding Resource
7 Waters ((10 V.S.A. § 1424(a)(d), 30 V.S.A. § 248(b)(8), § 6086(a)(1)(A)).

8 A7. The Project site is not located within a headwaters area, as it is not located within
9 lands characterized by steep slopes and shallow soils, drainage areas of 20 square
10 miles or less, above 1500 feet in elevation, watersheds of public water supplies, or
11 lands supplying significant amounts of recharge to aquifers. The Project is not
12 located near and will have no effect on any outstanding resource waters. These
13 criteria are, therefore, inapplicable to the Project.

14

15 Q8. Please describe the evaluation of the Project with respect waste disposal and soil
16 erosion (10 V.S.A. § 6086(a)(1)(B)) and § 6086(a)(4)).

17 A8. The Project will not result in the creation of new impervious surface which would
18 require an operational phase discharge permit pursuant to 10 V.S.A. § 1264.

19 However, because just over one acre of ground would be disturbed during
20 construction of the facility, authorization under the Construction Stormwater
21 NPDES General Permit (GP 3-9020) will be required. A Notice Of Intent (NOI)
22 was filed by the Petitioner on August 13, 2009 as a low risk project, based on the

1 risk analysis methodology associated with GP 3-9020. Following completion of
2 public notice as required under GP 3-9020, DEC Authorization of NOI #6197-
3 9020 was issued on August 31, 2009 (see Exhibit__[JAN- 3]).

4 With respect to operational phase stormwater, the governing criterion is whether
5 the Project would result in greater than 5,000 square feet of new impervious area.
6 This includes any roads, driveways, building roofs, footings, etc. that would be
7 constructed for the Project. Since no new roads or driveways are proposed, and
8 the only area of new impervious surface would be the inverter shed (140 square
9 feet) which less than 5,000 square feet, no operational phase stormwater discharge
10 permit will be required.

11

12 Q9. Please describe the assessment of flood hazard issues associated with the Project
13 (10 V.S.A. § 6086(a)(1)(D))

14 A9: The Petitioner has worked with ANR to evaluate both inundation and fluvial
15 erosion hazards (FEH) at the Project site, associated with the Dog River. With
16 respect to fluvial erosion hazards, the Petitioner has modified the design of the PV
17 array and ANR has refined the limits of the FEH zone on site based on additional
18 field evaluation so that the Project is not located within the FEH zone. See letter
19 of ANR's Ms. Dolan dated August 13, 2009 (Exhibit__[JAN-4]).

20

21 With respect to floodwater inundation, the mapping of the site based on Flood
22 Insurance Rate Maps (FIRMs) as presented in a 1984 Flood Insurance Study (FIS)

1 prepared by FEMA have been reviewed and discussed. This mapping shows the
2 floodway and 100-year floodplain poorly aligned with the channel of the Dog
3 River. During the site visit, Ms. Pfeiffer presented a draft mapping update titled
4 “Washington County 2007 Pre DFIRM”. This mapping represents a correction
5 of earlier mapping to shift the Special Flood Hazard Area (SFHA) to better reflect
6 the channel location. Although this information is not currently in effect, it
7 represents the best available information and therefore can be used for assessment
8 of inundation risks. Based on this information the proposed array is located
9 predominantly outside the mapped DFIRM floodway. Most of the remainder of
10 the Project area is within the floodway fringe but outside the floodway, and
11 therefore below the base (100 year) flood elevation of approximately 523 feet in
12 the area of the site. See Exhibit__[JAN-5]. Some regrading of these areas is
13 proposed, primarily involving spreading the existing soil stockpile to achieve a
14 more level pad for the array. For the structures within the floodway fringe, Ms.
15 Pfeiffer indicated that the equipment would need to be anchored and that the
16 machinery should be elevated above the base flood elevation. Electrical
17 connections should be water tight. The inverter shed should be placed out of the
18 floodplain. If the existing trailer is within the floodplain it should also be
19 anchored down.

20
21 All Project improvements will be placed outside of the floodway and FEH area.
22 The petitioner proposes to anchor down and make watertight those Project

1 components proposed to be located at elevation 523 feet or below. Therefore, the
2 Project will have no adverse effect on and will not restrict or divert the flow of
3 flood waters, and will not endanger the health, safety and welfare of the public or
4 of riparian owners during flooding. Furthermore, the Project will not significantly
5 increase the peak discharge of the river or stream within or downstream from the
6 area of development and endanger the health, safety, or welfare of the public or
7 riparian owners during flooding.

8

9 Q10. Please describe the evaluations of Wetlands, Streams and Shorelines on the
10 Project site (248(b)(5); 10 V.S.A. § 6086(a)(1)(E); 10 V.S.A. § 6086(a)(1)(F) and
11 § 6086(a)(1)(G)).

12 A10. The project site has been field evaluated by VHB Pioneer for the presence of
13 wetlands and streams. The project does not abut a shoreline, and therefore does
14 not have an adverse effect shorelines. A report documenting the results of this
15 investigation has been provided to ANR. No wetlands were identified within the
16 Project site. The Project borders on a segment of the Dog River. Field mapping
17 of the top of bank to the Dog River was also performed by VHB Pioneer staff.
18 Subject to Paragraph 3 below, the Project will have no adverse effect on wetlands
19 or streams.

20

21 Q11. Please discuss the conformance of the Project with the ANR Riparian Buffer
22 Guidance (248(b)(5); 10 V.S.A. § 6086(a)(1)(E) and § 6086(a)(1)(G)).

1

2 A11. The Project site has been evaluated pursuant to the ANR Riparian Buffer
3 Guidance (December 2005). Based on this evaluation, a variable width riparian
4 buffer zone of 75 to 100 feet wide, measured from the field-determined top of
5 bank (as shown on VHB Pioneer plan titled “Green Mountain Power Corporation,
6 Proposed Photovoltaic Solar System Project, Berlin, VT”, dated August 21, 2009
7 (see Exhibit__JAN-5), is proposed by Petitioner to fully protect riparian functions
8 and values. The buffer zone currently is comprised of a mix of a small area of
9 deciduous forested upland, scrub shrub upland, and managed open field. The
10 area with the buffer would be allowed to grow back, although periodic vegetation
11 management may be needed to prevent shading of the PV array. During the life
12 of the Project, Petitioner’s cutting of vegetation will be limited to trees or other
13 brush that have the potential to cause shading of the PV array, and would be
14 limited to within those areas that are currently scrub shrub upland or open field.

15

16 Based on the implementation of these practices, the Project will have no adverse
17 effect on and will not violate any rules applicable to significant wetlands, will
18 maintain the natural condition of the Dog River, and will not endanger the health,
19 safety, or welfare of the public or of adjoining landowners.

20

21 Q12. Please describe the consideration of the Project site with respect to RTE Species
22 and RINA (10 V.S.A. § 6086(a)(8) and § 6086(a)(8)(A)).

1

2 A12. The Project site has been evaluated by VHB Pioneer for the presence of rare,
3 threatened and endangered (RTE) plant species as well as the potential for the site
4 to serve as a rare and irreplaceable natural area (RINA). VHB Pioneer conducted
5 a search of existing databases for known occurrences of both RTE plants and
6 RINA. No previously identified occurrences of either RTE plants or RINA were
7 recorded by the Vermont Nongame and Natural Heritage Program (NNHP)
8 within or immediately adjacent to the investigation area. A field assessment by
9 VHB Pioneer confirmed the absence of RTE plant species or RINA on the Project
10 site. These findings are documented in our memorandum documenting the
11 results of this investigation (see Exhibit__[JAN-3]). No other necessary wildlife
12 habitat is present on the Project site. ANR mapping shows no critical wildlife
13 habitat, such as deer wintering areas within the vicinity of the Project. The
14 Project, therefore, will not destroy or significantly imperil necessary wildlife
15 habitat or any endangered species, the scenic or natural beauty of the area, or rare
16 and irreplaceable natural areas.

1

2 **3. Summary and Conclusion**

3 Q13. Based upon your evaluation and analyses, will the Project have an undue adverse
4 effect upon on water purity or the natural environment, with due consideration
5 having been given to the criteria specified in Section 248(b)(5)?

6 A13. No. We investigated and evaluated the Project's potential impacts under each of
7 the above-mentioned criteria, and found that the Project met the criteria. It is our
8 conclusion that the Project will not have an undue adverse effect on water purity
9 or the natural environment, with due consideration having been given to the
10 specified criteria.

11 Q14. Does this conclude your testimony?

12 A14. Yes.