

**Stormwater Management Project
TECHNICAL REVIEW MEMORANDUM**

TO: **Jessica Damon, Project Manager**
FROM: **Ken Libbey, Engineer**
DATE: **January 5, 2016**
RE: **Number nine wind**

APPLICANT: Number nine wind farm, LLC

DEP#: 26502

Town: Bridgewater

Engineer who prepared application: Fisher assoc.

Parcel Size:

Site Description: Existing woods area

Size of impervious area: **287 acres**

Project description: Installation of 119 turbines with roads and/or widenings

Amount of developed area created: 2100 acres

Watershed (waterbody): **Howe Brook, St. Croix Lake, St. Croix Stream, Dead Stream, South Brook, Three Brooks, Hoyt Brook-North Branch Meduxnekeag River, Burntland Brook, Whitney Brook, Shields Brook-upper Presque Isle Stream, West Branch-Presque Isle Stream, Beaver Brook, East Branch Presque Isle Stream, Scopan Lake-Scopan Stream**

Watershed type: Not at risk

QUANTITY:

Flooding Standard: **Yes**

BMPs to meet stormwater quantity standards: **Not needed at turbine areas, no increase in CN value. Seven other areas use wetponds with detention.**

Requesting a variance from the quantity standards? **No**

Significant increase? **NO**

QUALITY:

BMPs used to meet stormwater quality standards: Buffers, Wetponds(8 at 7 locations)

Level of quality treatment: **This will change with corrections. Will have Phosphorus and General standards**

Pretreatment: **No**

Buffers: **yes**

Phosphorus:**yes**

Urban Impaired Stream: **No**

\$ or off-site mitigation: **No**

OTHER ISSUES:

1. Is maintenance of the stormwater management system necessary? **YES, the applicant must maintain all components of the stormwater management system.**
2. Will stormwater be discharged to **freshwater** or **coastal** wetlands? **Yes**
3. In the same manner as pre-development conditions? **YES**
4. Project area in a wellhead protection area of a public water supply? **NO**
5. Project runoff discharges into a cold water fishery? **yes**
6. Stormwater analysis involves off-site watersheds? **yes**
7. As-built required? **Yes**

STORMWATER MANAGEMENT

Wetpond Locations

1. Stormwater needs to come in at one end and flow through the pond-plug flow with no short circuiting.
2. Need the overflow spillway detail-size, stone size, etc.
3. Outlet protection-stone(level spreader)
4. All ponds need a gravel bench not underdrained pipe.

Buffer Locations

1. DT(Ditch turnout) buffers can only be used for road surfaces, side slopes and ditch.
2. RS(Road Side) buffers can only be used for sheet flow off roads and side slopes.
3. Buffers at Turbine areas will need to be Buffers with stone bermed level spreaders, may be able to waive berm if slope to buffer is consistent and not too long. These buffers will need to be sized using soil type and slope.
4. Areas where roads are to superelevated will need to be shown on the plans.
5. More test pits or test pit info from the wetland delineation will need to be provided for all areas where buffers touch wetlands or are very close at the same elevation.
6. The total number of buffers for the project needs to be in the stormwater write up.
7. See attached spreadsheet for specific concerns or questions for the buffers.

EROSION CONTROL

Minimum erosion control measures will need to be implemented during construction and the applicant will be responsible to maintain all components of the erosion control plan until the site is fully stabilized. However, based on site and weather conditions during construction, additional erosion control measures may need to be implemented. All areas of instability and erosion must be repaired immediately during construction and need to be maintained until the site is fully stabilized or vegetation is established.

The Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices as published in 1991 by the Cumberland County Soil and Water Conservation District and the Maine Department of Environmental Protection has been changed to the Maine Erosion and Sediment Control BMPs published by the Maine DEP in 2003. Please change all references to the new manual: <http://www.maine.gov/dep/blwq/docstand/escbmps/index.htm>

MAINTENANCE:

The applicant will be responsible for the maintenance of all proposed stormwater management structures, i.e. swales, dry swales, culverts and level spreaders.. The DEP may request to inspect the site at a future date.

DESIGN REVIEW RESPONSIBILITY

This review only ensures that the proposed plan is meeting the minimum standards set by the department for erosion control management and for stormwater management. It does not guarantee that the design is appropriate for the level of work suggested and for the functionality of the facility.

If you have any question concerning this project, please call me at (207) 299-4823.