

## **Section 12**

### **Stormwater Management**

**AMENDED OAKFIELD WIND PROJECT  
SECTION 12  
STORMWATER MANAGEMENT  
L-24572-24-A-N / L-24572-TF-B-N**

*Submitted to:*

**MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION**

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**TABLE OF CONTENTS**

**12.2.0 AMENDED OAKFIELD WIND POWER PROJECT ..... 1**

**12.2.0.1 SURFACE WATER ON OR ABUTTING THE SITE ..... 4**

**12.2.0.2 DOWNSTREAM PONDS AND LAKES..... 4**

**12.2.0.3 GENERAL TOPOGRAPHY ..... 4**

**12.2.0.4 FLOODING ..... 4**

**12.2.0.5 ALTERATIONS TO NATURAL DRAINAGE WAYS..... 4**

**12.2.0.6 ALTERATIONS TO LAND COVER WITHIN THE WATERSHED..... 5**

**12.2.0.7 MODELING ASSUMPTIONS..... 7**

**12.3 MAPS..... 8**

**12.4 DRAINAGE PLANS ..... 9**

**12.5 RUNOFF ANALYSIS ..... 9**

**12.5.1 CURVE NUMBER COMPUTATIONS ..... 9**

**12.5.2 TIME CONCENTRATION CALCULATIONS ..... 10**

**12.5.3 TRAVEL TIME CALCULATIONS..... 10**

**12.5.4 PEAK DISCHARGE CALCULATIONS..... 11**

**12.6 FLOODING STANDARD ..... 11**

**12.6.1 VARIANCE SUBMISSIONS ..... 11**

**12.6.2 SIZING OF CULVERTS..... 11**

**12.6.3 STORMWATER PONDS AND BASINS..... 12**

**12.6.4 INFILTRATION SYSTEM..... 12**

**12.6.5 DRAINAGE EASEMENT DECLARATIONS..... 12**

**12.7 STORMWATER QUALITY TREATMENT PLAN ..... 12**

**12.7.1 BASIC STANDARDS SUBMISSIONS ..... 12**

**12.7.2 GENERAL STANDARDS SUBMISSIONS..... 13**

**12.7.3 PHOSPHORUS CONTROL PLAN..... 13**

**12.7.4 OFF-SITE CREDITS ..... 16**

**12.7.5 RUNOFF TREATMENT MEASURES..... 16**

**12.7.6 CONTROL PLAN FOR THERMAL IMPACTS TO COLDWATER FISHERIES ..... 16**

**12.7.7 CONTROL PLAN FOR OTHER POLLUTANTS ..... 16**

**12.7.8 ENGINEERING INSPECTION OF STORMWATER MANAGEMENT FACILITIES 17**

<b>12.7</b>	<b>COMPONENTS OF THE AMENDED OAKFIELD WIND PROJECT POST-CONSTRUCTION STORMWATER MAINTENANCE PLAN.....</b>	<b>17</b>
<b>12.8.1</b>	<b>FACILITIES TO BE MAINTAINED .....</b>	<b>17</b>
<b>12.8.2</b>	<b>GENERAL INSPECTION AND MAINTENANCE REQUIREMENTS.....</b>	<b>18</b>
<b>12.8.2.1</b>	<b>DRAINAGE CONVEYANCE SYSTEMS .....</b>	<b>18</b>
<b>12.8.2.2</b>	<b>ROADWAYS .....</b>	<b>18</b>
<b>12.8.2.3</b>	<b>SUBSTATION YARD.....</b>	<b>18</b>
<b>12.8.2.4</b>	<b>REVEGETATED AREAS AND EMBANKMENTS .....</b>	<b>18</b>
<b>12.8.2.5</b>	<b>WATER QUALITY TREATMENT BUFFERS.....</b>	<b>19</b>

**LIST OF APPENDICES**

Appendix 12-1 – Watershed Maps

Appendix 12-2 – Pre and Post Development Curve Number Calculations

Appendix 12-3 – Culvert Schedule

Appendix 12-4 – Water Quality Calculations

Appendix 12-5 – Post Construction Stormwater Inspection and Maintenance Log

Appendix 6 – Declaration of Restrictions

## 12.2.0 Amended Oakfield Wind Power Project

Evergreen Wind Power II, LLC proposes to amend their approved industrial scale wind energy project in the Town of Oakfield and T4R3 WELS, Maine. This Amendment consists of modifications to the original turbine arrays as well as the installation of 16 additional wind turbine generators. The total project output is planned to be 150 MW based on the installation of 50 3.0 MW WTG.

The following narrative describes and quantifies the project area's pre- and post-development stormwater characteristics. The accompanying calculations demonstrate that construction of the Amended Oakfield Wind Power Project (the Project) will continue to comply with the applicable Maine Department of Environmental (MDEP) stormwater management requirements in Chapter 500. The stormwater management measures for this development have been designed to meet the Basic Standards, General Standards, Flooding Standards and Phosphorus Standards of Chapter 500. A preapplication meeting to discuss the project's stormwater requirements was held on November 8, 2010, the minutes of which are provided in Appendix 12-1.

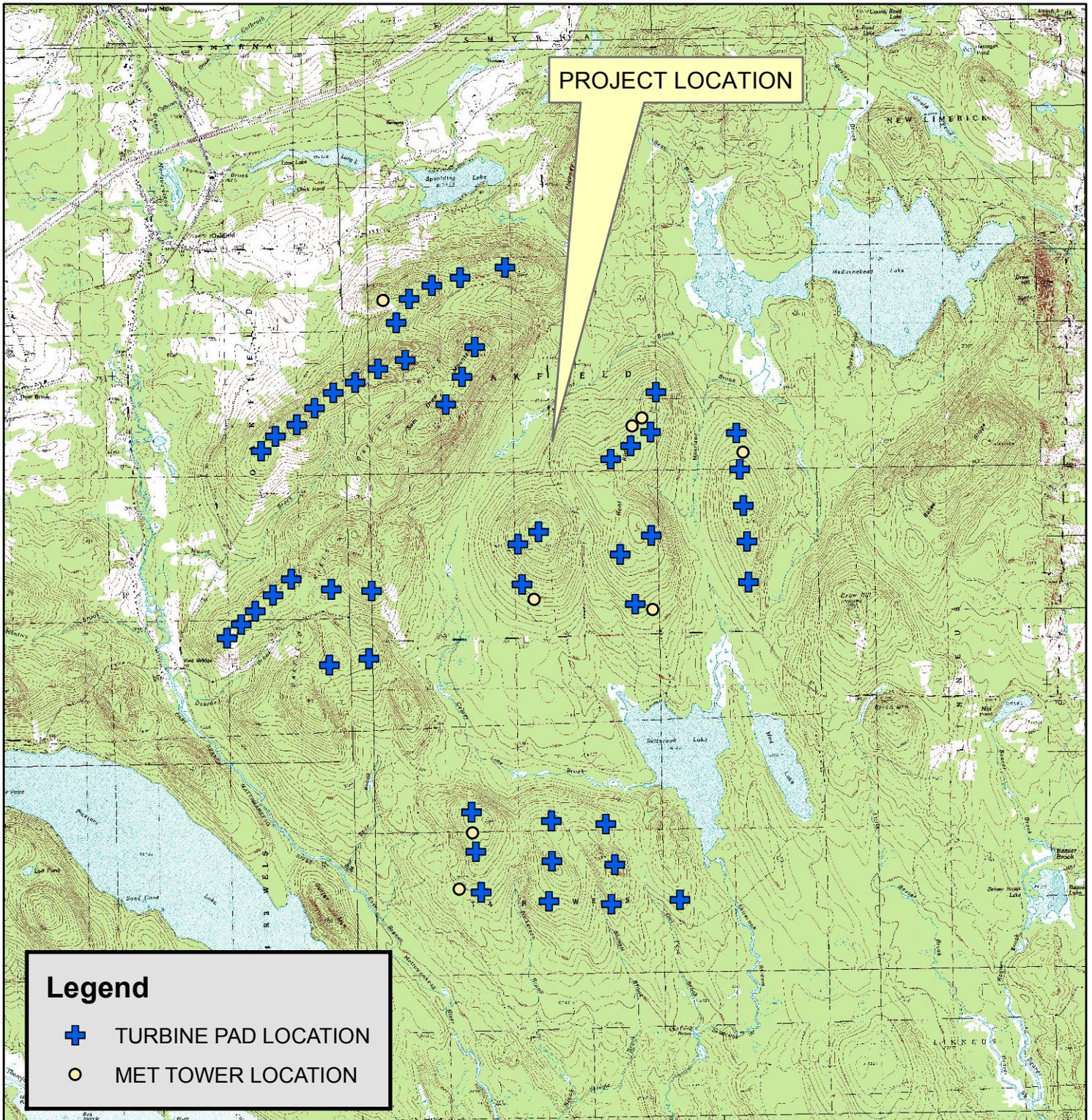
The project is located in the Town of Oakfield and T4R3 WELS, Aroostook County, Maine, as shown on Figure 12-1. The Amended Oakfield Wind Power Project will be comprised of 50 wind turbines sites with associated access roads, 34.5kV collector lines, and a new 34.5kV/115kV collector substation at the southeast corner of the project area as well as the previously-permitted operation and maintenance facility off Thompson Settlement Road. The project area consists of road and turbine sites on the series of ridges generally two to five miles southeast of Interstate 95, Exit 286. The project area is identified as the Oakfield Hills, Sam Drew Mountain and Hunt Ridge as identified within the B-5 area of Map 52 of the Delorme Gazetteer. Figure 12-1 following this section is an excerpt of the U.S.G.S. quadrangle map showing the site area.

The project area consists of mostly undeveloped forest land that has been partially logged. Numerous existing logging roads allow access throughout the project area and additional ATV and snowmobile trails are located throughout. Within the 5,400 acre area included in this stormwater analysis, approximately 197 acres of impervious area will be created. Following construction, approximately 120 acres of the temporary impervious area in the form of gravel roads or turbine pads will be restored and revegetated. Approximately 80

acres will remain as new impervious area and will consist of turbine pads, new substation yard and associated permanently maintained access roads.

**Exhibit 12-1**

**Figure 12-1 Site Location Map**




**USGS LOCATION MAP**  
**EVERGREEN WIND POWER II, LLC**  
**REVISED OAKFIELD WIND PROJECT**  
**OAKFIELD AND T4 R3 WELS , MAINE**  
 SOURCE: MAINE OFFICE OF GIS - DRGCLIP LAYER

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 CHECKED: SJB  
 DATE: MAY 2011  
 FILENAME: 2898-USGS  
 SCALE: 1" = 6,396'

FIGURE  
**12-1**

### **12.2.0.1 Surface Water on or Abutting the Site**

The majority of the development activities are located along several ridge tops and hill sides. There are no named water bodies on or abutting the development areas that are subject to this stormwater analysis. Portions of the Project area drain to Moose Brook, Downing Brook and Bear Brook, which in turn drain to the East Branch of the Mattawamkeag River. The watershed map for the East Branch of the Mattawamkeag River is shown in Appendix 12-1. Other portions of the Project area drain to Higgins Brook and Morrison Brook, which flow to Meduxnekeag Lake; and Centerline Brook, which flows to Skitacook Lake. There are additional small unnamed tributary streams within these watersheds.

### **12.2.0.2 Downstream Ponds and Lakes**

Portions of the Project area are included in three separate lake watersheds: Spaulding Lake, Meduxnekeag Lake (a/k/a Drews Lake) and Skitacook Lake. None of these lake watersheds are listed as a “Lake Most at Risk from Development,” as defined in Chapter 502. Watershed maps are provided as in Appendix 12-1 which accompany this section.

### **12.2.0.3 General Topography**

The topography of the land surface within the Project area is generally hilly to mountainous, as is common within this portion of the state. Along the ridge tops, slopes range from approximately 10 to 25 percent. Elevations across the area range from approximately 700 to 1400 feet above mean sea level. The two-foot contour information for the Project area was provided by Aerial Survey & Photo, Inc. in September 2009. Where necessary, two-foot contour data for the area surrounding the Project location were extrapolated from United States Geological Survey (USGS) topographic mapping.

### **12.2.0.4 Flooding**

The project is not located within a 100-year flood zone, based on Q3 Flood Data derived from the Federal Emergency Management Agency Flood Insurance Rate Maps (FIRM) for the Town of Oakfield (Panel Number 230028A, dated September 5, 1974).

### **12.2.0.5 Alterations to Natural Drainage Ways**

In the Post-development condition, the natural drainage patterns will generally remain unchanged. In order to keep the natural drainage patterns intact, the water management

design will consist of incorporating numerous culverts spaced out evenly along the access and crane roads to collect runoff and then discharge to plunge pools or level spreaders to return the runoff to sheet flow or to otherwise maintain current hydrologic conditions. The project design also includes the use of the Rock Sandwich Road section that will effectively allow the natural hydrologic conditions to continue in areas where new roads may be constructed in areas of shallow subsurface hydrology.

#### **12.2.0.6 Alterations to Land Cover Within the Watershed**

Following construction, the wind turbine pads, associated access roads and the 115kV substation site will produce approximately 80 acres of new, permanent impervious areas (gravel roads, foundations, concrete pads, and building structures). Approximately 117 acres of the 197 acres of impervious area created for gravel surfaces will be allowed to revert to grass and scrub/brush, resulting in a total of approximately 5320 acres of vegetated area remaining within the studied area.

The following description of each development activity is provided:

1. Wind Turbine Pads: Each wind turbine pad will be constructed within cleared site limits ranging in size from approximately 2.0 acres to 2.2 acres. The pad sites will contain a 25-foot diameter concrete turbine foundation pedestal with a 12.5-foot wide gravel ring surrounding the pedestal, a 70 by 85 foot permanent gravel crane pad, and 12-16 foot access drives. Most of the construction area will be restored with erosion control mix and seeding with only the foundation pedestal, gravel ring, gravel crane pad, and access drives remaining as impervious area (approximately 0.23 to 0.28 acre).
2. Substation Site: The 115kV substation site will consist of a 200-foot by 225-foot crushed stone substation yard and two gravel access drives. The substation yard will be topped with 6" of crushed stone on 18" gravel fill base meeting the MDOT 703.06 Type A specifications. This cross section of materials exceeds the specifications as described in an agreement letter between Central Maine Power Company (CMP) and MDEP<sup>1</sup>, which previously established an acceptable water quality treatment design for electric substations and switchyards. Vegetated buffers will be used to treat the runoff generated by the access drives.

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<sup>1</sup> See Agreement dated June 5, 2009

3. Access Roads and Crane Roads: The Project will include approximately 24 miles of either new access roads, crane roads or improved existing land management roads. The access roads and improved existing roads will be constructed or improved to a 24-foot wide gravel surface. After construction is complete select areas of the roads within the Spaulding, Skitacook, and Meduxnekeag Lake Watersheds will be reduced to a 12-16 foot permanently maintained width by restoring/revegetating the sides to promote vegetative growth and infiltration. All other roads will remain as constructed. The crane roads will be located along the ridge tops and will be constructed as a 36-foot wide gravel surface. Similarly, select areas of the crane roads within the Spaulding, Skitacook, and Meduxnekeag Lake Watersheds will also be restored to a 12 to 16-foot permanently maintained width after construction is completed.

As agreed upon with Department Representatives, the stormwater quantity standard will be analyzed by the performance of a pre- and post-development curve number analysis. A summary of the pre- and post-development cover types within the affected watersheds are presented in Tables 12-1 and 12-2.

<b>Table 12-1. Pre-Development Watershed Cover Types</b>					
		Mattawamkeag River	Skitacook Lake	Spaulding Lake	Meduxnekeag Lake
Soil Group		<i>(acres)</i>			
C	Gravel	1.171	1.209	0.055	0.000
	Cleared	12.980	6.761	0.385	0.000
	Woods	164.731	174.927	19.723	31.046
C/D	Gravel	32.342	10.654	2.906	9.642
	Cleared	49.905	33.166	11.253	30.602
	Woods	1714.555	1572.397	255.272	945.366
D	Gravel	1.687	0.944	0.310	0.072
	Cleared	8.921	4.970	0.000	0.237
	Woods	65.759	206.919	6.644	19.173

<b>Table 12-2. Post Development Watershed Cover Types</b>					
		Mattawamkeag River	Skitacook Lake	Spaulding Lake	Meduxnekeag Lake
Soil Group		<i>(acres)</i>			
C	Gravel	1.922	1.209	0.055	0.000
	Cleared	12.237	6.761	0.385	0.000
	Woods	164.724	174.927	19.723	31.046
C/D	Gravel	49.793	31.930	6.497	19.597
	Cleared	49.281	19.189	11.014	30.483
	Woods	1697.728	1565.098	251.920	935.529
D	Gravel	1.871	0.944	0.310	0.072
	Cleared	8.829	4.970	0.000	0.237
	Woods	65.667	206.919	6.644	19.173

The analysis of these pre and post development cover types is more fully discussed in Section 12.5 of this report.

#### **12.2.0.7 Modeling Assumptions**

The Department has agreed that stormwater runoff modeling to determine pre- and post-development peak flows is not strictly required for this Project. Instead, a pre- and post-development curve number comparison analysis for each watershed will be substituted as evidence that the project will have an insignificant impact on the peak stormwater flows in the watershed.

The pre-development study area used for the curve number comparison is consistent with the boundary methodology used in the original approved Oakfield Wind Farm analysis. The

limits of the watershed boundary lines are defined as a 750-foot offset from the edge of proposed development. The wind farm site footprint extends across four watersheds:

- The Spaulding Lake watershed to the north;
- The Meduxnekeag Lake watershed to the east;
- The Mattawamkeag River watershed to the southwest; and
- The Skitacook Lake watershed to the southeast.

The pre- and post-development watershed boundaries for each of the four watersheds are identified on the Watershed Plans contained in the Permit Plan Set and in Appendix 12-1. Within the areas proposed for development, the watershed boundaries were determined using the aerial surveyed two-foot contours. Watershed boundaries outside areas proposed for development were determined from two-foot contours extrapolated from the USGS topographic quadrangle map.

The post-development stormwater curve number analysis consists of the same four watersheds. As described previously in Section 12.2.0.6, the alterations to land cover within the watersheds will consist of wind turbine pads, associated access and crane roads and a substation site. The collector line right of way is not included in the curve number comparison analysis because, like other vegetated electric transmission line rights of way, its drainage characteristics will remain essentially unchanged following construction of the collector lines.

The results of the curve analysis are presented in Section 12.5.1.

### **12.3 MAPS**

Mapping used for this stormwater analysis is summarized below:

- An excerpt from the USGS Oakfield and Meduxnekeag Quadrangle maps, annotated to indicate the site boundaries, is provided as Figure 12-1.
- Watershed maps identifying the affected areas are provided as Appendix 12-1.
- Soils mapping obtained from the U.S. Department of Agriculture Soil Conservation Service (now the Natural Resources Conservation Service (NRCS)) *Soil Survey of Aroostook County, Maine*.
- Soils mapping developed from the Class L Soil Survey completed by Albert Frick Associates for the areas affected by Project construction is provided in Section 11.

## **12.4 DRAINAGE PLANS**

DeLuca-Hoffman Associates, Inc. has prepared the Post-Development Watershed Plans for the proposed development area. The plans include topography, clearing limits, general cover types, soil groups, watershed boundaries, existing features, primary drainage ways, locations of proposed turbine pads and new roads.

## **12.5 RUNOFF ANALYSIS**

A specific pre- and post-development analysis of peak flows has not been performed due to the overall project area size; instead a curve number comparison analysis for each project watershed area was conducted in lieu of the runoff modeling. The analysis includes computations for determining the runoff curve numbers (CN values) for the pre- and post-development project watersheds. The pre- and post-development curve number calculations are provided in Appendix 12-2. The purpose of the curve number analysis is to show that the proposed project activities result in an insignificant impact to the overall watershed curve number. A watershed curve number is an indicator for predicting direct runoff or infiltration from rainfall excess. A significant change (increase) in the CN might indicate an increase in stormwater runoff conditions. An insignificant change in the CN indicates there will be no impact to overall stormwater runoff conditions.

A summary of the pre- and post-development curve numbers is provided in the following Section.

### **12.5.1 Curve Number Computations**

A summary of the cover types, hydrologic soil group (HSG), and curve numbers for the pre- and post-development watersheds is provided in the stormwater calculation package included as Appendix 12-2. Cover types within the study areas were determined from the aerial topographic survey.

The soils and hydrologic soil groups within the area to be developed are based on the Class L Soil Survey completed by Albert Frick Associates. Soils and hydrologic soil group information for that portion of the Project outside the Class L survey areas are based on Class D Medium-Intensity soils survey mapping obtained from the NRCS *Soil Survey of Aroostook County, Maine*. The soils and hydrologic soil groups within the watershed analysis areas are shown on the Post-Development Drainage Plans.

The runoff curve numbers are based on the observed cover types and hydrologic soil groups, the stormwater modeling program HydroCAD, and the MDEP *Maine Stormwater Best*

*Management Practices Manual, Volume III, Appendix A-12.: “Runoff Curve Numbers for use in TR-55 and TR-20”.*

In accordance with the previously approved agreement between Central Maine Power (CMP) and the Department, a curve number of 60 will be used for the proposed substation area, where soils conditions are HSG.D.

Note that where soils are mapped as dual hydrologic soil groups C/D (*e.g.*, Thorndike C/D), corresponding CN value for C soils (“drained condition”) was used in the model to characterize upland areas, and the CN value for D soils (“undrained condition”) was used in the model for the areas that are delineated as wetlands.

A summary of the pre- and post-development curve numbers is provided in Table 12-3.

**Table 12-3. Pre- and Post-Development Curve Number Comparison**

<b>Sub Watershed</b>	<b>Sub Watershed Area, acres</b>	<b>Pre CN</b>	<b>Post CN</b>	<b>Post CN</b>
Spaulding Lake	296.5	74.03	74.22	0.25%
Meduxnekeag Lake	1,036.1	74.12	74.27	0.20%
Skitacook Lake	2,011.9	73.81	73.96	0.20%
Mattawamkeag River	2,056.1	74.04	74.18	0.19%

The weighted curve number for each watershed changes insignificantly (< 0.5%) from the pre-developed condition to the post-developed condition since there is an insignificant change to the overall impervious cover types. The impact due to the creation of the impervious areas by this development and its small change in land cover in relation to the overall size of the watersheds is negligible. Therefore the runoff from the developed site is not anticipated to adversely affect any downstream conveyance conditions or properties.

**12.5.2 Time Concentration Calculations**

Time of Concentration Calculations have not been performed since an analysis of peak flow (quantity) conditions is not required due to the insignificant change in runoff conditions in the study area watersheds.

**12.5.3 Travel Time Calculations**

All culvert sizing has been based on the Rational Method. Runoff travel times within sub-watersheds have been established for use in determining rainfall intensity values for the

rational method formula. The travel time for each culvert sub-watershed was calculated using a spreadsheet based on equations prepared by the NRCS. These times were then used to determine rainfall intensity based on the IDF curve for Millinocket as contained in the BMP manual.

#### **12.5.4 Peak Discharge Calculations**

25-year peak flows are shown in the Culvert Schedules included with Appendix 12-3.

### **12.6 FLOODING STANDARD**

#### **12.6.1 Variance Submissions**

A variance from the peak flow standard is not necessary for the proposed Project. As stated previously, due to the small amount of impervious area created, the curve number analysis has demonstrated that there will be no significant impact to post-development runoff conditions. As a result, the project will not adversely affect downstream conveyance conditions or properties.

#### **12.6.2 Sizing of Culverts**

All culvert sizing and placement has been based on the Maine DEP Chapter 500.5.A standards. These standards require that all projects discharging runoff in the form of concentrated flow must convert the runoff to sheet flow before leaving the project limits. To achieve this objective, level spreaders are identified on the plans at locations where sheet flow dispersal is desired. The calculations for sizing the proposed culverts are presented in Appendix 12-3. Detailed drawings for the proposed on-site conveyance structures, including drainage swales, culverts with inlet and outlet protection, and level spreaders, are shown on the Plan and Profile Drawings and Construction and Erosion Control Detail drawings in the Permit Plan Set located in Exhibit 1 of this application. Stabilization methods will be designed, constructed and maintained in accordance with Evergreen II's previously approved Erosion and Sedimentation Control Plan (E&S Plan), which is consistent with the *Maine Erosion and Sedimentation Control Best Management Practices*.

Please refer to Section 14: Basic Standards Submissions for a detailed description of the site-specific erosion control measures and practices to be utilized during construction of the access roads, crane roads, collector system and substation.

### **12.6.3 Stormwater Ponds and Basins**

Stormwater ponds and basins are not proposed as part of the overall stormwater management design. The use of vegetated and stone-lined swales, in conjunction with the plunge pools or level spreaders positioned at the end of swales and culverts will be used to collect and disperse the stormwater runoff from the access roads and turbine pads. Vegetated buffers consisting of natural forest vegetation are also proposed down gradient of all ditch turnouts and along road sections where sheet flow can be evenly dispersed through the buffer zone. The design of the substation yard surface provides adequate treatment of runoff from the area.

### **12.6.4 Infiltration System**

No infiltration systems are proposed.

### **12.6.5 Drainage Easement Declarations**

No drainage easements are necessary for this Project.

## **12.7 STORMWATER QUALITY TREATMENT PLAN**

### **12.7.1 Basic Standards Submissions**

In accordance with the Basic Standards, stormwater conveyance structures will be designed, constructed, and stabilized using erosion and sedimentation (E&S) Best Management Practices (BMPs). The stormwater conveyance structures will be maintained to prevent or correct any noted erosion problems to ensure their continued effectiveness. The applicant's E&S Plan outlines the measures that will be utilized to prevent erosion from occurring, and to address any problems that may develop. The E&S Plan is contained within Section 14: Basic Standards of this application, and incorporates the applicable methods and materials presented in the *Maine Erosion and Sediment Control BMPs*, dated March 2003. The E&S Plan contains the details and specifications for general stabilization of the site. These measures will be used to protect exposed soils during construction and during the service life of the project. The primary erosion control measure to be used during construction will be the use of Erosion Control Mix<sup>2</sup> that will be placed over much of the project's disturbed surfaces. The use of Erosion Control Mix has been found to be most effective for the type of soil disturbance activity proposed.

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<sup>2</sup> See Maine Department of Environmental Protection – Information Sheet: Erosion Control Mix for Mulch – [www.maine.gov/dep/blwq/docstand/stormwater/is-ecmixmulch.htm](http://www.maine.gov/dep/blwq/docstand/stormwater/is-ecmixmulch.htm)

The stabilization measures for the site will include temporary and permanent E&S controls; appropriate design of swales, culverts, and erosion protection for earthen cut and fill slopes; and provisions for future maintenance of the site.

### **12.7.2 General Standards Submissions**

The proposed development will have more than one acre of impervious area and will have more than five acres of developed area so compliance with the General Standards is required at a minimum. The development activity generally consists of roads that are considered linear. The standards for linear projects require that at least 75 percent of the impervious area within the watershed be treated. The accompanying calculations indicate the following treatment percentage for the Mattawamkeag River watershed. The Spaulding, Meduxnekeag, and Skitacook Lake Watersheds were analyzed under the Phosphorous Standard, see Section 12.7.3 for calculations. The treatment percentage achieved for the Mattawamkeag River Watershed is 75.79% Please refer to the water quality calculations contained in Appendix 12-4 for additional details.

### **12.7.3 Phosphorus Control Plan**

Portions of the Project are located in one of three different lake watersheds. These include Spaulding Lake, Meduxnekeag Lake and Skitacook Lake. None of these lakes are identified as a “Lake Most at Risk from Development.” Nevertheless, Phosphorous Standards apply as greater than one acre of impervious area is created in each lake watershed. In accordance with MDEP’s Chapter 500 Stormwater Management Rules, the Phosphorus Standards must be met.

To determine the allowable threshold for pounds of phosphorous export that the Project must meet, a per acre phosphorous allocation for each lake watershed is provided in the DEP’s *Volume II Phosphorous Control in Lake Watersheds* contained in the Stormwater BMP Manual. The corresponding phosphorous allocation area used to determine the project phosphorous budget for each lake watershed has been established as that area contained within a 150-foot offset from all areas of proposed disturbance. This area represents a restricted buffer area that can be effectively controlled by the applicant through landowner agreements. All proposed stormwater vegetative buffers are effectively included in this 150-foot restricted buffer area around the project. This essentially provides protection for the vegetative buffers that are relied on for stormwater treatment.

Please note that a portion of the restricted buffer area was increased to 300 feet in the Spaulding Lake Watershed. This area generally follows North Road 1 from station 147+00 to 223+00 on the northerly side of the access road. This also includes North MET Road 1. An expanded restricted buffer area is necessary in the Spaulding Lake Watershed due to the limited phosphorous budget available in that watershed.

For the purpose of the phosphorous calculations, only the impervious area to be permanently maintained associated with the new access and crane roads, turbine sites, and the 115kV substation was considered. Portions of the existing timber logging roads needed for construction, and all other areas disturbed during the construction such as the lay down areas, will be restored/revegetated and allowed to revert to natural conditions upon the completion of construction. A description of the impervious areas included in the calculations is as follows:

#### Access and Crane Roads:

The new access roads and improved existing roads will be constructed to a 24-foot wide gravel surface. Where necessary due to the phosphorous loading requirements following construction, these roads will then be reduced to a 12-foot or 16-foot permanently maintained travel surface by restoring/revegetating the roadsides. The crane roads will be located along the ridge top and will be constructed as a 36-foot wide gravel surface. Again, where necessary for phosphorous control the crane roads will also be restored to a 12-16-foot permanently maintained surface after construction is complete. The remaining post construction access drive width is shown in Appendix 12-4. Mitigation credits in the Spaulding and Skitacook Lake Watersheds have been used to calculate the total phosphorous export. In both areas there are existing logging roads that will be revegetated, Mitigation Credit Worksheets are provided in Appendix 12-4. The existing logging road in the Skitacook Watershed is located adjacent to South Road #7 between stations 64+00 and 76+00. The logging road in the Spaulding Lake Watershed is located adjacent to North Road #1 between stations 205+00 and 216+00. Additionally, a significant portion of South Road #7 is an existing gravel road (approximately 16 feet wide) that will be re-used. In areas where the road will be re-used we have assumed that only the additional 8 foot width needs to be treated.

#### Turbine sites:

Each wind turbine pad will be constructed within a 2.0 acre to 2.2 acre cleared site, which includes a 25-foot diameter concrete turbine foundation pedestal with a surrounding 12.5 foot gravel ring 70 by 85 foot gravel crane pad, and 12'-16' wide access drive. Most of the construction area will be restored and allowed to revert to a vegetated condition with only the foundation pedestal, gravel ring and gravel crane pad remaining as exposed gravel area (approximately 0.23 to 0.28 acres). Vegetated buffer areas at the restored turbine pads will be oversized in such a way to allow flexibility in design and construction.

#### 115kV Collector Substation:

The 115kV substation site will consist of a 200-foot by 225-foot crushed stone substation yard and two gravel access drives. The substation yard will be built as shown on the Project drawings and will provide water quality treatment through its proposed surface section. The yard will consist of 6" of crushed stone surface layer over an 18" MDOT 703.06 Type A gravel fill base. This cross section of materials exceeds the specifications as described in the aforementioned agreement letter between CMP and MDEP, which established an acceptable water quality treatment design for electric substation and switchyards. A natural vegetated buffer will be used to treat the runoff generated by the access drives.

Guidance to determine the appropriate phosphorus controls was provided by the MDEP's Maine Stormwater Best Management Practices Manual Volume II Phosphorous Control in Lake Watersheds: A Technical Guide for Evaluating New Development. Without controls the proposed development within the Lake watersheds is calculated to export phosphorous in excess of the Project Phosphorous Budget(PPB). In order to reduce the total amount of phosphorous export, vegetated consisting of natural vegetation down slope of the access roads, crane roads, turbine pads and the substation will be used to reduce the amount of phosphorous. The vegetated buffers are sized using Table 5-4, 5-5 and 5-6 from Chapter 5, Volume III of the Maine Stormwater BMP's. Generally speaking these natural buffer strips consist of at least a minimum width of 55' up to 80' for buffers adjacent to downhill side of road and 120 feet for ditch turnout buffers.

The following Table is a summary of the Phosphorous loading for each watershed.

**Table 12-6. Phosphorous Export Summary Watershed**

<b>Sub Watershed</b>	<b>Allowable Phosphorous Lbs P/year</b>	<b>Project Budget</b>	<b>Computed Phosphorous Lbs P/year</b>	<b>Project Export</b>
Spaulding Lake	3.66		3.61	
Meduxnekeag Lake	14.14		14.04	
Skitacook Lake	9.96		9.76	

As demonstrated in Table 12-6, the various treatment buffers will provide adequate capture of phosphorous to maintain phosphorous export to below allowable limits. For additional details, please refer to the detailed phosphorous control calculations provided in Appendix 12-4. Please note that in each of the Lake watersheds the project has exceeded the small watershed threshold.

**12.7.4 Off-Site Credits**

Off-site credits for total suspended solids (TSS) or phosphorous are not proposed for the Project.

**12.7.5 Runoff Treatment Measures**

The drainage design for this project will consist of naturally vegetated buffers, vegetated and stone-lined conveyance swales, ditch turnouts, level spreaders and plunge pools. Vegetated and stone-lined swales will collect and direct runoff from the access roads, crane roads, turbine pads and the substation yard to a level spreader or plunge pool. The level spreaders and or plunge pools will convert shallow concentrated flows to sheet flow prior to the runoff leaving the Project area. When built in accordance with the Project design requirements, the substation yard will provide adequate water quality treatment through its surface design. The cross section and materials incorporated in this design exceed the specifications in the CMP/MDEP agreement letter.

**12.7.6 Control Plan for Thermal Impacts to Coldwater Fisheries**

The development activities will not result in thermal impact to downstream conditions based on the insignificant impact to overall runoff conditions in the watersheds.

**12.7.7 Control Plan for Other Pollutants**

A control plan for other pollutants in stormwater runoff is not required.

### **12.7.8 Engineering Inspection of Stormwater Management Facilities**

Evergreen II will ensure that a qualified design engineer inspects the construction site periodically to verify that the substation yard, stormwater conveyance swales, level spreaders, and plunge pools are constructed in accordance with the plans and specifications shown on the design drawings, and that these structures are functioning properly. These inspections will commence with the initial earth moving activities on the site and will continue, as needed, during any period when construction activity affecting the stormwater management system occurs, until the site is permanently stabilized.

Additionally, inspections of the site to evaluate the effectiveness of stormwater management structures and erosion and sedimentation control measures will be conducted. These inspections will be used to determine any required maintenance or repair of the control measures. BMPs for erosion control and stormwater pollution prevention during construction will include weekly or more frequent inspection and maintenance. We anticipate inspection and maintenance of items such as temporary and permanent erosion control measures; stabilization of the substation site, road ditches, and the collector right-of-way will be conducted during these weekly inspections. The routine maintenance conducted during these inspections will include correction of any erosion or sedimentation that is occurring, minor repair of control measures, and removal of debris accumulations. The inspection and maintenance of erosion control measures are described in more detail in Section 14 of this application.

## **12.7 COMPONENTS OF THE AMENDED OAKFIELD WIND PROJECT POST-CONSTRUCTION STORMWATER MAINTENANCE PLAN**

The Amended Oakfield Wind Project will be solely-owned, operated, and maintained by Evergreen II.

### **12.8.1 Facilities to be Maintained**

The stormwater management facilities to be maintained at the Amended Oakfield Wind Project include:

- Stormwater conveyance swales, level spreaders and plunge pools associated with the access roads, crane roads, turbine pads and substation yard;
- Culverts with inlet and outlet protection;
- Permanent access roads;

- Substation yard (crushed stone);
- Turbine pads;
- Revegetated areas and embankments; and
- Operations and Maintenance Building and Yard Area (previously approved).

## **12.8.2 General Inspection and Maintenance Requirements**

Generally, the proposed facility will be operated and maintained in a manner consistent with good utility practices, including monthly on-site substation inspections and maintenance of stormwater management structures as needed. A post-construction maintenance and inspection log is provided in Appendix 12-5.

Maintenance issues associated with specific areas and facilities are identified in the following paragraphs.

### **12.8.2.1 Drainage Conveyance Systems**

The vegetated and stone-lined swales, level spreaders, plunge pools, and culverts will be inspected on a monthly basis. Any signs of existing or developing blockage of flow, trash, erosion, channeling or excessive build up of sediment will be removed/repaired, as needed. Swales and other vegetated structures will be mowed or otherwise maintained to control the growth of woody vegetation within the channel, but no more than once per year.

### **12.8.2.2 Roadways**

The roadways will typically require little on-going maintenance, due to the limited use of heavy vehicles. These areas will be inspected monthly, and signs of existing or developing areas of channelized flow, erosion, rutting, trash or unwanted vegetation will be removed/repaired as needed.

### **12.8.2.3 Substation Yard**

The substation yard will be inspected monthly. Any signs of existing or developing erosion, rutting, trash, or unwanted vegetation within the substation yard will be removed/repaired as needed.

### **12.8.2.4 Revegetated Areas and Embankments**

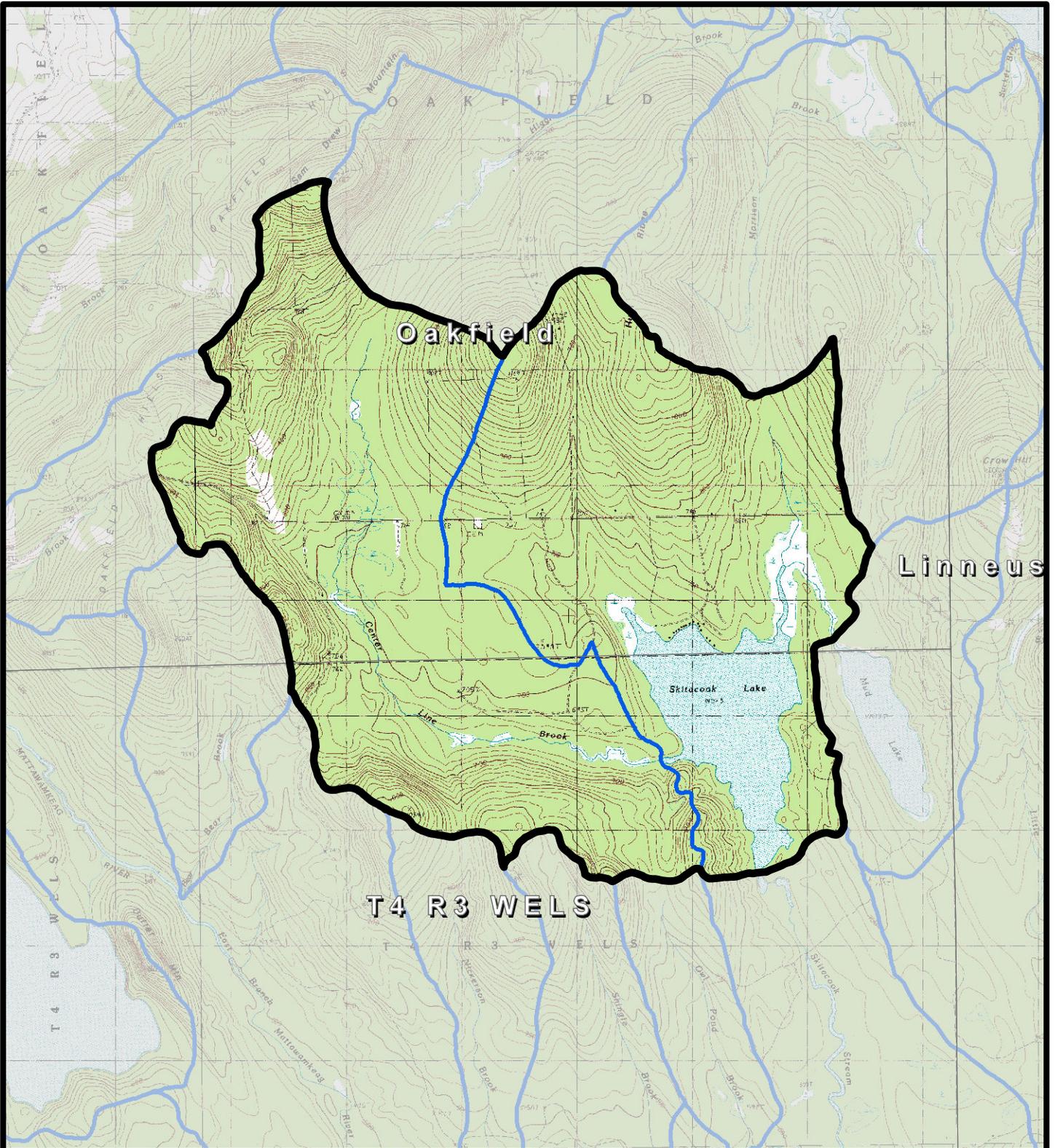
Revegetated areas and embankments will be inspected monthly. Any signs of erosion or inadequate revegetation of these areas will be corrected as needed.

#### **12.8.2.5 Water Quality Treatment Buffers**

Water quality treatment buffers, in conjunction with level spreaders and plunge pools, will be inspected monthly. Any signs of existing or developing erosion or disturbed vegetation will be removed/repaired as needed.

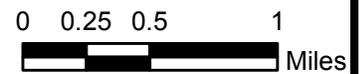
## **APPENDIX 12-1**

### **Watershed Maps**



## SKITACOOK LAKE WATERSHED

REVISED OAKFIELD WIND PROJECT  
OAKFIELD AND T4 R3 WELS, MAINE



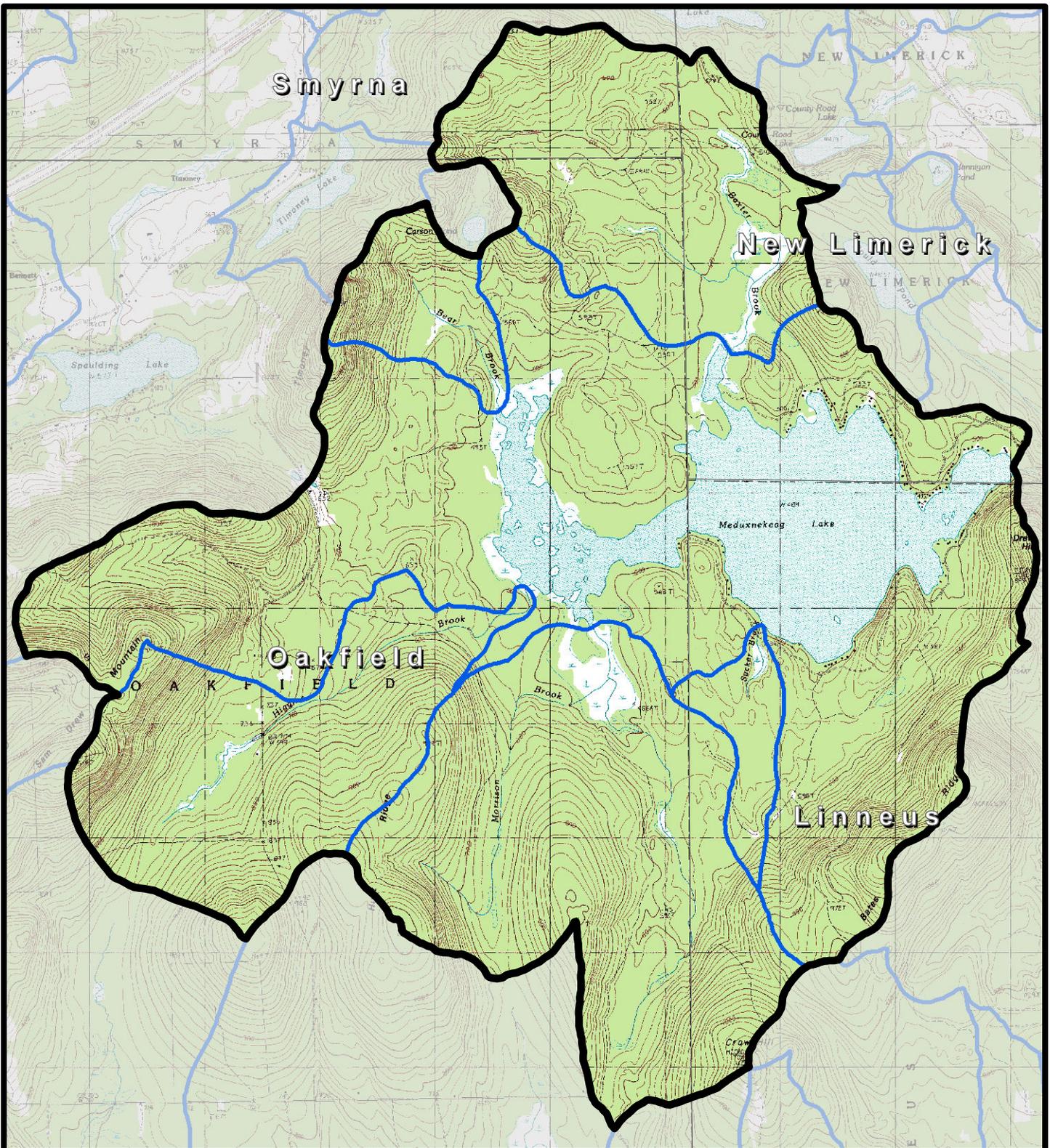
SOURCE: MAINE OFFICE OF GIS

**DELUCA-HOFFMAN ASSOCIATES, INC.**  
778 MAIN STREET  
SUITE 8  
SOUTH PORTLAND, ME 04106  
207.775.1121  
[www.delucahoffman.com](http://www.delucahoffman.com)

DRAWN: DED  
CHECKED: SJB  
DATE: NOV 2010  
FILENAME: 2898 Skitacook Lake  
SCALE: 1 inch = 0.75 miles

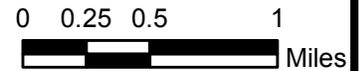
FIGURE





## MEDUXNEKEAG LAKE WATERSHED

REVISED OAKFIELD WIND PROJECT  
OAKFIELD AND T4 R3 WELS, MAINE



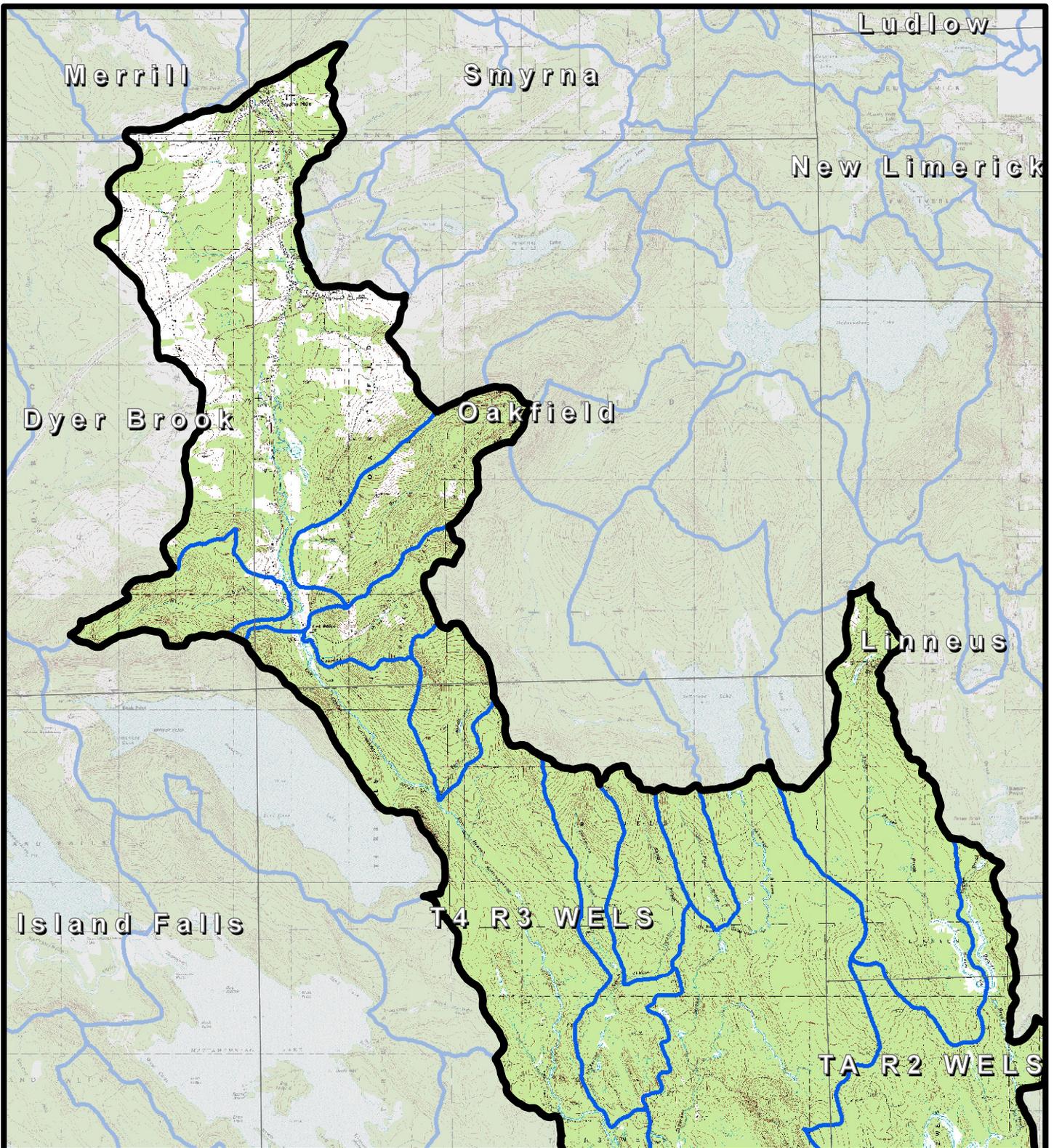
SOURCE: MAINE OFFICE OF GIS

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DRAWN: DED  
CHECKED: SJB  
DATE: NOV 2010  
FILENAME: 2898 Meduxnekeag Lake  
SCALE: 1 inch = 0.75 miles

FIGURE





## MATTAWAMKEAG RIVER WATERSHED

REVISED OAKFIELD WIND PROJECT  
OAKFIELD AND T4 R3 WELS, MAINE



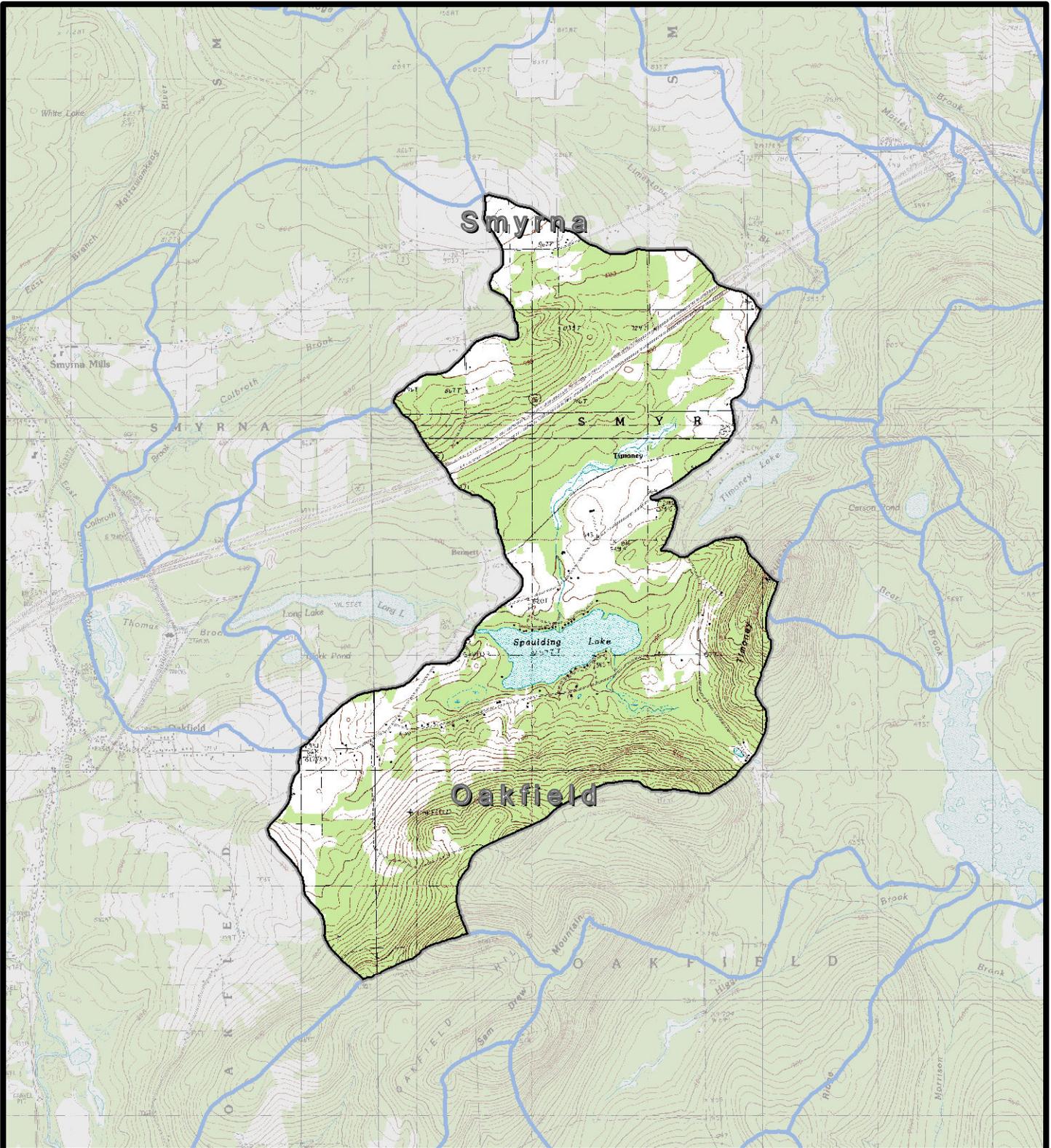
SOURCE: MAINE OFFICE OF GIS

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DRAWN: DED  
CHECKED: SJB  
DATE: NOV 2010  
FILENAME: 2898 Mattawamkeag River  
SCALE: 1 inch = 1.5 miles

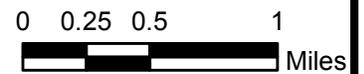
FIGURE





## SPAULDING LAKE WATERSHED

REVISED OAKFIELD WIND PROJECT  
OAKFIELD AND T4 R3 WELS, MAINE



SOURCE: MAINE OFFICE OF GIS

**DELUCA-HOFFMAN ASSOCIATES, INC.**  
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SUITE 8  
SOUTH PORTLAND, ME 04106  
207.775.1121  
[www.delucahoffman.com](http://www.delucahoffman.com)

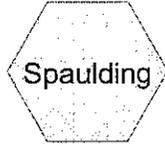
DRAWN: DED  
CHECKED: SJB  
DATE: NOV 2010  
FILENAME: 2898 Spaulding Lake  
SCALE: 1 inch = 0.75 miles

FIGURE



## **APPENDIX 12-2**

### **Pre and Post Development Curve Number Calculations**



Spaulding Lake WSHD



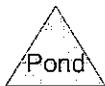
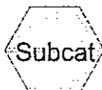
Meduxnekeag Lake WSHD



Skitacook Lake WSHD



Mattawamkeag River WSHD



**Drainage Diagram for 2898 Pre-Development**  
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## 2898 Pre-Development

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Page 2

### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
390.427	70	Woods, Good, HSG C (Mattawamkeag,Meduxnekeag,Skitacook,Spaulding)
20.126	74	>75% Grass cover, Good, HSG C (Mattawamkeag,Skitacook,Spaulding)
4,487.590	74	Woods, Good, HSG C/D (Mattawamkeag,Meduxnekeag,Skitacook,Spaulding)
124.926	77	>75% Grass cover, Good, HSG C/D (Mattawamkeag,Meduxnekeag,Skitacook,Spaulding)
298.495	77	Woods, Good, HSG D (Mattawamkeag,Meduxnekeag,Skitacook,Spaulding)
14.128	80	>75% Grass cover, Good, HSG D (Mattawamkeag,Meduxnekeag,Skitacook)
2.435	89	Gravel roads, HSG C (Mattawamkeag,Skitacook,Spaulding)
55.544	90	Gravel roads, HSG C/D (Mattawamkeag,Meduxnekeag,Skitacook,Spaulding)
3.013	91	Gravel roads, HSG D (Mattawamkeag,Meduxnekeag,Skitacook,Spaulding)
<b>5,396.684</b>		<b>TOTAL AREA</b>

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Page 3

**Soil Listing (all nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
5,081.048	HSG C	Mattawamkeag, Meduxnekeag, Skitacook, Spaulding
315.636	HSG D	Mattawamkeag, Meduxnekeag, Skitacook, Spaulding
0.000	Other	
<b>5,396.684</b>		<b>TOTAL AREA</b>

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Type III 24-hr 2-YR Rainfall=2.50"

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Page 4

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment Mattawamkeag:** Runoff Area=2,052.051 ac 0.00% Impervious Runoff Depth>0.53"  
Flow Length=3,850' Tc=69.9 min CN=74 Runoff=454.63 cfs 90.429 af

**Subcatchment Meduxnekeag:** Runoff Area=1,036.138 ac 0.00% Impervious Runoff Depth>0.54"  
Flow Length=746' Tc=34.0 min CN=74 Runoff=345.89 cfs 46.594 af

**Subcatchment Skitacook: Skitacook** Runoff Area=2,011.947 ac 0.00% Impervious Runoff Depth>0.54"  
Flow Length=1,512' Tc=41.6 min CN=74 Runoff=607.21 cfs 90.103 af

**Subcatchment Spaulding: Spaulding Lake** Runoff Area=296.548 ac 0.00% Impervious Runoff Depth>0.54"  
Flow Length=1,544' Tc=38.4 min CN=74 Runoff=93.35 cfs 13.304 af

**Total Runoff Area = 5,396.684 ac Runoff Volume = 240.429 af Average Runoff Depth = 0.53"**  
**100.00% Pervious = 5,396.684 ac 0.00% Impervious = 0.000 ac**

**2898 Pre-Development**

Type III 24-hr 2-YR Rainfall=2.50"

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**Summary for Subcatchment Mattawamkeag: Mattawamkeag River WSHD**

Runoff = 454.63 cfs @ 13.05 hrs, Volume= 90.429 af, Depth> 0.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-YR Rainfall=2.50"

Area (ac)	CN	Description
1.171	89	Gravel roads, HSG C
12.980	74	>75% Grass cover, Good, HSG C
164.731	70	Woods, Good, HSG C
1.687	91	Gravel roads, HSG D
8.921	80	>75% Grass cover, Good, HSG D
65.759	77	Woods, Good, HSG D
* 32.342	90	Gravel roads, HSG C/D
* 49.905	77	>75% Grass cover, Good, HSG C/D
* 1,714.555	74	Woods, Good, HSG C/D
2,052.051	74	Weighted Average
2,052.051		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	150	0.0333	0.09		<b>Sheet Flow, AB</b>
					Woods: Light underbrush n= 0.400 P2= 2.50"
3.3	180	0.0333	0.91		<b>Shallow Concentrated Flow, BC</b>
					Woodland Kv= 5.0 fps
10.5	800	0.0650	1.27		<b>Shallow Concentrated Flow, CD</b>
					Woodland Kv= 5.0 fps
17.9	1,770	0.1085	1.65		<b>Shallow Concentrated Flow, DE</b>
					Woodland Kv= 5.0 fps
9.9	520	0.0308	0.88		<b>Shallow Concentrated Flow, EF</b>
					Woodland Kv= 5.0 fps
0.9	430	0.0511	8.25	41.27	<b>Channel Flow, FG</b>
					Area= 5.0 sf Perim= 7.9' r= 0.63'
					n= 0.030 Earth, grassed & winding
69.9	3,850	Total			

**Summary for Subcatchment Meduxnekeag: Meduxnekeag Lake WSHD**

Runoff = 345.89 cfs @ 12.54 hrs, Volume= 46.594 af, Depth> 0.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-YR Rainfall=2.50"

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Type III 24-hr 2-YR Rainfall=2.50"

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Page 6

Area (ac)	CN	Description
0.000	89	Gravel roads, HSG C
0.000	74	>75% Grass cover, Good, HSG C
31.046	70	Woods, Good, HSG C
0.072	91	Gravel roads, HSG D
0.237	80	>75% Grass cover, Good, HSG D
19.173	77	Woods, Good, HSG D
* 9.642	90	Gravel roads, HSG C/D
* 30.602	77	>75% Grass cover, Good, HSG C/D
* 945.366	74	Woods, Good, HSG C/D
1,036.138	74	Weighted Average
1,036.138		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	16	0.2187	0.12		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
27.6	134	0.0261	0.08		<b>Sheet Flow, BC</b> Woods: Light underbrush n= 0.400 P2= 2.50"
0.8	30	0.0167	0.65		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
3.4	566	0.3148	2.81		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
34.0	746	Total			

**Summary for Subcatchment Skitacook: Skitacook Lake WSHD**

Runoff = 607.21 cfs @ 12.65 hrs, Volume= 90.103 af, Depth> 0.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-YR Rainfall=2.50"

Area (ac)	CN	Description
1.209	89	Gravel roads, HSG C
6.761	74	>75% Grass cover, Good, HSG C
174.927	70	Woods, Good, HSG C
0.944	91	Gravel roads, HSG D
4.970	80	>75% Grass cover, Good, HSG D
206.919	77	Woods, Good, HSG D
* 10.654	90	Gravel roads, HSG C/D
* 33.166	77	>75% Grass cover, Good, HSG C/D
* 1,572.397	74	Woods, Good, HSG C/D
2,011.947	74	Weighted Average
2,011.947		Pervious Area

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Type III 24-hr 2-YR Rainfall=2.50"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.4	150	0.0367	0.09		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
3.0	447	0.2411	2.46		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
7.8	664	0.0813	1.43		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
4.4	251	0.0359	0.95		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
41.6	1,512	Total			

**Summary for Subcatchment Spaulding: Spaulding Lake WSHD**

Runoff = 93.35 cfs @ 12.61 hrs, Volume= 13.304 af, Depth> 0.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-YR Rainfall=2.50"

Area (ac)	CN	Description
0.055	89	Gravel roads, HSG C
0.385	74	>75% Grass cover, Good, HSG C
19.723	70	Woods, Good, HSG C
0.310	91	Gravel roads, HSG D
0.000	80	>75% Grass cover, Good, HSG D
6.644	77	Woods, Good, HSG D
* 2.906	90	Gravel roads, HSG C/D
* 11.253	77	>75% Grass cover, Good, HSG C/D
* 255.272	74	Woods, Good, HSG C/D
296.548	74	Weighted Average
296.548		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.3	135	0.0330	0.09		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
5.9	640	0.1313	1.81		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
4.4	464	0.1250	1.77		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
2.8	305	0.1280	1.79		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
38.4	1,544	Total			

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Type III 24-hr 10-YR Rainfall=3.80"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment Mattawamkeag:** Runoff Area=2,052.051 ac 0.00% Impervious Runoff Depth>1.30"  
Flow Length=3,850' Tc=69.9 min CN=74 Runoff=1,208.16 cfs 221.579 af

**Subcatchment Meduxnekeag:** Runoff Area=1,036.138 ac 0.00% Impervious Runoff Depth>1.32"  
Flow Length=746' Tc=34.0 min CN=74 Runoff=911.95 cfs 113.725 af

**Subcatchment Skitacook: Skitacook** Runoff Area=2,011.947 ac 0.00% Impervious Runoff Depth>1.31"  
Flow Length=1,512' Tc=41.6 min CN=74 Runoff=1,601.68 cfs 220.093 af

**Subcatchment Spaulding: Spaulding Lake** Runoff Area=296.548 ac 0.00% Impervious Runoff Depth>1.31"  
Flow Length=1,544' Tc=38.4 min CN=74 Runoff=245.77 cfs 32.486 af

**Total Runoff Area = 5,396.684 ac Runoff Volume = 587.882 af Average Runoff Depth = 1.31"**  
**100.00% Pervious = 5,396.684 ac 0.00% Impervious = 0.000 ac**

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Type III 24-hr 10-YR Rainfall=3.80"

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Page 9

**Summary for Subcatchment Mattawamkeag: Mattawamkeag River WSHD**

Runoff = 1,208.16 cfs @ 12.98 hrs, Volume= 221.579 af, Depth> 1.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-YR Rainfall=3.80"

Area (ac)	CN	Description
1.171	89	Gravel roads, HSG C
12.980	74	>75% Grass cover, Good, HSG C
164.731	70	Woods, Good, HSG C
1.687	91	Gravel roads, HSG D
8.921	80	>75% Grass cover, Good, HSG D
65.759	77	Woods, Good, HSG D
* 32.342	90	Gravel roads, HSG C/D
* 49.905	77	>75% Grass cover, Good, HSG C/D
* 1,714.555	74	Woods, Good, HSG C/D
2,052.051	74	Weighted Average
2,052.051		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	150	0.0333	0.09		<b>Sheet Flow, AB</b>
					Woods: Light underbrush n= 0.400 P2= 2.50"
3.3	180	0.0333	0.91		<b>Shallow Concentrated Flow, BC</b>
					Woodland Kv= 5.0 fps
10.5	800	0.0650	1.27		<b>Shallow Concentrated Flow, CD</b>
					Woodland Kv= 5.0 fps
17.9	1,770	0.1085	1.65		<b>Shallow Concentrated Flow, DE</b>
					Woodland Kv= 5.0 fps
9.9	520	0.0308	0.88		<b>Shallow Concentrated Flow, EF</b>
					Woodland Kv= 5.0 fps
0.9	430	0.0511	8.25	41.27	<b>Channel Flow, FG</b>
					Area= 5.0 sf Perim= 7.9' r= 0.63'
					n= 0.030 Earth, grassed & winding
69.9	3,850	Total			

**Summary for Subcatchment Meduxnekeag: Meduxnekeag Lake WSHD**

Runoff = 911.95 cfs @ 12.50 hrs, Volume= 113.725 af, Depth> 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-YR Rainfall=3.80"

**2898 Pre-Development**

Type III 24-hr 10-YR Rainfall=3.80"

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Area (ac)	CN	Description
0.000	89	Gravel roads, HSG C
0.000	74	>75% Grass cover, Good, HSG C
31.046	70	Woods, Good, HSG C
0.072	91	Gravel roads, HSG D
0.237	80	>75% Grass cover, Good, HSG D
19.173	77	Woods, Good, HSG D
* 9.642	90	Gravel roads, HSG C/D
* 30.602	77	>75% Grass cover, Good, HSG C/D
* 945.366	74	Woods, Good, HSG C/D
1,036.138	74	Weighted Average
1,036.138		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	16	0.2187	0.12		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
27.6	134	0.0261	0.08		<b>Sheet Flow, BC</b> Woods: Light underbrush n= 0.400 P2= 2.50"
0.8	30	0.0167	0.65		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
3.4	566	0.3148	2.81		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
34.0	746	Total			

**Summary for Subcatchment Skitacook: Skitacook Lake WSHD**

Runoff = 1,601.68 cfs @ 12.61 hrs, Volume= 220.093 af, Depth> 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-YR Rainfall=3.80"

Area (ac)	CN	Description
1.209	89	Gravel roads, HSG C
6.761	74	>75% Grass cover, Good, HSG C
174.927	70	Woods, Good, HSG C
0.944	91	Gravel roads, HSG D
4.970	80	>75% Grass cover, Good, HSG D
206.919	77	Woods, Good, HSG D
* 10.654	90	Gravel roads, HSG C/D
* 33.166	77	>75% Grass cover, Good, HSG C/D
* 1,572.397	74	Woods, Good, HSG C/D
2,011.947	74	Weighted Average
2,011.947		Pervious Area

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Type III 24-hr 10-YR Rainfall=3.80"

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Page 11

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.4	150	0.0367	0.09		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
3.0	447	0.2411	2.46		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
7.8	664	0.0813	1.43		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
4.4	251	0.0359	0.95		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
41.6	1,512	Total			

**Summary for Subcatchment Spaulding: Spaulding Lake WSHD**

Runoff = 245.77 cfs @ 12.56 hrs, Volume= 32.486 af, Depth> 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-YR Rainfall=3.80"

Area (ac)	CN	Description
0.055	89	Gravel roads, HSG C
0.385	74	>75% Grass cover, Good, HSG C
19.723	70	Woods, Good, HSG C
0.310	91	Gravel roads, HSG D
0.000	80	>75% Grass cover, Good, HSG D
6.644	77	Woods, Good, HSG D
* 2.906	90	Gravel roads, HSG C/D
* 11.253	77	>75% Grass cover, Good, HSG C/D
* 255.272	74	Woods, Good, HSG C/D
296.548	74	Weighted Average
296.548		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.3	135	0.0330	0.09		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
5.9	640	0.1313	1.81		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
4.4	464	0.1250	1.77		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
2.8	305	0.1280	1.79		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
38.4	1,544	Total			

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Type III 24-hr 25-YR Rainfall=4.40"

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Page 12

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment Mattawamkeag:** Runoff Area=2,052.051 ac 0.00% Impervious Runoff Depth>1.70"  
Flow Length=3,850' Tc=69.9 min CN=74 Runoff=1,605.32 cfs 291.411 af

**Subcatchment Meduxnekeag:** Runoff Area=1,036.138 ac 0.00% Impervious Runoff Depth>1.73"  
Flow Length=746' Tc=34.0 min CN=74 Runoff=1,208.57 cfs 149.420 af

**Subcatchment Skitacook: Skitacook** Runoff Area=2,011.947 ac 0.00% Impervious Runoff Depth>1.73"  
Flow Length=1,512' Tc=41.6 min CN=74 Runoff=2,123.03 cfs 289.231 af

**Subcatchment Spaulding: Spaulding Lake** Runoff Area=296.548 ac 0.00% Impervious Runoff Depth>1.73"  
Flow Length=1,544' Tc=38.4 min CN=74 Runoff=325.71 cfs 42.687 af

**Total Runoff Area = 5,396.684 ac Runoff Volume = 772.749 af Average Runoff Depth = 1.72"**  
**100.00% Pervious = 5,396.684 ac 0.00% Impervious = 0.000 ac**

**2898 Pre-Development**

Type III 24-hr 25-YR Rainfall=4.40"

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Page 13

**Summary for Subcatchment Mattawamkeag: Mattawamkeag River WSHD**

Runoff = 1,605.32 cfs @ 12.97 hrs, Volume= 291.411 af, Depth> 1.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-YR Rainfall=4.40"

Area (ac)	CN	Description
1.171	89	Gravel roads, HSG C
12.980	74	>75% Grass cover, Good, HSG C
164.731	70	Woods, Good, HSG C
1.687	91	Gravel roads, HSG D
8.921	80	>75% Grass cover, Good, HSG D
65.759	77	Woods, Good, HSG D
* 32.342	90	Gravel roads, HSG C/D
* 49.905	77	>75% Grass cover, Good, HSG C/D
* 1,714.555	74	Woods, Good, HSG C/D
2,052.051	74	Weighted Average
2,052.051		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	150	0.0333	0.09		<b>Sheet Flow, AB</b>
					Woods: Light underbrush n= 0.400 P2= 2.50"
3.3	180	0.0333	0.91		<b>Shallow Concentrated Flow, BC</b>
					Woodland Kv= 5.0 fps
10.5	800	0.0650	1.27		<b>Shallow Concentrated Flow, CD</b>
					Woodland Kv= 5.0 fps
17.9	1,770	0.1085	1.65		<b>Shallow Concentrated Flow, DE</b>
					Woodland Kv= 5.0 fps
9.9	520	0.0308	0.88		<b>Shallow Concentrated Flow, EF</b>
					Woodland Kv= 5.0 fps
0.9	430	0.0511	8.25	41.27	<b>Channel Flow, FG</b>
					Area= 5.0 sf Perim= 7.9' r= 0.63'
					n= 0.030 Earth, grassed & winding
69.9	3,850	Total			

**Summary for Subcatchment Meduxnekeag: Meduxnekeag Lake WSHD**

Runoff = 1,208.57 cfs @ 12.49 hrs, Volume= 149.420 af, Depth> 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-YR Rainfall=4.40"

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Type III 24-hr 25-YR Rainfall=4.40"

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Page 14

Area (ac)	CN	Description
0.000	89	Gravel roads, HSG C
0.000	74	>75% Grass cover, Good, HSG C
31.046	70	Woods, Good, HSG C
0.072	91	Gravel roads, HSG D
0.237	80	>75% Grass cover, Good, HSG D
19.173	77	Woods, Good, HSG D
* 9.642	90	Gravel roads, HSG C/D
* 30.602	77	>75% Grass cover, Good, HSG C/D
* 945.366	74	Woods, Good, HSG C/D
1,036.138	74	Weighted Average
1,036.138		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	16	0.2187	0.12		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
27.6	134	0.0261	0.08		<b>Sheet Flow, BC</b> Woods: Light underbrush n= 0.400 P2= 2.50"
0.8	30	0.0167	0.65		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
3.4	566	0.3148	2.81		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
34.0	746	Total			

**Summary for Subcatchment Skitacook: Skitacook Lake WSHD**

Runoff = 2,123.03 cfs @ 12.60 hrs, Volume= 289.231 af, Depth> 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-YR Rainfall=4.40"

Area (ac)	CN	Description
1.209	89	Gravel roads, HSG C
6.761	74	>75% Grass cover, Good, HSG C
174.927	70	Woods, Good, HSG C
0.944	91	Gravel roads, HSG D
4.970	80	>75% Grass cover, Good, HSG D
206.919	77	Woods, Good, HSG D
* 10.654	90	Gravel roads, HSG C/D
* 33.166	77	>75% Grass cover, Good, HSG C/D
* 1,572.397	74	Woods, Good, HSG C/D
2,011.947	74	Weighted Average
2,011.947		Pervious Area

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Type III 24-hr 25-YR Rainfall=4.40"

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Page 15

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.4	150	0.0367	0.09		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
3.0	447	0.2411	2.46		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
7.8	664	0.0813	1.43		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
4.4	251	0.0359	0.95		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
41.6	1,512	Total			

**Summary for Subcatchment Spaulding: Spaulding Lake WSHD**

Runoff = 325.71 cfs @ 12.55 hrs, Volume= 42.687 af, Depth> 1.73"

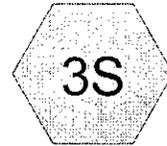
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-YR Rainfall=4.40"

Area (ac)	CN	Description
0.055	89	Gravel roads, HSG C
0.385	74	>75% Grass cover, Good, HSG C
19.723	70	Woods, Good, HSG C
0.310	91	Gravel roads, HSG D
0.000	80	>75% Grass cover, Good, HSG D
6.644	77	Woods, Good, HSG D
* 2.906	90	Gravel roads, HSG C/D
* 11.253	77	>75% Grass cover, Good, HSG C/D
* 255.272	74	Woods, Good, HSG C/D
296.548	74	Weighted Average
296.548		Pervious Area

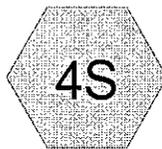
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.3	135	0.0330	0.09		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
5.9	640	0.1313	1.81		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
4.4	464	0.1250	1.77		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
2.8	305	0.1280	1.79		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
38.4	1,544	Total			



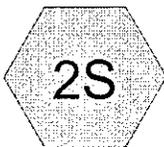
Spaulding Lake WSHD



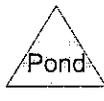
Meduxnekeag Lake  
WSHD



Skitacook Lake WSHD



Mattawamkeag River  
WSHD



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Page 2

### Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
390.420	70	Woods, Good, HSG C (2S,3S,4S,5S)
19.383	74	>75% Grass cover, Good, HSG C (2S,4S,5S)
4,450.275	74	Woods, Good, HSG C/D (2S,3S,4S,5S)
109.967	77	>75% Grass cover, Good, HSG C/D (2S,3S,4S,5S)
298.403	77	Woods, Good, HSG D (2S,3S,4S,5S)
14.036	80	>75% Grass cover, Good, HSG D (2S,3S,4S)
3.186	89	Gravel roads, HSG C (2S,4S,5S)
107.817	90	Gravel roads, HSG C/D (2S,3S,4S,5S)
3.197	91	Gravel roads, HSG D (2S,3S,4S,5S)
<b>5,396.684</b>		<b>TOTAL AREA</b>

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Page 3

### Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
5,081.048	HSG C	2S, 3S, 4S, 5S
315.636	HSG D	2S, 3S, 4S, 5S
0.000	Other	
<b>5,396.684</b>		<b>TOTAL AREA</b>

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Type III 24-hr 2-YR Rainfall=2.50"

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Page 4

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 2S: Mattawamkeag River** Runoff Area=2,052.052 ac 0.00% Impervious Runoff Depth>0.53"  
Flow Length=3,850' Tc=69.9 min CN=74 Runoff=454.63 cfs 90.429 af

**Subcatchment 3S: Meduxnekeag Lake** Runoff Area=1,036.137 ac 0.00% Impervious Runoff Depth>0.54"  
Flow Length=746' Tc=34.0 min CN=74 Runoff=345.89 cfs 46.594 af

**Subcatchment 4S: Skitacook Lake** Runoff Area=2,011.947 ac 0.00% Impervious Runoff Depth>0.54"  
Flow Length=1,512' Tc=41.6 min CN=74 Runoff=607.21 cfs 90.103 af

**Subcatchment 5S: Spaulding Lake WSHD** Runoff Area=296.548 ac 0.00% Impervious Runoff Depth>0.54"  
Flow Length=1,544' Tc=38.4 min CN=74 Runoff=93.35 cfs 13.304 af

**Total Runoff Area = 5,396.684 ac Runoff Volume = 240.429 af Average Runoff Depth = 0.53"**  
**100.00% Pervious = 5,396.684 ac 0.00% Impervious = 0.000 ac**

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Type III 24-hr 2-YR Rainfall=2.50"

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Page 5

**Summary for Subcatchment 2S: Mattawamkeag River WSHD**

Runoff = 454.63 cfs @ 13.05 hrs, Volume= 90.429 af, Depth> 0.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-YR Rainfall=2.50"

Area (ac)	CN	Description
1.922	89	Gravel roads, HSG C
12.237	74	>75% Grass cover, Good, HSG C
164.724	70	Woods, Good, HSG C
1.871	91	Gravel roads, HSG D
8.829	80	>75% Grass cover, Good, HSG D
65.667	77	Woods, Good, HSG D
* 49.793	90	Gravel roads, HSG C/D
* 49.281	77	>75% Grass cover, Good, HSG C/D
* 1,697.728	74	Woods, Good, HSG C/D
2,052.052	74	Weighted Average
2,052.052		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	150	0.0333	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.50"
3.3	180	0.0333	0.91		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
10.5	800	0.0650	1.27		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
17.9	1,770	0.1085	1.65		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
9.9	520	0.0308	0.88		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.9	430	0.0511	8.25	41.27	<b>Channel Flow,</b> Area= 5.0 sf Perim= 7.9' r= 0.63' n= 0.030 Earth, grassed & winding
69.9	3,850	Total			

**Summary for Subcatchment 3S: Meduxnekeag Lake WSHD**

Runoff = 345.89 cfs @ 12.54 hrs, Volume= 46.594 af, Depth> 0.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-YR Rainfall=2.50"

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Type III 24-hr 2-YR Rainfall=2.50"

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Page 6

Area (ac)	CN	Description
0.000	89	Gravel roads, HSG C
0.000	74	>75% Grass cover, Good, HSG C
31.046	70	Woods, Good, HSG C
0.072	91	Gravel roads, HSG D
0.237	80	>75% Grass cover, Good, HSG D
19.173	77	Woods, Good, HSG D
* 19.597	90	Gravel roads, HSG C/D
* 30.483	77	>75% Grass cover, Good, HSG C/D
* 935.529	74	Woods, Good, HSG C/D
1,036.137	74	Weighted Average
1,036.137		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	16	0.2187	0.12		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
27.6	134	0.0261	0.08		<b>Sheet Flow, BC</b> Woods: Light underbrush n= 0.400 P2= 2.50"
0.8	30	0.0167	0.65		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
3.4	566	0.3148	2.81		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
34.0	746	Total			

**Summary for Subcatchment 4S: Skitacook Lake WSHD**

Runoff = 607.21 cfs @ 12.65 hrs, Volume= 90.103 af, Depth> 0.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-YR Rainfall=2.50"

Area (ac)	CN	Description
1.209	89	Gravel roads, HSG C
6.761	74	>75% Grass cover, Good, HSG C
174.927	70	Woods, Good, HSG C
0.944	91	Gravel roads, HSG D
4.970	80	>75% Grass cover, Good, HSG D
206.919	77	Woods, Good, HSG D
* 31.930	90	Gravel roads, HSG C/D
* 19.189	77	>75% Grass cover, Good, HSG C/D
* 1,565.098	74	Woods, Good, HSG C/D
2,011.947	74	Weighted Average
2,011.947		Pervious Area

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Type III 24-hr 2-YR Rainfall=2.50"

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Page 7

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.4	150	0.0367	0.09		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
3.0	447	0.2411	2.46		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
7.8	664	0.0813	1.43		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
4.4	251	0.0359	0.95		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
41.6	1,512	Total			

**Summary for Subcatchment 5S: Spaulding Lake WSHD**

Runoff = 93.35 cfs @ 12.61 hrs, Volume= 13.304 af, Depth> 0.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-YR Rainfall=2.50"

Area (ac)	CN	Description
0.055	89	Gravel roads, HSG C
0.385	74	>75% Grass cover, Good, HSG C
19.723	70	Woods, Good, HSG C
0.310	91	Gravel roads, HSG D
0.000	80	>75% Grass cover, Good, HSG D
6.644	77	Woods, Good, HSG D
* 6.497	90	Gravel roads, HSG C/D
* 11.014	77	>75% Grass cover, Good, HSG C/D
* 251.920	74	Woods, Good, HSG C/D
296.548	74	Weighted Average
296.548		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.3	135	0.0330	0.09		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
5.9	640	0.1313	1.81		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
4.4	464	0.1250	1.77		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
2.8	305	0.1280	1.79		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
38.4	1,544	Total			

**2898 Post-Development**

Type III 24-hr 10-YR Rainfall=3.80"

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Page 8

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 2S: Mattawamkeag River** Runoff Area=2,052.052 ac 0.00% Impervious Runoff Depth>1.30"  
Flow Length=3,850' Tc=69.9 min CN=74 Runoff=1,208.16 cfs 221.579 af

**Subcatchment 3S: Meduxnekeag Lake** Runoff Area=1,036.137 ac 0.00% Impervious Runoff Depth>1.32"  
Flow Length=746' Tc=34.0 min CN=74 Runoff=911.95 cfs 113.725 af

**Subcatchment 4S: Skitacook Lake** Runoff Area=2,011.947 ac 0.00% Impervious Runoff Depth>1.31"  
Flow Length=1,512' Tc=41.6 min CN=74 Runoff=1,601.68 cfs 220.093 af

**Subcatchment 5S: Spaulding Lake WSHD** Runoff Area=296.548 ac 0.00% Impervious Runoff Depth>1.31"  
Flow Length=1,544' Tc=38.4 min CN=74 Runoff=245.77 cfs 32.486 af

**Total Runoff Area = 5,396.684 ac Runoff Volume = 587.882 af Average Runoff Depth = 1.31"**  
**100.00% Pervious = 5,396.684 ac 0.00% Impervious = 0.000 ac**

**2898 Post-Development**

Type III 24-hr 10-YR Rainfall=3.80"

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Page 9

**Summary for Subcatchment 2S: Mattawamkeag River WSHD**

Runoff = 1,208.16 cfs @ 12.98 hrs, Volume= 221.579 af, Depth> 1.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-YR Rainfall=3.80"

Area (ac)	CN	Description
1.922	89	Gravel roads, HSG C
12.237	74	>75% Grass cover, Good, HSG C
164.724	70	Woods, Good, HSG C
1.871	91	Gravel roads, HSG D
8.829	80	>75% Grass cover, Good, HSG D
65.667	77	Woods, Good, HSG D
* 49.793	90	Gravel roads, HSG C/D
* 49.281	77	>75% Grass cover, Good, HSG C/D
* 1,697.728	74	Woods, Good, HSG C/D
2,052.052	74	Weighted Average
2,052.052		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	150	0.0333	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.50"
3.3	180	0.0333	0.91		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
10.5	800	0.0650	1.27		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
17.9	1,770	0.1085	1.65		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
9.9	520	0.0308	0.88		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.9	430	0.0511	8.25	41.27	<b>Channel Flow,</b> Area= 5.0 sf Perim= 7.9' r= 0.63' n= 0.030 Earth, grassed & winding
69.9	3,850	Total			

**Summary for Subcatchment 3S: Meduxnekeag Lake WSHD**

Runoff = 911.95 cfs @ 12.50 hrs, Volume= 113.725 af, Depth> 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-YR Rainfall=3.80"

**2898 Post-Development**

Type III 24-hr 10-YR Rainfall=3.80"

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Page 10

Area (ac)	CN	Description
0.000	89	Gravel roads, HSG C
0.000	74	>75% Grass cover, Good, HSG C
31.046	70	Woods, Good, HSG C
0.072	91	Gravel roads, HSG D
0.237	80	>75% Grass cover, Good, HSG D
19.173	77	Woods, Good, HSG D
* 19.597	90	Gravel roads, HSG C/D
* 30.483	77	>75% Grass cover, Good, HSG C/D
* 935.529	74	Woods, Good, HSG C/D
1,036.137	74	Weighted Average
1,036.137		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	16	0.2187	0.12		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
27.6	134	0.0261	0.08		<b>Sheet Flow, BC</b> Woods: Light underbrush n= 0.400 P2= 2.50"
0.8	30	0.0167	0.65		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
3.4	566	0.3148	2.81		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
34.0	746	Total			

**Summary for Subcatchment 4S: Skitacook Lake WSHD**

Runoff = 1,601.68 cfs @ 12.61 hrs, Volume= 220.093 af, Depth> 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-YR Rainfall=3.80"

Area (ac)	CN	Description
1.209	89	Gravel roads, HSG C
6.761	74	>75% Grass cover, Good, HSG C
174.927	70	Woods, Good, HSG C
0.944	91	Gravel roads, HSG D
4.970	80	>75% Grass cover, Good, HSG D
206.919	77	Woods, Good, HSG D
* 31.930	90	Gravel roads, HSG C/D
* 19.189	77	>75% Grass cover, Good, HSG C/D
* 1,565.098	74	Woods, Good, HSG C/D
2,011.947	74	Weighted Average
2,011.947		Pervious Area

**2898 Post-Development**

Type III 24-hr 10-YR Rainfall=3.80"

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Page 11

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.4	150	0.0367	0.09		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
3.0	447	0.2411	2.46		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
7.8	664	0.0813	1.43		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
4.4	251	0.0359	0.95		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
41.6	1,512	Total			

**Summary for Subcatchment 5S: Spaulding Lake WSHD**

Runoff = 245.77 cfs @ 12.56 hrs, Volume= 32.486 af, Depth> 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-YR Rainfall=3.80"

Area (ac)	CN	Description
0.055	89	Gravel roads, HSG C
0.385	74	>75% Grass cover, Good, HSG C
19.723	70	Woods, Good, HSG C
0.310	91	Gravel roads, HSG D
0.000	80	>75% Grass cover, Good, HSG D
6.644	77	Woods, Good, HSG D
* 6.497	90	Gravel roads, HSG C/D
* 11.014	77	>75% Grass cover, Good, HSG C/D
* 251.920	74	Woods, Good, HSG C/D
296.548	74	Weighted Average
296.548		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.3	135	0.0330	0.09		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
5.9	640	0.1313	1.81		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
4.4	464	0.1250	1.77		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
2.8	305	0.1280	1.79		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
38.4	1,544	Total			

**2898 Post-Development**

Type III 24-hr 25-YR Rainfall=4.40"

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Page 12

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 2S: Mattawamkeag River** Runoff Area=2,052.052 ac 0.00% Impervious Runoff Depth>1.70"  
Flow Length=3,850' Tc=69.9 min CN=74 Runoff=1,605.32 cfs 291.411 af

**Subcatchment 3S: Meduxnekeag Lake** Runoff Area=1,036.137 ac 0.00% Impervious Runoff Depth>1.73"  
Flow Length=746' Tc=34.0 min CN=74 Runoff=1,208.57 cfs 149.420 af

**Subcatchment 4S: Skitacook Lake** Runoff Area=2,011.947 ac 0.00% Impervious Runoff Depth>1.73"  
Flow Length=1,512' Tc=41.6 min CN=74 Runoff=2,123.03 cfs 289.231 af

**Subcatchment 5S: Spaulding Lake WSHD** Runoff Area=296.548 ac 0.00% Impervious Runoff Depth>1.73"  
Flow Length=1,544' Tc=38.4 min CN=74 Runoff=325.71 cfs 42.687 af

**Total Runoff Area = 5,396.684 ac Runoff Volume = 772.749 af Average Runoff Depth = 1.72"**  
**100.00% Pervious = 5,396.684 ac 0.00% Impervious = 0.000 ac**

**2898 Post-Development**

Type III 24-hr 25-YR Rainfall=4.40"

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Page 13

**Summary for Subcatchment 2S: Mattawamkeag River WSHD**

Runoff = 1,605.32 cfs @ 12.97 hrs, Volume= 291.411 af, Depth> 1.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-YR Rainfall=4.40"

Area (ac)	CN	Description
1.922	89	Gravel roads, HSG C
12.237	74	>75% Grass cover, Good, HSG C
164.724	70	Woods, Good, HSG C
1.871	91	Gravel roads, HSG D
8.829	80	>75% Grass cover, Good, HSG D
65.667	77	Woods, Good, HSG D
* 49.793	90	Gravel roads, HSG C/D
* 49.281	77	>75% Grass cover, Good, HSG C/D
* 1,697.728	74	Woods, Good, HSG C/D
2,052.052	74	Weighted Average
2,052.052		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	150	0.0333	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.50"
3.3	180	0.0333	0.91		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
10.5	800	0.0650	1.27		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
17.9	1,770	0.1085	1.65		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
9.9	520	0.0308	0.88		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.9	430	0.0511	8.25	41.27	<b>Channel Flow,</b> Area= 5.0 sf Perim= 7.9' r= 0.63' n= 0.030 Earth, grassed & winding
69.9	3,850	Total			

**Summary for Subcatchment 3S: Meduxnekeag Lake WSHD**

Runoff = 1,208.57 cfs @ 12.49 hrs, Volume= 149.420 af, Depth> 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-YR Rainfall=4.40"

**2898 Post-Development**

Type III 24-hr 25-YR Rainfall=4.40"

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Page 14

Area (ac)	CN	Description
0.000	89	Gravel roads, HSG C
0.000	74	>75% Grass cover, Good, HSG C
31.046	70	Woods, Good, HSG C
0.072	91	Gravel roads, HSG D
0.237	80	>75% Grass cover, Good, HSG D
19.173	77	Woods, Good, HSG D
* 19.597	90	Gravel roads, HSG C/D
* 30.483	77	>75% Grass cover, Good, HSG C/D
* 935.529	74	Woods, Good, HSG C/D
1,036.137	74	Weighted Average
1,036.137		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	16	0.2187	0.12		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
27.6	134	0.0261	0.08		<b>Sheet Flow, BC</b> Woods: Light underbrush n= 0.400 P2= 2.50"
0.8	30	0.0167	0.65		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
3.4	566	0.3148	2.81		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
34.0	746	Total			

**Summary for Subcatchment 4S: Skitacook Lake WSHD**

Runoff = 2,123.03 cfs @ 12.60 hrs, Volume= 289.231 af, Depth> 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-YR Rainfall=4.40"

Area (ac)	CN	Description
1.209	89	Gravel roads, HSG C
6.761	74	>75% Grass cover, Good, HSG C
174.927	70	Woods, Good, HSG C
0.944	91	Gravel roads, HSG D
4.970	80	>75% Grass cover, Good, HSG D
206.919	77	Woods, Good, HSG D
* 31.930	90	Gravel roads, HSG C/D
* 19.189	77	>75% Grass cover, Good, HSG C/D
* 1,565.098	74	Woods, Good, HSG C/D
2,011.947	74	Weighted Average
2,011.947		Pervious Area

**2898 Post-Development**

Type III 24-hr 25-YR Rainfall=4.40"

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Page 15

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.4	150	0.0367	0.09		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
3.0	447	0.2411	2.46		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
7.8	664	0.0813	1.43		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
4.4	251	0.0359	0.95		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
41.6	1,512	Total			

**Summary for Subcatchment 5S: Spaulding Lake WSHD**

Runoff = 325.71 cfs @ 12.55 hrs, Volume= 42.687 af, Depth> 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-YR Rainfall=4.40"

Area (ac)	CN	Description
0.055	89	Gravel roads, HSG C
0.385	74	>75% Grass cover, Good, HSG C
19.723	70	Woods, Good, HSG C
0.310	91	Gravel roads, HSG D
0.000	80	>75% Grass cover, Good, HSG D
6.644	77	Woods, Good, HSG D
* 6.497	90	Gravel roads, HSG C/D
* 11.014	77	>75% Grass cover, Good, HSG C/D
* 251.920	74	Woods, Good, HSG C/D
296.548	74	Weighted Average
296.548		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.3	135	0.0330	0.09		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 2.50"
5.9	640	0.1313	1.81		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
4.4	464	0.1250	1.77		<b>Shallow Concentrated Flow, CD</b> Woodland Kv= 5.0 fps
2.8	305	0.1280	1.79		<b>Shallow Concentrated Flow, DE</b> Woodland Kv= 5.0 fps
38.4	1,544	Total			

**APPENDIX 12-3**

**Culvert Schedule**

**Evergreen Wind Power  
Oakfield, Maine  
CULVERT SCHEDULE - SOUTH**

Culvert ID	Station Location	Diameter (inches)	Length (ft)	Invert In	Invert Out	Runoff Coefficient	Rainfall Intensity (25 yr) (in/hr)	Area (acres)	Q <sub>25</sub> (cfs)
C-S1	1+48	18"	60'	661.5	661.0	0.30	5.90	4.42	7.79
C-S2	2+00 Right	18"	55'	666.0	664.0	0.29	5.90	3.82	6.54
C-S3	59+14	15"	80'	944.0	942.0	0.35	5.90	0.76	1.55
C-S4	61+15	18"	60'	938.0	936.0	0.21	5.90	5.91	7.15
C-S5	64+60	12"	50'	930.0	929.5	0.20	5.90	2.17	2.57
C-S6	64+75 Right	12"	40'	929.4	929.0	0.28	5.90	3.24	5.32
C-S7	78+14	12"	50'	939	938.0	0.22	5.90	1.32	1.73
C-S8	79+50	12"	70'	941.0	940.0	0.20	5.90	0.75	0.88
C-S9	123+40	15"	70'	952.0	951.0	0.33	5.90	2.08	4.01
C-S10	128+85	48"	60'	913.0	911.5				
C-S11	139+45	15"	110'	949.55	949.0	0.21	5.90	1.90	2.34
C-S12	140+60	18"	160'	951.0	931.0	0.20	5.90	3.23	3.81
C-S13	143+85	12"	50'	964.0	963.5	0.20	5.90	2.25	2.65
C-S14	148+00	15"	50'	993.0	992.0	0.20	5.90	1.64	1.93
C-S15	171+50	18"	90'	1038.0	1032.0	0.20	5.90	2.82	3.33
C-S16	232+35	15"	60'	959.75	959.25	0.20	5.90	1.21	1.42
C-S17	239+55	15"	60'	985.00	984.00				
C-S18	245+78	15"	60'	972.0	971.0	0.20	5.90	1.28	1.51
C-S19	246+80	18"	60'	976.0	975.0	0.20	5.90	9.70	11.44
C-S20	250+71	15"	50'	1018.0	1016.0	0.20	5.90	5.98	7.05
C-S21	254+95	15"	50'	1059.0	1058.0	0.20	5.90	1.32	1.55

**Evergreen Wind Power  
Oakfield, Maine  
CULVERT SCHEDULE - SOUTH**

Culvert ID	Station Location	Diameter (inches)	Length (ft)	Invert In	Invert Out	Runoff Coefficient	Rainfall Intensity (in/hr)	Area (acres)	Q <sub>25</sub> (cfs)
C-S22	12+20	12"	55'	726.00	725.80	0.20	5.90	0.81	0.95
C-S23	16+10	12"	50'	712.00	711.00	0.20	5.90	3.08	3.64
C-S24	20+40	36"	40'	701.90	701.50	0.21	0.00	241.53	21.55
C-S25	21+25	18"	40'	703.50	703.30	0.20	5.90	8.18	9.65
C-S26	23+00	12"	50'	705.00	704.80	0.20	5.90	4.49	5.29
C-S27	25+90	18"	50'	707.00	706.80	0.20	3.90	16.83	13.12
C-S28	35+60	12"	50'	723.50	723.00	0.20	5.90	10.07	11.88
C-S29	37+50	18"	40'	732.00	731.80	0.20	5.90	7.75	9.15
C-S30	40+50	15"	40'	738.20	738.00	0.20	5.90	5.53	6.52
C-S31	44+25	15"	50'	742.00	741.00	0.20	5.90	5.87	6.92
C-S32	49+20	18"	60'	751.50	747.00	0.20	5.90	14.38	16.96
C-S33	52+50	12"	40'	758.00	756.00	0.20	5.90	5.19	6.12
C-S34	59+80	18"	40'	756.00	754.00	0.20	5.90	10.94	12.91
C-S35	63+50	12"	50'	770.00	769.80	0.20	5.90	4.34	5.12
C-S36	67+50	12"	40'	779.00	777.00	0.20	5.90	1.23	1.45
C-S37	79+70	12"	65'	718.00	717.00	0.20	5.90	6.64	7.92
C-S38	80+80	18"	40'	717.60	717.40	0.20	4.60	10.02	9.22
C-S39	84+50	12"	50'	736.00	731.00	0.20	5.90	3.05	3.59
C-S40	88+50	12"	45'	735.20	735.00	0.20	5.90	1.30	1.53
C-S41	91+50	12"	50'	733.30	733.00	0.20	5.90	2.18	2.57
C-S42	94+50	12"	40'	731.00	730.50	0.20	5.90	3.00	3.54
C-S43	96+90	12"	50'	728.00	727.80	0.20	5.90	1.90	2.25
C-S44	99+00	18"	40'	726.00	725.00	0.20	5.90	16.41	19.36
C-S45	102+00	18"	40'	734.70	734.50	0.20	5.90	7.51	8.87
C-S46	105+00	18"	60'	746.50	746.00	0.20	5.90	6.81	8.03
C-S47	108+50	12"	50'	748.30	748.00	0.21	5.90	2.99	3.70
C-S48	111+70	24"	70'	746.00	745.80	0.21	3.90	24.34	19.66
C-S49	114+50	15"	40'	750.50	750.00	0.20	5.90	5.86	7.07
C-S50	117+20	18"	70'	756.00	755.80	0.20	4.60	12.36	11.57
C-S51	122+30	24"	40'	767.00	766.80	0.20	3.90	24.83	19.56
C-S52	125+50	12"	40'	781.00	780.00	0.20	5.90	2.66	3.14
C-S53	132+10	12"	40'	797.50	797.00	0.20	5.90	3.38	3.99
C-S54	132+70	12"	40'	796.50	796.20	0.20	5.90	0.20	0.24
C-S55A	135+10	15"	50'	793.00	792.80	0.20	5.90	7.65	9.03
C-S55B	135+10	15"	110'	792.70	792.00	0.20	5.90	7.65	9.03
C-S56	138+50	12"	50'	803.00	800.00	0.20	5.90	8.31	9.81
C-S57	141+50	12"	80'	810.00	802.00	0.20	5.90	3.07	3.63
C-S58	146+00	12"	70'	814.00	813.80	0.20	5.90	1.94	2.29
C-S59	149+10	18"	110'	831.50	831.20	0.20	5.90	12.29	14.76
C-S60	153+00	12"	55'	831.90	830.00	0.25	5.90	1.28	1.88
C-S61	156+00	12"	50'	829.00	828.00	0.23	5.90	2.28	3.17
C-S62	158+50	12"	60'	828.00	828.00	0.22	5.90	2.94	3.85
C-S63	161+40	24"	60'	825.00	823.00	0.22	3.90	20.89	17.90
C-S64	164+00	18"	50'	829.00	827.00	0.20	5.90	11.91	14.05
C-S65	167+00	12"	50'	845.00	843.00	0.20	5.90	0.68	0.81
C-S66	170+00	12"	45'	843.00	842.00	0.20	5.90	4.19	4.95
C-S67	173+00	12"	50'	832.00	831.00	0.20	5.90	5.63	6.65
C-S68	175+40	12"	50'	827.00	826.80	0.20	5.90	22.09	26.06
C-S69	189+50	12"	80'	915.00	905.00	0.26	5.90	2.45	3.82
C-S70	194+40	12"	65'	913.00	909.00	0.20	5.90	1.24	1.46
C-S71	197+50	12"	60'	898.00	892.00	0.20	5.90	0.79	0.93
C-S72	200+00	12"	50'	884.00	883.00	0.20	5.90	0.83	0.98
C-S73	203+00	18"	50'	866.00	865.00	0.20	5.90	9.65	11.39
C-S74	214+80	18"	75'	827.00	824.00	0.20	5.90	10.47	12.35
C-S75	216+40	12"	70'	823.00	822.50	0.20	5.90	4.71	5.56
C-S76	217+30	18"	60'	823.00	820.50	0.20	5.90	9.43	11.13
C-S77	227+30	18"	65'	821.00	820.00	0.20	5.90	9.51	11.22
C-S78	229+90	12"	85'	836.50	830.00	0.20	5.90	3.68	4.34
C-S79	231+50	12"	70'	858.00	857.60	0.39	5.90	0.53	1.22
C-S80	238+00	12"	50'	894.00	893.00	0.20	5.90	0.49	0.58
C-S81	240+50	12"	60'	884.00	883.80	0.20	5.90	1.78	2.10
C-S82	244+10	12"	90'	863.00	857.00	0.20	5.90	5.72	6.75
C-S83	323+30	12"	55'	983.00	981.00	0.21	5.90	4.32	5.42
C-S84	327+10	12"	75'	996.00	995.80	0.20	5.90	1.93	2.28
C-S85	420+80	12"	90'	1001.00	989.00	0.20	5.90	0.88	1.04
C-S86	424+00	12"	50'	990.50	990.00	0.20	5.90	0.39	0.46
C-S87	427+00	12"	50'	963.00	962.50	0.20	5.90	1.30	1.53
C-S88	429+00	12"	50'	945.00	944.00	0.20	5.90	1.09	1.29
C-S89	434+00	12"	50'	900.00	897.00	0.20	5.90	1.66	1.95
C-S90	436+70	12"	60'	889.20	888.00	0.20	5.90	2.37	2.80
C-S91	502+00	12"	85'	873.00	865.00	0.21	5.90	1.97	2.45
C-S92	603+50	12"	100'	796.00	794.00	0.21	5.90	9.50	11.61
C-S93	604+80	12"	45'	792.00	791.80	0.20	5.90	2.81	3.31
C-S94	610+00	12"	65'	777.50	777.00	0.20	5.90	0.93	1.09
C-S95	613+00	12"	50'	755.00	752.00	0.20	5.90	1.66	1.95
C-S96	621+60	48"	85'	704.00	699.00	0.20	5.90	113.06	152.85
C-S97	625+00	18"	65'	717.00	716.80	0.20	5.90	11.62	13.71
C-S98	628+00	12"	45'	733.20	733.00	0.20	5.90	5.47	6.46
C-S99	631+00	12"	45'	738.00	737.00	0.20	5.90	3.15	3.72
C-S100	633+70	12"	70'	740.00	739.80	0.20	5.90	0.25	0.29

**Evergreen Wind Power  
Oakfield, Maine  
CULVERT SCHEDULE - NORTH**

Culvert ID	Station Location	Diameter		Invert In	Invert Out	Runoff	Rainfall Intensity	Area	Q <sub>25</sub> (cfs)
		(inches)	Length (ft)			Coefficient	(in/hr)	(acres)	
C-N1	50+28	12"	40'	924.5	924.3	0.20	5.90	3.62	4.27
C-N2	51+96	12"	50'	939.0	938.8	0.20	5.90	4.44	5.24
C-N3	55+07	12"	50'	966.0	962.0	0.20	5.90	3.00	3.54
C-N4	58+22	12"	40'	992.0	991.8	0.20	5.90	2.24	2.64
C-N5	61+21	12"	50'	1006.0	1005.0	0.20	5.90	3.00	3.54
C-N6	64+25	12"	50'	1012.0	1010.0	0.20	5.90	3.53	4.17
C-N7	67+09	12"	50'	1034.0	1032.0	0.20	5.90	0.91	1.07
C-N8	70+77	12"	70'	1063.0	1062.7	0.57	5.90	1.67	5.61
C-N9	73+08	12"	70'	1070.0	1069.7	0.38	5.90	2.18	4.84
C-N10	800+57	24"	80'	1066.0	1064.5	0.32	4.60	10.20	15.08
C-N10A	802+89	15"	60'	1076.7	1075.0	0.20	4.60	8.10	7.45
C-N10B	805+88	12"	60'	1095.0	1092.0	0.20	5.90	0.90	1.06
C-N10C	808+99	12"	60'	1123.0	1120.0	0.25	5.90	2.55	3.84
C-N10D	811+96	12"	60'	1156.0	1155.0	0.20	5.90	1.70	2.01
C-N10E	815+03	12"	60'	1192.0	1191.0	0.20	5.90	0.45	0.53
C-N10F	818+17	12"	60'	1234.0	1229.0	0.90	5.90	0.25	1.33
C-N10G	88+60	12"	60'	1178.0	1175.0	0.20	5.90	0.82	0.97
C-N10H	93+13	12"	50'	1166.0	1164.0	0.20	5.90	1.63	1.92
C-N10I	96+13	12"	60'	1146.0	1144.0	0.33	5.90	2.80	5.37
C-N10J	99+65	15"	60'	1127.0	1126.0	0.25	4.60	7.20	8.23
C-N10K	165+82	12"	70'	1141.0	1136.0	0.51	5.90	0.90	2.71
C-N11	130+80	18"	100'	1144.0	1140.0	0.20	5.90	7.44	8.84
C-N12	135+25	15"	60'	1184.0	1182.0	0.20	5.90	2.37	2.82
C-N13	138+50	15"	50'	1200.5	1200.0	0.21	5.90	2.02	2.47
C-N14	141+00	15"	50'	1212.0	1211.0	0.21	5.90	3.98	4.97
C-N15	146+00	15"	50'	1213.0	1210.0	0.20	5.90	3.18	3.76
C-N16	149+00	15"	50'	1204.0	1202.0	0.20	5.90	9.28	11.07
C-N17	187+50	18"	100'	1088.0	1080.0	0.20	5.90	3.66	4.32
C-N18	304+50	15"	50'	1168.0	1168.0	0.20	5.90	1.23	1.45
C-N19	306+85	15"	50'	1198.0	1196.0	0.20	5.90	1.46	1.73
C-N20	313+00	15"	50'	1208.0	1206.0	0.22	4.60	8.68	11.55
C-N21	322+00	24"	50'	1202.2	1202.0	0.22	4.60	16.60	18.60
C-N22	328+00	18"	50'	1210.2	1210.0	0.22	4.60	12.88	13.02
C-N23	332+90	15"	50'	1251.0	1248.0	0.24	5.90	8.91	12.99
C-N24	339+60	12"	50'	1311.0	1310.5	0.42	5.90	0.31	0.78
C-N25	353+40	12"	50'	1327.0	1326.0	0.20	5.90	1.16	1.37
C-N26	357+40	15"	50'	1330.0	1330.0	0.20	5.90	2.44	2.88
C-N27A	403+00	12"	50'	1324.1	1323.9	0.20	5.90	0.47	0.56
C-N27B	403+00	12"	90'	1323.9	1323.5	0.20	5.90	0.47	0.56
C-N28	423+75	12"	60'	1415.0	1414.0	0.21	5.90	0.54	0.67
C-N29	425+70	12"	60'	1403.0	1402.0	0.20	5.90	0.36	0.42
C-N30	427+90	12"	60'	1387.0	1384.0	0.20	5.90	0.76	0.89
C-N31	429+80	15"	60'	1365.0	1362.0	0.20	5.90	1.34	1.58
C-N32	431+90	12"	90'	1347.0	1344.0	0.20	5.90	0.95	1.12
C-N33	504+00	12"	50'	1313.0	1312.8	0.24	5.90	0.92	1.32
C-N34	508+10	18"	60'	1301.0	1300.0	0.22	5.90	5.92	11.72
C-N35	601+65	12"	140'	1356.0	1350.0	0.20	5.90	3.31	3.90

**Evergreen Wind Power  
Oakfield, Maine  
CULVERT SCHEDULE - EAST**

Culvert ID	Station	Diameter (inches)	Length (ft)	Invert In	Invert Out	Runoff	Rainfall Intensity	Area (acres)	Q <sub>25</sub> (cfs)
	Location					Coefficient	(in/hr)		
C-E1	14+00	24"	50'	772.00	771.50	0.20	5.90	16.25	19.17
C-E2	16+00	12"	50'	778.00	777.00	0.20	5.90	0.08	0.09
C-E3	18+00	12"	50'	787.00	786.00	0.20	5.90	0.10	0.12
C-E4	20+00	12"	50'	797.00	796.00	0.20	5.90	5.12	6.04
C-E5	22+00	18"	50'	807.00	806.00	0.20	5.90	9.54	11.25
C-E6	24+00	12"	50'	817.00	816.00	0.20	5.90	1.30	1.53
C-E7	27+00	15"	50'	839.00	838.00	0.20	5.90	0.17	6.45
C-E8	30+50	15"	40'	869.00	868.00	0.20	5.90	5.30	6.25
C-E9	33+00	15"	80'	897.00	893.00	0.20	5.90	4.73	5.58
C-E10	39+25	12"	60'	955.00	951.00	0.20	5.90	1.65	1.94
C-E11	41+00	18"	60'	975.00	972.00	0.20	5.90	10.27	12.12
C-E12	46+50	12"	50'	1032.00	1031.00	0.20	5.90	3.24	3.82
C-E13	48+50	12"	50'	1048.00	1046.00	0.20	5.90	2.17	2.57
C-E14	50+50	12"	50'	1053.00	1050.00	0.20	5.90	2.77	3.27
C-E15	53+00	12"	50'	1059.00	1053.00	0.20	5.90	1.98	2.33
C-E16	56+00	18"	90'	1061.00	1054.00	0.20	5.90	10.28	12.13
C-E17	62+00	18"	70'	1061.00	1057.00	0.20	5.90	7.66	9.04
C-E18	64+00	12"	50'	1067.00	1066.00	0.20	5.90	2.10	2.47
C-E19	66+00	12"	50'	1079.00	1075.00	0.20	5.90	2.26	2.66
C-E20	68+00	12"	50'	1091.00	1088.75	0.20	5.90	1.33	1.57
C-E21	70+00	12"	60'	1103.00	1101.00	0.20	5.90	0.91	1.07
C-E22	72+00	12"	60'	1120.00	1118.00	0.20	5.90	0.49	0.58
C-E23	74+00	12"	60'	1141.00	1132.00	0.20	5.90	1.02	1.20
C-E24	76+00	12"	60'	1160.00	1153.00	0.20	5.90	0.29	0.35
C-E25	100+30	24"	140'	760.00	755.00	0.20	5.90	14.96	17.66
C-E26	115+00	12"	50'	880.75	875.00	0.20	5.90	1.57	1.85
C-E27	118+25	12"	60'	898.00	894.00	0.20	5.90	0.26	0.30
C-E28	131+00	12"	60'	990.00	987.75	0.20	5.90	0.87	1.03
C-E29	133+50	12"	60'	1010.00	1007.00	0.20	5.90	0.34	0.40
C-E30	148+40	12"	60'	1062.00	1059.00	0.20	5.90	1.39	1.64
C-E31	152+60	15"	90'	1052.00	1051.00	0.20	5.90	7.49	8.84
C-E32	154+75	12"	50'	1056.00	1054.00	0.20	5.90	2.58	3.04
C-E33	157+00	12"	50'	1061.00	1059.00	0.20	5.90	1.85	2.19
C-E34	159+10	12"	70'	1065.50	1057.00	0.20	5.90	0.42	0.49
C-E35	161+00	12"	50'	1065.00	1063.00	0.20	5.90	1.29	1.52
C-E36	163+00	12"	50'	1061.00	1059.00	0.20	5.90	0.72	0.85
C-E37	165+00	12"	50'	1054.00	1053.00	0.20	5.90	2.18	2.58
C-E38	170+20	12"	50'	1023.00	1022.00	0.20	5.90	0.11	0.13
C-E39	171+60	12"	70'	1020.00	1019.00	0.21	5.90	4.12	5.07
C-E40	190+50	12"	50'	1022.00	1020.00	0.20	5.90	1.86	2.19
C-E41	192+50	12"	50'	1004.00	1002.00	0.20	5.90	1.07	1.27
C-E42	194+25	12"	50'	989.00	987.00	0.20	5.90	0.70	0.82
C-E43	200+30	15"	50'	975.00	974.00	0.20	5.90	5.88	6.94
C-E44	205+15	12"	80'	959.00	958.80	0.20	5.90	2.14	2.52
C-E45	216+00	12"	60'	959.00	956.00	0.22	5.90	0.70	0.92
C-E46	228+00	12"	50'	941.50	940.00	0.21	5.90	1.10	1.36
C-E47	232+00	12"	50'	933.00	931.00	0.20	5.90	1.78	2.10
C-E48	237+80	12"	60'	933.00	931.00	0.20	5.90	0.96	1.13
C-E49	241+76	12"	100'	920.00	912.00	0.20	5.90	3.10	3.65
C-E50	301+10	24"	60'	1028.00	1027.80	0.20	5.90	14.96	17.65
C-E51	304+00	12"	50'	1039.30	1039.00	0.20	5.90	4.80	5.66
C-E52	307+15	12"	60'	1052.00	1050.00	0.20	5.90	2.24	2.64
C-E53	310+00	12"	50'	1064.00	1063.00	0.20	5.90	0.48	0.57
C-E54	312+00	12"	80'	1069.00	1068.00	0.20	5.90	0.89	1.05
C-E55	406+60	12"	50'	698.20	698.00	0.20	5.90	0.53	0.62
C-E56	409+00	12"	40'	706.00	705.00	0.20	5.90	0.79	0.93
C-E57	412+00	12"	40'	714.00	712.00	0.20	5.90	0.99	1.17
C-E58	415+00	12"	40'	727.00	726.00	0.20	5.90	0.36	0.43
C-E59	418+00	12"	40'	753.00	752.00	0.20	5.90	0.56	0.66
C-E60	424+00	12"	60'	766.00	765.00	0.20	5.90	0.24	0.28
C-E61	444+40	12"	50'	865.00	864.80	0.20	5.90	2.06	2.44
C-E62	470+25	12"	70'	842.00	840.00	0.24	5.90	2.51	3.53
C-E63	472+00	12"	50'	831.50	828.00	0.20	5.90	1.53	1.80
C-E64	474+00	12"	50'	824.00	822.00	0.20	5.90	2.64	3.12
C-E65	483+30	12"	50'	805.50	802.00	0.20	5.90	2.20	2.59
C-E66	651+25	24"	60'	900.00	896.00	0.31	5.90	3.16	19.81
C-E68	455+50	12"	60'	900.75	900.00				

## **APPENDIX 12-4**

### **Water Quality Calculations**

**Evergreen Wind Power  
Oakfield, Maine  
Mattawamkeag River Watershed Treatment Calculations**

Impervious Area Road ID Descriptions:	
SR	South Access/Crane Road
NR	North Access/Crane Road
ER	East Access/Crane Road
S	South Turbine Site
N	North Turbine Site
E	East Turbine Site
METR	M.E.T. Road
Misc.	Miscellaneous Imp. Area

BMP ID DESCRIPTIONS		
AD	Buffer Adjacent to Downhill	Side of Road
DT	Ditch Turnout Buffer	

Road ID	Station Location		BMP ID	Buffer Slope (%)	Buffer Length (ft)	Impervious Area (ac)	Impervious Area Treated (ac)	Impervious Area Untreated (ac)
NR1	50+00	-	54+50	-	-	0.25		0.25
NR1	54+50	-	57+00	DT-N1	15.00	120.00	0.14	
NR1	57+00	-	68+50	AD-N2	18.00	55.00	0.63	
NR1	68+50	-	71+00	DT-N3	15.00	120.00	0.14	
NR1	71+00	-	74+50	-	-	0.29		0.29
NR1	74+50	-	80+50	AD-N10	14.00	55.00	0.50	0.50
NR1	80+50	-	83+00	DT-N10G	8.00	120.00	0.21	0.21
NR1	83+00	-	86+00	DT-N10C	8.30	120.00	0.25	0.25
NR1	86+00	-	91+00	AD-N10D	20.00	55.00	0.41	0.41
NR1	91+00	-	99+50	-	-	0.70		0.70
NR1	99+50	-	109+00	AD-N10E	20.00	55.00	0.79	0.79
N13	-	-	-	DT-N10F	18.00	120.00	0.15	0.15
N15	-	-	-	AD-N10A	17.00	55.00	0.07	0.07
N15	-	-	-	DT-N10B	9.00	120.00	0.07	0.07
NR7	801+00	-	803+50	DT-N6	10.00	120.00	0.21	0.21
NR7	803+50	-	818+00	AD-N7	20.00	80.00	1.20	1.20
NR7	818+00	-	820+50	-	-	0.21		0.21
N14	-	-	-	AD-N8	12.00	55.00	0.07	0.07
N14	-	-	-	DT-N9	17.00	120.00	0.07	0.07
NR6	700+00	-	703+50	-	-	0.29		0.29
N16	-	-	-	DT-N4	11.70	120.00	0.07	0.07
N16	-	-	-	AD-N5	12.70	55.00	0.07	0.07
NR 1	116+00	-	121+00	ADN12	16.00	55.00	0.41	0.41
N1	-	-	-	ADN13	-	-	0.24	0.24
NR 1	121+00	-	123+00	DTN14	15.00	120.00	0.17	0.17
N2	-	-	-	DTN17	9.58	120.00	0.22	0.22
NR 2	300+00	-	302+50	ADN18	10.91	55.00	0.21	0.21
NR 2	302+50	-	305+00	DTN19	10.83	120.00	0.21	0.21
NR 2	305+00	-	307+50	-	-	0.21	0.00	0.21
NR 2	307+50	-	309+50	DTN34	17.50	120.00	0.17	0.17
NR 2	309+50	-	322+00	-	-	1.03	0.00	1.03
NR 2	322+00	-	327+50	ADN35	16.36	55.00	0.45	0.45
NR 2	327+50	-	328+00	-	-	0.04	0.00	0.04
NR 2	328+00	-	330+50	ADN36	16.18	55.00	0.21	0.21
NR 2	330+50	-	332+50	DTN37	17.50	120.00	0.17	0.17
NR 2	332+50	-	333+50	-	-	0.08	0.00	0.08
NR 2	333+50	-	339+50	ADN38	19.44	55.00	0.50	0.50
NR 2	339+50	-	341+00	DTN39	10.00	120.00	0.12	0.12
NR 2	341+00	-	342+50	ADN40	13.85	55.00	0.12	0.12
NR 2	342+50	-	345+00	DTN41	12.50	120.00	0.21	0.21
NR 3	400+00	-	405+00	-	-	0.41	0.00	0.41
NR 3	405+00	-	407+00	DTN46	14.17	120.00	0.17	0.17
NR 3	407+00	-	409+50	DTN47	15.00	120.00	0.21	0.21
NR 3	409+50	-	413+00	-	-	0.29	0.00	0.29
NR 3	413+00	-	419+00	ADN49	19.05	55.00	0.50	0.50
NR 3	419+00	-	424+00	-	-	0.41	0.00	0.41
N4	-	-	-	-	-	0.24	0.00	0.24
NR 3	424+00	-	426+00	DTN50	-	120.00	0.17	0.00
NR 3	426+00	-	428+00	DTN51	-	120.00	0.17	0.00
NR 3	428+00	-	430+00	DTN52	-	120.00	0.17	0.00
NR 3	430+00	-	432+00	DTN53	-	120.00	0.17	0.00
N3	-	-	-	DTN54	-	120.00	0.23	0.00
O&M FACILITY	-	-	-	-	-	0.63	0.00	0.63
SR 1	0+00	-	3+00	-	-	0.17	0.00	0.17
SR 1	3+00	-	5+50	DTS1	5.83	120.00	0.14	0.00
SR 1	5+50	-	11+00	ADS2	9.09	55.00	0.30	0.00
SR 1	11+00	-	13+50	DTS3	9.17	120.00	0.14	0.00
SR 1	13+50	-	16+50	ADS4	10.67	55.00	0.17	0.00
SR 1	16+50	-	19+00	-	-	0.14	0.00	0.14
SR 1	19+00	-	21+00	DTS6	13.33	120.00	0.11	0.00

**Evergreen Wind Power  
Oakfield, Maine  
Mattawamkeag River Watershed Treatment Calculations**

Impervious Area Road ID Descriptions:	
SR	South Access/Crane Road
NR	North Access/Crane Road
ER	East Access/Crane Road
S	South Turbine Site
N	North Turbine Site
E	East Turbine Site
METR	M.E.T. Road
Misc.	Miscellaneous Imp. Area

BMP ID DESCRIPTIONS		
AD	Buffer Adjacent to Downhill	Side of Road
DT	Ditch Turnout Buffer	

Road ID	Station Location		BMP ID	Buffer Slope (%)	Buffer Length (ft)	Impervious Area (ac)	Impervious Area Treated (ac)	Impervious Area Untreated (ac)	
SR 1	21+00	-	22+50	DTS7	14.17	120.00	0.08	0.08	0.00
SR 1	22+50	-	26+00	ADS8	19.64	55.00	0.19	0.19	0.00
SR 1	26+00	-	26+50	-	-	-	0.03	0.00	0.03
SR 1	26+50	-	29+00	DTS9	10.00	120.00	0.14	0.14	0.00
SR 1	29+00	-	29+50	-	-	-	0.03	0.00	0.03
SR 1/S2	29+50	-	34+50	ADS10	4.36	55.00	0.64	0.64	0.00
SR 1	34+50	-	35+80	-	-	-	0.11	0.00	0.11
SR 2/S1	42+00	-	45+00	ADS11/12	14.55	55.00	0.46	0.46	0.00
SR 2	45+00	-	46+00	DTS13	6.25	120.00	0.08	0.08	0.00
SR 2	46+00	-	49+50	DTS14	8.33	120.00	0.29	0.29	0.00
SR 2	49+50	-	54+00	-	-	-	0.37	0.00	0.37
SR 2	54+00	-	56+50	DTS15	8.75	120.00	0.21	0.21	0.00
SR 2	56+50	-	60+50	ADS16	11.43	55.00	0.33	0.33	0.00
SR 3	100+00	-	103+00	ADS16	12.50	55.00	0.25	0.25	0.00
S3	-	-	-	ADS17	18.67	55.00	0.24	0.24	0.00
SR 2	60+50	-	64+50	-	-	-	0.33	0.00	0.33
SR 2	64+50	-	66+00	-	-	-	0.12	0.00	0.12
SR 2	66+00	-	68+00	DTS18	11.67	120.00	0.17	0.17	0.00
SR 2	68+00	-	69+50	DTS19	10.83	120.00	0.12	0.12	0.00
SR 2	69+50	-	72+00	ADS21	3.13	55.00	0.21	0.21	0.00
S4	72+00	-	74+50	ADS22	10.91	55.00	0.45	0.45	0.00
SR 2	74+50	-	78+00	ADS23	11.48	55.00	0.29	0.29	0.00
SR 2	78+00	-	79+00	-	-	-	0.08	0.00	0.08
SR 2	79+00	-	81+00	ADS24	13.64	55.00	0.17	0.17	0.00
S5	-	-	-	ADS25	15.17	55.00	0.12	0.12	0.00
S5	-	-	-	ADS26	7.50	80.00	0.12	0.12	0.00
SR 4	120+00	-	121+50	ADS27	5.79	55.00	0.12	0.12	0.00
SR 4	121+50	-	124+00	ADS28	4.53	55.00	0.21	0.21	0.00
SR 4	124+00	-	126+00	DTS29	10.00	120.00	0.17	0.17	0.00
SR 4	126+00	-	131+00	-	-	-	0.41	0.00	0.41
SR 4	131+00	-	133+50	DTS30	14.17	120.00	0.21	0.21	0.00
SR 4	133+50	-	136+00	ADS31	9.09	55.00	0.21	0.21	0.00
SR 4	136+00	-	138+00	DTS32	11.67	120.00	0.17	0.17	0.00
SR 4	138+00	-	142+00	-	-	-	0.33	0.00	0.33
SR 4	142+00	-	150+50	ADS33	20.98	55.00	0.70	0.70	0.00
SR 4	150+50	-	152+00	-	-	-	0.12	0.00	0.12
SR 4	152+00	-	155+00	DTS34	7.08	120.00	0.25	0.25	0.00
SR 4	166+50	-	170+50	DTS39	16.67	120.00	0.33	0.33	0.00
SR 4	170+50	-	172+00	-	-	-	0.12	0.00	0.12
SR 4	171+00	-	176+50	ADS40	8.33	55.00	0.45	0.45	0.00
S9	-	-	-	ADS41	4.93	55.00	0.24	0.24	0.00
SR 5	230+00	-	235+50	-	-	-	0.45	0.00	0.45
SR 5	235+50	-	237+50	DTS42	7.50	120.00	0.17	0.17	0.00
SR 5	237+50	-	239+50	DTS43	10.83	120.00	0.17	0.17	0.00
SR 5	239+50	-	240+50	-	-	-	0.08	0.00	0.08
S6	-	-	-	ADS44	7.50	55.00	0.23	0.23	0.00
SR 5	240+50	-	245+50	ADS45	9.44	55.00	0.41	0.41	0.00
SR 6	280+00	-	281+00	-	-	-	0.08	0.00	0.08
SR 6	281+00	-	283+50	DTS48	10.00	120.00	0.41	0.41	0.00
SR 6	283+50	-	285+00	DTS49	5.83	120.00	0.12	0.12	0.00
SR 6/S8	285+00	-	292+00	ADS51	8.13	55.00	0.77	0.77	0.00
S8	-	-	-	ADS52	7.14	55.00	0.04	0.04	0.00
SR 7	68+00	-	71+00	ADS65	14.40	55.00	0.17	0.17	0.00
SR 7	71+00	-	73+50	DTS65A	7.50	120.00	0.14	0.14	0.00
SR 7	73+50	-	75+00	DTS66	7.50	120.00	0.08	0.08	0.00
SR 7	75+00	-	77+50	DTS67	9.17	120.00	0.14	0.14	0.00
SR 7	77+50	-	81+00	-	-	-	0.19	0.00	0.19
SR 7	81+00	-	96+00	ADS68	13.64	55.00	0.83	0.83	0.00
SR 7	96+00	-	97+50	DTS69	10.00	120.00	0.08	0.08	0.00
SR 7	97+50	-	99+50	ADS70	10.67	55.00	0.11	0.11	0.00
SR 7	99+50	-	101+50	DTS71	9.17	120.00	0.11	0.11	0.00
SR 7	101+50	-	103+50	ADS72	14.55	55.00	0.11	0.11	0.00
SR 7	103+50	-	105+00	DTS73	14.38	120.00	0.08	0.08	0.00

**Evergreen Wind Power  
Oakfield, Maine  
Mattawamkeag River Watershed Treatment Calculations**

Impervious Area Road ID Descriptions:	
SR	South Access/Crane Road
NR	North Access/Crane Road
ER	East Access/Crane Road
S	South Turbine Site
N	North Turbine Site
E	East Turbine Site
METR	M.E.T. Road
Misc.	Miscellaneous Imp. Area

BMP ID DESCRIPTIONS		
AD	Buffer Adjacent to Downhill	Side of Road
DT	Ditch Turnout Buffer	

Road ID	Station Location		BMP ID	Buffer Slope (%)	Buffer Length (ft)	Impervious Area (ac)	Impervious Area Treated (ac)	Impervious Area Untreated (ac)
SR 7	105+00	- 108+00	-	-	-	0.17	0.00	0.17
SR 7	108+00	- 112+50	ADS74	7.14	55.00	0.25	0.25	0.00
SR 7	112+50	- 114+00	DTS75	6.67	120.00	0.08	0.08	0.00
SR 7	114+00	- 126+50	ADS76	12.50	55.00	0.69	0.69	0.00
SR 7	126+50	- 130+00	-	-	-	0.19	0.00	0.19
SR 7	130+00	- 132+00	DTS77	7.92	120.00	0.11	0.11	0.00
SR 7	132+00	- 134+50	DTS78	7.92	120.00	0.14	0.14	0.00
SR 7	134+50	- 135+50	-	-	-	0.06	0.00	0.06
SR 7	135+50	- 137+50	-	-	-	0.11	0.00	0.11
SR 7/S12	137+50	- 146+50	ADS80	10.91	55.00	0.99	0.99	0.00
SR 7	146+50	- 149+00	DTS81	10.83	120.00	0.21	0.21	0.00
SR 7	149+00	- 173+75	ADS82	14.55	55.00	2.05	2.05	0.00
SR 7	173+75	- 176+50	-	-	-	0.23	0.00	0.23
SR 7	-	-	DTS83	2.50	120.00	0.33	0.33	0.00
SR 7	176+50	- 179+50	ADS84	18.18	55.00	0.25	0.25	0.00
SR 7	236+00	- 241+50	ADS94	5.81	55.00	0.45	0.45	0.00
SR 7	241+50	- 243+00	-	-	-	0.12	0.00	0.12
SR 7	243+00	- 245+50	-	-	-	0.21	0.00	0.21
SR 7	245+50	- 247+00	DTS97	15.00	120.00	0.12	0.12	0.00
SR 7	247+00	- 249+00	DTS98	18.33	120.00	0.17	0.17	0.00
SR 7	249+00	- 251+00	DTS99	17.50	120.00	0.17	0.17	0.00
SR 7	251+00	- 253+00	DTS100	19.17	120.00	0.17	0.00	0.07
S9	-	-	DTS101	22.50	120.00	0.09	0.00	0.09
S9	-	-	DTS102	7.08	120.00	0.09	0.09	0.00
S9	-	-	ADS103	14.55	55.00	0.11	0.11	0.00
SR 8	300+00	- 302+50	-	-	-	0.21	0.00	0.21
SR 8	302+50	- 314+00	ADS104	7.27	55.00	0.95	0.95	0.00
SR 8	314+00	- 315+50	-	-	-	0.12	0.00	0.12
SR 8	315+50	- 317+50	DTS105	8.33	120.00	0.17	0.17	0.00
SR 8	317+50	- 318+50	DTS106	14.17	120.00	0.08	0.08	0.00
SR 8	318+50	- 321+00	DTS107	9.17	120.00	0.21	0.21	0.00
SR 8	321+00	- 323+00	-	-	-	0.17	0.00	0.17
SR 8	323+00	- 332+50	ADS108	9.68	55.00	0.79	0.79	0.00
SR 8	332+50	- 335+50	-	-	-	0.25	0.00	0.25
SR 9/S14	414+00	- 424+50	ADS118	12.73	55.00	1.10	1.10	0.00
SR 9	424+50	- 426+00	DTS119	14.17	120.00	0.12	0.12	0.00
SR 9	426+00	- 429+50	ADS120	11.82	55.00	0.29	0.29	0.00
SR 9	429+50	- 431+50	DTS121	5.00	120.00	0.17	0.17	0.00
SR 9	431+50	- 432+50	DTS122	10.42	120.00	0.08	0.08	0.00
SR 9	432+50	- 434+50	DTS123	6.67	120.00	0.17	0.17	0.00
SR 9/S15	434+50	- 438+00	ADS124	6.36	55.00	0.45	0.45	0.00
S15	-	-	DTS125	6.67	120.00	0.05	0.05	0.00
SR 10	500+00	- 502+00	-	-	-	0.17	0.00	0.17
SR 10	502+00	- 505+50	ADS126	16.92	55.00	0.29	0.29	0.00
SR 10	505+50	- 507+50	DTS128	12.92	120.00	0.17	0.17	0.00
S17	-	-	ADS129	18.18	55.00	0.18	0.18	0.00
S17	-	-	DTS130	17.50	120.00	0.02	0.02	0.00
S17	-	-	DTS131	22.92	120.00	0.02	0.00	0.02
SR 11	600+00	- 601+00	-	-	-	0.08	0.00	0.08
SR 11	601+00	- 603+00	DTS132	7.08	120.00	0.17	0.17	0.00
SR 11	603+00	- 604+00	-	-	-	0.08	0.00	0.08
SR 11	604+00	- 614+50	ADS133	10.80	55.00	0.87	0.87	0.00
SR 11	614+50	- 617+00	DTS134	8.33	120.00	0.21	0.21	0.00
SR 11/S19	617+00	- 634+00	ADS135	9.09	55.00	1.52	1.52	0.00
S19	-	-	DTS136	8.33	120.00	0.11	0.11	0.00
<b>Totals</b>						<b>47.87</b>	<b>36.28</b>	<b>11.49</b>

**Impervious Area Treatment Calculations (Linear project)**

Total Proposed Impervious Area=	47.87	ac
Total Treated Proposed Impervious Area=	36.28	ac
Total Untreated Proposed Impervious Area=	11.49	ac
Proposed Impervious Area Treatment Percentage=	75.79	%

**Evergreen Wind Power  
Oakfield, Maine  
Skitacook Lake Watershed Treatment Calculations**

Impervious Area Road ID Descriptions:	
SR	South Access/Crane Road
NR	North Access/Crane Road
ER	East Access/Crane Road
S	South Turbine Site
N	North Turbine Site
E	East Turbine Site
METR	M.E.T. Road
Misc.	Miscellaneous Imp. Area

BMP ID DESCRIPTIONS	
AD	Buffer Adjacent to Downhill Side of Road
DT	Ditch Turnout Buffer

Road ID	Station Location	BMP ID	HSG	Buffer Slope	Buffer Length (ft)	Impervious Area (ac)	Export Coefficient	Pre-Treat Export (lbs P/yr)	BMP Treatment Factor	Post-Treat Export (lbs P/yr)	Road Width After Revegetation (ft)		
ER 2	100+00	-	102+00	-	-	0.06	1.75	0.10	1.00	0.10	12		
ER 2	102+00	-	104+00	DTE9	C/D	8.33	120.00	0.06	1.75	0.10	0.35	0.03	12
ER 2	104+00	-	106+50	DTE10	C/D	12.50	120.00	0.07	1.75	0.12	0.35	0.04	12
ER 2	106+50	-	108+50	DTE11	C/D	11.67	120.00	0.06	1.75	0.10	0.35	0.03	12
ER 2	108+50	-	110+50	DTE12	C/D	9.17	120.00	0.06	1.75	0.10	0.35	0.03	12
ER 2	110+50	-	111+50	DTE13	C/D	9.17	120.00	0.03	1.75	0.05	0.35	0.02	12
ER 2	111+50	-	113+50	DTE14	C/D	10.42	120.00	0.06	1.75	0.10	0.35	0.03	12
ER 2	113+50	-	119+00	ADE15	C/D	10.91	55.00	0.15	1.75	0.27	0.35	0.09	12
ER 2	119+00	-	121+00	DTE16	C/D	7.50	120.00	0.06	1.75	0.10	0.35	0.03	12
ER 2	121+00	-	123+00	DTE17	C/D	7.08	120.00	0.06	1.75	0.10	0.35	0.03	12
ER 2	123+00	-	125+00	DTE18	C/D	8.75	120.00	0.06	1.75	0.10	0.35	0.03	12
ER 5	600+00	-	602+00	DTE66	C/D	10.00	120.00	0.10	1.75	0.18	0.35	0.06	12
ER 5/E10	602+00	-	603+50	-	-	-	0.23	1.75	0.40	1.00	0.40	12	
ER 2	125+00	-	127+00	-	-	-	0.06	1.75	0.10	1.00	0.10	12	
ER 2	127+00	-	129+00	DTE19	C/D	10.00	120.00	0.06	1.75	0.10	0.35	0.03	12
ER 2	129+00	-	131+00	DTE20	C/D	11.67	120.00	0.06	1.75	0.10	0.35	0.03	12
ER 2	131+00	-	140+00	-	-	-	0.25	1.75	0.43	1.00	0.43	12	
ER 2/E8	139+50	-	146+00	ADE21	C/D	12.73	55.00	0.41	1.75	0.72	0.35	0.25	12
ER 2	146+50	-	149+50	ADE22	C/D	12.73	55.00	0.08	1.75	0.14	0.35	0.05	12
ER 2	149+50	-	151+50	DTE23	C/D	13.33	120.00	0.06	1.75	0.10	0.35	0.03	12
ER 2	151+50	-	159+00	ADE24	C/D	14.55	55.00	0.21	1.75	0.36	0.35	0.13	12
ER 2	159+00	-	162+00	-	-	-	0.08	1.75	0.14	1.00	0.14	12	
ER 2	162+00	-	165+00	ADE25	C/D	11.82	55.00	0.08	1.75	0.14	0.35	0.05	12
ER 2	176+50	-	184+50	ADE29	C/D	5.45	56.00	0.22	1.75	0.39	0.35	0.13	12
ER 3	300+00	-	306+00	-	-	-	0.17	1.75	0.29	1.00	0.29	12	
ER 3	306+00	-	312+00	ADE38	C/D	5.45	55.00	0.17	1.75	0.29	0.35	0.10	12
ER 3	312+00	-	314+00	DTE39	C/D	9.17	120.00	0.06	1.75	0.10	0.35	0.03	12
ER 3/E9	314+00	-	315+00	ADE40	C/D	12.73	55.00	0.08	1.75	0.14	0.35	0.05	12
E11	-	-	-	DTE45	C/D	10.00	120.00	0.05	1.75	0.08	0.35	0.03	-
ER 1	10+00	-	13+00	-	-	-	0.08	1.75	0.14	1.00	0.14	12	
ER 1	13+00	-	15+00	DTE1	C	6.67	120.00	0.06	1.75	0.10	0.30	0.03	12
ER 1	15+00	-	16+75	DTE2	C	5.00	120.00	0.05	1.75	0.08	0.30	0.03	12
ER 1	16+75	-	18+50	DTE3	C	7.92	120.00	0.05	1.75	0.08	0.30	0.03	12
ER 1	18+50	-	20+00	DTE4	C	7.92	120.00	0.04	1.75	0.07	0.30	0.02	12
ER 1	20+00	-	22+50	DTE5	C	10.83	120.00	0.07	1.75	0.12	0.30	0.04	12
ER 1	22+50	-	24+50	DTE5A	C	-	120.00	0.06	1.75	0.10	0.30	0.03	12
ER 1	24+50	-	26+00	DTE5B	C	-	120.00	0.04	1.75	0.07	0.30	0.02	12
ER 1	26+00	-	39+50	-	-	-	0.37	1.75	0.65	1.00	0.65	12	
ER 1	39+50	-	42+00	DTE6	C/D	15.00	120.00	0.07	1.75	0.12	0.35	0.04	12
ER1	42+00	-	44+00	DTE6A	C/D	16.67	120.00	0.06	1.75	0.10	0.35	0.03	12
ER1	44+00	-	46+00	DTE6B	C/D	16.67	120.00	0.06	1.75	0.10	0.35	0.03	12
ER1	46+00	-	47+50	DTE6C	C/D	16.67	120.00	0.04	1.75	0.07	0.35	0.03	12
ER1	47+50	-	49+00	ADE6D	C/D	20.00	55.00	0.04	1.75	0.07	0.35	0.03	12
ER 1	49+00	-	54+00	-	-	-	0.14	1.75	0.24	1.00	0.24	12	
ER 1/E2	54+00	-	70+00	ADE6E	C?D	20.00	55.00	0.67	1.75	1.18	0.35	0.41	12
ER 6	650+00	-	652+00	-	-	-	0.06	1.75	0.10	1.00	0.10	12	
ER 6/E1	652+00	-	653+00	ADE67	C	9.09	55.00	0.13	1.75	0.23	0.30	0.07	12
E1	-	-	-	DTE68	C	10.83	120.00	0.11	1.75	0.18	0.30	0.06	12
ER 4	427+50	-	429+50	DTE48	C/D	12.50	120.00	0.06	1.75	0.10	0.35	0.03	12
ER 4	429+50	-	431+50	DTE50	C/D	12.50	120.00	0.06	1.75	0.10	0.35	0.03	12
ER 4	431+50	-	434+00	DTE51	C/D	5.00	120.00	0.07	1.75	0.12	0.35	0.04	12
ER 4	434+00	-	435+50	-	-	-	0.04	1.75	0.07	1.00	0.07	12	
ER 4	435+50	-	441+00	ADE52	C/D	10.00	55-80	0.15	1.75	0.27	0.35	0.09	12
ER 4	441+00	-	446+50	-	-	-	0.15	1.75	0.27	1.00	0.27	12	
ER 4	446+50	-	448+50	DTE54	C/D	13.33	120.00	0.06	1.75	0.10	0.35	0.03	12
ER 4	448+50	-	450+50	DTE55	C/D	10.00	120.00	0.06	1.75	0.10	0.35	0.03	12
ER 4	450+50	-	454+00	DTE56	C/D	8.33	120.00	0.10	1.75	0.17	0.35	0.06	12
E METR	700+00	-	701+00	-	-	-	0.03	1.75	0.05	1.00	0.05	-	
E METR	701+00	-	703+44	DTE69	C	8.33	120.00	0.07	1.75	0.12	0.30	0.04	-
E METR	750+00	-	752+00	DTE70	C/D	8.33	120.00	0.06	1.75	0.10	0.35	0.03	-
E METR	752+00	-	754+50	DTE71	C/D	7.50	120.00	0.07	1.75	0.12	0.35	0.04	-
E METR	754+50	-	756+70	DTE72	C/D	6.67	120.00	0.06	1.75	0.11	0.35	0.04	-
SR 4	155+00	-	158+00	ADS35	C/D	10.00	55.00	0.08	1.75	0.14	0.35	0.05	12
SR 4	158+00	-	160+50	DTS36	C/D	5.00	120.00	0.07	1.75	0.12	0.35	0.04	12
SR 4	160+50	-	163+00	DTS37	C/D	15.00	120.00	0.07	1.75	0.12	0.35	0.04	12
SR 4	163+00	-	166+50	ADS38	C/D	13.64	55.00	0.10	1.75	0.17	0.35	0.06	12
SR 5	245+50	-	247+00	-	-	-	0.04	1.75	0.07	1.00	0.07	12	
SR 5	247+00	-	248+50	ADS46	C/D	15.89	55.00	0.04	1.75	0.07	0.35	0.03	12
SR 5	248+50	-	249+50	-	-	-	0.03	1.75	0.05	1.00	0.05	12	
SR 5	249+50	-	260+00	ADS47	C/D	24.11	55.00	0.29	1.75	0.51	0.35	0.18	12
S7	-	-	-	ADS47	C/D	16.18	55.00	0.23	1.75	0.40	0.35	0.14	-
SR 7	10+00	-	15+50	ADS53	C	19.19	55.00	0.10	1.75	0.18	0.30	0.05	24
SR 7	15+50	-	18+00	DTS54	C/D	6.67	120.00	0.05	1.75	0.08	0.35	0.03	24
SR 7	18+00	-	20+00	ADS55	C/D	5.63	80.00	0.04	1.75	0.06	0.35	0.02	24
SR 7	20+00	-	21+50	-	-	-	0.03	1.75	0.05	1.00	0.05	24	
SR 7	21+50	-	23+00	ADS56	D	3.75	80.00	0.03	1.75	0.05	0.40	0.02	24
SR 7	23+00	-	24+50	-	-	-	0.03	1.75	0.05	1.00	0.05	24	
SR 7	24+50	-	27+00	DTS57	D	6.25	120.00	0.05	1.75	0.08	0.40	0.03	24
SR 7	27+00	-	29+00	DTS58	D	10.83	120.00	0.04	1.75	0.06	0.40	0.03	24
SR 7	29+00	-	30+00	ADS59	C/D	18.18	55.00	0.02	1.75	0.03	0.35	0.01	24
SR 7	30+00	-	33+50	-	-	-	0.06	1.75	0.11	1.00	0.11	24	
SR 7	33+50	-	41+00	ADS60	C/D	18.18	55.00	0.14	1.75	0.24	0.35	0.08	24
SR 7	41+00	-	43+50	DTS61	C/D	13.75	120.00	0.05	1.75	0.08	0.35	0.03	24

**Evergreen Wind Power  
Oakfield, Maine  
Skitacook Lake Watershed Treatment Calculations**

Impervious Area Road ID Descriptions:	
SR	South Access/Crane Road
NR	North Access/Crane Road
ER	East Access/Crane Road
S	South Turbine Site
N	North Turbine Site
E	East Turbine Site
METR	M.E.T. Road
Misc.	Miscellaneous Imp. Area

BMP ID DESCRIPTIONS	
AD	Buffer Adjacent to Downhill Side of Road
DT	Ditch Turnout Buffer

Road ID	Station Location		BMP ID	HSG	Buffer Slope	Buffer Length (ft)	Impervious Area (ac)	Export Coefficient	Pre-Treat Export (lbs P/yr)	BMP Treatment Factor	Post-Treat Export (lbs P/yr)	Road Width After Revegetation (ft)	
SR 7	43+50	-	46+50	-	-	-	0.06	1.75	0.10	1.00	0.10	24	
SR 7	46+50	-	55+00	ADS62	C/D	13.75	80.00	0.16	1.75	0.27	0.35	0.10	24
SR 7	55+00	-	56+00	DTS63	C	11.67	120.00	0.02	1.75	0.03	0.30	0.01	24
SR 7	56+00	-	57+50	DTS64	C	12.50	120.00	0.03	1.75	0.05	0.30	0.01	24
SR 7	57+50	-	68+00	ADS65	C/D	18.42	55.00	0.58	1.75	1.01	0.35	0.35	24
SR 7/S13	179+50	-	202+00	ADS84	C/D	15.49	55.00	0.86	1.75	1.51	0.35	0.53	12
SR 7	202+00	-	204+00	DTS85	C/D	2.08	120.00	0.06	1.75	0.10	0.35	0.03	12
SR 7	204+00	-	207+00	-	-	-	-	0.08	1.75	0.14	1.00	0.14	12
SR 7	207+00	-	209+50	DTS86	C/D	13.33	120.00	0.07	1.75	0.12	0.35	0.04	12
SR 7	209+50	-	211+50	DTS87	C/D	10.83	120.00	0.13	1.75	0.23	0.35	0.08	12
SR 7/S16	211+50	-	220+50	ADS88	C/D	8.96	55.00	0.32	1.75	0.56	0.35	0.20	12
S16	-	-	-	ADS89	C/D	7.27	55.00	0.07	1.75	0.13	0.35	0.04	-
S16	-	-	-	DTS90	C/D	15.42	120.00	0.72	1.75	1.26	0.35	0.44	-
SR 7	220+50	-	222+50	-	-	-	-	0.06	1.75	0.10	1.00	0.10	12
SR 7	222+50	-	225+00	DTS91	C/D	3.33	120.00	0.07	1.75	0.12	0.35	0.04	12
SR 7	225+00	-	228+75	ADS92	C/D	3.70	55.00	0.10	1.75	0.18	0.35	0.06	12
SR 7	228+75	-	234+50	-	-	-	-	0.16	1.75	0.28	1.00	0.28	12
SR 7	234+50	-	236+00	DTS93	D	3.33	120.00	0.04	1.75	0.07	0.40	0.03	12
SR 9	400+00	-	402+00	-	-	-	-	0.07	1.75	0.13	1.00	0.13	16
SR 9	402+00	-	404+00	DTS112	C/D	6.25	120.00	0.07	1.75	0.13	0.35	0.04	16
SR 9	404+00	-	406+00	DTS113	C/D	4.17	120.00	0.07	1.75	0.13	0.35	0.04	16
SR 9	406+00	-	408+00	DTS114	C/D	10.00	120.00	0.07	1.75	0.13	0.35	0.04	16
SR 9	408+00	-	410+00	DTS115	C/D	8.33	120.00	0.07	1.75	0.13	0.35	0.04	16
SR 9	410+00	-	412+00	DTS116	C/D	11.67	120.00	0.07	1.75	0.13	0.35	0.04	16
SR 9	412+00	-	414+00	DTS117	C/D	10.00	120.00	0.07	1.75	0.13	0.35	0.04	16
S10	-	-	-	DTS109	C/D	9.17	120.00	0.09	1.75	0.16	0.35	0.06	-
S10	-	-	-	DTS110	C/D	6.25	120.00	0.09	1.75	0.16	0.35	0.06	-
S10	-	-	-	ADS111	C/D	7.27	55.00	0.05	1.75	0.08	0.35	0.03	-
						<b>Totals</b>	<b>12.15</b>		<b>21.26</b>		<b>10.02</b>		

**Project Phosphorus Calculations**

Project Phosphorus Budget (PPB)	9.96	lbs/yr
Project Phosphorus Export (PPE)	10.02	lbs/yr
Mitigation credit	0.26	lbs/yr
Project Phosphorus Export (PPE)	9.76	lbs/yr

**Evergreen Wind Power  
Oakfield, Maine  
Meduxnekeag Lake Watershed Treatment Calculations**

Impervious Area Road ID Descriptions:	
SR	South Access/Crane Road
NR	North Access/Crane Road
ER	East Access/Crane Road
S	South Turbine Site
N	North Turbine Site
E	East Turbine Site
METR	M.E.T. Road
Misc.	Miscellaneous Imp. Area

BMP ID DESCRIPTIONS	
AD	Buffer Adjacent to Downhill Side of Road
DT	Ditch Turnout Buffer

Road ID	Station Location		BMP ID	HSG	Buffer Slope	Buffer Length (ft)	Impervious Area (ac)	Export Coefficient	Pre-Treat Export (lbs P/yr)	BMP Treatment Factor	Post-Treat Export (lbs P/yr)	Road Width After Revegetation (ft)
ER 1	70+00	- 79+00	-	-	-	-	0.74	1.75	1.30	1.00	1.30	36
E3	-	-	DTE7	C/D	7.50	120.00	0.10	1.75	0.18	0.35	0.06	-
E3	-	-	DTE8	C/D	11.67	120.00	0.10	1.75	0.18	0.35	0.06	-
ER 2	165+00	- 167+50	DTE26	C/D	7.50	120.00	0.21	1.75	0.36	0.35	0.13	36
ER 2	167+50	- 170+00	DTE27	C/D	14.17	120.00	0.21	1.75	0.36	0.35	0.13	36
ER 2	170+00	- 174+00	ADE28	C/D	9.09	55.00	0.33	1.75	0.58	0.35	0.20	36
ER 2	174+00	- 176+50	-	-	-	-	0.21	1.75	0.36	1.00	0.36	36
ER 2	184+50	- 187+50	ADE29	C/D	1.82	55.00	0.25	1.75	0.43	0.35	0.15	36
ER 2	187+50	- 189+00	-	-	-	-	0.12	1.75	0.22	1.00	0.22	36
ER 2/E4	189+00	- 197+00	ADE30	C/D	10.91	55.00	0.91	1.75	1.58	0.35	0.55	36
ER 2	197+00	- 200+50	DTE31	C	6.25	120.00	0.29	1.75	0.51	0.30	0.15	36
ER 2	200+50	- 202+50	-	-	-	-	0.07	1.75	0.13	1.00	0.13	36
ER 2/E5	202+50	- 211+00	ADE32	C	4.55	55.00	0.90	1.75	1.58	0.30	0.47	36
E5	-	-	DTE33	C/D	10.42	120.00	0.04	1.75	0.08	0.35	0.03	-
ER 2	211+00	- 213+50	DTE34	C/D	9.58	120.00	0.21	1.75	0.36	0.35	0.13	36
ER 2	213+50	- 215+50	DTE35	C/D	14.17	120.00	0.17	1.75	0.29	0.35	0.10	36
ER 2	215+50	- 216+50	-	-	-	-	0.08	1.75	0.14	1.00	0.14	36
ER 2/E6	216+50	- 242+00	ADE36	C	9.09	55.00	1.18	1.75	2.07	0.30	0.62	16
E7	-	-	ADE36	C/D	12.73	55.00	0.15	1.75	0.26	0.35	0.09	-
E7	-	-	DTE37	C	10.83	120.00	0.10	1.75	0.17	0.30	0.05	-
E9	-	-	DTE41	C/D	21.67	120.00	0.10	1.75	0.18	0.35	0.06	-
ER 4	400+00	- 400+50	-	-	-	-	0.03	1.75	0.05	1.00	0.05	24
ER 4	400+50	- 406+00	ADE42	C	9.09	55.00	0.30	1.75	0.53	0.30	0.16	24
ER 4	406+00	- 407+50	DTE43	C/D	20.00	120.00	0.08	1.75	0.14	0.35	0.05	24
ER 4/E11	407+50	- 419+00	ADE44	C/D	15.45	55.00	0.83	1.75	1.46	0.35	0.51	24
ER 4	419+00	- 424+00	ADE44	C/D	15.45	55.00	0.41	1.75	0.72	0.35	0.25	36
ER 4	424+00	- 426+50	DTE46	C/D	18.33	120.00	0.21	1.75	0.36	0.35	0.13	36
ER 4	426+50	- 427+50	DTE47	C/D	15.00	120.00	0.08	1.75	0.14	0.35	0.05	36
ER 4	454+00	- 456+00	DTE57	C/D	5.00	120.00	0.07	1.75	0.13	0.35	0.04	16
ER 4	456+00	- 456+50	-	-	-	-	0.02	1.75	0.03	1.00	0.03	16
ER 4	456+50	- 461+00	ADE58	C/D	3.64	55.00	0.17	1.75	0.29	0.35	0.10	16
E13	-	-	ADE59	C/D	5.45	80.00	0.23	1.75	0.40	0.35	0.14	-
ER 4	461+00	- 464+00	-	-	-	-	0.11	1.75	0.19	1.00	0.19	16
ER 4	464+00	- 466+00	DTE60	C/D	12.22	180.00	0.07	1.75	0.13	0.35	0.04	16
ER 4/E14	466+00	- 489+00	ADE61	C	6.36	55-80	1.09	1.75	1.91	0.30	0.57	16
ER 4	489+00	- 491+50	DTE62	C/D	6.67	120.00	0.09	1.75	0.16	0.35	0.06	16
E15	-	-	DTE63	C/D	9.17	120.00	0.11	1.75	0.19	0.35	0.07	-
E15	-	-	DTE64	C/D	6.67	120.00	0.11	1.75	0.19	0.35	0.07	-
E15	-	-	ADE65	C/D	5.45	55.00	0.03	1.75	0.06	0.35	0.02	-
E METR	800+00	- 801+50	ADE36	C	9.09	55.00	0.04	1.75	0.07	0.30	0.02	-
E METR	801+50	- 804+50	ADE73	C/D	6.36	55.00	0.08	1.75	0.14	0.35	0.05	-
E METR	804+50	- 806+50	DTE74	C/D	5.00	120.00	0.06	1.75	0.10	0.35	0.03	-
E METR	806+50	- 808+16	DTE75	C/D	13.45	120.00	0.05	1.75	0.08	0.35	0.03	-
E METR	850+00	- 851+00	-	-	-	-	0.03	1.75	0.05	1.00	0.05	-
E METR	851+00	- 852+50	DTE76	C/D	5.00	120.00	0.04	1.75	0.07	0.35	0.03	-
E METR	852+50	- 854+50	DTE77	C/D	9.58	120.00	0.06	1.75	0.10	0.35	0.03	-
E METR	854+50	- 856+50	DTE78	C/D	8.33	120.00	0.06	1.75	0.10	0.35	0.03	-
E METR	856+50	- 858+50	DTE79	C/D	8.33	120.00	0.06	1.75	0.10	0.35	0.03	-
E METR	858+50	- 860+14	DTE80	C/D	7.50	120.00	0.05	1.75	0.08	0.35	0.03	-
E METR	900+00	- 901+00	-	-	-	-	0.03	1.75	0.05	1.00	0.05	-
E METR	901+00	- 903+48	DTE81	C/D	6.67	120.00	0.07	1.75	0.12	0.35	0.04	-
NR 2	345+00	- 345+50	-	-	-	-	0.04	1.75	0.07	1.00	0.07	36
NR 2/N6	345+50	- 356+50	ADN42	C	13.64	55.00	1.15	1.75	2.02	0.30	0.61	36
NR 2	356+50	- 358+00	-	-	-	-	0.12	1.75	0.22	1.00	0.22	36
NR 2	358+00	- 360+00	DTN43	C/D	9.17	120.00	0.17	1.75	0.29	0.35	0.10	36
NR 2	360+00	- 362+00	DTN44	C/D	10.00	120.00	0.17	1.75	0.29	0.35	0.10	36
NR 2	362+00	- 364+00	DTN45	C/D	10.83	120.00	0.17	1.75	0.29	0.35	0.10	36
N7	-	-	-	-	-	-	0.23	1.75	0.41	1.00	0.41	-
NR 4	500+00	- 502+50	DTN55	C/D	10.00	120.00	0.21	1.75	0.36	0.35	0.13	36
NR 4	502+50	- 504+00	-	-	-	-	0.12	1.75	0.22	1.00	0.22	36
NR 4	504+00	- 505+50	DTN56	C	5.83	120.00	0.12	1.75	0.22	0.30	0.07	36
NR 4	505+50	- 515+50	-	-	-	-	0.83	1.75	1.45	1.00	1.45	36
N5	-	-	-	-	-	-	0.21	1.75	0.37	1.00	0.37	-
NR 5	601+50	- 604+00	-	-	-	-	0.21	1.75	0.36	1.00	0.36	36
NR 1	156+00	- 160+00	-	-	-	-	0.11	1.75	0.19	1.00	0.19	12
NR 1	160+00	- 163+50	ADN23	C/D	18.60	55.00	0.10	1.75	0.17	0.35	0.06	12
N8	-	-	ADN24	C/D	9.09	55.00	0.24	1.75	0.43	0.35	0.15	-
NR 1	163+50	- 165+50	-	-	-	-	0.06	1.75	0.10	1.00	0.10	12

**Evergreen Wind Power  
Oakfield, Maine  
Meduxnekeag Lake Watershed Treatment Calculations**

Impervious Area Road ID Descriptions:	
SR	South Access/Crane Road
NR	North Access/Crane Road
ER	East Access/Crane Road
S	South Turbine Site
N	North Turbine Site
E	East Turbine Site
METR	M.E.T. Road
Misc.	Miscellaneous Imp. Area

BMP ID DESCRIPTIONS	
AD	Buffer Adjacent to Downhill Side of Road
DT	Ditch Turnout Buffer

Road ID	Station Location		BMP ID	HSG	Buffer Slope	Buffer Length (ft)	Impervious Area (ac)	Export Coefficient	Pre-Treat Export (lbs P/yr)	BMP Treatment Factor	Post-Treat Export (lbs P/yr)	Road Width After Revegetation (ft)
NR 1	165+50	- 168+00	ADN25	C	11.81	55.00	0.07	1.75	0.12	0.30	0.04	12
NR 1	168+00	- 168+50	-	-	-	-	0.01	1.75	0.02	1.00	0.02	12
NR 1	168+50	- 171+00	DTN26	C/D	10.83	120.00	0.07	1.75	0.12	0.35	0.04	12
N12		-	-	-	-	-	0.25	1.75	0.44	1.00	0.44	-
NR 1	204+50	- 219+00	-	-	-	-	0.40	1.75	0.70	1.00	0.70	12
<b>Totals</b>							<b>16.17</b>		<b>28.30</b>		<b>14.04</b>	

**Project Phosphorus Calculations**

Project Phosphorus Budget (PPB) 14.14 lbs/yr  
 Project Phosphorus Export (PPE) 14.04 lbs/yr

**Evergreen Wind Power  
Oakfield, Maine  
Spaulding Lake Watershed Treatment Calculations**

Impervious Area Road ID Descriptions:	
SR	South Access/Crane Road
NR	North Access/Crane Road
ER	East Access/Crane Road
S	South Turbine Site
N	North Turbine Site
E	East Turbine Site
METR	M.E.T. Road
Misc.	Miscellaneous Imp. Area

BMP ID DESCRIPTIONS	
AD	Buffer Adjacent to Downhill Side of Road
DT	Ditch Turnout Buffer

Road ID	Station Location		BMP ID	HSG	Buffer Slope	Buffer Length (ft)	Impervious Area (ac)	Export Coefficient	Pre-Treat Export (lbs P/yr)	BMP Treatment Factor	Post-Treat Export (lbs P/yr)	Road Width After Revegetation (ft)	
NR 1	123+00	-	124+50	DTN15	C/D	11.67	120.00	0.06	1.75	0.10	0.35	0.03	16
NR 1	124+50	-	127+00	DTN16	C/D	10.83	120.00	0.09	1.75	0.16	0.35	0.06	16
NR 1/N2	127+00	-	130+50	ADN18	C/D	9.46	55.00	0.13	1.75	0.22	0.35	0.08	16
NR 1	130+50	-	131+00	-	-	-	-	0.02	1.75	0.03	1.00	0.03	16
NR 1	131+00	-	133+00	ADN20	C/D	16.87	55.00	0.07	1.75	0.13	0.35	0.04	16
NR 1	133+00	-	135+00	-	-	-	-	0.07	1.75	0.13	1.00	0.13	16
NR 1	135+00	-	137+00	-	-	-	-	0.07	1.75	0.13	1.00	0.13	16
NR 1	137+00	-	156+00	-	-	-	-	0.70	1.75	1.22	1.00	1.22	16
NR 1/N9	171+00	-	173+00	DTN27	C/D	10.00	120.00	0.20	1.75	0.34	0.35	0.12	16
NR 1/N9	173+00	-	175+00	DTN28	C/D	10.00	120.00	0.20	1.75	0.34	0.35	0.12	16
NR 1	175+00	-	183+00	-	-	-	-	0.29	1.75	0.51	1.00	0.51	16
NR 1/N10	183+00	-	187+50	ADN29	C/D	10.82	55.00	0.42	1.75	0.73	0.35	0.26	16
NR 1	187+50	-	190+00	DTN30	C/D	6.67	120.00	0.09	1.75	0.16	0.35	0.06	16
NR 1	190+00	-	192+50	-	-	-	-	0.09	1.75	0.16	1.00	0.16	16
NR 1	192+50	-	195+00	DTN32	C/D	15.00	120.00	0.09	1.75	0.16	0.35	0.06	16
NR 1	195+00	-	198+50	-	-	-	-	0.13	1.75	0.22	1.00	0.22	16
NR 1/N11	198+50	-	202+00	ADN32A	C/D	19.24	55.00	0.35	1.75	0.61	0.35	0.21	16
NR 1	202+00	-	204+50	-	-	-	-	0.09	1.75	0.16	1.00	0.16	16
N METR	650+00	-	651+00	-	-	-	-	0.03	1.75	0.05	1.00	0.05	-
N METR	651+00	-	653+50	DTN57	C/D	10.83	120.00	0.07	1.75	0.12	0.35	0.04	-
N METR	653+50	-	655+00	DTN58	C/D	9.58	120.00	0.04	1.75	0.07	0.35	0.03	-
N METR	655+00	-	658+50	ADN59	C/D	14.00	55.00	0.10	1.75	0.17	0.35	0.06	-
N METR	658+50	-	660+00	DTN60	C/D	10.42	120.00	0.04	1.75	0.07	0.35	0.03	-
N METR	660+00	-	662+00	DTN61	C/D	5.42	120.00	0.06	1.75	0.10	0.35	0.03	-
N METR	662+00	-	663+92	ADN62	C/D	7.27	55.00	0.05	1.75	0.09	0.35	0.03	-
							<b>Totals</b>	<b>3.54</b>		<b>6.20</b>		<b>3.87</b>	

**Project Phosphorus Calculations**

Project Phosphorus Budget (PPB)	3.66	lbs/yr
Project Phosphorus Export (PPE)	3.87	lbs/yr
Mitigation Credit	0.26	lbs/yr
Project Phosphorus Export (PPE)	3.61	lbs/yr

## Worksheet 1 PPB calculations

Project name: Oakfield Wind  
 Lake name: Skitacook Lake  
 Town name: Oakfield

### Standard Calculation

Watershed per acre phosphorus budget (Appendix C):	<b>PAPB</b>	<u>0.047</u>	lbs P/acre/year
Total acreage of development parcel:	<b>TA</b>	<u>329.7</u>	acres
NWI wetland acreage:	<b>WA</b>	<u>0.83</u>	acres
Steep slope acreage:	<b>SA</b>	<u>9.55</u>	acres
Existing developed area			acres
Project acreage: $A = TA - (WA + SA)$	<b>A</b>	<u>319.32</u>	acres

<b>Project Phosphorus Budget:</b> $PPB = P \times A$	<b>PPB</b>	<u>15.00804</u>	<b>lbs P/year</b>
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### Small Watershed Adjustment

If Project Acreage (A) is greater than the threshold acreage for the small watershed threshold (SWT, from pertinent lake and town info in the table in Appendix C), calculate an alternative PPB using the analysis below and use this value if it is less than

Small Watershed Threshold (Appendix C):	<b>SWT</b>	<u>181</u>	acres
Project acreage:	<b>A</b>	<u>319.32</u>	acres
Allowable increase in town's share of annual phosphorus load to lake (Appendix C):	<b>FC</b>	<u>33.86</u>	lbs P/year
Area available for development (Appendix C):	<b>AAD</b>	<u>3623</u>	acres
Ratio of A to AAD ( $R=A/AAD$ )	<b>R</b>	<u>0.088136903</u>	

<b>If <math>R &lt; 0.5</math>,</b>	<b>Project Phosphorus Budget</b> $PPB = [(FC \times R)/2] + [FC/4]$	<b>PPB</b>	<u>9.95715777</u>	<b>lbs P/year</b>
<b>If <math>R &gt; 0.5</math>,</b>	<b>Project Phosphorus Budget</b> $PPB = FC \times R$	<b>PPB</b>	2.98431554	<b>lbs P/year</b>

## Worksheet 1 PPB calculations

Project name: Oakfield Wind  
 Lake name: Meduxnekeag Lake  
 Town name: Oakfield

### Standard Calculation

Watershed per acre phosphorus budget (Appendix C):	<b>PAPB</b>	<u>0.054</u>	lbs P/acre/year
Total acreage of development parcel:	<b>TA</b>	<u>255.56</u>	acres
NWI wetland acreage:	<b>WA</b>	<u>0</u>	acres
Steep slope acreage:	<b>SA</b>	<u>7.46</u>	acres
Existing developed area			acres
Project acreage: $A = TA - (WA + SA)$	<b>A</b>	<u>248.1</u>	acres

<b>Project Phosphorus Budget:</b> $PPB = P \times A$	<b>PPB</b>	<u>13.3974</u>	<b>lbs P/year</b>
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### Small Watershed Adjustment

If Project Acreage (A) is greater than the threshold acreage for the small watershed threshold (SWT, from pertinent lake and town info in the table in Appendix C), calculate an alternative PPB using the analysis below and use this value if it is less than

Small Watershed Threshold (Appendix C):	<b>SWT</b>	<u>242</u>	acres
Project acreage:	<b>A</b>	<u>248.1</u>	acres
Allowable increase in town's share of annual phosphorus load to lake (Appendix C):	<b>FC</b>	<u>52.54</u>	lbs P/year
Area available for development (Appendix C):	<b>AAD</b>	<u>6458</u>	acres
Ratio of A to AAD ( $R=A/AAD$ )	<b>R</b>	<u>0.038417467</u>	

<b>If <math>R &lt; 0.5</math>,</b> <b>Project Phosphorus Budget</b> $PPB = [(FC \times R)/2] + [FC/4]$	<b>PPB</b>	<u>14.14422685</u>	<b>lbs P/year</b>
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<b>If <math>R &gt; 0.5</math>,</b> <b>Project Phosphorus Budget</b> $PPB = FC \times R$	<b>PPB</b>	<u>2.018453701</u>	<b>lbs P/year</b>
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## Spaulding Lake PPB Calculation

Project name: Oakfield Wind  
 Lake name: Spaulding Lake  
 Town name: Oakfield

### Standard Calculation

Watershed per acre phosphorus budget (Appendix C):	<b>PAPB</b>	<u>0.03</u>	lbs P/acre/year
Total acreage of development parcel:	<b>TA</b>	<u>130.8</u>	acres
NWI wetland acreage:	<b>WA</b>	<u>0</u>	acres
Steep slope acreage:	<b>SA</b>	<u>17.5</u>	acres
Existing developed area			acres
Project acreage: $A = TA - (WA + SA)$	<b>A</b>	<u>113.3</u>	acres

<b>Project Phosphorus Budget:</b> $PPB = P \times A$	<b>PPB</b>	<u>3.399</u>	<b>lbs P/year</b>
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### Small Watershed Adjustment

If Project Acreage (A) is greater than the threshold acreage for the small watershed threshold (SWT, from pertinent lake and town info in the table in Appendix C), calculate an alternative PPB using the analysis below and use this value if it is less than

Small Watershed Threshold (Appendix C):	<b>SWT</b>	<u>112</u>	acres
Project acreage:	<b>A</b>	<u>113.3</u>	acres
Allowable increase in town's share of annual phosphorus load to lake (Appendix C):	<b>FC</b>	<u>13.31</u>	lbs P/year
Area available for development (Appendix C):	<b>AAD</b>	<u>2246</u>	acres
Ratio of A to AAD ( $R=A/AAD$ )	<b>R</b>	<u>0.050445236</u>	

<b>If <math>R &lt; 0.5</math>,</b> <b>Project Phosphorus Budget</b> $PPB = [(FC \times R)/2] + [FC/4]$	<b>PPB</b>	<u>3.663213045</u>	<b>lbs P/year</b>
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<b>If <math>R &gt; 0.5</math>,</b> <b>Project Phosphorus Budget</b> $PPB = FC \times R$	<b>PPB</b>	0.671426091	<b>lbs P/year</b>
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**APPENDIX 12-5**

**Post-Construction Stormwater Inspection and Maintenance Log**

**Oakfield Wind Project  
Stormwater Management System Inspection & Maintenance Log**

	Schedule		Inspector Initials and Date	Inspector Comments
	Monthly Inspection	Maintenance		
<b>Revegetated Areas and Embankments:</b>				
Inspect all revegetated areas and embankments	X			
Replant bare areas or areas with sparse growth		As Required		
Armor areas with rill erosion with an appropriate lining or divert the erosive flows to on-site		As Required		
<b>Drainage Conveyance Systems:</b>				
Inspect swales, level spreaders and plunge pools for evidence of erosion, debris, woody growth and excessive sediment	X			
Remove any obstructions and accumulated sediments or debris		As Required		
Control vegetated growth and woody vegetation		As Required		
Repair any erosion of the swale lining		As Required		
Mow vegetated swales		Annually		
Remove woody vegetation growing through riprap		As Required		
Repair any slumping side slopes		As Required		
Replace riprap where underlying filter fabric is showing or where stones have dislodged		As Required		
<b>Culverts:</b>				
Inspect culvert inlet, outlet, and structure	X			
Remove accumulated sediment and debris at the inlet, at the outlet, and within the conduit		As Required		
Repair any erosion at the culvert's inlet and outlet		As Required		

**Oakfield Wind Project**

## Stormwater Management System Inspection & Maintenance Log

### Schedule

	Monthly Inspection	Maintenance	Inspector Initials and Date	Inspector Comments
<b>Roadway Surfaces:</b>				
Inspect access road surfaces and shoulders for erosion, false ditches, and excess accumulation of sand that could impede water flow				
Remove excess sand either manually or with a front-end loader		<b>As Required</b>		
Grade gravel roads and shoulders		<b>As Required</b>		
<b>Substation Yard:</b>				
Inspect for existing or developing erosion, rutting, trash, and unwanted vegetation	<b>X</b>			
Correct any erosion/rutting and/or remove trash or vegetation		<b>As Required</b>		
<b>Water Quality Treatment Buffer:</b>				
Inspect treatment buffers for evidence of erosion or concentrated flow	<b>X</b>			
Inspect and repair down slope of all spreaders for erosion	<b>X</b>	<b>As Required</b>		
Repair, reseed areas of erosion or damaged vegetation in the buffers		<b>As Required</b>		
<b>Maintenance Needed and When:</b>				

**APPENDIX 12-6**

**Declaration of Restrictions**

**(Forested Buffer Limited Disturbance)**

**DECLARATION OF RESTRICTIONS**  
(Forested Buffer, Limited Disturbance)

THIS DECLARATION OF RESTRICTIONS is made this \_\_\_\_ day of \_\_\_\_\_, 2011, by **EVERGREEN WIND POWER II, LLC**, A Delaware limited liability company having a mailing address at c/o First Wind Energy, LLC, 85 Wells Ave., Suite 305, Newton, MA 02459 (herein referred to as the “Declarant”), pursuant to a permit received from the Maine Department of Environmental Protection under the Stormwater Management Law, to preserve a buffer area on a parcel of land near

\_\_\_\_\_, \_\_\_\_\_.  
(road name) (known feature and/or town)

WHEREAS, the Declarant is the developer of a certain wind power project being constructed on lands located in \_\_\_\_\_, Aroostook County, Maine (the “Project”) in accordance with the Site Location Order # \_\_\_\_\_ (the “Order”);

WHEREAS, the Declarant is the tenant under that certain Land Lease Agreement dated \_\_\_\_\_, a memorandum of which being recorded at the Aroostook County Registry of Deeds in Book \_\_\_\_\_, Page \_\_\_\_\_ (the “Lease”), pursuant to which Lease the Declarant controls certain real property necessary for the Project situated in \_\_\_\_\_, Maine described in a deed to \_\_\_\_\_ dated \_\_\_\_\_, 20\_\_, and recorded in Book \_\_\_\_\_, Page \_\_\_\_\_, at said Registry of Deeds, herein referred to as the “property;” and

WHEREAS, pursuant to Condition \_\_\_\_ of the Order, Declarant desires to place certain restrictions, under the terms and conditions herein, over a portion of said real property (hereinafter referred to as the “Restricted Buffer”) described as follows: **(Note: Insert description of restricted buffer area location here)**

WHEREAS, pursuant to the Stormwater Management Law, 38 M.R.S.A. Section 420-D and Chapter 500 of rules promulgated by the Maine Board of Environmental Protection (“Stormwater Management Rules”), Declarant has agreed to impose certain restrictions on the Restricted Buffer Area as more particularly set forth herein and has agreed that these restrictions may be enforced by the Maine Department of Environmental Protection or any successor (hereinafter the “MDEP”);

NOW, THEREFORE, the Declarant hereby declares that the Restricted Buffer area is and shall be held, transferred, sold, conveyed, occupied and maintained subject to the conditions and restrictions set forth herein during the term hereof. The Restrictions shall run with the Restricted Buffer Area and shall be binding on all parties having any rights, title or interest in and to the Restricted Buffer Area, or any

portion thereof, and their heirs, personal representatives, successors, and assigns. Any present or future owner or occupant of the Restricted Buffer Area or any portion thereof, by the acceptance of a deed of conveyance or all or part of the Covenant Area or an instrument conveying any interest therein, whether or not the deed or instrument shall so express, shall be deemed to have accepted the Restricted Buffer Area subject to the Restrictions and shall agree to be bound by, to comply with and to be subject to each and every one of the Restrictions hereinafter set forth.

1. Restrictions on Restricted Buffer Area. Unless the owner or occupant of the Restricted Buffer Area, or any successors or assigns, obtains the prior written approval of the MDEP, the Restricted Buffer Area must remain undeveloped for the term of this Declaration. To maintain the ability of the Restricted Buffer Area to filter and absorb stormwater, and to maintain compliance with the Stormwater Management Law and the permit issued thereunder to the Declarant, the use of the Restricted Buffer Area is hereinafter limited as follows:

- a. No soil, loam, peat, sand, gravel, concrete, rock or other mineral substance, refuse, trash, vehicle bodies or parts, rubbish, debris, junk waste, pollutants or other fill material may be placed, stored or dumped on the Restricted Buffer Area, nor may the topography of the area be altered or manipulated in any way;
- b. Any removal of trees or other vegetation within the Restricted Buffer Area must be limited to the following definition of general forest used:
  - (i) The land must be maintained in essentially forest cover with undisturbed soil, duff layer and ground cover vegetation, and understory vegetation. Timber may be harvested on a selective basis provided that no more than 40% of the volume is harvested within any 10 year period.
- c. No building or other temporary or permanent structure may be constructed, placed or permitted to remain on the Restricted Buffer Area, except for a sign, utility pole or fence;
- d. Any level lip spreader directing flow to the Restricted Buffer Area must be regularly inspected and adequately maintained to preserve the function of the level spreader.

Any activity on or use of the Restricted Buffer Area during the term of this Declaration that is inconsistent with the purpose of these Restrictions is prohibited. Any future alterations or changes in use of the Restricted Buffer Area during the term of this Declaration must receive prior approval in writing from the MDEP. The MDEP may approve such alterations and changes in use if such alterations and uses do not impede the stormwater control and treatment capability of the Restricted

Buffer Area or if adequate and appropriate alternative means of stormwater control treatment are provided.

2. Enforcement. The MDEP may enforce any of the Restrictions set forth in Section 1 above.
3. Term; Binding Effect. The term of this Declaration shall expire upon the decommissioning of the Project as described in the Order. The restrictions set forth herein shall be binding on any present or future owner or occupant of the Restricted Buffer Area during the term hereof. If the Restricted Buffer Area is at any time owned or leased by more than one owner/occupant, each owner/occupant shall be bound by the foregoing restrictions to the extent that any of the Restricted Buffer Area is included within such owner/occupant's property.
4. Amendment. Any provision contained in this Declaration may be amended or revoked only by the recording of a written instrument or instruments specifying the amendment or the revocation signed by the tenant or tenants under the Lease and by the MDEP.
5. Effective Provisions of Declaration. Each provision of this Declaration, and any agreement, promised, covenant and undertaking to comply with each provision of this Declaration, shall be deemed a land use restriction running with the land as a burden and upon the title to the Restricted Buffer Area during the term hereof.
6. Severability. Invalidity or unenforceability of any provision of this Declaration in whole or in part shall not affect the validity or enforceability of any other provision or any valid and enforceable part of a provision of this Declaration.
7. Governing Law. This Declaration shall be governed by and interpreted in accordance with the laws of the State of Maine.

EVERGREEN WIND POWER II, LLC

By: \_\_\_\_\_  
(Name)

STATE OF MAINE, COUNTY OF \_\_\_\_\_, \_\_\_\_\_, 2011

Personally appeared before me the above-named \_\_\_\_\_, \_\_\_\_\_ of Evergreen Wind Power II, LLC, who swore to the truth of the foregoing to the best of (his/her) knowledge, information and belief and acknowledged the foregoing instrument to be (his/her) free act and deed and the free act and deed of said company.

\_\_\_\_\_  
Notary Public