

# Stormwater Narrative

## **Randall Farm 6 Lot Subdivision**

### **Peggy M. Farr Revocable Trust**

#### **1. Introduction**

Krebs and Lansing Consulting Engineers Inc. (K&L) are writing on behalf of the Peggy M. Farr Revocable Trust to prepare a Stormwater Management Plan for a proposed six lot subdivision located between East Hill Road and Kenyon Road in Richmond, Vermont.

#### **2. Project Description**

The applicant proposes to subdivide an existing 220.9 acre lot into six lots. Lots 1-5 will be new building lots. Lot 6 will be remaining lands with no development proposed at this time. The new building lots will be served by a private gravel road from East Hill Road. The proposed stormwater treatment practices include two gravel wetlands, one with forebay pre-treatment and one with grass channel pre-treatment. A total of 1.07 acres of new impervious surface is proposed and will be treated to the standards of the 2017 Vermont Stormwater Management Manual.

#### **3. Existing Condition**

The existing site is undeveloped. The undeveloped land includes a meadow area to the south, but is primarily wooded. There are wetlands to the east of the proposed lots. The site is bounded by East Hill Road to the south, Kenyon Road to the east, and mostly wooded, rural areas to the north and west.

Soils on the site in the area of development are classified as Peru fine sandy loam, Lyman-Marlow complex, and Marlow fine sandy loam, very stony. All of these soils are classified as hydrologic soils group "D". "D" soils have a low permeability and a high degree of existing runoff.

#### **4. Existing Stormwater System**

There is no existing stormwater infrastructure on the site.

#### **5. Proposed Stormwater System:**

The project has been modeled as a two watersheds draining to existing wetlands that eventually drain via culverts and existing channels eventually discharges under East Road via to Johnnie Brook. Each watershed drains to one of the proposed gravel wetlands.

a) Description of Impervious Area: There is no permitted impervious area on the site. New impervious areas include a 24' wide shared private road, individual driveways to the house sites, and rooftops from the new residential buildings. There is a total of 1.07 acres of impervious area proposed, all classified as "new".

b) Receiving Body: Wetlands in the Johnnie Brook watershed

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- c) Fish Habitat Designation for Receiving Water: Warm
- d) Description of compliance with each of the treatment standards in the 2017 VSMM including the treatment practices or waivers used to meet each of the following standards:
  - i) Post-Construction Soil Depth and Quality Standard:

This standard will be met via two options outlined in the VSMM.

Option 1: Areas outside of construction will be left undisturbed and protected from compaction during construction.

Option 3: Remove and stockpile existing topsoil during construction. On site soil testing indicates an existing sandy loam topsoil layer on the site ranging from 7-13 inches in depth. Given that much of the finish site will be covered in building or paving, there will be an excess of existing topsoil to re store other disturbed areas such as setbacks, vegetated islands, swales, and side-slopes. Compost will be incorporated into the existing topsoil stockpile if needed to achieve 4% organic content.
  - ii) Groundwater Recharge Standard:

This standard is waived because the entire site area is located on hydrologic group “D” soils.
  - iii) Water Quality Treatment Standard (WQ<sub>v</sub>):
    - (1) S/N 001: WQ<sub>v</sub> will be met for S/N 001 via the use of Gravel Wetlands #1 & #2. The stone voids in the gravel wetland will store 50% of the WQ<sub>v</sub> draining to this area. The remaining 50% WQ<sub>v</sub> is provided by extended detention using a 1” diameter orifice. Pre-treatment for Gravel Wetlands #1 is provided via a sediment forebay. Pre-treatment for Gravel Wetlands #2 is provided in a grassed channel.
  - iv) Channel Protection Standard (CP<sub>v</sub>):
    - (1) S/N 001: CP<sub>v</sub> is met for S/N 001 via the Extended Detention Method and Gravel Wetlands #1 & #2. Additional storage is provided above the wetland gravel, along with a low flow orifices and controlled outlet structures to meet the detention requirements. A 1.0” minimum diameter orifice has been provided for each structure.
  - v) Overbank Flood Protection Standard (Q<sub>P10</sub>):
    - (1) S/N 001: The Overbank Flood Protection Standard is met using Gravel Wetlands #1 & #2 to limit post development peak flows below predevelopment levels. The predevelopment peak flow for S/N 001 is 17.5 cfs., while the post development peak flow is 11.1 cfs.
  - vi) Extreme Flood Protection Standard (Q<sub>P100</sub>):
    - (1) This standard is waived because less than 10 acres of impervious surface is being proposed.

### **Location Map**

[Insert project specific location map here. You may download topographic map from the [Natural Resource Atlas](#). Please show the site outline, the location of the discharge point(s) and receiving waters. The scale of the location map should be between 1:20,000 and 1:40,000.]

**See Attached Location Map.**

### **Soils Map**

[Insert project specific soils map here. Soils information can be found at the [Web Soil Survey](#) website. Hydrologic Soil Groups— “HSGs” shall be overlaid with site outline. Soils information can also be provided as data layer on an existing or proposed condition plan sheet (if included as a data layer on one of the plan sheets please indicate that here)]

**See Attached Soils Map.**