Jim Ryan

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
STORMWATER PROGRAM

DEC’s Municipal Roads General Permit
Today’s Presentation

• Roads and water quality
• MRGP Timelines and coverage
• Hydrologic connectivity
• Road Erosion Inventories
• Very High Priority roads and prioritization
• Implementation Table and Annual Reporting
• MRGP Standards
• MRGP Fees
• Available assistance and summary for municipalities
Vermont Road Mileage

- 18,777 total road miles
- 155 miles of federal roads - 1%
- 2,709 miles of state highway - 14%
- 2,823 miles of private roads - 15%
- 13,090 miles of town highway (Classes 1-4) - 70%
Municipal Road Classes

Road Class Distribution (annually reported to Vtrans)

- **Class 1**: 139 miles or 1.1% (VTrans and municipally-maintained)
- **Class 2**: 2,790 miles or 21.2%
- **Class 3**: 8,535 miles or 65.2%
- **Class 4**: 1,627 miles or 12.5%
Potential Road Pollutants

- Nutrients – Phosphorus
- Sediment
- Trace heavy metals
- Hydrocarbons
- Road salt
Modeled phosphorus loading to Lake Memphremagog
(Municipal roads approximately 6.6% of total P)
Secondary benefits: Flood resilience and reducing town road maintenance and costs

Photo Credits: Beverley Wemple
Wemple
Bryan Pfeiffer
Draft municipal roads general permit

Summer-Fall 2017

MRGP public hearings and comments

July 31, 2018

Municipalities apply for MRGP coverage (NOI) and pay fees

2021 and 2022

Required implementation of priority road projects. A minimum of 15% of non-compliant segments upgraded to meet standards in 2021 and 2022

Starting in 2019- Annual Reports due April 1st

January 2018

MRGP Issued

December 31, 2020

Initial Road Erosion Inventory and Implementation Table Due
December 31, 2025

**MRGP Timeline of Deliverables ( Longer-Term )**

On-going MRGP practice implementation and maintenance throughout

- **December 31, 2025**
  - All Very High Priority segments (except Class 4) upgraded

- **December 31, 2028**
  - All Class 4 Very High Priority segments upgraded

- **2023**

- **2025**

- **2028**

- **2036**

**Annual MRGP schedule updates - due April 1st**

**December 31, 2036**

- All connected roads meet MRGP Standard. On-going practice maintenance forward
MRGP Coverage

Discharges of Stormwater (SW) from municipal roads including:

• Town highways, Classes 1-4

• SW infrastructure associated with town highways under the operational control of the municipality

Exemptions:

• **Unorganized towns and gores exempt** from MRGP permit

• **MS4 towns**- exempt from MRGP fee and permit application but MRGP standards implementation will be required in future SW Management Plans
What is not covered by the MRGP

• Perennial stream crossing replacements or retrofits

• Road embankment streambank or lakeshore stabilization-related to stream or wave erosion

• Standard implementation considered infeasible if the implementation of that practice will trigger another state or federal permit (except non-reporting permits such as ACOE Self-Verified)
Hydrologically-Connected Road Segments
Hydrologically-Connected Roads

**Connected Criteria:**

- Municipal roads within 100’ of a water resource
- Municipal road that bisects (crosses) and drains to a water resource
- Municipal road located within the DEC river corridor
- Segments can be re-classified as connected, or not connected, during the inventories
- Catch basin outfalls within 500’ of a water resource and those segments associated with those outfalls

**Water Resources:**

- Perennial streams
- Intermittent streams
- Wetlands
- Lakes and Ponds
Road Stormwater Management Plan Components

Inventory

Prioritize – Implementation Table

Implement
# Road Inventory and Evaluation Form A

## PAVED ROADS WITH OPEN DITCHES

### GRAVEL/OPEN (DITCHED) NON-CLASS 4 ROADS

<table>
<thead>
<tr>
<th>Name:</th>
<th>Date:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Road Segment Name, Town Highway Number &amp; Segment ID Number</th>
<th>ANR Atlas Slope</th>
<th>Field Determined Slope</th>
<th>Road Type:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Paved</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Gravel</td>
</tr>
</tbody>
</table>

### 1. ROADWAY CROWN/TRAVEL LANE: (N/A for Paved) What percentage of the segment is properly crowned (¼" to ½" per foot), in-sloped, or out-sloped? Note if erosion is present due to poor road surface material.

- **Erosion Type Present**
- **Present**
- **Not Present**

#### 2. GRADER BERM/WINDROW: What percentage of the segment (both sides of road, 200m, 656') is the grader berm/window removed? (N/A for paved roads)

- **Erosion Type Present**
- **Present**
- **Not Present**

#### 3. ROAD DRAINAGE: What percentage of the segment (both sides of road, 200m, 656') is the allowed to shed in a distributed manner to a vegetated or forested filter area (shoulder lower than travel lane) or drainage ditch stabilized appropriately for the slope range below?

- **<5% slope:** stabilized with vegetation, stone-lined, or check dams
- **>5% to <8% slope:** stabilized with stone-lined ditch or combination of grass lined ditch with check dams or grass-lined ditch if installed with disconnection practices such as turnouts and cross culverts
- **>8% slope:** stone-lined ditch required

#### 4. CONVEYANCE AREA/TURNOUT: Do drainage outlets/conveyance areas meet the standard of being turned out, shed in a distributed manner down the bank (shedding water), and/or stabilized with vegetation (<5% slope) or stone (≥5% slope)?

- **Erosion Type Present**
- **Present**
- **Not Present**

### 5 & 6. DRIVEWAY & DRAINAGE CULVERTS

<table>
<thead>
<tr>
<th>A. Type of culvert?</th>
<th>B. Is erosion present?</th>
<th>C. Where in the culvert cross section is erosion present and is it rill or gully erosion?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driveway</td>
<td>No (Fully Meets)</td>
<td>C1. Failing header/end treatment?</td>
</tr>
<tr>
<td>Drainage</td>
<td>Yes (complete C)</td>
<td>C2. Outlet scour or perched culvert?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C3. Undersized/missing structure/poor condition?</td>
</tr>
<tr>
<td>Driveway</td>
<td>No (Fully Meets)</td>
<td>Rill (Partially Meets)</td>
</tr>
<tr>
<td>Drainage</td>
<td>Yes (complete C)</td>
<td>Gully (Does Not Meet)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rill (Partially Meets)</td>
</tr>
<tr>
<td>Driveway</td>
<td>No (Fully Meets)</td>
<td>Rill (Partially Meets)</td>
</tr>
<tr>
<td>Drainage</td>
<td>Yes (complete C)</td>
<td>Gully (Does Not Meet)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rill (Partially Meets)</td>
</tr>
</tbody>
</table>

### Other Erosion Present?

- River-road embankment erosion
- Historic stone walls, LF:

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A screenshot was added to your Dropbox.
Road Erosion Inventories (REI)

Determine if MRGP standards are met by evaluating individual practices within the road cross section.
Road Erosion Inventories (REIs)

Separate REIs and standards for:

- Paved and gravel roads with ditches
- Paved roads with catch basins
- Class 4 roads

REI “scores” for each 328 foot segment:

- Fully Meets
- Partially Meets or
- Does Not Meet
Approximately half of connected roads already meet the MRGP Standards.
Implementation Prioritization

- Towns will submit REI results and Implementation Tables by 12/31/2020

- All “connected” roads brought up to MRGP standards no later than 12/31/2036
Very High Priority (VHP) Segments Criteria

Gravel and Paved Roads with Drainage Ditches:
• *Does Not Meet* MRGP on slopes >10%

Paved Roads with Catch Basins:
• *Does Not Meet* with outfall erosion of 3 cubic yards or more

cubic yards = (length x width x depth)/27

Class 4 Roads:
• *Does Not Meet* MRGP (gully erosion) on slopes >10%
Very High Priority Segments
Implementation Schedule

VHP Paved and Gravel Roads with Ditches:
• Shall meet standards by 12/31/2025

VHP Class 4 roads:
• Shall meet standards by 12/31/2028

VHP Paved Roads with Catch Basins:
• Shall meet standard by 12/31/2025

(Gully erosion)
<table>
<thead>
<tr>
<th>Segment ID</th>
<th>TH Number</th>
<th>Road Name</th>
<th>Change in Connectivity</th>
<th>Road Type</th>
<th>Segment Slope %</th>
<th>Date of Assessment</th>
<th>Assessor</th>
<th>Organization</th>
<th>Assessment Reason</th>
<th>Assessment Reason Notes</th>
<th>Roadway Crown/Travel Lane</th>
<th>Roadway Crown/Travel Lane Erosion</th>
<th>Grader Berm/Window Assessment</th>
<th>Grader Berm/Window Erosion</th>
<th>Road Drainage Assessment</th>
<th>Roadway Erosion</th>
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<tbody>
<tr>
<td>VT-001</td>
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<td></td>
<td>Gravel-ditched</td>
<td></td>
<td>9</td>
<td>5/13/2017</td>
<td>John Snow</td>
<td>Initial Assessment</td>
<td>Fully Meets</td>
<td>Storm Damage</td>
<td>Fully Meets</td>
<td>Fully Meets</td>
<td>Partially Meets</td>
<td>None</td>
<td>Fully Meets</td>
<td>None</td>
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<td>Gravel-ditched</td>
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<td>10</td>
<td>5/13/2017</td>
<td>John Snow</td>
<td>Initial Assessment</td>
<td>Partially Meets</td>
<td>None</td>
<td>Fully Meets</td>
<td>None</td>
<td>None</td>
<td>Fully Meets</td>
<td>None</td>
<td>Fully Meets</td>
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<td>Gravel-ditched</td>
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<td>5/13/2017</td>
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<td>Re Assesment</td>
<td>Does Not Meet</td>
<td>Gully</td>
<td>Gully</td>
<td>Gully</td>
<td>Does Not Meet</td>
<td>Gully</td>
<td>Does Not Meet</td>
<td>Gully</td>
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<td>VT-004</td>
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<td>Class 4</td>
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<td>5</td>
<td>5/13/2017</td>
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<td>Re Assesment</td>
<td>Does Not Meet</td>
<td>Storm Damage</td>
<td>Does Not Meet</td>
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<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
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<tr>
<td>VT-005</td>
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<td>Class 4</td>
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<td>9</td>
<td>5/13/2017</td>
<td>John Snow</td>
<td>Work Done</td>
<td>Rock lined Ditches</td>
<td>None</td>
<td>Fully Meets</td>
<td>None</td>
<td>Fully Meets</td>
<td>None</td>
<td>None</td>
<td>None</td>
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<td>4</td>
<td>5/13/2017</td>
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<td>Work Done</td>
<td>Rock lined Ditches</td>
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<td>Fully Meets</td>
<td>None</td>
<td>Fully Meets</td>
<td>None</td>
<td>None</td>
<td>None</td>
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<td>12</td>
<td>5/13/2017</td>
<td>John Snow</td>
<td>Work Done</td>
<td>Rock lined Ditches</td>
<td>Partially Meets</td>
<td>None</td>
<td>Fully Meets</td>
<td>None</td>
<td>None</td>
<td>None</td>
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<tr>
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<td>12</td>
<td>5/13/2017</td>
<td>John Snow</td>
<td>Work Done</td>
<td>Rock lined Ditches</td>
<td>Partially Meets</td>
<td>None</td>
<td>Fully Meets</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
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<tr>
<td>VT-009</td>
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<td></td>
<td>Paved-ditched</td>
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<td>12</td>
<td>5/13/2017</td>
<td>John Snow</td>
<td>Work Done</td>
<td>Rock lined Ditches</td>
<td>Partially Meets</td>
<td>None</td>
<td>Fully Meets</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
Implementation Table Components

- Road Erosion Inventory (REI) results

- Connected segments *Fully Meeting, Partially Meeting, and Not Meeting* MRGP Standards - report any segment status changes

- Lists all segments upgraded to meet MRGP Standards in previous calendar year
MRGP Implementation Example

Town A. has 52 total road miles (VT average)

• 26 road miles are hydrologically-connected road segments

• 26 miles not considered connected (no BMP work needed)

• 13 connected road miles currently fully meet MRGP standards (maintenance of BMPs only)

• 13 remaining connected miles – required to be brought up to MRGP Standards before 2036

• 15% of 13 miles = 1.95 miles or 31.2 segments will be brought up to standards over a 2 year period 2021 and 2022
Annual Reports due April 1\textsuperscript{st} – starting in 2019

- Documentation of segment upgrades during the previous calendar year
- Changes to segment compliance status
MRGP Principles

First – Disconnect road Stormwater whenever possible, starting at the top of the road watershed

Second – Infiltrate stormwater

Third – Stabilize conveyances and turn out ditches
Implementation “Triggers”

Required baseline standards- no matter what existing conditions are:

• Road grading/crowning
• Grass and stone-lined ditching (based on slope) or distributed flow
• Removal of grader berm
• Lowering of shoulders
• Stable turnouts

Practices are required when moderate (rill) to severe (gully) erosion present and for new construction:

• 18” drainage culvert minimum- (Culvert sizing information for intermittent streams available)
• 15” drive culvert
• Culvert headwalls/headers
• Culvert outlet stabilization
• Class 4 roads- gully erosion present
• Catch basin outfall erosion
Types of Erosion

Rill erosion 1” to <12” deep

Gully erosion 12” plus
Seed and mulch or stone stabilization required for any work on connected roads within 5 days of disturbance (starting this field season)
Required Baseline Standard

Road crowning
Required Baseline Standard – Grass and stone-lined drainage ditches/distributed flow
## Drainage Ditch MRGP Standards

<table>
<thead>
<tr>
<th>Road Drainages</th>
<th>Paved</th>
<th>Paved/Ditched</th>
<th>Gravel (not Class IV)</th>
<th>Class IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheet flow (no drainage ditch) Can be substituted for grass or stone-lined ditch. Road embankment lower than road surface (no back slope)</td>
<td>N/A</td>
<td>• Distributed flow from roadway/travel lane to grass or forested area</td>
<td>Distributed flow from roadway/travel lane to grass or forested area</td>
<td>-</td>
</tr>
<tr>
<td><strong>Drainage ditch: 0% ≤ Slope &lt; 5%</strong></td>
<td>N/A</td>
<td>• Grass-lined ditch</td>
<td>• Grass-lined ditch</td>
<td>-</td>
</tr>
<tr>
<td><strong>Drainage ditch: 5% ≤ Slope &lt; 8%</strong></td>
<td>N/A</td>
<td>• Stone-lined ditch 6-8” minus minimum stone recommended and/or</td>
<td>• Stone-lined ditch 6-8” minus minimum stone recommended and/or</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Stone-check dams and/or</td>
<td>• Stone-check dams and/or</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• BMPs that disconnect water out of road drainage network (2 cross culverts or 2 turnouts per segment)</td>
<td>• BMPs that disconnect water out of road drainage network (2 cross culverts or 2 turnouts per segment minimum)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Drainage ditches: Slope ≥ 8%</strong></td>
<td>N/A</td>
<td>• Stone-lined ditch 6-8” minus required. 12” minus recommended for slopes &gt;10%</td>
<td>• Stone-lined ditch 6-8” minus required. 12” minus recommended for slopes &gt;10%</td>
<td>-</td>
</tr>
</tbody>
</table>
Required Baseline Standard – Stable Turnouts
Required Baseline Standard – Removal of shoulder/grader berm
Distributed flow instead of a ditch
Driveway culvert erosion and remediation (within right-of-way)
Erosion from lack of culvert headwall/header
Culvert outlet erosion
Catch basin outlet erosion
New MRGP Fees?

Fees established through the 2015 Legislative Fee Bill

• $2,000/annual operating fee

• $400/application fee (once every permit cycle)

• $240/Administrative processing fee (twice every permit cycle – major permit amendments)
MRGP Summary for Municipalities:

- **July 31, 2018**: MRGP application coverage – Notice of Intent and annual fees begin
- **April 1, 2019**: Annual Reporting begins
- **December 31, 2020**: Road Erosion Inventories and Implementation Plans due
- **2021 Field Season** (or sooner): Road upgrades begin
- **December 31, 2025** (or sooner): All *Very High Priority* segments brought up to standards, except Class 4’s
- **December 31, 2028** (or sooner): All *Very High Priority* Class 4 roads brought up to standards
- **December 31, 2036** (or sooner): all connected roads meet MRGP standards
Assistance to Towns

- Funding – *New Municipal Grant-in-Aid*
- Outreach and Technical Assistance
- Shared Equipment
Grant in Aid – FY18 Results and FY19 Funding

FY 18 GIA – Actual Funding:

- 186 participating towns – 70% participation
- $2.6 million
- Approximately 42 road miles will be brought up to the new MRGP standards by July 1, 2018.

FY 19 GIA – $2.9 million (anticipated)
For Additional Information:
http://dec.vermont.gov/watershed/stormwater/permit-information-applications-fees/municipal-roads-program#Development of Permit

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