



State of Vermont
District Maintenance & Fleet Division

Agency of Transportation

Web: [District Maintenance and Fleet | Agency of Transportation \(vermont.gov\)](https://www.vermont.gov/district-maintenance-and-fleet)

Best Management Practice: **“BRIDGE WASHING”**

2/23/2023

Effective Date:

VTrans Authorized Signature:

DocuSigned by:

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Director, District Maintenance & Fleet Division

VTRANS STATE HIGHWAY SYSTEM BRIDGE WASHING BEST MANAGEMENT PRACTICES (BMPs) ** APPLICABLE STATEWIDE **

PURPOSE STATEMENTS

Washing bridges is a preventative maintenance task performed on a recurring basis in order to protect bridge decks, components and superstructure against corrosive effects of chlorides, de-icing chemicals and the accumulation of sand on bridge surfaces throughout the winter.

The VTrans State Highway System Bridge Washing BMP guides maintenance activities in order to:

- ∞ Define appropriate level of service and performance expectations;
- ∞ Maintain safe bridges for the traveling public and bridge maintenance employees;
- ∞ Prevent infrastructure deterioration, extend useful life and provide for a better functioning structure;
- ∞ Comply with VTrans Policy and Federal or State rules and regulations;
- ∞ Reduce Cost (water consumption, energy, equipment and personnel costs);
- ∞ Protect water quality and aquatic wildlife habitats;
- ∞ Create mechanisms and standards for addressing environmentally sensitive areas;
- ∞ Preserve the scenic qualities of the highway corridor.

GUIDING PRINCIPLES

These BMPs have several guiding principles:

- ∞ Compliance with State and Federal Regulatory requirements;
- ∞ Creating consistent statewide requirements;
- ∞ Preserve transportation infrastructure, while maintaining environmental stewardship and conserving protected resources.

LEVEL OF SERVICE & PERFORMANCE EXPECTATIONS

Sweep 100% and wash 50% of all bridges annually in the Spring. It is expected that all bridges will be washed at least every other year and that bridge washing operations are compliant with all applicable Safety and Environmental Regulations. Annual Trainings shall be provided to VTrans Maintenance Personnel directly involved in bridge washing activities.



GENERAL STANDARDS

These standards are applicable only to bridges on the VTrans State Highway System, are subject to the conditions and exceptions noted below and are intended to be implemented to the extent reasonable and practicable when not otherwise required by rule, regulation, or law. Bridge washing operations shall not violate any written VTrans Policy or State/Federal Rule, Regulation or Permit.

The VTrans District Transportation Administrator (DTA) or its designee must ensure compliance with all Vermont Occupational Safety and Health Administration (VOSHA) standards and the Manual for Uniform Traffic Control Devices (MUTCD) by use of contract language and safety plan review meetings with contractors or VTrans personnel. Items to be addressed in addition to VOSHA and MUTCD standards should include, but are not limited to, equipment loading, storage, and access plans; safety plans for working over water; traffic control and mobile operations sign planning, and protection of personnel, infrastructure, and the traveling public.

TARGET AUDIENCE

These BMPs are primarily intended for VTrans District Maintenance & Fleet Division and contractors hired to perform these services. Municipalities may wish to refer to these standards and implement the practices mentioned herein. VTrans will not be responsible for monitoring Municipal performance nor compliance under these standards and practices but may serve as a technical resource for Municipalities regarding the implementation of these practices.

POLICY & REGULATORY REQUIREMENTS – APPLICABLE STATEWIDE

VTrans Policy and State/Federal Regulations will dictate how, where and when these BMPs are applied and to what performance level. The BMPs noted herein are directed at addressing these requirements.

- ∞ VTrans Bridge Washing Policy (Attachment A)
Requirements have statewide implications and include but are not limited to:
 - ∞ Removal and proper disposal of sand, debris, and other material from bridge deck prior to use of water to clean bridge surface.
 - ∞ Water used to flush salts and de-icing chemicals from the bridge must come from a water source which has no potential to harm the receiving water body.
 - ∞ Minimize impact to the receiving waters when washing bridge seats, pier caps, diaphragms, and any other superstructure (steel) components of the bridge.

- ∞ “Transport of Aquatic Plants and Other Nuisance Species” V.S.A Title 10 Chapter 50 Section 1454
[Aquatic Invasive Species Program | Department of Environmental Conservation \(vermont.gov\)](#)

On July 1, 2010, the then 22-year old law was amended prohibiting:

- ∞ Transport of any invasive aquatic species in Vermont. Specifically, the law prohibits transport on the outside of boats, personal watercraft, trailer, or other equipment. That means the outside of an intake hose on any pump or water truck and any pump equipment used by VTrans to get water from natural water bodies. This is a law that has statewide jurisdiction and may require:
 - ∞ Avoiding taking water from document water bodies that are known to have aquatic invasive species per [VT Aquatic Invasive Species Laws & Regulations](#).
 - ∞ Drawing water from nearby municipal water supplies or standpipes installed by various fire districts or other clean/non-contaminated water source.
 - ∞ Cleaning off any equipment used for “working over water” safety programs before moving to next bridge.

- ∞ [Vermont Water Quality Standards](#) in effect or as may be amended.
- ∞ [Vermont Streamflow Protection Law under Vermont Act 135 \(of 2022\)](#) which requires any person withdrawing ‘surface water’ (as defined in 10 V.S.A. § 1002 (20)) to register with and report the water withdrawal and usage to the Vermont Department of Environmental Conservation (VDEC) beginning January 1, 2023. Registration and Reporting triggers are “Surface water withdrawals of over 10,000 gallons in a 24-hour period and 150,000 over 30 days”. Additional guidance can be found [here](#).
- ∞ Federal Clean Water Act – National Pollutant Elimination System - [Transportation Separate Storm Sewer System \(TS4\) General Permit](#). Applicable statewide and, as it relates to bridge washing, prohibits discharging bridge deck washing water into State surface waters.
- ∞ [Federal Migratory Bird \(MBTA\)/Bald & Golden Eagle Protection Act and Endangered Species Act](#)
Both Federal programs are intended to protect bird species of concern.

The MBTA provides that it is unlawful to pursue, hunt, take, harass, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg or any such bird, unless authorized under a permit issued by the Secretary of the Interior. Some regulatory exceptions apply. Take is defined in regulations as: “pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.” The migratory bird species protected by the Act are listed in 50 CFR 10.13. The Bald/Golden Eagle Act is extremely comprehensive, prohibiting the take, possession, sale, purchase, barter, or offer to sell, purchase, or barter, export or import of the bald or Golden eagles at any time or in any manner.

The [Endangered Species Act \(ESA\)](#) and the [Vermont Rare, Threatened, and Endangered Species Rules \(VRTER\)](#) are designed to regulate a wide range of activities affecting species of concern. The ESA protects animals designated as endangered or threatened, and the habitats upon which they depend, while the VRTER also includes protections for state listed endangered, threatened, or rare species. With some exceptions, the ESA and VRTER prohibits taking and other activities affecting these protected species and their habitats unless authorized by a permit. Permitted activities are designed to be consistent with the conservation of the species. Take, from Section 3(18) of the Federal Endangered Species Act, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

Contact VTrans Highway Division Program Development Environmental Program [Staff Biologist](#) or the [Vermont Department of Fish & Wildlife](#) if you find a nest with or without eggs or young and if you feel you have a rare, threatened or endangered species present (i.e., birds, bats or other listed species using the bridge has habitat). Be advised, you may be instructed to avoid disturbing the nest and to wash areas around the nest, leaving the nest undisturbed.

- ∞ Highway Safety
The DTA or its designee must ensure compliance with all VOSHA standards and the Manual for Uniform Traffic Control Devices (MUTCD) by use of contract language and safety plan review meetings with contractors or VTrans personnel. Items to be addressed in addition to VOSHA and MUTCD standards should include, but are not limited to, equipment loading, storage, and access plans; safety plans for working over water; traffic control and mobile operations sign planning, and protection of personnel, infrastructure, and the traveling public.

BRIDGE WASHING PROCEDURES & PRACTICES – APPLICABLE STATEWIDE

1. **WORK PLAN - Prepare for and set up a work plan for each bridge:**
 - a. Traffic control, fall protection, working over water plan, and other MUTCD/VOSHA requirements.
 - b. Consider TS4 requirements for avoiding discharge of wash water to State surface waters. TS4 is statewide.
 - c. Consider proximity of bridge to various clean bridge washing water sources (even sources on route).
 - d. Consider presence of invasive/nuisance aquatic plants/organisms in local surface water sources.
 - e. Consider presence of bird nests or other protected species and complete coordination with the VTtrans Staff Biologist or Vermont Department of Fish & Wildlife prior to disturbing any nests, birds, or other protected species. Bridge washing between April 1 and August 1 is more likely to encounter birds and nesting. Bridge Maintenance Crews that experience recurring bird use, nesting or use by rare, threatened, or endangered species may want to consider installing deterrents on that specific bridge.

2. **WATER SOURCE - Identify appropriate water source:**
 - a. **COMMENCING JANUARY 1, 2023**, Vermont Streamflow Protection under Vermont Act 135 (of 2022) requires any person withdrawing 'surface water' (as defined in 10 V.S.A. § 1002 (20) to register with and report the surface water withdrawal and usage to the Vermont Department of Environmental Conservation (VDEC). Registration and Reporting triggers are surface water withdrawals of over 10,000 gallons in a 24-hour period and 150,000 over 30 days. Additional Guidance can be found [here](#).
 - b. Check for local sources of fresh/clean water and if considering using a local water body as source, check [Agency of Natural Resources \(ANR\) web site](#) for presence of aquatic invasive/nuisance species. If the surface water body intended for use to fill the tanker truck is or is suspected of carrying aquatic invasive/nuisance species, then that water body SHALL NOT be used and an alternate (municipal) clean water source.
 - c. When considering water sources, first seek to use a clean untreated or de-chlorinated water source from a municipal supply, second from fire stand pipe in the same watershed as the bridge scheduled for washing, and final option is from a water body under bridge being washed or in the same watershed if the bridge is not over waters and those water bodies are not known or suspected of carrying aquatic invasive/nuisance species.
 - d. If the only available option is to use a surface water body to fill a water tanker truck, first inspect all hoses, pipes, pumps that will come in contact with the water for any plant material or mud prior to putting this equipment into the water and remove any materials if found and properly dispose of the plant material. Proper disposal means bagged and disposed of in trash receptacle. After pumping is completed, inspect again, and remove plant materials and mud if any are found before moving on to the next bridge. Empty tanker truck of all water taken up from surface water body before moving onto the next bridge.
 - i. **Inspect** and clean off any aquatic plants, animals, and mud from all equipment before leaving bridge location where water was drawn from.
 - ii. **Drain** pumps, hoses and all other water containing devices.
 - iii. **Dispose of unused water on location if source of water is from non-municipal supply.**
 - iv. **Never dump live fish, vegetation, or any other organisms from one water body into another.**

The intent of these actions is to clean off any visible large-bodied organisms attached to equipment. Draining can also remove small organisms such as zebra mussel veligers, however, additional steps are needed to remove small-bodied organisms from other parts of the equipment. Those can be easily rinsed off or die if left out of water in a short period of time. To this end, added precautions that improve treatment effectiveness are to:

- i. **Spray/rinse** equipment with high pressure hot water to clean off mud and kill aquatic invasive species,
 - ii. **Flush pump** motor according to owner's manual, and/or
 - iii. **Dry** everything for at least five days before reuse or **wipe** with a towel before reuse.
- e. If a surface water body is used as bridge washing water source the pipes/hoses used to withdraw water shall be screened to prevent fish entrainment and to help prevent uptake of vegetation.

3. **PRE-WASH BRIDGE SURFACE SWEEPING PROCEDURE- Prior to washing bridge surface:**
 - a. Sweep sand and debris from the bridge as instructed in this BMP.
 - b. Sweepings will be removed by hand using shovels, wheelbarrows or bobcat buckets and placed off the roadway shoulder. Larger amounts of sweepings will be spread out along roadway shoulder after trash and larger debris has been removed for proper disposal. Sweepings can also be trucked back to Maintenance Yard and added to sand pile for future re-use (again after trash and larger debris has been removed and properly disposed of). Sweepings will not be swept into open deck drains or over the edge of the bridge.
 - c. Prior to washing bridge surfaces, all scuppers and other drains will be blocked with unbroken sandbags to prevent accidental discharge of wash water to surface waters under bridge or onto roadway below bridge.
4. **PRE-WASH SUPERSTRUCTURE PROCEDURE - Prior to washing bridge superstructure:**
 - a. If nests are found while on-site working or if you feel you may have a rare, threatened or endangered species present (i.e., Indiana Bat or other listed species using the bridge as habitat), contact Vermont Department of Fish & Wildlife or VTrans Environmental Biologist.
 - b. If bird nests are present, they must not be disturbed. Bridge washing operations may proceed so long as nests and birds can be avoided and left undisturbed.
 - c. If rare, threatened, or endangered species are suspected or are present, Bridge Maintenance Crews must contact VTrans Environmental Biologist or Vermont Department of Fish & Wildlife to confirm species and secure guidance on how to proceed before bridge washing operations commence on that specific bridge.
5. **WASHING BRIDGE AND SUPERSTRUCTURE PROCEDURE:**
 - a. Water hose nozzles will be aimed to minimize overspray into surface waters or roads below bridge.
 - b. Limit psi when washing steel bridge components so as to avoid the accidental dislodging of paint which might end up in the water body beneath the bridge. Pressure washing equipment shall be operated at pressures that do not damage the paint or other coatings on the bridge or undercut the grout or harm the masonry plates beneath the bearings.
 - c. Water will be aimed along the curb line to wash any accumulated sand/salt towards the bridge down slope.
 - d. Washing will include bridge joints, finger joint troughs, bridge shoe and seats and any bridge components that are within the splash zone.
 - e. To the extent practicable, washing of bridges will be scheduled on structures over waterways during the springtime to coincide with high-flow periods or during other high-flow periods following storm events.
 - f. Any bridge deficiencies should be repaired or noted and added to the work schedule.
 - g. **Bridge deck washing to avoid discharge to State surface waters** – All bridge drainage systems shall be blocked during surface washing and to the extent practicable, residual wash water will be diverted to upland areas (i.e., over embankments into vegetated areas or into catch basins) so that sediments may settle out prior to reaching the waterway. Water washed over a vegetated area must not cause scour or contribute to sedimentation of the waterway.
 - h. **Bridge deck washing reporting discharge to State surface waters-** REPORT within 5 business days, to VTrans Operations Environmental Program Stormwater Technician any accidental discharges to water bodies and corrective measures taken to cease the discharge and prevent additional discharges.
 - i. Clean off any equipment used for “working over water” safety programs before moving to next bridge.

ATTACHMENT A
VTrans Bridge Washing Policy

Operations Division Vermont Agency of Transportation	Original Policy Adopted Date: N/a	Original Identification No. 05-MOP--3011
Policy and Procedures Manual	Responsible Section: Maintenance Districts	Policy Name: Bridge Washing
Subject: Training	Approval Date: 11/29/2005	Page(s) 1 of 1

Statutory Reference / Other Authority: Federal and state rules and regulations, and the Manual on Uniform Traffic Control Devices (MUTCD)

Approved by: Samuel B. Lewis, Director of Operations

BRIDGE WASHING

Purpose:

Bridge preventive maintenance is critical in extending the life of bridges. Decks, seats, pier caps and troughs need to be periodically cleaned of debris and salt residue. Over the winter, sand and debris accumulate along the deck /curbing interface, as well as on abutments or pier caps, allowing a perfect medium for residual salt to penetrate to the reinforcing steel and cause deterioration of both the steel and structural concrete. It is important that the process of removing of the sand and debris is accomplished early in the spring and in a manner that does not harm the environment or violate state or federal regulations.

Policy:

Sand, debris, and other material must be removed from the bridge deck prior to the use of pressure water which will remove the salt latents from the deck/curbing interface. Appropriate removal of material can be accomplished with hand tools and power or hand brooms. All removed material must be deposited in an area which will not affect the river, brook or other body of water crossed by the bridge. Generally, an appropriate place for depositing the material can be found along the approaches of the bridge. **No foreign material can be deposited over the side of the bridge rail, even if it is not directly over water!**

Water used to flush the salt latents from the deck must come from a source which has no potential to harm the receiving water body. Scuppers will need to be sand bagged or plugged if they have a direct route to the body of water crossed by the bridge.

Care needs to taken when washing bridge seats, pier caps, and diaphragms to minimize any impact on the receiving water.

Traffic control shall follow the guidance provided in the MUTCD.

It is expected that bridges will be washed at least every other year.