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Sent: Monday, December 15, 2008 1:53 PM
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Cc: Rogers, Scott; Digiammarino, Craig; Campoli, Gina; Portalupi, Alec
Subject: FW: VTrans Stormwater Protocol1.doc

The attached Operational Stormwater Protocol has been developed over the last 18 months and is ready to be implemented throughout AOT Programs. Multiple drafts were sent out for review and comments, and this final version represents consensus between all sections of PDD and OPS. The protocol is based on the project development process and addresses post construction responsibilities as well. It is intended to facilitate the determination of whether a permit is needed, obtaining of the permit and maintaining the treatment facility after the project is constructed. Key elements that will improve our SW practices include:

- involvement of Operations Division throughout
- invitation for ANR to attend PCC
- addressing design changes during construction
- final post construction "hand-off" from PDD to OPS

We recognize the challenges stormwater regulation has posed for our agency, and implementing this protocol can help us meet them. Additionally, we continue our discussions with ANR to pursue improvements to the regulations that will take into account the unique nature of our transportation linear projects.

Please share with staff, and feel free to contact John Narowski with any questions on the protocol.

Many thanks to everyone involved in pulling this together.

Intro: This document (compiled with input from all relevant affected sections) is intended to be used to facilitate typical Program Development Division (PDD) projects' stormwater processes during the various stages of project development and into maintenance. Note: document subject to change.

Scoping Process/ Initial Stormwater Assessment

- **Site Assessment:** An initial site assessment consisting of office research and a field visit should be performed by the design team with assistance from applicable resources prior to a project survey. This assessment should identify existing or future site characteristics that may impact the stormwater management design. Input from District and/ or Municipal Personnel is very useful to understand existing features and areas of concern. Examples that may impact the design and the resulting proposed survey limits include but are not limited to:
 - Project Setting (urban vs. rural, etc)
 - Water Resources (Impaired watershed, Location/Type of receiving water)
 - Existing Stormwater Collection (Type of System – Closed/ Grass Channels/Overland Flow, Structural or non-structural stormwater treatment features present, etc)
 - Site Constraints (Terrain, known resources, wetlands, archeological)
 - Apparent or known deficiencies (areas of severe erosion, suspected illicit discharges, etc.)
 - Watershed Information (Size, Land use cover, Project location in watershed)
 - Existing permits in effect in project vicinity or other regulatory considerations of note

- **Project Survey:** The limits of the project survey should encompass the potential design. The specific data obtained during the site assessment should be analyzed to determine if additional site specific survey may be required for the design of the stormwater management system. The design team should identify and include these areas in the survey request.

- **Alternative Selection and project scope:** Stormwater should be considered when selecting an alternative and in determining the scope of the project. When analyzing the potential project scope, thought should be given to how different alternatives would affect operational stormwater specifically if/how they would differ in terms of permit requirements, potential environmental impacts, potential right-of-way impacts, construction feasibility and ongoing maintenance expectations/ requirements.

Conceptual Plans Process

- **Conceptual Layout:** Project line and grade or relevant other concept design should be done in a manner that considers impacts to receiving waters and opportunities to provide for effective stormwater management. Consideration should be given to context of the site with an eye towards minimization of direct and indirect impacts to surface and groundwater. Generally, existing topography should be matched as closely as practicable and hydrologic modification minimized.

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Preliminary Plans Process

- **Tentative post-construction SW permit jurisdictional determination:** The designer will provide relevant project impervious surface information using appropriate definitions. This will be submitted by the Project Manager to the Environmental Specialist (ES) for determination of permit jurisdiction. Questions on interpretation or options for permit avoidance may be directed to the Stormwater Management Engineer (SWME). The ES will consult with the SWME to confirm appropriate interpretation and identify other issues. The ES will respond with a memo determining whether a permit is needed (cc SWME). The SWME will populate/ update the environmental database to reflect the determination.
- **Preliminary SW design:** If a post-construction stormwater discharge permit is needed, the design team will review the latest iteration of the VT Stormwater Management Manual (VSWMM) vol. 1 and 2 as well as all related documents, forms and instructions needed for a permit available on the ANR Stormwater Section's webpage. Information necessary to complete the design, permit application and necessary supporting design documentation may be needed from several sources within VTrans. Feasibility screening and/ or testing may be required, including borings, soil profiles and infiltration tests. Vol. 2 of the VSWMM contains a guidance checklist for preliminary (and final) plan information. Selection of Stormwater Treatment Practices should consider input and guidance from Matrices in VSWMM Vol. 2, SWME, as well as constructability and operational concerns. If full treatment of each discharge point is not practicable due to site constraints, use of the ANR Site Balancing Procedure may be needed. Frequent consultation and involvement with SWME throughout this process is recommended, particularly when innovative practices are used.
- **Meet with ANR Stormwater:** If a SW permit is needed, meeting with the appropriate regional SW analyst (on-site if appropriate) is recommended to: familiarize them with project goals, context and site constraints, discuss proposed treatment rationale, and gain insight into other regulatory and technical considerations. Visual aids including a location map, GIS orthophotos, plan(s) depicting project jurisdictional impervious areas (shaded), existing and proposed contours etc. and a summary table showing impervious areas by receiving water and by discharge/ analysis point and associated required treatment volumes and waiver applicability is very useful during the meeting. The SWME should always be invited to participate in this meeting and it is advisable to invite the ES as well. Design team should keep minutes, which should be passed around electronically for review/ comment/ concurrence by attendees. Minutes provide useful documentation of issues discussed and provide a record to be included in project files and later submitted with permit application. Having an internal pre-meeting briefing is recommended to ensure consistency.
- **Refine Stormwater Design:** Considering input gathered from relevant AOT Staff and other sources including ANR meeting, geotechnical and infiltration investigations, property owner meetings, resource coordination meeting, other regulation, design standards, etc. the designer should work to refine the SW design. Drainage layout should be completed and preliminary details developed. Effort should be made to maximize use of non-structural treatment methods and promote use of natural treatment systems with an eye towards minimizing maintenance needs and considering life cycle costs. Stormwater can be seen as a resource as well and be used to provide water to certain landscaping features. Submission of calculations, draft details, draft special provisions or other supporting documentation can occur with preliminary plan submittal for review and comment by SWME and/ or hydraulics unit. Informal consultation is encouraged as well. Experience and knowledge from peer designers & other similar designs can prove very useful and should be sought out.

Semi-Final Plans Process

- **Complete and submit SW permit application:** Considering comments/ changes needed from formal Preliminary plan submittal, a complete hard copy of draft SW permit application should be prepared by the designer and submitted to the ES, who will solicit review comments from the SWME, Operations Environmental Coordinator (OEC) and any needed co-permittees (such as Municipalities note: VTrans generally will not be co-permittee with private non-governmental entities). After incorporating review comments, designer will prepare an electronic copy of the final application (pdf format on CD in accordance with ANRs directory/ file format) and sign a hard copy of the NOI as designer. The NOI and CD will be submitted to the ES who will obtain Director signature(s) and submit to the appropriate ANR regional SW analyst. For projects within VTrans proposed ROW it is most appropriate for the PDD Director to sign as owner and OPS Director to sign as operator. For projects on Town highways, the appropriate town official(s) should be the signator(s). Special care must be taken on shared jurisdiction projects, which should be developed in close coordination with the SWME. The SWME and ES shall be cc'd on any subsequent ANR review comments, questions, follow up, correspondence or revised materials related to any SW permits affecting VTrans. Upon receipt of draft permit, the SWME and OEC shall review in detail and discuss needed changes with the SWME to notify ANR. Once the permit is in force, the SWME will update the env. database as appropriate.

- **ROW Take Line Review:** In addition to temporary construction needs, the final ROW must incorporate all land needed for permanent access for maintenance and as necessary to assure control over the impervious surfaces under SW permit jurisdiction and treatment practices, including those associated with SW credits (such as non-rooftop disconnection credit). If a permit is required, the SWME should be invited to participate in this.

Final Plans Process

- **Finalize design details & plan notes:** As necessary to build. Take care not to deviate from materials submitted with permit, which are incorporated by reference. Any deviations should be discussed with the SWME to determine whether additional analysis and/ or permit amendment will be needed.

- **Complete Special Provisions:** As necessary to build. Take care not to deviate from materials submitted with permit which are incorporated by reference.

- **Maintenance Agreement:** a maintenance agreement will be needed for projects having municipal co-permittee(s) to clearly spell out expected maintenance, administrative and financial responsibilities. The SWME and OEC should be involved during development.

- **Layout sheets and Final Plan Submittal:** Vol 2. of VSWMM contains a guidance checklist for final plans related to SW practices. Take care not to deviate from materials submitted with permit which are incorporated by reference. Plans should clearly show regulated (jurisdictional) impervious surfaces covered under permit and locations of treatment practices as well as discharge points to waters and/ or points of reference covered under the permit. To ensure long term success and compliance, it is imperative for the designer to provide a summary of maintenance requirements with or on final plans. It is useful to break out estimated costs associated with Stormwater and provide a summary to the SWME and files. A note should be added on the appropriate layout(s) indicating that any deviations to impervious surface area, drainage, or treatment practices may require amendment of the permit. Prior to implementing proposed changes, the SWME shall be contacted to determine whether an amendment may be necessary. Analysis and administrative work associated with any design changes made during construction that require a permit amendment will be the responsibility of the contractor.

Construction Process

- **Pre-Construction Conference Notification:** The Regional Construction Engineer (RCE) shall ensure that the ANR Stormwater Section Chief (Padraic.monks@state.vt.us) and the VTrans SWME are invited to attend the conference.
- **Notice to Contractor and Field Staff:** The RCE shall inform the Contractor and Resident Engineer of the obligation to contact the Stormwater Management Engineer, if a potential illicit (or suspect) discharge is identified or there is a proposed change in resulting impervious area or drainage conveyance. Prior to implementing proposed field changes, the SWME shall be contacted to determine whether an amendment may be necessary. Analysis and administrative work associated with any design changes made during construction that require a permit amendment will be the responsibility of the contractor (unless alternative arrangements are agreed upon).
- **Routine Site Inspections:** The VTrans Construction Environmental Engineer (CEE) and SWME, and/or ANR Stormwater Analyst will perform periodic site visits throughout construction to ensure compliance with the Permit and provide technical support when problems are identified. Any time a modification is recognized, the project designer and designer will be contacted to analyze the modification and determine appropriate actions. The SWME (and possibly designer) shall perform and document inspections at major milestones and at least 30 days prior to the Contract completion date. Any changes identified shall be corrected in the field or submitted by the contractor to ANR as a Permit Amendment, with oversight from the CEE and SWME, as appropriate.
- **Final Inspection Notification:** The Regional Construction Engineer shall ensure that the ANR Stormwater section chief, the VTrans SWME, the Maintenance District PM (District Project Manager) and OEC (and/ or representatives from the town road authority in the case of municipal projects) are invited to attend the Final Inspection. When determined that the project was built as designed and permitted, responsibility will be transferred to District forces (or the town road authority).

- **Designer Certification:** The SWME (or designer if most appropriate) shall prepare an initial certification of compliance upon substantial completion of the project prior to acceptance of the project by the district.
- **As-Built plan generation:** The Construction Engineer shall ensure that as-builts are prepared in a timely manner which accurately reflect the constructed jurisdictional impervious footprint, drainage conveyances and treatment areas associated with the permit. As built will be made available electronically. The OEC (and/ or the town road authority for municipal projects) will be notified when as-builts are ready.

Maintenance Process

Note: Municipal projects are recommended to follow their own similar administrative process.

- **Transfer of responsibility to OPS (and/ or Municipality) Meeting:** The SWME, OEC, District PM and the town road authority (if applicable) shall meet to discuss the specific inspection and reporting requirements. This meeting will be organized and led by the SWME (may be able to occur during the same meeting as the final inspection, as appropriate). A change of ownership form will be completed, signed and a copy submitted to ANR Stormwater Section so that future compliance correspondence, etc. goes to Operations.
- **Inspection and Reporting:** The District PM shall perform routine inspections and report findings as required by Permit with oversight and compliance tracking from the OEC. Any failures or matters of non-compliance shall be presented to the OEC prior to submittal to ANR Stormwater Section.
- **Periodic Designer certifications:** The OEC will facilitate completion of the designer certifications of ongoing compliance as required by permits. (typically every 3 or 5 yrs). The SWME will be available to assist with this if needed.
- **Perpetual permit renewal:** The OEC will process renewals as needed in coordination with the SWME as needed.

Acronyms

SWME	Stormwater Management Engineer
ES	Environmental Specialist
OEC	Operations Environmental Coordinator
District PM	District Project Manager
CEE	Construction Environmental Engineer
RCE	Regional Construction Engineer
ANR	VT Agency of Natural Resources
VSMM	Vermont Stormwater Management Manual