

RPBCWD VOLUME DESIGN SEQUENCE FLOW CHART

Volume Performance Standard
 New and redevelopment projects:
 a. Abstract onsite or in the same subwatershed a:
 i. volume of 1.1" from regulated impervious surfaces or
 ii. volume from the 95th percentile storm event from site runoff
 Linear projects:
 a. 10,000 sq ft-1 acre of new and/or fully reconstructed impervious surface -> abstract onsite 1.1" off the net increase in impervious surface;
 b. More than 1 acre of new and/or fully reconstructed impervious surface -> Abstract onsite the larger of 1.1" from all new, or .55" from all new and fully reconstructed (D) impervious surfaces.

- Conduct Site Review:**
- In-Situ Infiltration Tests (needed for all infiltration BMPs)
 - Aerial Photos and Topographic Maps
 - County Soil Surveys and other Soil Information as Available
 - County Geologic Atlas
 - Local Groundwater Levels
 - DWSMA and Wellhead Protection Maps
 - FEMA and Local Floodplain Maps
 - Soil Borings (at each stormwater facility) and Site Survey
 - MPCA Listing of Potentially Contaminated Sites
 - Phase 1 and 2 Environmental Site Assessments
 - TMDLs and Local Water Quality Standards
 - Wetland Delineations, MNRAM Assessments, and Wetland Classifications
 - Proposed Conditions, Conceptual/Preliminary Site Design
 - Local zoning and land use requirements/ordinances, including stormwater rate control requirements
 - Communication with Local Landowners, LGU, or Others Knowledgeable about the Site
 - Site Inspection

RPBCWD Volume Abstraction Options (VAO)

The Volume Abstraction Options (VAO) alternatives presented here should be employed when the Performance Standard is not feasible and/or allowed. The designer must document the reasons why the Performance Standard and rejected VAO alternatives are not feasible and/or allowed.

VAO #1
 Applicant attempts to comply with the following conditions:
 1.a. Achieve at least 0.55" volume reduction goal, and
 1.b. Remove 60% of the annual TP load, 90% annual TSS load, and no net increase in TP or TSS compared to existing condition, and
 1.c. Options considered and presented shall examine the merits of relocating project elements to address varying soil conditions and other constraints across the site

VAO #2
 Applicant attempts to comply with the following conditions:
 2.a. Achieve volume reduction to the maximum extent practicable (MEP) (see guidance for MEP analysis description), and
 2.b. Remove 60% of the annual TP load, 90% annual TSS load, and no net increase in TP or TSS compared to existing condition; and
 2.c. Options considered and presented shall examine the merits of relocating project elements to address varying soil conditions and other constraints across the site.

VAO #3
 Offsite abstraction and treatment on another project in the same watershed equivalent to the volume of 1.1" from regulated impervious surfaces or volume from the 95th percentile storm event from site runoff performance standard and remove 60% of the annual TP load, 90% annual TSS load, and no net increase in TP or TSS compared to existing conditions

Notes:

- Volume reduction techniques considered shall include infiltration, rainwater harvesting and reuse, bioretention, permeable pavement, tree boxes, grass swales and/or additional techniques included in the MIDS calculator or the *Minnesota Stormwater Manual*.
- Applicant shall document the volume abstraction options decision sequence, following the order of alternatives presented here.
- For Alternative #2, the applicant is encouraged to use BMPs that reduce volume. Secondary preference is to employ filtration techniques, followed by rate control BMPs.
- Fully reconstructed impervious surfaces: Areas where impervious surfaces have been removed down to the underlying soils. Activities such as structure renovation, mill, and overlay projects, and other pavement rehabilitation projects that do not alter the underlying soil material beneath the structure, pavement, or activity are not considered full reconstruction. In addition, other maintenance activities such as catch basin and pipe repair/replacement, lighting, and pedestrian ramp improvements are not considered fully reconstructed impervious surfaces. Reusing an existing building foundation and re-roofing an existing building are not considered fully reconstructed.
- Soils that infiltrate too quickly may not provide sufficient pollutant removal before the infiltrated runoff enters groundwater.
- A reasonable attempt must be made to obtain right-of-way during the project planning process.
- Other, this is not an exhaustive list.
- Hotspots include any portion of a facility where infiltration is prohibited under an NPDES/SDS industrial stormwater permit issued by the MPCA.
- See [Table 2-15](#) in RPBCWD guidance document for examples of the types of information needed to document the various site constraints. The information in the table, as well as this flow chart, is not an exhaustive list.
- Soil borings are required at each stormwater facility and in-situ infiltration tests are needed for all infiltration BMPs.
- On-site rate control must be provided for each location where discharge leaves the site.

