

Appendix I – 2-Year, 24-Hour Storm Frequencies

This appendix is intended to provide a guide to permittees to determine the volume of precipitation associated with their local 2-year, 24-hour storm event. If the permittee is subject to the numeric turbidity limit in Part 3 of the permit, the C&D rule and Part 3.1.2.1 of the permit provide an exception for storms that are larger than the 2-year, 24-hour storm event during which the limit does not apply. In order to claim this exception during permit coverage, the permittee is required to record and document the amount of rainfall that fell on the site (in inches) either by using a rain gauge or precipitation data from another source within 5 miles of the site. If the volume of rainfall for a particular storm exceeds the 2-year, 24-hour storm volume for the area, then any exceedance of the turbidity limit measured during or after the storm is not considered violations of the limit.

The permittee should start out by determining their local 2-year, 24-hour storm volume. The rainfall frequency atlases, technical papers, and the Precipitation Frequency Data Server (PFDS) developed by the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) serve as national standards for rainfall intensity at specified frequencies and durations in the United States. Operators of construction projects subject to the numeric effluent limits can use these standards to determine their local 2-year, 24-hour storm. Table I-1 identifies methods for determining precipitation frequency based on permit area.

Table I-1 – Method to Determine Precipitation Frequency Based on Permit Area

PERMIT AREA	METHOD TO DETERMINE PRECIPITATION FREQUENCY
District of Columbia	PFDS; Technical Paper 40; NOAA Atlas 14, Vol. 2
Idaho	NOAA Atlas 2, Vol. 5; Technical Paper 40
Massachusetts	Technical Paper 40; Northeast Regional Climate Center: Atlas of Precipitation Extremes for the Northeastern United States and Southeastern Canada
New Hampshire	Technical Paper 40; Northeast Regional Climate Center: Atlas of Precipitation Extremes for the Northeastern United States and Southeastern Canada
New Mexico	PFDS; Technical Paper 40
Selected Pacific Islands	PFDS; Technical Paper 40
Puerto Rico and the U.S Virgin Islands	PFDS; Technical Paper 40
Other	PFDS; Technical Paper 40; NOAA Atlas 2 or 14

How to Claim the 2-Year, 24-Hour Storm Exception in Part 3.1.3.1

The steps you should take to determine if your stormwater discharge in any day is generated by a storm event in that same day that is larger than the local 2-year, 24-hour storm are as follows:

Step 1: Determine your local 2-year, 24-hour storm size.

Projects located in the **District of Columbia, New Mexico, Puerto Rico, U.S. Virgin Islands, or Pacific Islands** can use the PFDS at <http://hdsc.nws.noaa.gov/hdsc/pfds/index.html> or use NOAA's Atlas 14 Volumes 2, 3, and 5, respectively at <http://www.nws.noaa.gov/oh/hdsc/currentpf.htm> to determine their precipitation frequency.

The PFDS is an easy to use, point-and-click interface to official U.S. precipitation frequency estimates and intensities. The opening PFDS screen is a clickable map of the United States. Upon clicking on a state, a state-specific interface appears. From this page the user selects the following:

- A location: Either via clicking on the map or manually entering a longitude/latitude coordinate;
- Type of output: Depth-Duration Frequency (DDF) or Intensity-Duration-Frequency (IDF)
- Units: millimeters or inches; and
- Type of estimate: Point or areal.

Additionally, PFDS also serves as a tool for providing references and other information for other current precipitation frequency standards that are not yet updated.

Projects located in the **District of Columbia, Puerto Rico, U.S. Virgin Islands, or Pacific Islands** can use NOAA's Atlas 14 Volumes 2, 3, and 5, respectively at <http://www.nws.noaa.gov/oh/hdsc/currentpf.htm> or access the PFDS at <http://hdsc.nws.noaa.gov/hdsc/pfds/index.html> to determine their precipitation frequency.

Projects located in **Massachusetts and New Hampshire**, or other areas not covered by the PFDS or NOAA Atlases will need to use TP-40 to identify the precipitation frequency. TP-40 provides a map of the continental U.S. for the 2-year, 24-hour rainfall. TP40 can be accessed at http://www.nws.noaa.gov/oh/hdsc/PF_documents/TechnicalPaper_No40.pdf. (See also attached map of TP-40)

Projects located in **Massachusetts and New Hampshire** can also use data from the Northeast Regional Climate Center: Atlas of Precipitation Extremes for the Northeastern United States and Southeastern Canada. (See attached map of Northeastern United States)

Projects located in **Idaho** can use the NOAA Atlas 2, Vol. 5 to determine their precipitation frequency. NOTE: Precipitation Frequencies on the NOAA Atlas 2, Vol. 5 are in tenths of an inch and will have to be converted to inches to determine precipitation frequency. NOAA Atlas 2, Vol. 5 can be accessed at http://www.nws.noaa.gov/oh/hdsc/PF_documents/Atlas2_Volume5.pdf. (See also attached map of NOAA Atlas 2, Vol. 5)

Step 2: Record the amount of rainfall (in inches) that occurred at your site using a rain gauge, or similar device, or using data from other sources that are no more than 5 miles distance from your site, in accordance with Part 3.1.2.1 of the permit.

Step 3: Compare the measured storm event to the precipitation frequency. If you determine that your stormwater discharges in any day are generated by a storm event in that same day that is larger than the local 2-year, 24-hour storm as determined from the above references, you are not required to comply with the numeric turbidity limit for that day.

2-YEAR 24-HOUR RAINFALL (INCHES)





