

ONE-PER-TWO-YEAR AND ONE-PER-FIVE-YEAR PULSE FLOW STANDARDS IMPLEMENTATION

REVISED AUGUST 1, 2011

Basic concepts:

1. Applies only to applications for right to divert at a rate equal to or greater than 10% of the trigger level for the smallest applicable one-per-two-year pulse flow standard or to impound in an on-channel reservoir at least 5% of the volume of smallest applicable one-per-two-year pulse flow standard. Subject to provision 7 below, smaller applications can ignore both the one-per-two-year and one-per-five-year pulse flow standards.
2. Even for permits to which this provision applies, no conditions imposing any restrictions on operations to meet the one-per-two-year or one-per-five-year pulse flow standard would be required unless the evaluation indicates the need for such restrictions.
3. Applications to which this provision applies would be evaluated to see if an applicable one-per-two-year or one-per-five-year pulse flow requirement might be impaired.
4. A one-per-two-year or one-per-five-year pulse flow requirement would be considered impaired if the permit, in combination with other permits subject to the standards, would reduce the frequency of attainment of an applicable one-per-two-year or one-per-five-year pulse flow by 10% or more or would reduce the average volume of protected large pulses by 10% or more.
5. The baseline for comparison would be permits in effect at the time of adoption of the standards and the analysis would consider the full period of record.
6. If an impairment is indicated, any permit issued would include appropriate permit conditions to avoid the impairment.
7. A cumulative impacts provision would apply to avoid having multiple new authorizations just below the 10% or 5% thresholds significantly impair pulses:
 - a. The cumulative impacts provision would apply once permits subject to the standards have been issued upstream of an established flow standard location authorizing:
 - i. a cumulative diversion rate equal to or greater than 25% of the trigger level for the one-per-two-year pulse flow standard for that location; or
 - ii. a cumulative impoundment capacity in on-channel reservoirs equal to or greater than 15% of the volume of the one-per-two-year pulse flow standard for that location.
 - b. Once the cumulative impacts provision applies, future applications seeking to divert at 5% of the trigger level or 3% of the volume of the one-per-two-year pulse flow standard upstream of that location would have to be evaluated to see if an applicable one-per-two-year or one-per-five-year pulse flow requirement might be impaired.

Possible rule language to implement the concepts:

- (a) This Section applies only to an application subject to this Subchapter that seeks authorization to:
 - 1. divert at a rate equal to or greater than 10% of the trigger level of any applicable one-per-two-year pulse flow standard; or
 - 2. Impound, in an on-channel reservoir, more than 5% of the volume of any applicable one-per-two-year pulse flow standard.
- (b) A water right application to which this Section applies shall not result in impairment of an applicable one-per-two-year or one-per-five-year pulse flow standard set out in Figure ____ [*this would be a table with the 1-per-2-year and 1-per-5-year pulse flows for each gage*].
- (c) For purposes of this Section, an impairment of an applicable one-per-two-year or one-per-five-year pulse flow standard would result if, when modeled over the applicable period-of-record, the authorization, subject to any applicable special conditions and considered in combination with other authorizations subject to this Subchapter, is predicted to result in a reduction of ten percent or more in either:
 - 1. the frequency of attainment with the relevant pulse flow standard when compared to the baseline frequency of attainment predicted to occur under permits as they existed at the time of initial adoption of this Subchapter; or
 - 2. the average volume of pulses protected by the relevant pulse flow standard when compared to the baseline volume predicted to occur under permits as they existed at the time of initial adoption of this Subchapter.
- (d) Modeling undertaken for purposes of this Section shall be based on a WAM Run3 analysis (full use and no assumed return flows) for the relevant period of record.
- (e) In order to address the potential for cumulative effects, this Section shall apply to applications seeking to divert at a rate equal to or greater than 5% of the trigger level or to impound, in an on-channel reservoir, greater than 3% of the volume of any applicable one-per-two-year pulse flow standard if applications subject to the standards have been approved that authorize:
 - 1. diversions upstream of a specific flow standard location at a cumulative rate equal to or greater than 25% of the trigger level for the one-per-two-year pulse flow standard for that location; or
 - 2. impoundment , in on-channel reservoirs, of more than 15% of the volume of the one-per-two-year pulse flow standard for that location.

Example Application of Modeling Approach for One-Per-Two-Year
and One-Per-Five-Year Pulse Flow Standards

Llano River at Llano

1 Pulse Per 2 Years: Trigger = 17,400 cfs
 Volume = 89,300 af
 Duration= 22 days

1 Pulse Per 5 Years Trigger = 41,100 cfs
 Volume = 214,000 af
 Duration= 27 days

Application of concepts:

1. 10% of 17,400 cfs = 1,740 cfs, so would apply to application to divert at rate of 1,740 cfs or more.
2. 5% of 89,300 af = 4,515 acre-feet, so would apply to application to impound, in an on-channel reservoir, 4,515 acre-feet or more.
3. Applications seeking smaller impoundment or lower diversion rate would not be evaluated or affected by this provision unless the cumulative effects concept is triggered.
4. For applications to which the provision applies, a modeling assessment would be undertaken and impairment found if:
 - a. Frequency of attainment of either the 1-per-2-year or 1-per-5-year pulse flow standard would be reduced by 10% or more compared to permits in effect when standards adopted; or
 - b. Average volume of pulses protected by either the 1-per-2-year or 1-per-5-year pulse flow standard would be reduced by 10% or more compared to permits in effect when standards adopted.
5. If no impairment found, permit could be issued without permit conditions addressing the 1-per-2-year or 1-per-5-year pulse flow standards.
6. If impairment is found, when considering cumulative impacts of permits subject to the standards, permit could only be issued with the inclusion of appropriate conditions to achieve compliance with the 1-per-2-year and 1-per-5-year pulse flow standards.
7. Once permits upstream of this location and subject to the standards have been issued authorizing diversions at a cumulative rate of 4,350 cfs or impoundment, in on-channel reservoirs, of a cumulative volume of 13,395 acre-feet, provision would apply to future applications to divert at a rate of 870 cfs or to impound, in an on-channel reservoir, at least 2,679 acre-feet.