**Idaho Antidegradation Implementation**
**Discussion Paper**
**Waterbody-by-Waterbody or Pollutant-by-Pollutant**
**May 24, 2010**

One of the major decisions in implementing antidegradation is how to assign various levels of protection (tiers) – either pollutant-by-pollutant, or waterbody-by-waterbody, sometimes called the designation approach. This decision is also one of when the appropriate level of protection is recognized. The choice also has workload timing and tracking implications, and affects how high water quality (or high quality water) is recognized. Which is the best way to go may in turn be affected by the rigor of review and level of protection each tier is to receive. Thus the approach is queued up as the first decision.

## Waterbody by waterbody approach

The waterbody-by-waterbody (WbW) approach assigns a waterbody (or portion of a waterbody) to a particular tier of protection from degradation based on its overall water quality. An integrated view of water quality is favored by aquatic ecologists and lends itself to the use of biomonitoring data which EPA has been touting for years.

Under the WbW approach a waterbody is either one tier or another. This presents questions on how to weigh various qualities of a waterbody, gauge its overall quality, and thus make an assignment to a tier. Some states have selected a suite of common parameters (e.g. Colorado uses twelve) on which to make the call, but even then it has to be decided if all or only some of the parameters considered must be better than criteria in order for a water to be considered high quality. In Colorado, a water can be designated for Tier 1 protection when existing water quality (defined as a percentile of representative data) for at least three of the 12 parameters evaluated is worse than criteria. Rather than relying on chemical data, biological data could be used for identifying high quality waterbodies. Idaho is heavily vested in using biomonitoring data (BURP) to assess the quality of its waters. Weighing various parameters and making a decision on the level of protection based upon overall water quality will necessarily involve an exercise of discretion on the part of DEQ, and will likely invite disputes, challenges and possible litigation.

With the WbW approach a list of waters can be created, thus identifying the level of protection from degradation each will receive, in advance of any degrading activity. Assignment to tiers of antidegradation become similar to a beneficial use designation and can be tabulated in a state's rules the same as codified use designations. This advance identification may facilitate implementation of antidegradation. It is useful to the regulated community, permit writers and environmental protection organizations alike to know up front what protection is afforded to particular waters. If waterbody assignment to tiers must be designated before antidegradation can be implemented, it may be necessary to write language into rule on how to proceed until waters are designated, such as a presumed Tier II protection similar to presumed beneficial uses.

An advance list requires or implies that information on a waterbody's overall quality is presently at hand. This is not likely for every waterbody, and most states that have employed the WbW approach have what might be considered a partial list of high quality waters, much as Idaho has

incomplete use designations. If, due to lack of data or time to classify them, unclassified waters do not default to Tier II protection, then *de facto* high water quality may be degraded without proper review. Incomplete or small lists of Tier II waters have been an issue for environmentalists and the basis for legal action; see *Kentucky Waterways Alliance v. EPA*, 540 F.3d 466 (6th Circuit 2008).

It may also be hard, however, to assign waters to high quality (Tier II) protection without up front data to document water quality is high. This may be the case even though biological data is employed to assess use support in Idaho as those interested in new or increased discharge of pollutants will want to know what level of chemical quality is to be maintained. Such concerns have in fact been part of the reason Idaho has no Outstanding Resource Waters (ORWs, or Tier III) to date. While Idaho currently has no ORWs, the ORW process codified in Idaho's Water Quality Standards is a WbW approach, as it is in many other states.

A WbW approach may be beneficial in allowing DEQ to focus limited resources on those water bodies of higher water quality, if it turns out there is a limited list of Tier II waters and new or increased discharges to those waters

Idaho's many Special Resource Waters (SRWs) are listed in the use designation tables of Idaho's Water Quality Standards as well. In addition to following the WbW approach, Idaho's SRWs are also an example of waters given protection from further degradation based on more than just high chemical quality. An important advantage of the WbW approach is that it can recognize high quality waters that do not necessarily have high water quality, e.g. wetlands, marshes, or other waterbodies of high ecological or recreational value but whose water quality attributes alone may be substandard.

The fact that the WbW categorically identifies a waterbody as belonging to a single tier has been criticized by many environmental organizations as being under-protective, and thus not in keeping with the intent of antidegredation. This is because if it is decided that a water body is afforded Tier I (arguably the lowest) protection based on its quality failing just one or a few criteria, then other aspects of its quality that are better than criteria may be allowed to slide without the public review and justification required with Tier II protection. Thus it is argued the WbW approach would allow too much degradation. The reality of this fear depends on the type or depth of review a Tier I waterbody receives when a new or increased discharge is proposed, on how waterbodies are assigned Tier I or II protection, or on whether an integrated view of water is taken or not.

Oregon, for example, uses the WbW approach but affords Tier I waters the same level of review as it does for Tier II waters for pollutants that are better than criteria, that is, if there is lowering of water quality for a pollutant that is better than criteria that lowering must be shown to be necessary and important (ODEQ, 2001). New Jersey uses a WbW approach but has no Tier 1 waters, thus Tier II analysis of new or increased discharges is done for all but ORWs.

Another way to look at Tier I is with an integrated view of water quality (e.g. biomonitoring). In this view a waterbody judged as impaired would be seen as stressed to capacity and incapable of suffering further degradation in any of its myriad water quality parameters. In other words, use

support status is a function of overall stress which is a function of overall quality of the water. Thus further degradation in any single water quality parameter would make matters worse and could not be allowed. Strict adherence to this view would actually make Tier I the most protective tier. Although a dependence on biological assessment logically leads to this view, it is not in evidence in any existing state antidegradation program known to DEQ.

A more lenient WbW approach is to only protect existing uses in waters that have been classified as Tier I, allowing water quality for all parameters with assimilative capacity to be degraded down to water quality criteria without any restriction on that degradation. This is the approach embodied in Colorado's 'use-protected' designations. This does not seem to be in keeping with the spirit of antidegradation and depending on how easily waters are classified as Tier I could allow a lot of high water quality to be lost without consideration of preserving that quality.

Idaho's stringency statute might not allow DEQ to employ the Oregon or New Jersey approach and so if Idaho were to follow the WbW approach we might end up closer to Colorado's way of implementing Tier I protection of water quality than Oregon's.

There is potentially a large front end workload with the WbW approach. Data on chemical quality may need to be collected, if biological data is not sufficient. Even if biological data is sufficient, to reap the benefit of identifying protection up front it would be best to do designations in mass, likely through rulemaking. This would be a considerable effort. Perhaps offsetting the up front workload is a potentially lesser workload down the road, but only if waters assigned to Tier I categorically receive less rigorous review than do Tier II waters and only if the majority of new or increased discharges actually occur on Tier I waters.

Creating a list of water bodies for the different tiers of protection will likely take a considerable amount of time, particularly if rulemaking is needed. The Basin Area Meetings and identification of Stream Segments of Concern in the late 1980's and early 1990s are an example of what we might go through. DEQ would have to also have in place a method of implementing antidegradation with respect to permits and licenses that must be reviewed before the listing decisions are complete.

**Pollutant by Pollutant approach**

In a pollutant by pollutant (PbP) approach the level of antidegredation protection and review is decided for each pollutant separately, on a case-by-case basis, as new or increased discharges arise. Thus there is no assignment of waterbodies to tiers up front, no list, at least for Tier II protection. There may be a list of Tier I waterbodies/pollutants, which might be the same as the list of impaired waters and their limiting pollutants (AKA the 303(d) list, or now category 5 of the Integrated Report, and Category 4 of the Integrated Report, waters with TMDLs). And, unless Idaho regulations change, there would still be a list of SRWs and potentially ORWs in the future. Lack of a list of Tier II waters is beneficial in eliminating the need for up front work assigning waterbodies to this tier (likely the vast majority of waterbodies) but it is also a disadvantage in that watchdog organization will have nothing to keep tabs on and discharger, permit writer and DEQ workload planning becomes more uncertain. Still PbP is probably easier

to implement overall, and is more straightforward when it comes to actual analysis of degradation.

With a PbP approach a process on how to integrate various water quality parameters to make a high quality determination is not needed. Decisions on Tier II review may be less prone to challenge since they can be based solely on site-specific water column data. On the downside, Idaho DEQ for years has minimized its monitoring of traditional water column quality. It is not clear how the PbP approach would work with biomonitoring data Idaho is so rich in. Maryland provides some insight into this because one of the measures for which a water body can be designated Tier II is the index of biotic integrity (IBI) score. In fact, most of Maryland's waters receiving Tier II protection are designated based upon an IBI score. How Maryland conducts a Tier II review for such waters is unclear. Much new water quality data is likely to be needed, though not all at once, and will likely be the responsibility of those seeking a new or increased discharge – i.e. pay as you go.

It is overwhelming and unnecessary to look at or acquire data for all pollutants for which there are water quality criteria, so choices must be made in a PbP approach as to which pollutants will get looked at. Even just looking at all pollutants that may be present in a particular discharge could be too large an undertaking. Some process for selecting a reasonable subset of pollutants to evaluate PbP is needed – a sort of probable cause approach. One approach that could be used with respect to NPDES permits is to review those pollutants for which EPA conducts an analysis of reasonable potential to exceed water quality criteria (RPTE) that forms the basis for putting water quality based effluent limits in NPDES permits. For purposes of antidegradation review, pollutant selection will likely need to be more transparent than it is currently for RPTE.

The PbP approach does allow states to avoid the initial workload of assessing overall water quality involved in the waterbody by waterbody approach. The decision(s) on levels of protection for each pollutant need be made only as each new or increased discharge arises. With few new or increased discharges on the horizon this makes easing into Idaho implementation of antidegradation more realistic. Until we work out the details of a Tier II review this workload is unknown, but PbP could magnify the later workload if each pollutant needs a separate review of treatment alternatives, costs, and social and economic importance. Completely independent review of each pollutant seems unlikely and undesirable as it could miss economies or complications of joint treatment and it would be counter the integrated, waterbody/watershed as a whole approach in vogue today. Certainly some joint analysis of pollutants will occur, but how much is not clear and it may be discharge specific. What is clear is that under PbP there would be no purely Tier I waters, and thus more waters, likely all waters, would receive some degree of Tier II review. This is a positive from the standpoint of protection of water quality and the intent of antidegradation, but it does portend a greater workload, unless there is no difference in rigor of review between Tier I and II.

The PbP approach also has the potential to prolong NPDES permitting, particularly if the need for water quality data on which to base degradation analysis can not be anticipated. On the other hand it would likely be easier to tie such data collection to permitting and make it the responsibility of the discharger under a PbP approach because it is inherently a case-by-case

evaluation that allows waiting until a discharge is proposed to figure out the appropriate level of protection from degradation.

Using a PbP approach will avoid the disputes, challenges and possible litigation that will likely result from DEQ's exercise of its discretion in determining whether waters should be subject to Tier II protection. The PbP approach will also avoid the delay in implementation of antidegradation and issuance of permits that may result from having to gather data, make decisions on Tier assignment and adopt those assignments in rule.

**Hybrid Approaches**

In practice there maybe no strict WbW approach. States that assign waters to tiers of degradation protection up front typically analyze degradation on a PbP basis when confronted with a proposal for a new or increased discharge. This could be described as the 'WbW to identify - PbP to analyze' hybrid approach. This two stage approach to Tier II antidegradation review may be most useful to where there is some degradation to be justified through analysis. With an abundance of high quality water in Idaho – notwithstanding the numerous 303(d) listings for temperature, sediment and nutrients – this is likely to often be the case for Idaho discharges. As EPA points out in their 1998 ANPRM, even states where a waterbody-by-waterbody approach is used to identify high quality waters, evaluation of significance of degradation is made on a pollutant-by-pollutant basis. The rub, for environmental protection, comes in the possibly of not evaluating significance of degradation for waters that don't make the cut for Tier II.

Another hybrid approach is to assign waterbodies for Tier III, and Tier I protection, leaving everything else to be Tier II. This Tier II by default avoids the upfront work of Tier II assignment. It is relevant to note that in EPA's 1998 ANPRM the WbW vs PbP approach does not come up until Tier II antidegradation is discussed, thus supporting the notion that the choice of which way to go is peculiar to Tier II protection, and that a hybrid by tiers – WbW for Tiers I & III, and PbP for Tier II – is rational.

Another sort of hybrid would be to maintain several lists of Tier II waters, for each pollutant of concern. The analysis would be a PbP approach, but with an up front list of waters, for some pollutants at least, those for which we have data. This is essentially the way Tier I waterbodies are handled now – if you take Tier I to be synonymous with impaired waters. This approach is somewhat more complicated to track by all involved, and does not lend itself to designation in rule, but it offers both specificity and advance notice of levels of protection from degradation. The same pollutant selection issue as described above for the PbP approach would need to be addressed. There is no known example of this among other states, but it ties in well with stressor identification in integrated reporting.

**Pros and cons of various antidegradation tier classification schemes**

| | Pro | Con |
|---|---|---|
| **Water body-by-water body** | • Weighted assessment (biological, chemical, & physical)<br>• Coincides best with bioassessment<br>• Advance placement of waters<br>• Focus resources on high quality waters | • Some waters may not be adequately protected<br>• Must decide what data is needed to make assessment<br>• Adequate data may not be readily available<br>• High up front workload need<br>• Delay in implementation and need for procedures to address antidegradation before listing decisions are made<br>• More potential for disputes, challenges and litigation |
| **Pollutant-by-pollutant** | • More waters receive higher protection<br>• Little or no upfront workload<br>• More conventional, straightforward when it comes to actual analysis of degradation<br>• Avoids disputes involved in making a decision on the overall water quality of waters<br>• Can be immediately implemented, as new or increased discharges arise | • Potentially more reviews, more work down the road<br>• Water column data needed, uncertain how biological data could be used<br>• No list (no advance placement), case-by-case placement of waters makes planning more difficult<br>• More difficult to track because of the numerous pollutant-water body combinations<br>• May not focus implementation efforts on truly high quality waters |
| **Hybrid** | • Identifies waters that need to be protected and allows for some flexibility for water bodies that aren't supporting a beneficial use<br>• Best accommodates all three tiers of protection, allowing blended approach<br>• Seems to be most common and practicable | • Could be confusing<br>• Carry's several of the con's from both approaches above |

# STATE OF NEW MEXICO CONTINUING PLANNING PROCESS

**Adopted in fulfillment of the requirements of Section 303(e) of the Federal Clean Water Act**

# NEW MEXICO WATER QUALITY CONTROL COMMISSION

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**Figure 1. Tier Determination Flowchart**
**(Flow chart summarizes preceding narrative description, refer to narrative for complete detail)**

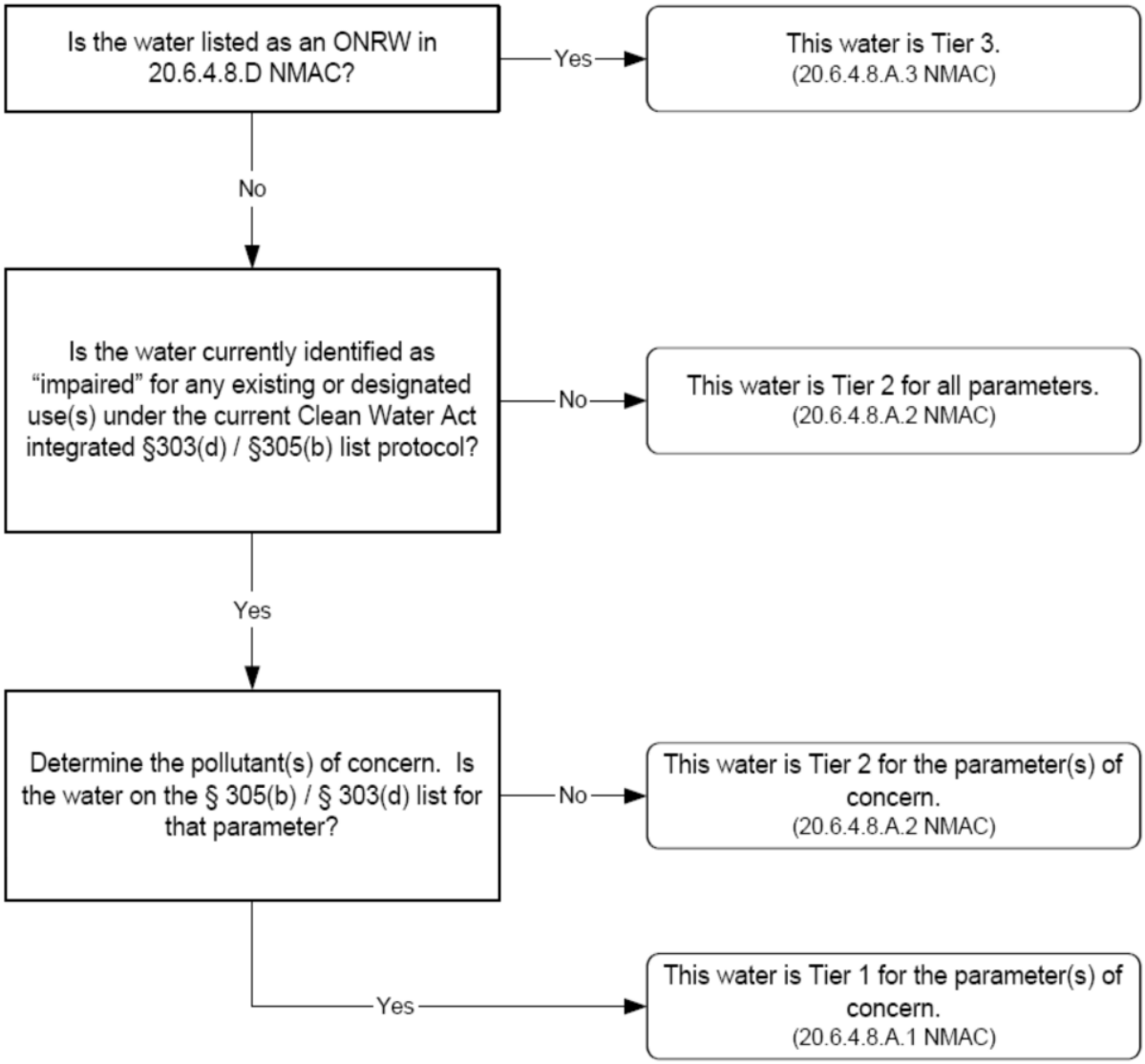
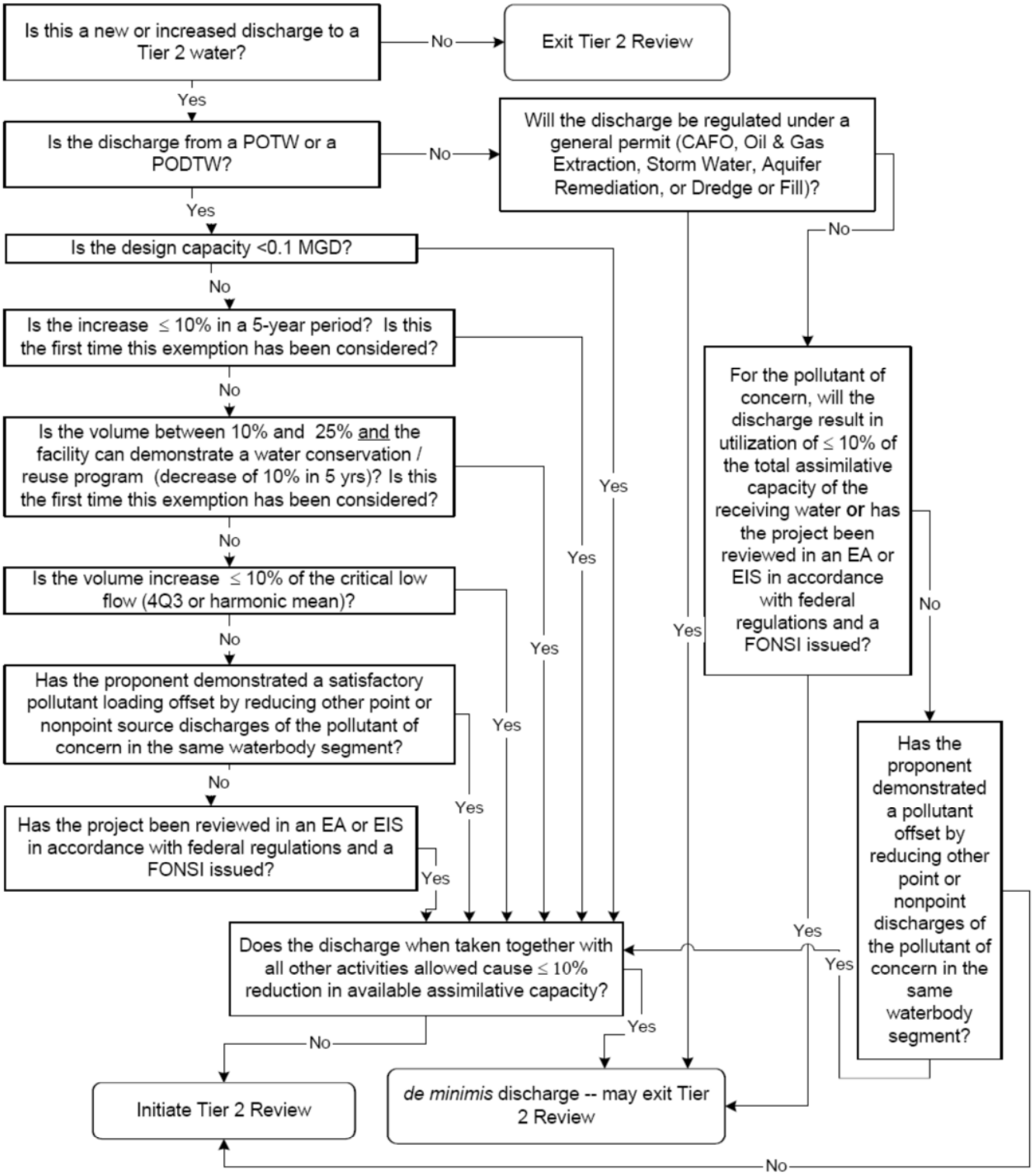
**Figure 2. Tier 2 Review - Eligibility Flowchart**
**(Flow chart summarizes preceding narrative description, refer to narrative for complete detail)**