

# **Chapter Three: Water Quality Standards and 303(d) Listing**

## **I. Introduction**

The CWA requires all states to promulgate comprehensive water quality standards (WQS) for all intrastate waters.<sup>1</sup> When Congress shifted the emphasis of pollution control to technology-based effluent limitations (end-of-pipe control) in 1972, it did not abandon the pre-1972 water quality standards system. As a consequence, the CWA contains both technology-based effluent standards and ambient-based (in-stream) water quality standards. Technology-based standards are largely controlled through Federal regulations (see Chapter Two), but states retain primary responsibility for setting water quality standards (WQS). As mentioned in Chapter Two, WQS, together with technology-based standards, are the basis for effluent limitations under the NPDES program.

WQS must be specific to particular bodies of water and consist of three parts: 1) designated uses of a waterway, 2) specific water quality criteria designed to protect those uses, and 3) a prohibition against degradation of the existing uses of the water.<sup>2</sup>

## **II. Components of Water Quality Standards**

### **A. Designated Uses**

Section 303(c) of the CWA requires that each state designate uses for all water bodies within the state. A designated use can be either an existing use or a higher quality use even though it is not a currently existing use. Typical uses include public drinking water

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<sup>1</sup> 33 U.S.C. §§ 1311(b)(1)(C), 1313.

<sup>2</sup> 40 C.F.R. § 131.6.

supplies, propagation of fish and wildlife, recreation, industrial use, and agriculture.<sup>3</sup> States are free to adopt other uses as they see fit,<sup>4</sup> and they may choose to establish seasonal uses.<sup>5</sup> However, states are prohibited from including waste transport or waste assimilation as a designated use.<sup>6</sup>

The CWA distinguishes between “designated uses” and “existing uses” of a water body. Existing uses are those uses actually attained by the water body on or after November 28, 1975, whether or not they are included in water quality standards.<sup>7</sup> Designated uses are those uses specified in water quality standards for each water body whether or not they are being attained.<sup>8</sup> Designated uses that are existing uses cannot be removed from a water body’s water quality standard.

Designated uses must include, at a minimum, “protection and propagation of fish, shellfish, and wildlife, and ... recreation in and on the water.”<sup>9</sup> This goal is often called “fishable/swimmable.” Although the EPA has never defined this term, fishable/swimmable waters generally refers to the level of water quality adequate to support an aquatic community consisting of a range of species and including primary contact by humans where water is likely to be ingested. The EPA does not identify specific uses that states may adopt to meet the fishable/swimmable goal; states have created a range of uses (full body contact, cold water fishery, etc.) that satisfy this goal.

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<sup>3</sup> 40 C.F.R. § 131.10(a). Also see, U.S. EPA, “Draft Strategy for Water Quality Standards and Criteria” (May 2002).

<sup>4</sup> Some examples of other uses include oceanographic research, coral reef preservation, aquifer protection, and hydroelectric power.

<sup>5</sup> For example, in northern climates, primary recreation uses are possible only a few months out of the year. If seasonal uses are adopted, water quality criteria can be adjusted to reflect seasonal uses, but these criteria cannot preclude the attainment and maintenance of a more protective use in another season.

<sup>6</sup> 40 C.F.R. § 131.10.

<sup>7</sup> 40 C.F.R. § 131.3(e).

<sup>8</sup> 40 C.F.R. § 131.3(f).

<sup>9</sup> 33 U.S.C. § 1251(a)(2).

A state can attempt to demonstrate that attaining “fishable/swimmable” uses on a water body are not feasible. In order to do this, the state must go through a Use Attainability Analysis (UAA),<sup>10</sup> and demonstrate through a comprehensive assessment of physical, biological, chemical, and economic information that one or more of six conditions outlined in 40 C.F.R. 131.10(g) exist.

Many states acknowledge that their designated uses need to be revised.<sup>11</sup> One problem is that many designated uses were established en masse in the early 1970s in order to meet CWA deadlines. Many states used the general goal of “fishable/swimmable” waters as their designated use. The National Research Council found that many designated uses are too broad and recommended states refine them in order to incorporate a broader range of scientific data and social needs for water quality.<sup>12</sup>

## **B. Water Quality Criteria**

“Criteria” is a term with a dual meaning in the CWA. *Ambient criteria* are part of state water quality standards in that an individual water quality standard is composed of designated uses and the water quality criteria necessary to protect those uses. The other use of the term is in CWA § 304(a) which requires the EPA to publish and update *water quality criteria* that reflect the latest scientific knowledge of the effects on human health and aquatic life that can result from

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<sup>10</sup> 40 C.F.R. § 131.10(g).

<sup>11</sup> GAO. Water Quality: Inconsistent State Approaches Complicate Nation’s Efforts to Identify Its Most Polluted Waters. January 2002.

<sup>12</sup> National Research Council, Assessing the TMDL Approach to Water Quality Management. Washington, DC: National Academy Press. 2001.

concentrations of pollutants in a water body.<sup>13</sup> Ambient criteria adopted by a state are the regulatory requirements for that particular water body, whereas § 304(a) criteria are nonregulatory scientific assessments. Section 304(a) criteria have no force of law until they have been incorporated into a state's water quality standard as ambient water quality criteria.

Ambient water quality criteria can be expressed in numerical terms and/or through narrative statements. EPA regulations provide guidance on the formation of ambient criteria.<sup>14</sup> This guidance advises the states to establish criteria as numerical values based on § 304(a) human health and aquatic life guidance modified to reflect site-specific conditions. These numerical water quality criteria can be expressed as chemical-specific criteria for individual pollutants or as whole-effluent toxicity criteria for a combination of pollutants.<sup>15</sup> Narrative statements are often used to protect the aesthetics and health of a waterway and more recently are being used to express biological criteria for water bodies. When a water body has multiple use classifications, ambient criteria must protect the most sensitive use.<sup>16</sup>

### **C. Antidegradation**

As part of their water quality standards, states must have an antidegradation policy that prohibits actions which will impair existing uses, regardless of whether a given existing use is

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<sup>13</sup> The numeric EPA Standards are contained in the Gold Book (Quality Criteria for Water 1986). These standards were published previously in the Green Book (1968), the Blue Book (1973), and the Red Book (1976). EPA numeric water quality criteria are now available on-line at:

[http://oaspub.epa.gov/wqsdatabase/wqsi\\_epa\\_criteria.rep\\_parameter](http://oaspub.epa.gov/wqsdatabase/wqsi_epa_criteria.rep_parameter). There are no numeric standards for groundwater quality.

<sup>14</sup> 40 C.F.R. § 131.11(b).

<sup>15</sup> Whole-effluent toxicity (WET) criteria focus on the toxicological properties of combinations of pollutants in effluents or in mixtures of effluents and receiving waters. 33 U.S.C. § 1251(a)(3) requires NPDES permits to include water quality-based effluent limitations, including whole-effluent toxicity limitations, when the permitting authority determines that a discharge causes a water body to exceed its water quality standard.

<sup>16</sup> 40 C.F.R. § 131.11(a)(1).

also a designated use. EPA antidegradation regulations require a state's water quality standards to:

1. Maintain and protect existing instream water uses and the level of water quality necessary to protect them;
2. Maintain levels of water quality exceeding levels necessary to support fish, wildlife, and recreation unless the state finds that allowing lower water quality is necessary to accommodate important economic and social development; and
3. Maintain and protect high-quality waters that constitute outstanding national resource waters (ONRW).<sup>17</sup>

These three components are often referred to as “tiers” and some states identify Tier 1, Tier 2, and Tier 3 waters.

#### i. Tier 1

The first provision or tier provides an absolute minimum standard for ambient water quality. It requires the protection of existing uses.

#### ii. Tier 2

The second provision furthers the CWA goal of achieving fishable/swimmable water quality for all of the nation's waters.

#### iii. Tier 3: ONRW

The third provision, or Tier 3, provides a high level of water quality protection for “high quality waters (that) constitute an outstanding national resource, such as waters of national and state parks and wildlife refuges and waters of exceptional recreational or ecological

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<sup>17</sup> 40 C.F.R. § 131.12.

significance.”<sup>18</sup> These waters are referred to as Outstanding National Resource Waters (ONRWs).

Tier 3 provides the highest level of protection to waterbodies by prohibiting the lowering of water quality. The water quality of an ONRW must be “maintained and protected,”<sup>19</sup> and the EPA has interpreted the requirement that ONRWs be maintained and protected by imposing a nearly absolute ban on new or expanded point source discharges. Degradation in ONRW is permitted only on a temporary short-term basis.

Although EPA regulations indicate how the water quality of ONRWs is to be protected, they provide little guidance on which waters are ONRWs. Regulations state that ONRWs are “the highest quality waters of the United States” and are bodies of water which are important, unique, or ecologically sensitive.<sup>20</sup> However, the EPA does not define “high quality” waters and it does not provide nationwide guidance on when waters are of “ecological significance.” In the absence of EPA guidance, states have generally taken one of three approaches when implementing the antidegradation policy.<sup>21</sup> Some states have repeated, without elaboration, the terminology used in EPA’s regulations; others have developed their own criteria for determining which waters qualify as exceptional; and some states have attached the “high quality” or “exceptional” designation to bodies of water that are designated as Federal or state Wild and Scenic Rivers or that harbor an endangered species. It is important to note that ONRW designation procedures differ significantly by EPA region and by state.<sup>22</sup>

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<sup>18</sup> 40 C.F.R. § 131.12(a)(3).

<sup>19</sup> 40 C.F.R. § 131.12(a)(3).

<sup>20</sup> 48 Fed. Reg. 51,400, 51,403 (1983).

<sup>21</sup> Glicksman, Robert. Pollution on the Federal Lands II: Water Pollution Law. 12 UCLA J. Envtl. L. and Pol’y 61. 1993.

<sup>22</sup> Brawer, Judith. Antidegradation Policy and Outstanding National Resource Waters in the Northern Rocky Mountain States. 20 Pub. Land and Resources Law Review. 13. 1999.

#### iv. “Tier 2\_”

States have developed an additional concept referred to as “Tier 2\_.” This application of the antidegradation policy has implementation requirements that are more stringent than Tier 2, but somewhat less stringent than the prohibition against the lowering of water quality in ONRWs under Tier 3. Even though it is not directly mentioned in EPA guidance or in the Water Quality Standards regulations, the EPA has accepted this concept.<sup>23</sup>

The rationale that led to this Tier 2\_ concept was a concern by the states that the Tier 3 ONRW provisions were so stringent that their application would prevent states from taking actions in the future that would be consistent with important social and economic development on or upstream of ONRWs. This concern is a major reason that relatively few water bodies are designated as ONRWs. The Tier 2\_ approach allows states to provide a very high level of water quality protection without precluding unforeseen future economic development considerations. States can protect the waters as if they were ONRWs, but have the flexibility to provide for changes in criteria or uses when deemed appropriate.

### **III. Water Quality Standard Approval Process**

States are primarily responsible for developing water quality standards (WQS). Section 303(c)(1) of the CWA requires that each state review and update its WQS every three years. States are also required to examine any water body that does not include fishable/swimmable uses and determine if new information indicates that these uses are attainable.<sup>24</sup>

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<sup>23</sup> The EPA has accepted this concept under the CWA § 510 which authorizes the states to adopt criteria and/or provisions for their waters that are more stringent than Federal requirements. The EPA’s rationale is that states are providing Tier 2 protection to the water body and then using their authority under § 510 to adopt more stringent requirements.

<sup>24</sup> 40 C.F.R. § 131.20(a).

Original WQS as well as new and revised standards are subject to EPA review and approval. The EPA determines whether the state WQS meet CWA requirements by following the specific elements of the review outlined in § 303(c)(2) of the CWA and 40 C.F.R. §§ 131.5 and 131.6. If state WQS do not pass EPA review, the EPA must notify the state and specify revisions to be made.<sup>25</sup> If changes are not made, the EPA has a mandatory duty to promulgate new or revised standards.

#### **IV. Water Quality Standards and NPDES Permits**

The CWA allows water quality-based effluent limitations to be added to an NPDES permit whenever discharges from a point source will interfere with the attainment of water quality standards. Both the ambient-based water quality limitations and the technology-based effluent limitations apply, and the source must meet the stricter of the two. Both the language of CWA § 302 and its legislative history make it clear that water quality-based limitations are supplemental in nature, and are to be added to NPDES permits when technology-based limitations are insufficient to produce the desired level of water quality.

#### **V. Impaired Waters: Section 303(d)**

Section 303(d) of the CWA outlines a water protection program that is intended to clean up waters that remain polluted even after the application of technology-based limitations. A state's 303(d) Lists identifies waterbodies where WQS are violated by one or more pollutants.

The program requires the states to:

- Identify waters that are and will remain in violation of state WQS after the application of technology-based controls;
- Prioritize these waters, taking into account the severity of their pollution; and

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<sup>25</sup> 33 U.S.C § 1313(c)(3); 40 C.F.R. § 131.22(a).

- Develop Total Maximum Daily Loads (TMDLs) that will allow polluted water bodies to meet WQS, accounting for seasonal variations and a margin of safety.<sup>26</sup>

## **A. Types of Lists**

States develop a series of lists of impaired waters (303(d) lists) and the EPA must approve these lists. The B List includes water bodies that are impaired because technology-based limits are not sufficient. The A(i) List includes water bodies impaired because technology-based limits are not sufficient and nonpoint source controls are not sufficient to meet state WQS. The A(ii) List includes those waters that do not meet the “fishable/swimmable” standards. States have been required to submit these 303(d) Lists on a biennial basis since 1992.

## **B. 303(d) Listing and Removal Process**

The general process for identifying impaired waters involves establishing water quality standards, gathering data on water quality through monitoring, and assessing the data to determine whether the criteria and standards are being met or whether a body of water is impaired (see Figure One). A 2002 GAO report found considerable variation in the approaches states use at each step in this process, and as a result, there are inconsistencies in the listing of impaired waters.<sup>27</sup>

In order to work towards improving water quality and removing water bodies from the 303(d) List, the CWA requires TMDLs to be established for listed water bodies. TMDLs are another kind of water quality-based effluent limitation that can impact point sources through the NPDES permit process and nonpoint sources through other provisions in the CWA. TMDLs are addressed in greater detail in Chapter Four.

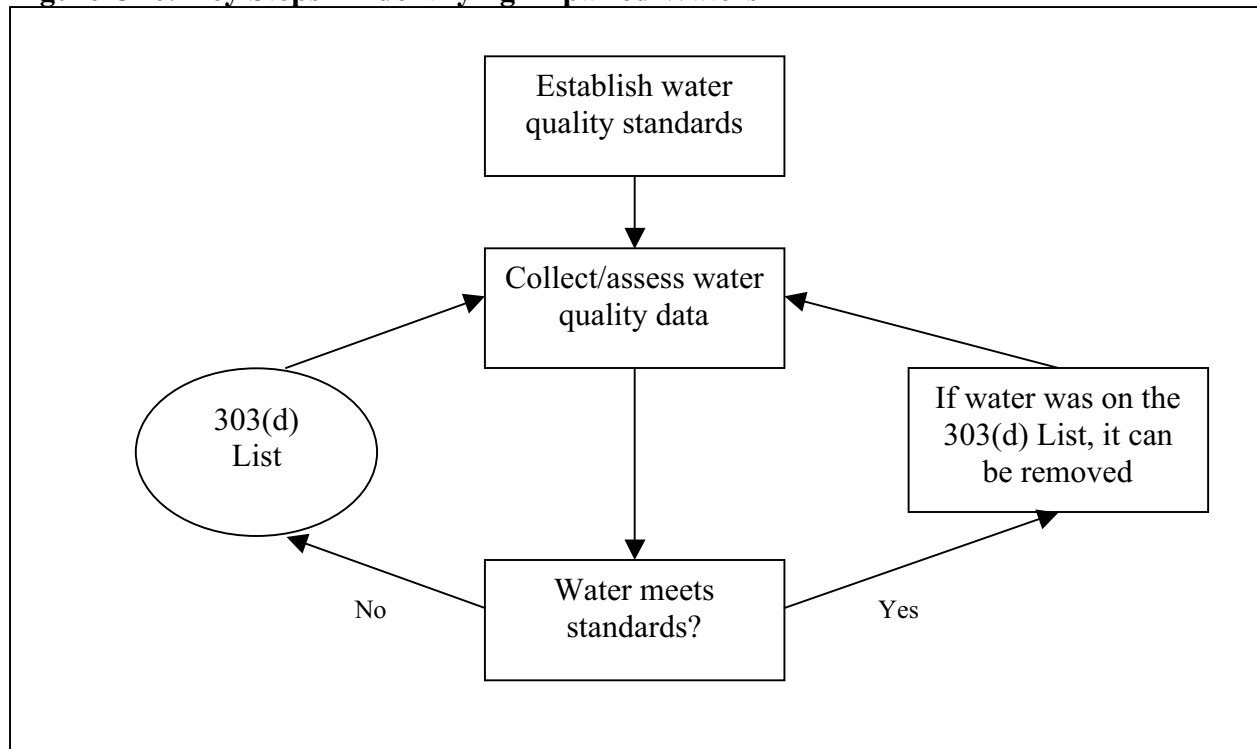
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<sup>26</sup> Houck, Oliver A. *The Clean Water Act TMDL Program : Law, Policy, and Implementation*. Washington, D.C.: Environmental Law Institute, 2002.

<sup>27</sup> GAO, *supra* note 11.

If the water quality improves on a listed water body, the state can seek EPA approval to remove that body of water from its list (see Figure One). EPA regulations require states to demonstrate “good cause” before an impaired water can be removed from a 303(d) List.<sup>28</sup> This means that once a water body is listed as impaired, it must remain on the list until a TMDL is developed unless: 1) new data show improvement in the water; 2) new information shows a flaw in the original impairment decision; or 3) changes in technological conditions, such as the use of new control equipment, result in improved water quality.<sup>29</sup> Despite these guidelines, states vary in their methods and justification for delisting waters, and EPA regional offices vary on their delisting assistance/advice to states.

**Figure One: Key Steps in Identifying Impaired Waters**



Source: GAO. *Water Quality: Inconsistent State Approaches Complicate Nation’s Efforts to Identify Its Most Polluted Waters*. January 2002.

<sup>28</sup> 40 C.F.R. § 130.7 (b)(6)(iv).

<sup>29</sup> GAO, *supra* note 11.

## **VI. Water Quality Monitoring**

In order to determine whether water quality standards are being met, states monitor their waters by collecting water samples or other indicators such as sediment, fish, or macroinvertebrates. The EPA provides guidance and ties monitoring to state funding.<sup>30</sup> However, states select which water bodies to monitor, determine the conditions for which it will sample and test, and determine how often to sample. In addition to their own data, states can use data from other sources. There is considerable variation in states' monitoring programs.<sup>31</sup> States differ in their types of monitoring, the emphasis placed on various pollutants, the comprehensiveness of monitoring programs, and the data sources used. This variation in monitoring has contributed to inconsistencies in the way states identify impaired waters to include on their 303(d) Lists.

## **VII. Toxic Pollutants and Individual Control Strategies**

Section 304(l) was added to the CWA through the 1987 amendments in order to identify and control "toxic hot spots." This section of the CWA creates a mechanism for identifying and improving waters where application of best available technology has proven insufficient to control toxic pollutants.<sup>32</sup>

States have primary responsibility for the § 304(l) program. States are required to identify waters that are not attaining established water quality standards for toxic pollutants,

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<sup>30</sup> EPA, 2003. Elements of a State Water Monitoring and Assessment Program. U.S. Environmental Protection Agency, Office of Wetlands, Oceans, and Watershed, Assessment and Watershed Protection Division. EPA 841-B-03-003. Available at: <http://www.epa.gov/owow/monitoring/repguid.html>. The EPA suggests that states develop a monitoring program addressing 10 elements.

<sup>31</sup> GAO, *supra* note 11.

<sup>32</sup> 33 U.S.C. § 1362(13) defines toxic pollutant as "those pollutants or combination of pollutants ... which after discharge and upon exposure ... will ... cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions or deformation ...." There are currently 65 compounds identified as toxic by the EPA. This list of toxic pollutants was last updated on July 1, 2003, and can be found at 40 C.F.R. § 401.15.

identify the point sources contributing to the impaired water quality in those waters, and develop individual control strategies (ICSs) for those point sources.<sup>33</sup>

#### **A. The “A List” and “B List”**

Section 304 (l) requires states to submit a series of lists. These lists are specific to toxic pollutants and are not to be confused with the 303(d) A and B Lists. Under § 304(l)(1)(A), each state is required to provide the EPA with a list of all waters that after application of effluent limitations “cannot reasonably be anticipated” to attain or maintain water quality standards for toxic pollutants.<sup>34</sup> This is known as the “A List” or the “long list.”

Under § 304(l)(1)(B), states must submit to the EPA a list of waters that, due to discharges of toxic pollutants from point sources, are not expected to achieve water quality standards. This “B List” is necessarily shorter than the A List because it includes only those impaired waters of which the impairment can be traced to point source dischargers. Therefore, the waters that are on the A list but not on the B list are impaired because of nonpoint source toxic pollution or because the impairment cannot be traced to specific point sources.

#### **B. Individual Control Strategies and the “C List”**

Section 304(l)(1)(C) requires each state to list the point sources discharging into the waters included on either the A or B lists. States must also identify the amount of toxic pollutants discharged from each point source.

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<sup>33</sup> 33 U.S.C. § 1314(l)(1).

<sup>34</sup> *Id.*

For each discharger on the C list who discharges into waters on the B list, the state must develop an Individual Control Strategy (ICS).<sup>35</sup> The CWA does not specify the form that an ICS should take, but EPA regulations define an ICS as a draft or final NPDES permit accompanied by documentation demonstrating that the effluent limits are sufficient to meet water quality standards for the receiving water body.<sup>36</sup>

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<sup>35</sup> 33 U.S.C. § 1314(l)(1)(D).

<sup>36</sup> 40 C.F.R. § 123.46(c).