



Interim Permitting Manual— Navigating NPDES Permit Issues on Impaired Waters

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Interim Permitting Manual— Navigating NPDES Permit Issues on Impaired Waters

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Abstract

Many facilities in the petrochemical industry discharge to impaired waters, or waters not meeting water quality standards. These facilities confront difficult issues when obtaining wastewater discharge permits during the “interim” period—before a total maximum daily load (TMDL) is developed—including significantly stricter effluent limitations, limits on facility modification or expansion, and even discharge prohibitions. This manual will assist affected facilities as they face these and other interim permitting issues. This manual is intended for use by plant and corporate compliance and permitting staff as they negotiate the terms of wastewater discharge permits under the National Pollutant Discharge Elimination System (NPDES) program.

However, this manual is not intended to provide legal advice. Users should consult their own legal counsel regarding compliance with appropriate laws and regulations.

Executive Summary

The first part of this manual will discuss water quality standards and the listing process, in order to provide a basic understanding of how a water becomes labeled as “impaired.” Water quality standards, which serve as the basis for comparison to actual water quality, include the designated uses for all waters, and the narrative and numeric water quality criteria necessary to support those uses. This manual addresses many water quality standards issues that facilities may encounter, including existing uses, use attainability analyses (UAA) to revise designated uses, fish consumption advisories, whole effluent toxicity (WET) criteria, and sediment criteria. In addition, the first part will describe the listing process, through which impairment determinations are made, including state listing methodologies, assessment of waters, identification of impaired waters, and submission of reports to the U.S. Environmental Protection Agency (EPA) for approval. The manual will provide guidance on a number of listing issues, including listings due to violations of narrative criteria and fish consumption advisories, delisting, listing waters that are impaired but do not need a TMDL because they are expected to meet standards through other means, and challenging an erroneous listing determination.

The second part of this manual will discuss permitting discharges to impaired waters during the interim period before TMDLs are developed. The manual will describe the development of water quality-based effluent limitations on impaired waters, and will also discuss a number of issues for affected facilities to consider during the permitting process, including timing (when the permit should be issued), watershed permitting, verifying the impairment determination before the permit is issued, other controls available to bring the water into attainment, reasonable potential calculations, voluntary reduction measures, non-numeric effluent limitations, and calculating numeric effluent limitations. The manual will also briefly discuss antidegradation and backsliding issues, as well as stormwater permits. Finally, the manual will discuss some options for obtaining relief from permit limits, including variances, site-specific criteria, and UAAs.

PART 1: STANDARDS AND LISTING

So you’re discharging to an impaired water. What exactly does that mean? Impaired waters are defined in comparison to water quality standards—that is, waters must be listed as impaired if they are not meeting water quality standards. Ultimately, TMDLs must be developed for most impaired waters. Before those TMDLs are developed, however, an impairment determination may result in more stringent permit limits for your facility. In order to help you understand how those determinations are made, the first part of this manual describes water quality standards generally, how waters are evaluated for compliance with those standards, how waters not in compliance with those standards become listed as impaired, and how you can deal with issues that arise during the listing process to be sure that your water is accurately listed before your permit is affected.

Water Quality Standards

Water quality standards serve as the foundation of the listing process for impaired waters (also called the 303(d) process), because waters can only be listed if they are not meeting the state's water quality standards. If the standards applicable to your receiving water are not appropriate, the basis of any impairment determination will be flawed. The Clean Water Act (CWA) sets forth the components of water quality standards as follows:

... Such revised or new water quality standard shall consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses. ...¹

Water quality standards therefore include designated uses and specific water quality criteria necessary to protect those uses. As discussed in more detail below, criteria may be numeric or narrative (e.g., "no toxics in toxic amounts"). In addition, the state's antidegradation policy is considered to be part of its water quality standards.² States are required to adopt water quality standards applicable to waters within their jurisdictions, and to evaluate those waters to determine whether the standards are being met. As discussed in more detail below, waters that are not meeting standards will be considered impaired, and generally will be scheduled for TMDL development.

Designated Uses

The CWA includes goals for the nation's water quality: that all waters should provide for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water.³ These goals are often interpreted as a requirement that all waters be "fishable" and "swimmable." The CWA specifies that states must take the fishable/swimmable goals—and several other uses—into consideration when establishing their water quality standards:

Such standards shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter. Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes, and also taking into consideration their use and value for navigation.⁴

In addition, the state must account for any downstream water quality standards in designating uses for its waters:

In designating uses of a water body and the appropriate criteria for those uses, the State shall take into consideration the water quality standards of the downstream waters and shall ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters.⁵

States may also designate their waters for uses not listed in the statute. The only prohibited uses are waste transport and waste assimilation.⁶ Many states and tribes have adopted other designated uses, including for coral reef protection and tribal ceremonies, among other things.

Further, states may adopt subcategories of designated uses:

¹ CWA 303(c)(2)(A); 33 USC 1313(c)(2)(A); see also 40 CFR 131.3(i).

² 40 CFR 131.6(d).

³ CWA 101(a)(2); 33 USC 1251(a)(2).

⁴ CWA 303(c)(2)(A); 33 USC 1313(c)(2)(A). Similar requirements are contained in 40 CFR 131.10(a).

⁵ 40 CFR 131.10(b).

⁶ 40 CFR 131.10(a).

States may adopt sub-categories of a use and set the appropriate criteria to reflect varying needs of such sub-categories of uses, for instance, to differentiate between cold water and warm water fisheries.⁷

Examples of subcategorization also include secondary contact recreation.

Finally, states may adopt seasonal uses:

States may adopt seasonal uses as an alternative to reclassifying a water body or segment thereof to uses requiring less stringent water quality criteria. If seasonal uses are adopted, water quality criteria should be adjusted to reflect the seasonal uses, however, such criteria shall not preclude the attainment and maintenance of a more protective use in another season.⁸

Examples of seasonal uses include recreational uses such as full body contact recreation, which may be applicable only during summer months.

Waters can—and frequently do—have multiple designated uses. For example, a waterbody may be designated for all of the following uses: warm water fishery, primary contact recreation, public water supply, industrial water supply, and agriculture. Be sure you identify all the uses designated for your receiving water, so you can better understand how your waterbody was assessed. You should be able to obtain this information by looking at the state water statutes or regulations, which are generally available on your state environmental agency's water website. You may also find useful information concerning your state's water quality standards on EPA's Water Science web page.⁹

When you are evaluating the uses designated for your receiving water, remember that a water can be designated for a use even if it is not currently attaining—or has never attained—that particular use:

Designated uses are those uses specified in water quality standards for each water body or segment whether or not they are being attained.¹⁰

Accordingly, many states have assigned a core set of designated uses to all of their waters, regardless of whether all waters are capable of actually attaining those uses. EPA particularly encourages states to designate all waters for the fishable and swimmable uses that serve as a key goal of the CWA:

[I]t is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983...¹¹

Federal regulations do not require any special procedures for states to assign fishable and swimmable uses to its waters. However, if a state does not designate the fishable or swimmable use for a waterbody, or if it wishes to establish sub-categories of certain uses, it must support its decision by conducting a use attainability analysis (UAA), which is a scientific assessment of the factors affecting attainment of a particular use.¹² The UAA process is described in greater detail below.

⁷ 40 *CFR* 131.10(c).

⁸ 40 *CFR* 131.10(f).

⁹ <http://www.epa.gov/ost/>.

¹⁰ 40 *CFR* 131.3(f).

¹¹ 33 USC 1251(a)(2).

¹² 40 *CFR* 131.10(j).

Existing Uses

Unlike designated uses, the concept of “existing uses” does not come directly from the CWA. Rather, it is EPA’s regulatory interpretation of the intent of the CWA to protect the actual uses of the nation’s waters. EPA defines an existing use as follows:

Existing uses are those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards.¹³

EPA has interpreted this regulation to mean that a particular use is considered to be “existing” if: either the use has actually occurred at any time since November 28, 1975; or the water quality at any time since that date has been suitable to allow that use to be attained.¹⁴ EPA has interpreted its regulation to mean that a particular use is considered an “existing” use if it has actually occurred since the 1975 date, or if the water quality since that date has been suitable to allow that use to be attained.¹⁵ EPA has also indicated that existing use determinations should be linked to water quality. In other words, states should not designate an existing use where an activity has occurred but where water quality is not—and has not been—sufficient to support that type of activity; on the other hand, where water quality is sufficient to support the use the use should be designated even if the associated activity has never occurred.¹⁶

In addition to identifying the designated uses applicable to your receiving water, it is important to determine whether any existing uses have been defined for that water. If any designated use is also considered to be an existing use, a UAA is not an option for removal of that use.¹⁷ Unfortunately, states often do not define existing uses until the issue arises during a UAA. If your state is attempting to define existing uses on your water, keep in mind that the state has the discretion to define those uses very narrowly if it chooses, and can determine that a broader existing use is still satisfied even if the associated activity has changed since 1975.¹⁸ For example, the state could define an existing recreational use to be limited to dry weather. Or the state could determine that an existing “fishing” use is being met even if the types of fish suitable for consumption are different than when the existing use first occurred.

Use Attainability Analyses (UAAs)

If you feel that the uses designated for your receiving water are inappropriate because they are not attainable, you may wish to pursue a UAA to have the use changed. Federal regulations define attainable uses as follows:

At a minimum, uses are deemed attainable if they can be achieved by the imposition of effluent limits required under sections 301(b) and 306 of the Act and cost-effective and reasonable best management practice for nonpoint source control.¹⁹

There are limited circumstances under which a state can determine that a designated use (that is not also an existing use) should be removed because it is not attainable:

States may remove a designated use which is *not* an existing use, as defined in §131.3, or establish sub-categories of a use if the State can demonstrate that attaining the designated use is not feasible because:

¹³ 40 CFR 131.3(e).

¹⁴ *Interpretation of the Term “Existing Uses” Under the Antidegradation Policy* (EPA, Feb. 21, 1985); *Water Quality Standards Regulation: Advanced Notice of Proposed Rulemaking*, 63 Fed. Reg. 36,742, 36,752-53 (EPA, Jul. 7, 1998) (the ANPRM).

¹⁵ *Interpretation of the Term “Existing Uses” Under the Antidegradation Policy* (EPA, Feb. 21, 1985); *Water Quality Standards Regulation: Advanced Notice of Proposed Rulemaking* (the ANPRM), 63 Fed. Reg. 36,742, 36,752-53 (EPA, Jul. 7, 1998).

¹⁶ *Id.*

¹⁷ 40 CFR 131.10(g) (“States may remove a designated use which is *not* an existing use”); 40 CFR 131.10(h).

¹⁸ *Determination of “Existing Uses” for Purposes of Water Quality Standards Implementation* (EPA, Apr. 7, 1986).

¹⁹ 40 CFR 131.10(d).

(1) Naturally occurring pollutant concentrations prevent the attainment of the use; or

(2) Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State or Tribal water conservation requirements to enable uses to be met;

(3) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place;

(4) Dams, diversions or other types of hydrological modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of a use;

(5) Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; or

(6) Controls more stringent than those required by Sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact.²⁰

As noted above, this process applies to the refinement of designated uses into subcategories, but only if the criteria necessary to support the proposed subcategories are less stringent than those associated with the general designated use category:

A state must conduct a use attainability analysis as described in §131.3(g) whenever:

(2) The state wishes to...adopt subcategories of uses specified in section 101(a)(2) of the Act which require less stringent criteria.²¹

The UAA process is not simple to accomplish. It requires time, resources, and justification to EPA and the public:

Prior to adding or removing any use, or establishing sub-categories of a use, the State shall provide notice and an opportunity for a public hearing under §131.20(b) of this regulation.²²

As a result, many states have chosen to establish fishable and swimmable designated uses for all state waters, even if some state waters are not capable of supporting such uses. These statewide generic fishable and swimmable use designations can be problematic, because they may force states to list waters as impaired, regardless of whether the water quality standards can ever be attained. States often lack the resources to collect all of the information required to support a change in use. If you feel that a UAA is necessary for your receiving water, consider whether you can fund or conduct the study yourself—either alone or in cooperation with other affected dischargers.

Resource and political pressures can make UAAs difficult to accomplish. With the exception of some very simple situations—for example, limiting primary contact uses for ephemeral waters—UAAs can take years to

²⁰ 40 CFR 131.10(g).

²¹ 40 CFR 131.10(j); See also ANPRM at 36,752-53.

²² 40 CFR 131.10(e).

conduct, and years to get approved. However, a number of UAAs have been conducted across the country—over 4,000 as of May 2004, according to one EPA official. Kansas has been particularly successful at UAAs, and has established protocols with detailed, step-by-step instructions for conducting UAAs for various designated use categories, including expedited UAAs for recreational uses.²³ Kansas also specifically allows third parties to conduct UAAs, which must then be approved by the state.²⁴

Despite the difficulties involved, it may be worth conducting a UAA if your facility would otherwise be forced either to use prohibitively expensive technologies in an attempt to achieve an unattainable standard, or to stop discharging altogether. If a UAA is conducted and approved, the designated use for your water can be revised to one that is actually achievable, which can be supported through less stringent water quality criteria. When evaluated with the new criteria, your water may be meeting standards, in which case it can be delisted. Even if it is still impaired, however, any reductions necessary in your interim permit—and any later permit under a TMDL—should be more reasonable.

Criteria to Support Designated Uses

Water quality criteria are established to protect designated uses, and must be scientifically sound:

States must adopt those water quality criteria that protect the designated use. Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use.²⁵

Waters are evaluated for listing purposes based on whether they meet the state's water quality standards, which include the designated use classifications and the criteria necessary to support those classifications. Waters that do not meet a criterion for a specific pollutant—or that do not meet the statutory thermal requirements—must be included on the state's 303(d) List, and will be scheduled for TMDL development, with a few limited exceptions. The process a state must follow to assess waters in comparison to water quality criteria, including listing methodologies and data quality requirements, is discussed in more detail later in this manual.

Federal regulations set forth the procedures a state must follow to adopt criteria for toxic pollutants:

Toxic Pollutants. States must review water quality data and information on discharges to identify specific water bodies where toxic pollutants may be adversely affecting water quality or the attainment of the designated water use or where the levels of toxic pollutants are at a level to warrant concern and must adopt criteria for such toxic pollutants applicable to the water body sufficient to protect the designated use. Where a State adopts narrative criteria for toxic pollutants to protect designated uses, the State must provide information identifying the method by which the State intends to regulate point source discharges of toxic pollutants on water quality limited segments based on such narrative criteria. Such information may be included as part of the standards or may be included in documents generated by the State in response to the Water Quality Planning and Management Regulations (40 CFR part 35).²⁶

States may and have adopted many different types of water quality criteria:

²³ *Guidance Document for Use Attainability Analyses (UAAs)* (Kansas Department of Health and Environment, Dec. 1, 2001).

²⁴ *Kansas Implementation Procedures: Surface Water Quality Standards* (Kansas Department of Health and Environment, May 1, 2003).

²⁵ 40 CFR 131.11(a)(1).

²⁶ 40 CFR 131.11(a)(2).

Form of criteria: in establishing criteria, States should:

(1) Establish numerical values based on:

(i) 304(a) Guidance; or

(ii) 304(a) Guidance modified to reflect site-specific conditions; or

(iii) Other scientifically defensible methods;

(2) Establish narrative criteria or criteria based upon biomonitoring methods where numerical criteria cannot be established or to supplement numerical criteria.²⁷

Although certain types of criteria are easier to interpret when determining a water's attainment status, a state may use all types of criteria to varying degrees during its assessment process.

If you are concerned that a particular criterion that is or will be applicable to your water is not appropriate, you should have a number of opportunities to participate in the criteria development or revision process. Water quality criteria are generally adopted through a formal state rulemaking process, which provides for public participation through review and comment periods or hearings. In addition, states are required to review their water quality standards—including criteria—every three years to determine whether new data or other information would justify any revisions.²⁸ Although this so-called “triennial review” does not always occur on a timely basis, it does allow public participation. If you have information that a criterion that has already been adopted is not appropriate, you may petition your state to revise the criterion, or request a site-specific criterion or variance to obtain some relief until the next triennial review. If the criterion is appropriate to support the designated use, but that use cannot be met, a UAA may be justified. Keep in mind, however, that your state may adopt numeric interpretations of narrative criteria without following the same public process. If so, the numeric values that will be used to assess your water may appear for the first time in the state's listing methodology, or even in the 303(d) List itself. In that case, you should be allowed to oppose the underlying values when you submit comments on those documents.

Numeric Criteria

Numeric criteria are the most common and easily identifiable type of water quality criteria. States adopt numeric criteria for specific pollutants or other constituents to protect aquatic life and human health. Aquatic life criteria come in two forms: acute criteria to address toxic effects (usually death) from short term exposure; and chronic criteria to address long term exposure effects, such as on reproduction. Human health criteria can be expressed in several forms, but generally focus on long term risks (cancer and noncancer) based on the type of potential exposure (drinking or nondrinking).

Some states have also adopted numeric criteria for the protection of wildlife. States in the Great Lakes system are required to adopt such criteria.²⁹ As a result, for example, while in many states the most stringent criterion for mercury is for the protection of human health, in the Great Lakes states the mercury wildlife criterion of 1.3 nanograms per liter (ng/L), or parts per trillion (ppt), is the most stringent.

In addition to adopting numeric criteria for specific pollutants, many states have also adopted methodologies to develop new numeric criteria, as needed. States can use these methodologies when a numeric criterion has not yet been established for a particular pollutant. Some states also allow existing numeric criteria to be modified to account for site-specific factors of a particular water, such as the presence of certain species, or other site-specific water quality characteristics. Commonly known as a “site-specific modification” or site-specific criterion,” this procedure can result in a numeric criterion that is more appropriately tailored to conditions in your receiving water.

²⁷ 40 *CFR* 131.11(b).

²⁸ CWA 303(c)(1); 33 USC 1313(c)(1).

²⁹ 40 *CFR* 132.3(d).