Technology-Based Effluent Limitations for Non-POTWs

1. NPDES Permit Writers' Course Online Training Curriculum

1.1 Technology-based Effluent

Limitations for Non-POTWs

Notes:

Hello, and welcome to this presentation on technology-based effluent limitations in National Pollutant Discharge Elimination System, or NPDES, permits.

This presentation is one of two presentations on technology-based effluent limitations from an online training series on the NPDES program sponsored by the Environmental Protection Agency's Water Permits Division.

This presentation focuses on technology-based effluent limitations for facilities other than publicly-owned treatment works, which would include manufacturing and other industrial and commercial facilities.

Before we get started with the presentation, I want to introduce our speakers and take care of a housekeeping item.

1.2 Presenters

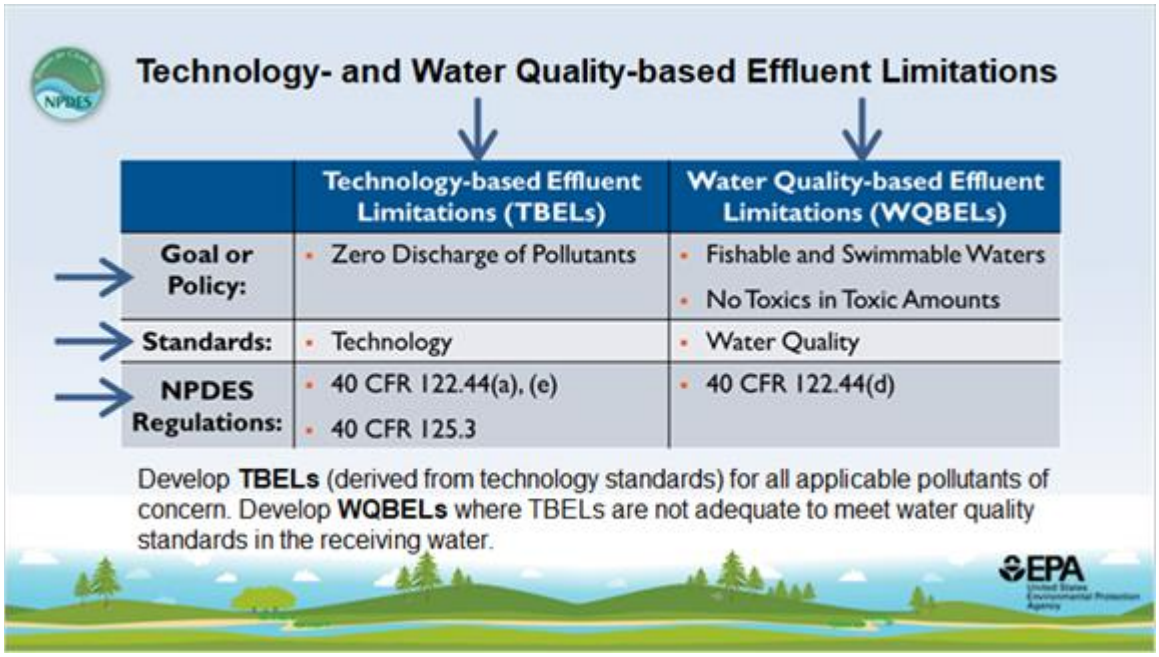
Notes:

Your speakers for this presentation are David Hair, an environmental engineer with the Water Permits Division of USEPA in Washington, DC, and me, Greg Currey, an environmental engineer with Tetra Tech, Incorporated in Fairfax, Virginia.

I also need to tell you that all the materials used in this presentation have been reviewed by USEPA staff for technical accuracy; however, the views of the speakers are their own and do not necessarily reflect those of USEPA. NPDES permitting is governed by the existing requirements of the Clean Water Act and USEPA's NPDES implementing regulations. These statutory and regulatory provisions contain legally binding requirements. The information in this presentation is not binding. Furthermore, it supplements, and does not modify, existing USEPA policy, guidance, and training on NPDES permitting. USEPA may change the contents of this presentation in the future.

Now, let's begin. Dave, how about getting us started?

1.3 Technology- and Water Quality-based Effluent Limitations



Notes:

OK, Greg.

First, let's step back for a moment and review how the Clean Water Act establishes the requirements for effluent limits in NPDES permits.

In a previous presentation in this series, we listed several goals and policies found in Section 101(a) of the Clean Water Act, three of which are provided in the top row of the table on this slide.

The left side of the table outlines what we refer to as the technology-based approach to establishing effluent limits.

The Clean Water Act goal that drives this approach is that "the discharge of pollutants into navigable waters be eliminated by 1985." To move us toward this goal, Congress, in the Clean Water Act, established required levels of performance for various types of point sources, and established deadlines by which these standards had to be enforced. Under these Clean Water Act requirements, EPA has established national technology-based standards for many categories of facilities. These performance-based standards depend on the type of facility and the availability of treatment technologies or pollutant minimization techniques and are not driven by site-specific impacts on water quality.

The NPDES regulations require the implementation of these technology-based standards through effluent limitations developed from the standards. We refer to limits developed in this manner as technology-based effluent limitations, or TBELs. Technology-based effluent limitations may also be developed on a case-by-case basis where EPA has not developed national standards for a category of point source discharger.

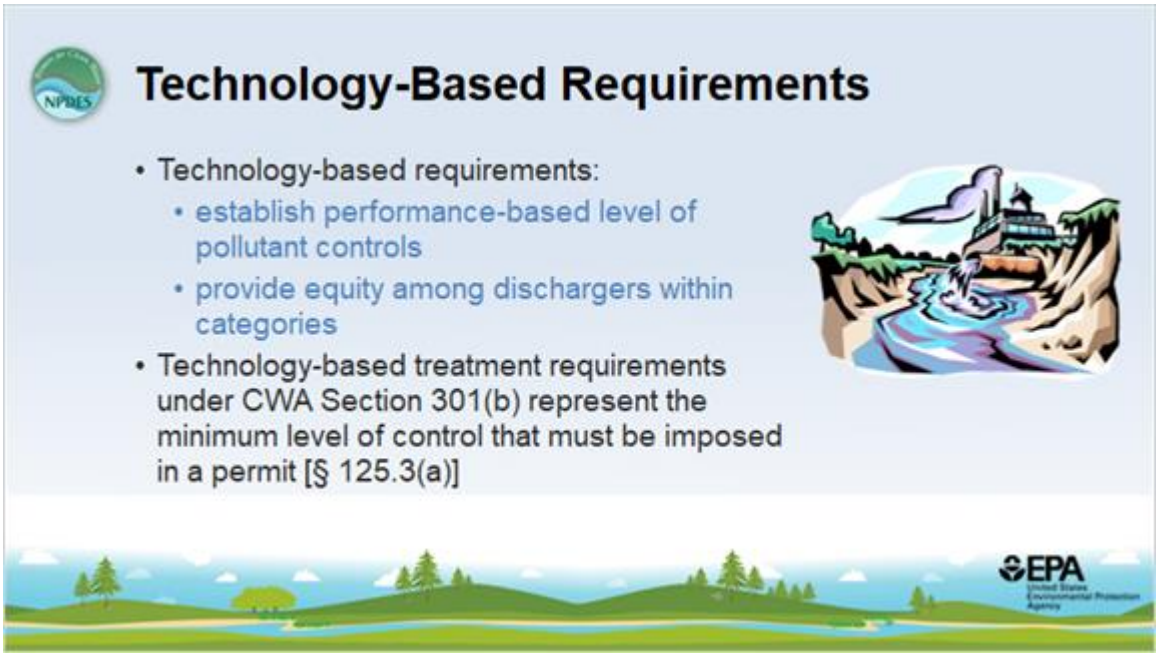
The other approach to developing effluent limits in permits is very different, and is driven by the Clean Water Act goal and policy listed in the top right of the table---namely, that we attain water quality that supports fish, shellfish, and wildlife propagation and recreation in and on the water, and that the discharge of toxic pollutants in toxic amounts be prohibited.

This water quality-based approach to pollution control relies on states and tribes to establish water quality standards to protect their waters.

The NPDES regulations then establish a requirement to develop water quality-based effluent limitations, or WQBELs, if technology-based effluent limits will not ensure the attainment of these water quality standards.

Because the Clean Water Act and the NPDES regulations establish these as two independent approaches for developing effluent limitations in an NPDES permit, a permit writer must consider limitations based on both. This presentation that follows, however, focuses exclusively on the technology-based approach.

1.4 Technology-Based Requirements



Notes:

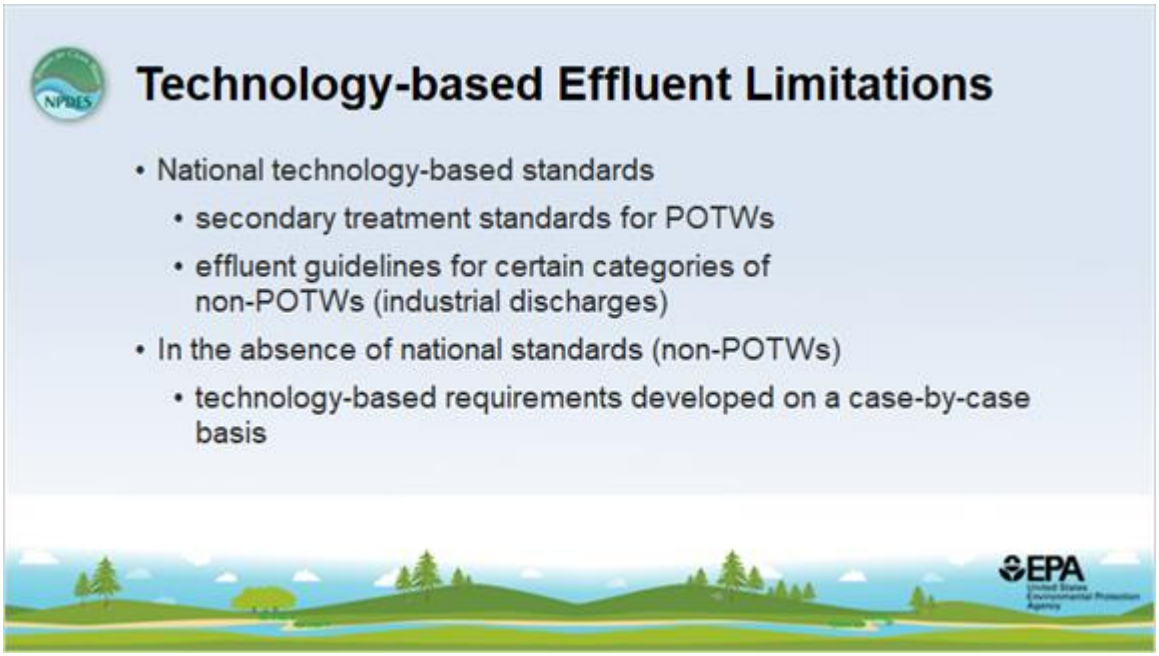
The technology-based approach to controlling point source discharges is driven by standards and requirements developed based on the actual, demonstrated performance of a known technology. The specific levels of performance are established in the Clean Water Act and vary based on the type of discharger, type of pollutant, technical considerations, and, in most cases, the cost to implement various controls.

Once established, these technology-based requirements provide a degree of equity among dischargers within a specific category, providing geographic consistency and minimizing the economic incentive for dischargers to seek out locations where pollutant controls may be more lax.

While technology-based standards are based on a demonstrated "model" technology, the specific requirements that dischargers must meet are performance-based. In other words, dischargers are not obligated to use the technology upon which the standards are based and can choose any treatment or pollutant control technologies so long as the controls achieve the required end result.

The provision in the regulations that requires the implementation of technology-based standards in NPDES permits is found at 40 CFR 125.3(a). This regulation indicates that technology-based requirements represent the minimum level of control that must be imposed in an NPDES permit.

1.5 Technology-based Effluent Limitations



Notes:

As I mentioned a few moments ago, the Clean Water Act directs EPA to develop national standards of performance for various types of point source dischargers.

For publicly-owned treatment works, or POTWs, the standards of performance are referred to as the "secondary treatment standards." These standards, and the effluent limits developed based on these standards, are the subject of another presentation in this training series.

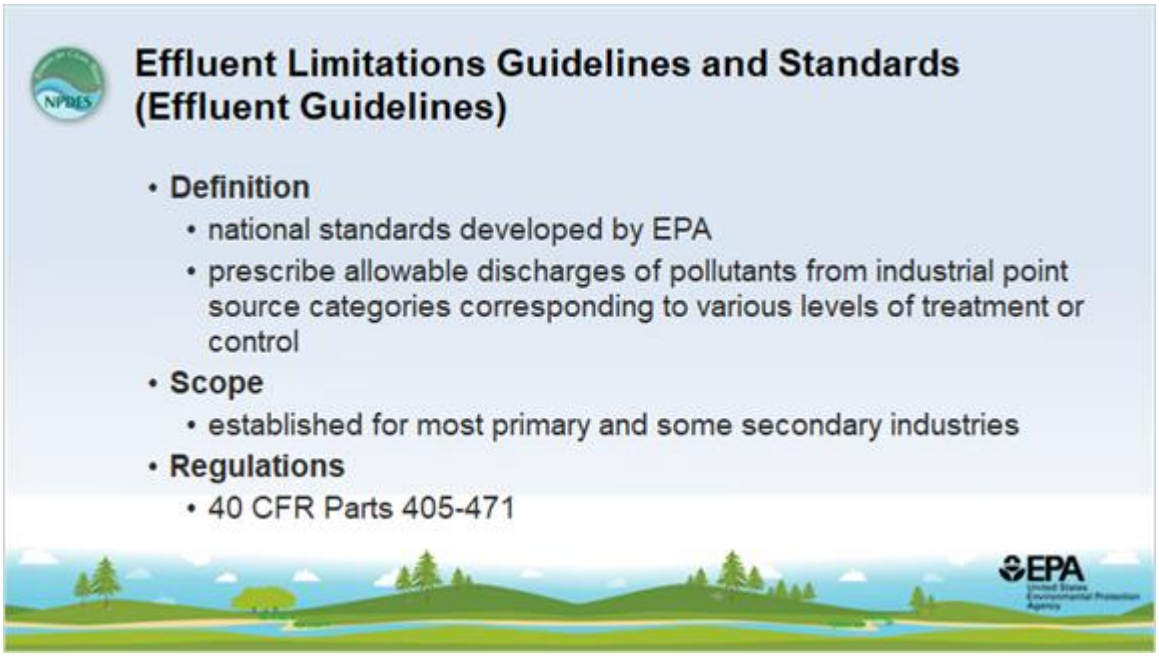
For non-POTWs the national standards of performance are established in "effluent limitation guidelines and

standards," or "effluent guidelines" for short.

In addition, there are situations where EPA has not developed specific national standards of performance for a category of non-POTW discharger, or for a process or pollutant at a particular facility. In this instance, the statute and regulations provide a process where the permit writer can develop site-specific standards of performance on case-by-case basis.

Let's now move on to the subject of this presentation, which is how we identify and apply technology-based standards for non-POTWs.

1.6 Effluent Limitations Guidelines and Standards (Effluent Guidelines)



Notes:

We noted the Clean Water Act requires EPA to develop effluent limitation guidelines and standards.

These effluent guidelines are national technology-based standards that typically prescribe the amounts of specific pollutants that may be discharged by a facility within a particular industrial point source category or subcategory.

Industries covered by effluent guidelines include everything from dairy products manufacturing to grain mills to iron and steel manufacturing to pulp and paper mills.

In another presentation from this series, we introduced the term "primary industries." These were industries that were thought to contribute the highest loadings of the 126 priority pollutants and are listed in Appendix A of 40 CFR

Part 122. As noted on this slide, effluent guidelines have been developed for nearly all of these primary industry categories, as well as some "secondary" categories that discharge high loadings of conventional pollutants (for example, food processors and dairies).

The effluent guidelines are published in the Code of Federal Regulations in Title 40, Parts 405 through 471.

1.7 EPA's Development of Effluent Guidelines

Notes:

EPA develops effluent guidelines for categories or sub-categories of facilities following an in-depth study of the industry.

As part of this study, EPA reviews available pollution control technologies and pollution prevention practices.

The study considers the technical feasibility and effectiveness of applying these practices as well as the costs within the particular industrial category. EPA is also required to assess the non-water quality effects of applying these practices, such as energy costs.

Based on the findings of the study, EPA then publishes the allowable level of pollutants that may be discharged based on the demonstrated performance of the best treatment processes or pollution control technologies, sometimes called the "model technology," using the criteria established in the Clean Water Act.

The results of these studies, along with background information, description of the analyses conducted, and

summaries of the technical and cost data are all provided in publicly available “Development Documents” that accompany the release of any new or revised effluent guideline.

1.8 CWA Performance Standards

Notes:

When EPA develops an effluent guideline, it considers the six technology-based control levels listed on this slide. These are usually referred to by their acronyms because no one can remember the long and complicated statutory names.

Why are there so many? Well, these performance levels are established in the Clean Water Act to address several types and classes of discharger. As you can see on this slide, for direct dischargers, we have:

- Existing Source Standards based on Clean Water Act section 301 and section 304; and,
- New Source Performance Standards, found in section 306 of the Act.
-

The standards for indirect dischargers are established in section 307 of the Act.

Because these indirect dischargers do not receive NPDES permits, we won’t be covering the pretreatment standards for existing and new sources (PSES and PSNS standards) in this presentation.

1.9 Compliance Deadlines—Direct Discharges

Notes:

This slide provides the statutory compliance deadlines for each of the direct discharge performance standards.

Recall that Congress established a goal in the 1972 Act that was intended to move dischargers from basically no federally required treatment standards to zero discharge of pollutants by 1985. To move dischargers in this direction, Congress established performance standards for existing sources that were intended to ratchet down on their pollutant allowances, based on the availability, effectiveness, and costs of treatment systems to treat various pollutants.

If you look at the compliance deadlines established in the Act for these existing source standards, you can see that Congress expected the BPT level of control to be achieved pretty quickly (by July 1, 1977) but provided additional time for existing sources to meet the more rigorous controls established by BCT and BAT. For permits issued and reissued now, the take home point is that all of these deadlines have passed; thus, existing sources must currently be required to comply with all BPT, BCT, and BAT requirements.

As we'll see on the next few slides, new sources know the rules when they begin construction, so Congress required that they be held to a higher standard. What's the compliance date for new sources? Well, the short answer is that facilities subject to applicable new source performance standards must be in compliance with effluent limits derived from these standards as soon as they begin to discharge.

1.10 Key Definitions—New Source [§ 122.2]

Notes:

We've been using a few new terms to categorize the Clean Water Act performance standards, so let's take a moment to define what we mean by a "new source" and an "existing source."

The term "new source" is defined in 40 CFR 122.2 as a building, structure, facility, or installation from which there is or may be a discharge of pollutants into waters of the United States, the construction of which commenced:

- after promulgation of applicable New Source Performance Standards in the effluent guidelines, or
- after proposal of an applicable New Source Performance Standard in an effluent guideline, but only if the standards are promulgated within 120 days of proposal.

This definition may seem a bit confusing; however, the idea is that if the discharger commenced construction of its facility after EPA had already established requirements in an effluent guideline that applies to the facility, then the facility could be designed and constructed knowing the pollutant reduction targets that it had to meet. Knowing the requirements prior to construction allows a new source to review EPA's development documents, and other pollution control information, and take advantage of the state-of-the-art pollutant minimization and treatment processes. This is a decided advantage over a facility that was already constructed and which would need to retrofit its operation to meet newly adopted performance standards.

The second criterion in the definition deals with a situation where EPA promulgates a guideline within 120 days of proposal. As it turns out, it nearly always takes several years to finalize an effluent guideline, so there's almost no chance that this criterion would ever be applicable.

When developing effluent limits for a facility subject to an effluent guideline, the task for permit writers, is to decide whether the facility is or is not a new source. To make this determination, the permit writer will need to answer two

questions: (1) is there an applicable effluent guideline with new source performance standards that applies to the facility? And (2) did construction of the facility commence after the applicable new source performance standards in the effluent guideline were promulgated?

1.11 Determining New Source Dates

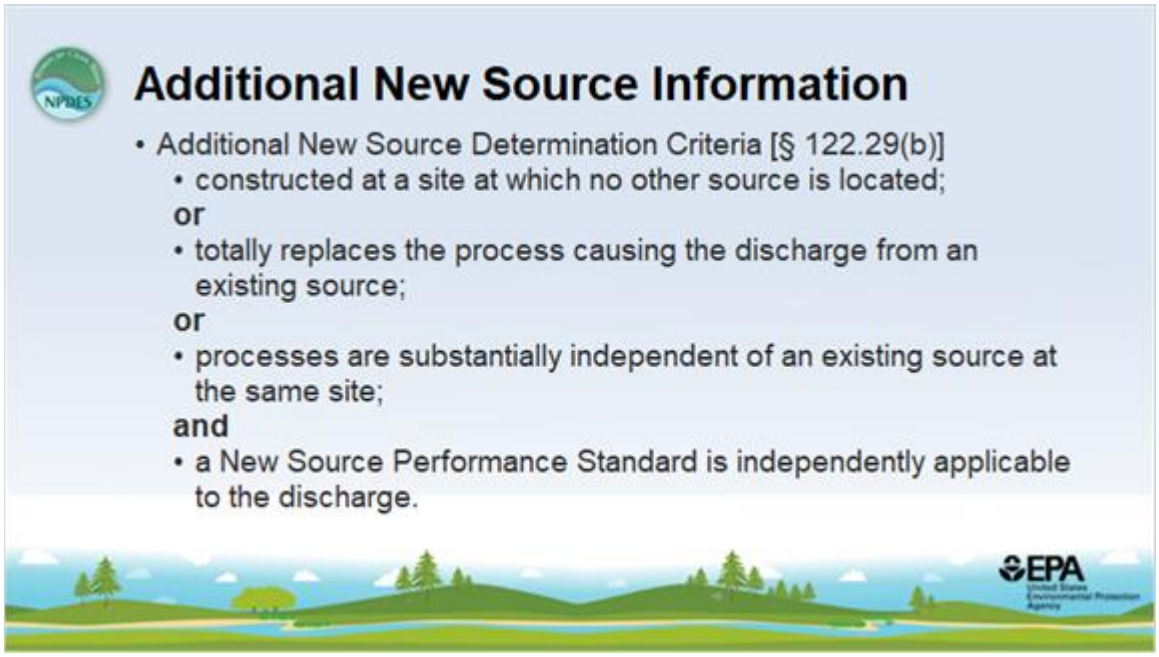
Notes:

We often refer to the promulgation date of a new source performance standard as the "new source date." This new source date will be different for each effluent guideline category, and in fact, may even differ by subpart within an effluent guideline category.

To determine the new source date, there a several sources of information that a permit writer can turn to. One source of this information is the Federal Register publication date that is referenced in the applicable section of the CFR. The publication date in the Federal Register generally is cited following the Table of Contents for each section of the regulations. However, if using this approach, permit writers should be very careful to check the particular section of the regulations containing the new source performance standards to be sure that it was not added or modified after the original promulgation date of the regulation.

The second, and most straightforward information source for new source dates, is the EPA memorandum that is referenced on this slide. To help sort through all the regulations and promulgation dates, EPA Headquarters developed a memo in 2007 that compiled all the regulation and guidance regarding new sources and created a summary to help guide permit writers through the process. There is even an appendix to the memo that provides all of the applicable new source dates for the effluent guidelines categories and sub-categories. The Web address for this document is provided in the last bullet on this slide.

1.12 Additional New Source Information



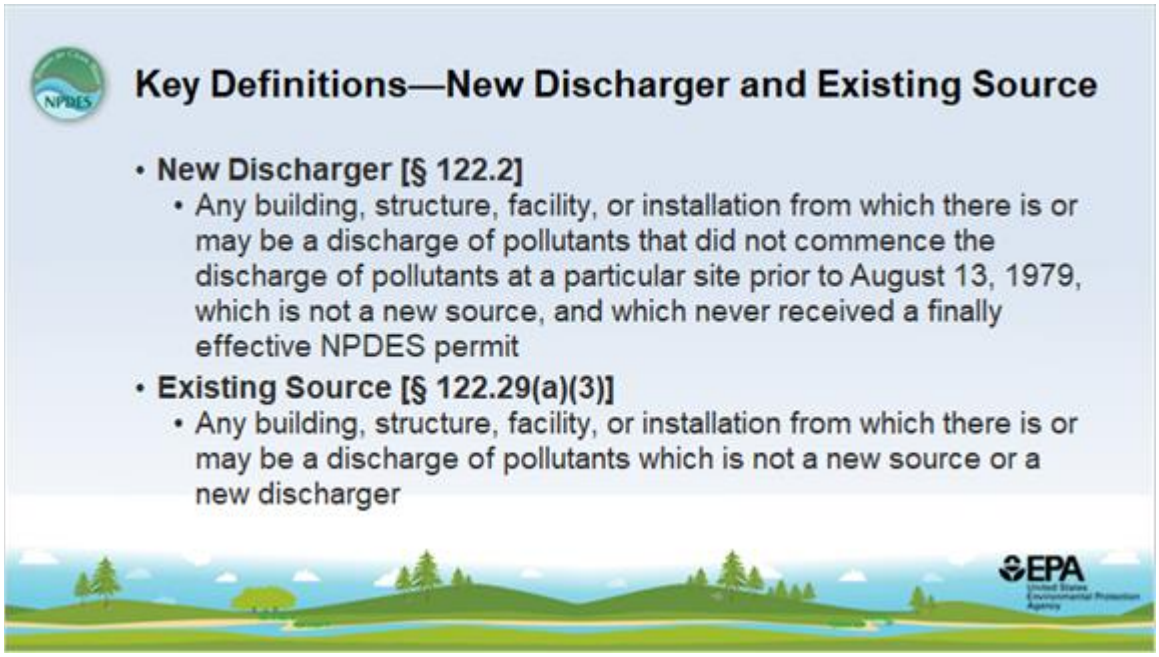
Notes:

Now, just to make this a bit more complicated, there are some additional criteria provided in 40 CFR 122.29(b) to help permit writers determine whether or not a particular discharge is a new source. These criteria cover situations where a facility is adding on a new building or process line that results in a discharge to the waters of the United States.

These criteria are applied on a case-by-case basis to new construction or new processes. Sometimes it can be difficult to distinguish between a new source and a modification or an alteration to an existing source, especially when modifications have occurred slowly over time.

The memorandum that was referenced on the previous slide also discusses the applicability of these additional new source criteria.

1.13 Key Definitions—New Discharger and Existing Source



Notes:

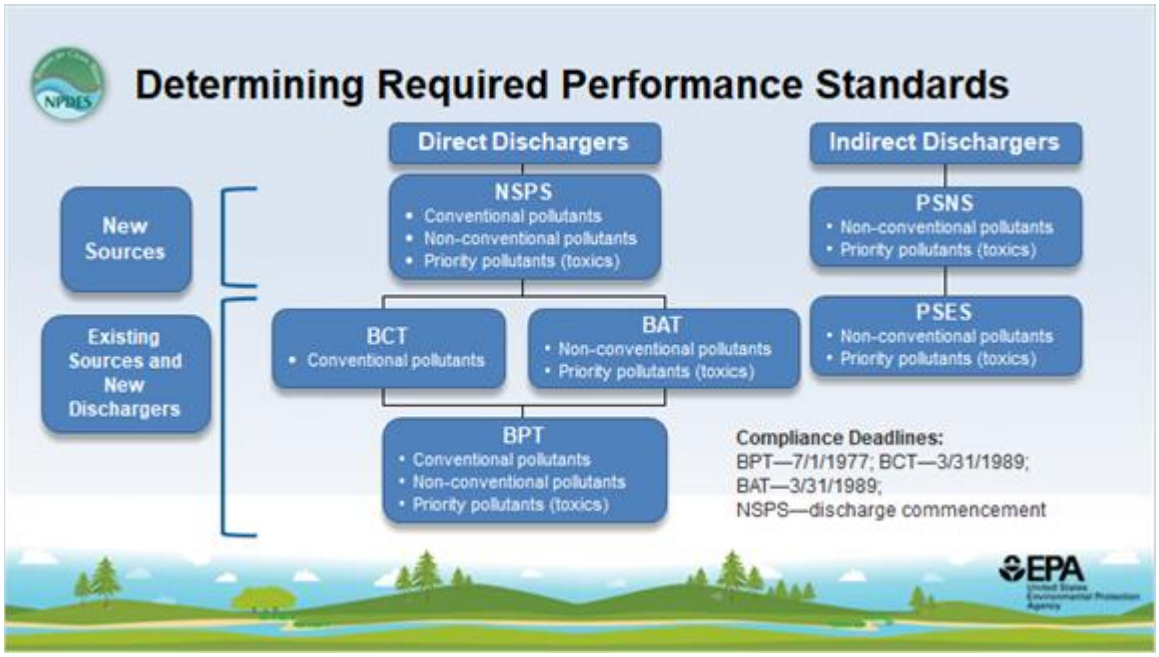
Two other terms that might come up as we work through the application of effluent guidelines are “new discharger” and “existing source.”

40 CFR 122.2 defines “new discharger” as basically any discharger that has never had a permit before and that isn’t a new source.

40 CFR 122.29(a)(3) defines “existing source” as any discharger that isn’t a new source or a new discharger.

With respect to developing technology-based effluent limits, the distinction between a new discharger and an existing source is not that important because, in most cases, they’re subject to the same Clean Water Act performance standards.

1.14 Determining Required Performance Standards



Notes:

Now that we've presented all these new terms and definitions, let's finish up this discussion by reviewing the diagram shown on this slide. This diagram was developed to help a permit writer determine what standards apply to various types of dischargers.

First, we determine whether the facility is a direct or indirect discharger. With rare exception, such as some indirect discharges to a privately-owned treatment works, we'll only be addressing direct dischargers in NPDES permits. So that leads us to the left-hand side of the chart.

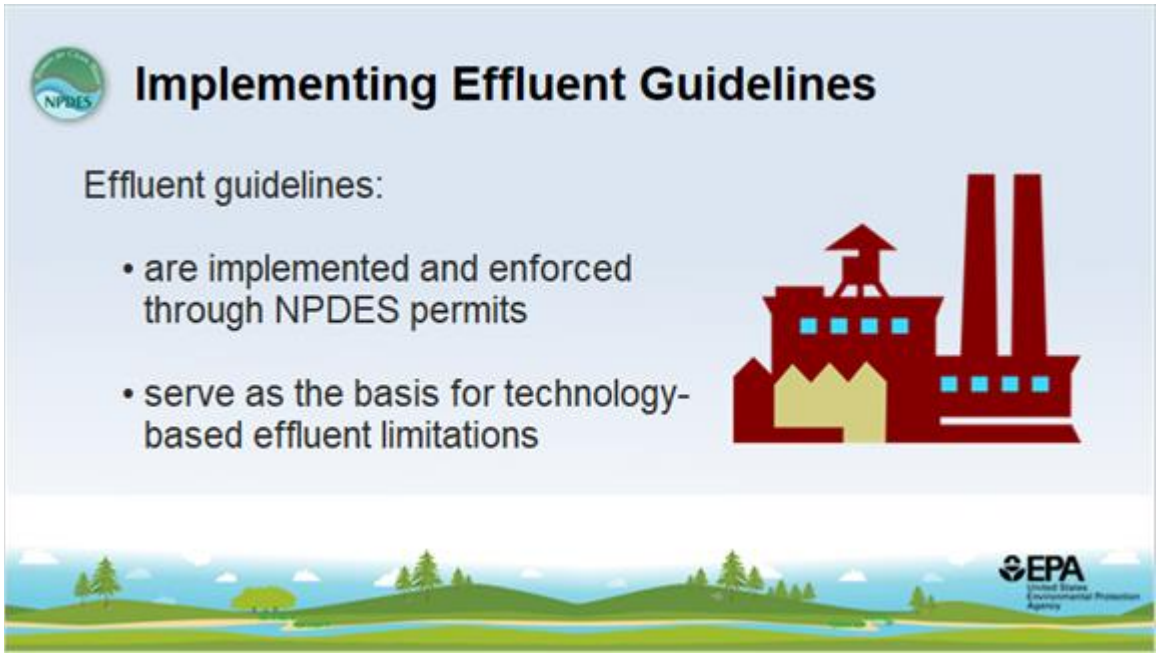
The chart then groups the performance standards based on whether the discharger is a new source or an existing source or new discharger. If it's a new source, then the new source performance standards apply. If it's an existing source or new discharger, then BPT, BCT, and BAT standards apply.

Notice also that the applicable standards for direct dischargers depend on the pollutant discharged. BPT and NSPS apply to all types of pollutants (conventional, non-conventional, and toxic), whereas BCT applies solely to the five conventional pollutants and BAT applies solely to toxic and non-conventional pollutants.

Clear as mud, right? Lots of acronyms and regulatory terminology, but hopefully this will all make sense once we start working through some examples.

Greg, can you explain why and how we implement these standards in NPDES permits?

1.15 Implementing Effluent Guidelines



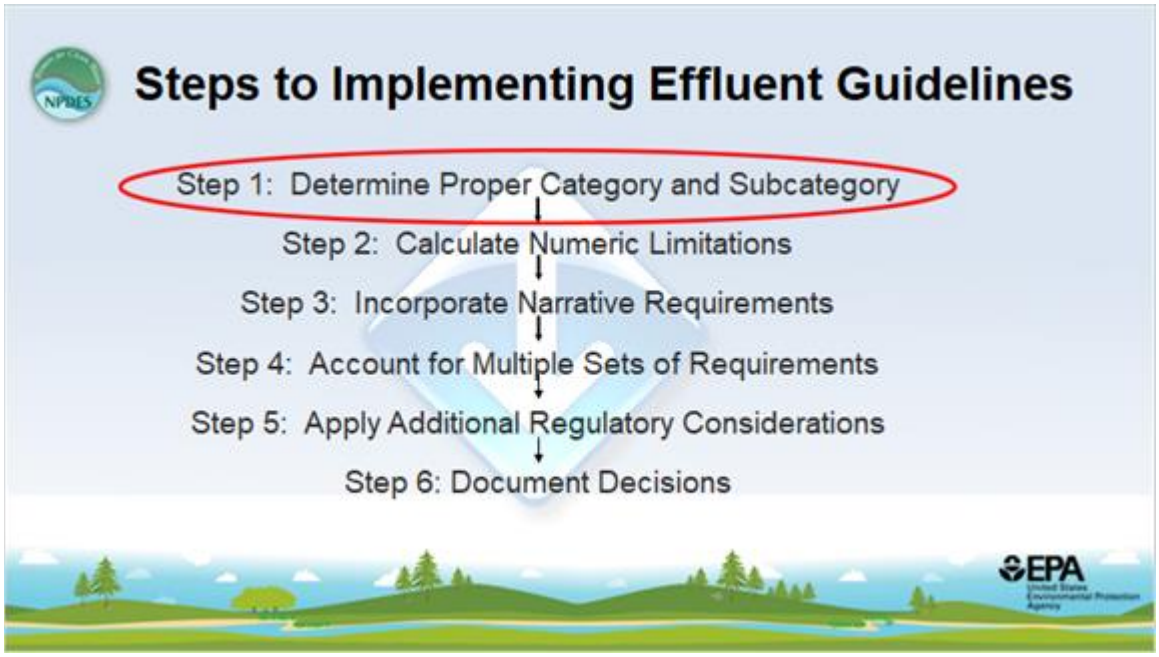
Notes:

Sure thing, Dave. Thanks for guiding us through that maze of acronyms.

For direct discharges, the standards from the effluent guideline are enforceable only if an NPDES permit issued to the facility includes requirements based on the applicable standards. Until the permit writer incorporates an effluent guideline standard into the permit, that standard is not an enforceable Clean Water Act requirement for that facility. Another way to think about it is that if a facility has met all application requirements and received an NPDES permit, then compliance with the permit constitutes compliance with the provisions of the Clean Water Act that the permit was intended to implement, even if that permit does not really adequately reflect the effluent guideline requirements.

It is critical, therefore, that permit writers be able to identify all applicable technology-based standards and translate these standards into effluent limitations and other permit conditions.

1.16 Steps to Implementing Effluent Guidelines



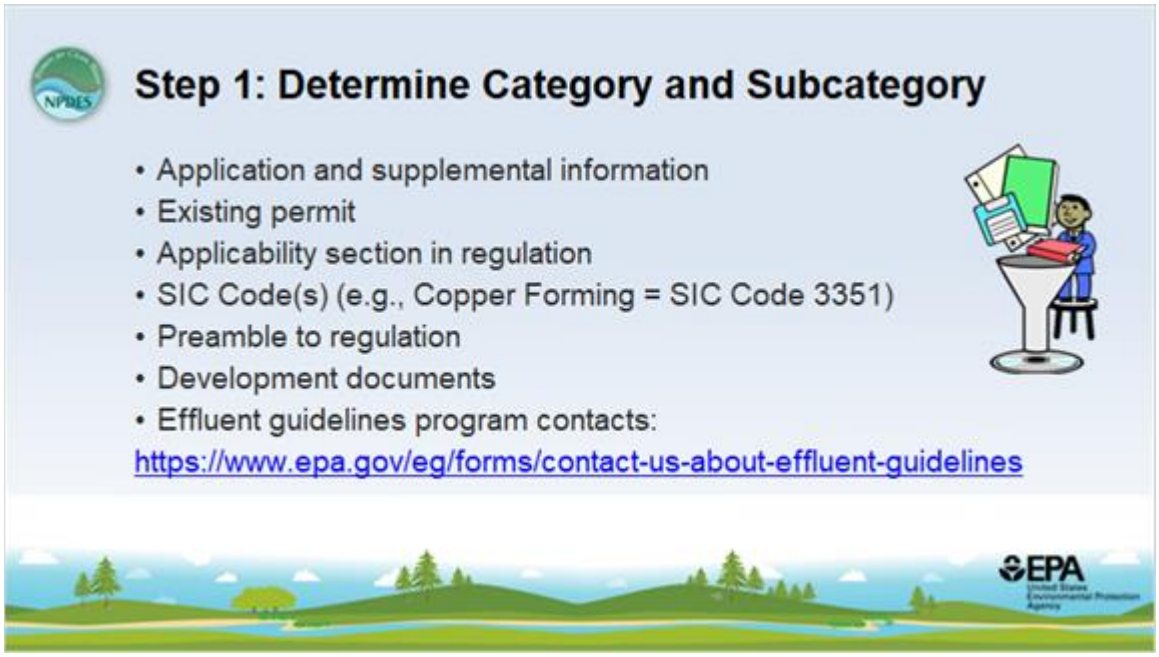
Notes:

So, it looks like we had better spend some time talking about the process we use to implement effluent guidelines in NPDES permits.

We've divided this process into six steps and we'll take a brief look at each step, providing some examples as we go along.

The first step, and one that is not always that easy, is to determine the proper category and subcategory of the facility we're permitting.

1.17 Step 1: Determine Category and Subcategory



Notes:

One of the toughest parts of drafting an NPDES permit for a manufacturing, industrial, or commercial facility can be determining the correct effluent guideline or guidelines to apply, or determining whether any effluent guidelines apply at all.

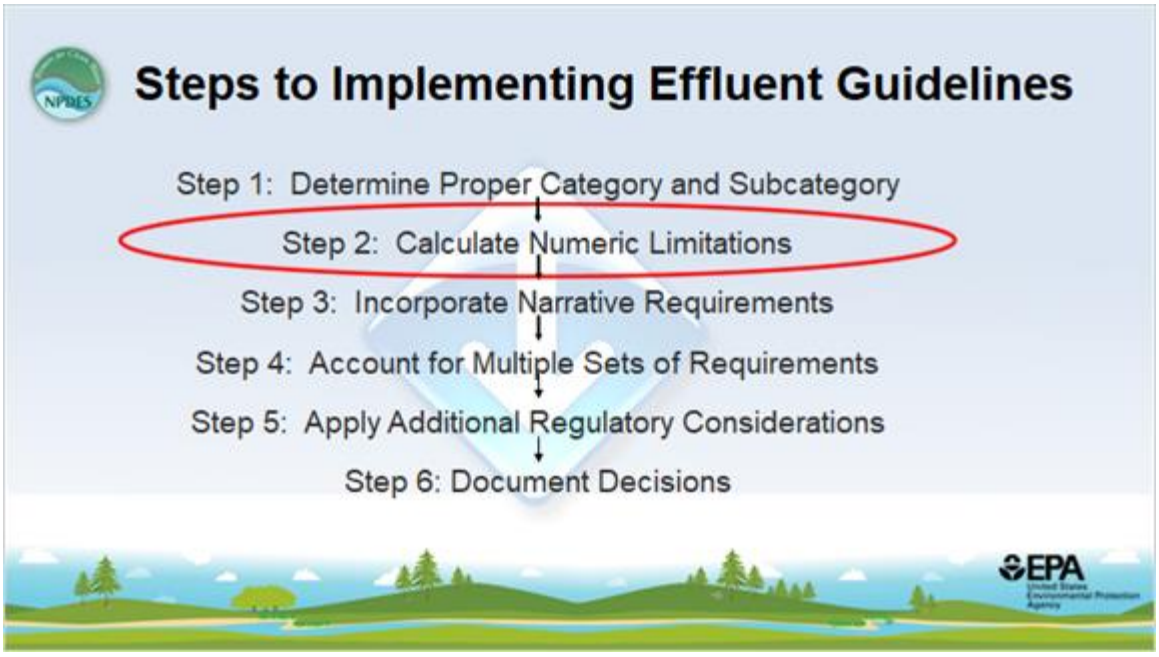
After reviewing the information supplied as part of a permit application, there are a number of places we can turn to determine the applicable category for an industrial or commercial discharger:

- In the application and any supplemental information that was requested, the applicant should have provided some indication of which category or categories in the effluent guidelines it believes might apply.
- If we're processing a permit renewal, then the best place to start is with the existing NPDES permit and fact sheet. The existing permit and fact sheet should provide a discussion regarding the categorization and performance standards required for this facility; however, we should not rely exclusively on this dated information. The previous permit writer could have made a mistake, or there could have been changes at the facility since the time the previous permit was written. The existing permit might not have been modified to incorporate those changes at the facility.
- Once the permit writer has identified one or more effluent guideline parts or subparts that might apply to a facility, he or she should carefully read the applicability section of the effluent guideline to confirm that the information in the existing permit and the application corresponds to the selected category and subcategory.
- If we have the Standard Industrial Classification code for the facility, that could help with determining the applicability of a few of the effluent guidelines that cite the SIC codes they cover.
- We might need to review the preamble to the effluent guideline promulgation in the Federal Register to better understand EPA's concerns and thought processes when developing the applicability section of the regulation.
- We also should be able to gather some useful information from the development documents for the effluent guidelines. When an effluent guideline is promulgated, the data used to develop the standards are

summarized in a book or set of books referred to as the development documents. These development documents contain a lot of information about the industrial category that should be helpful in determining whether or not our classification of a particular facility is correct.

- Finally, EPA has provided a list of contacts for the effluent guideline program by industrial category. These experts can help permit writers answer questions about the applicability of the effluent guidelines to a specific facility. Check out the Web site listed on the slide for more information.

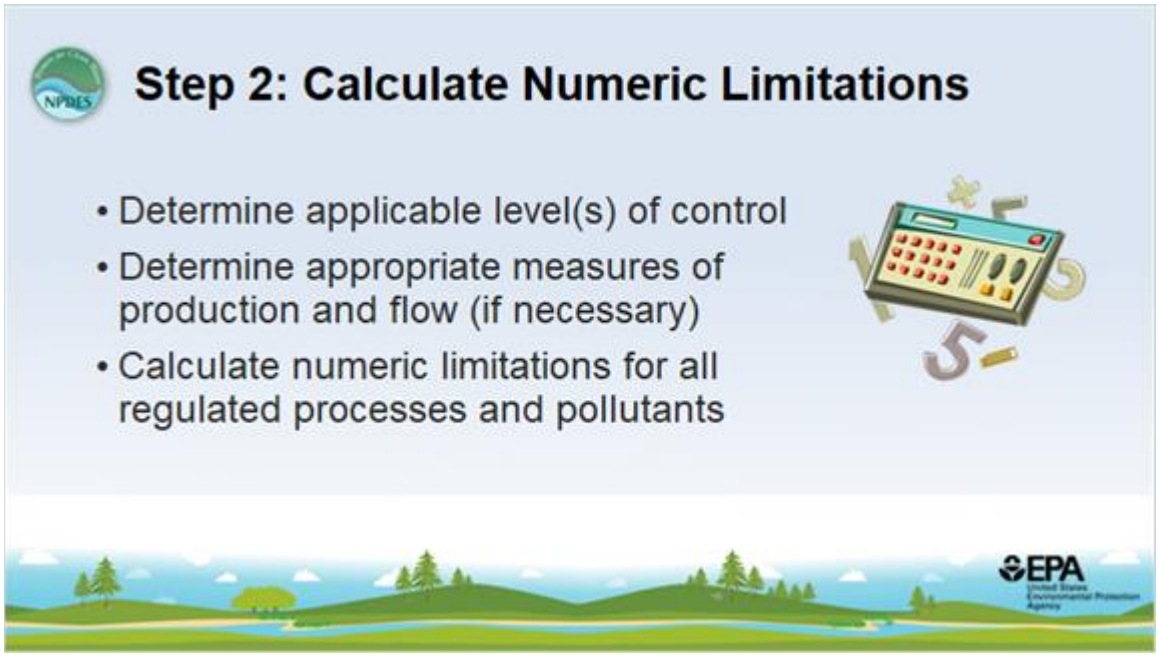
1.18 Steps to Implementing Effluent Guidelines



Notes:

After determining the proper category and subcategory of the facility we're permitting, our next step is to use the applicable effluent guidelines to calculate numeric effluent limitations.

1.19 Step 2: Calculate Numeric Limitations



Notes:

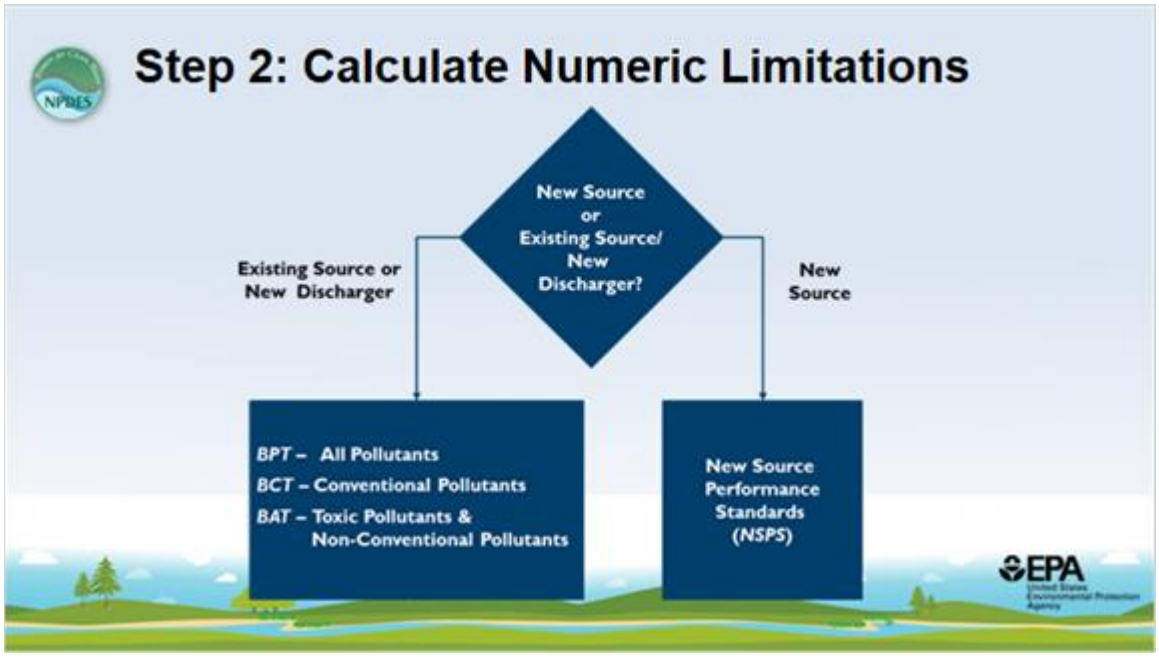
Here's an outline of what we need to do in this step.

First, we'll determine the applicable performance standard, such as BAT or NSPS.

Second, because most of the effluent guideline requirements are based on production or flow, we'll determine the appropriate measure of production or flow at the facility.

Third, we will use this information to calculate numeric limits for all of the processes and pollutants regulated by the effluent guideline.

1.20 Step 2: Calculate Numeric Limitations



Notes:

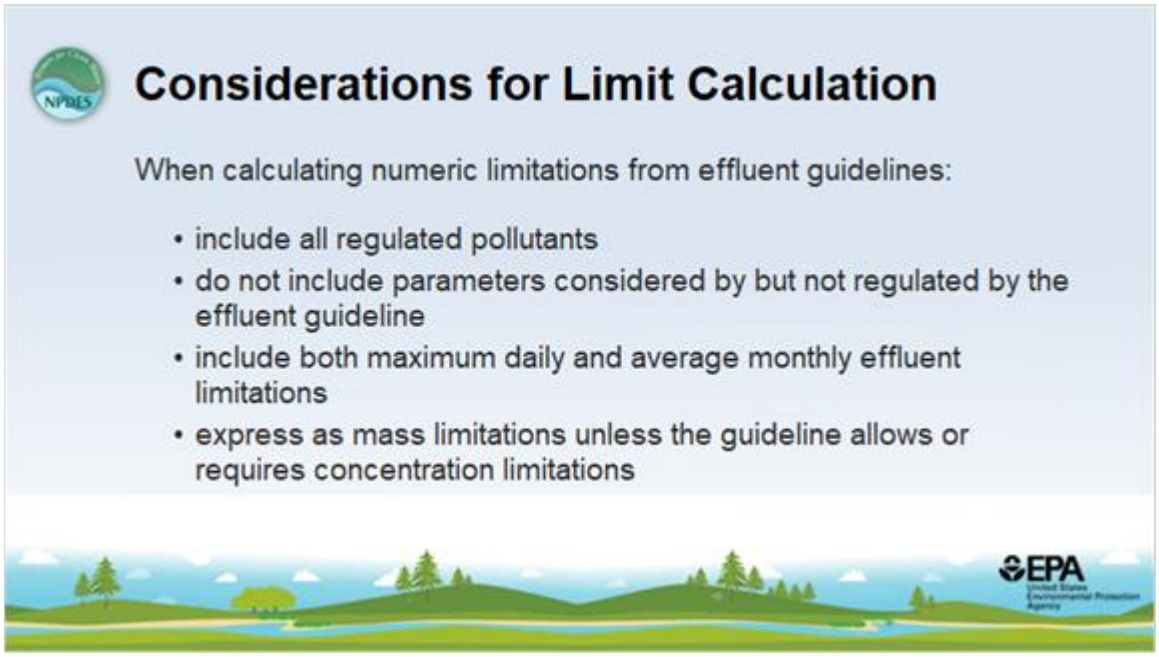
This slide is taken from information in the diagram that Dave showed us earlier.

We first need to determine whether we are permitting a new source or an existing source or new discharger

If we're permitting an existing source or new discharger, we apply BPT, BCT, and BAT.

If we're developing limits for a new source, we apply NSPS.

1.21 Considerations for Limit Calculation

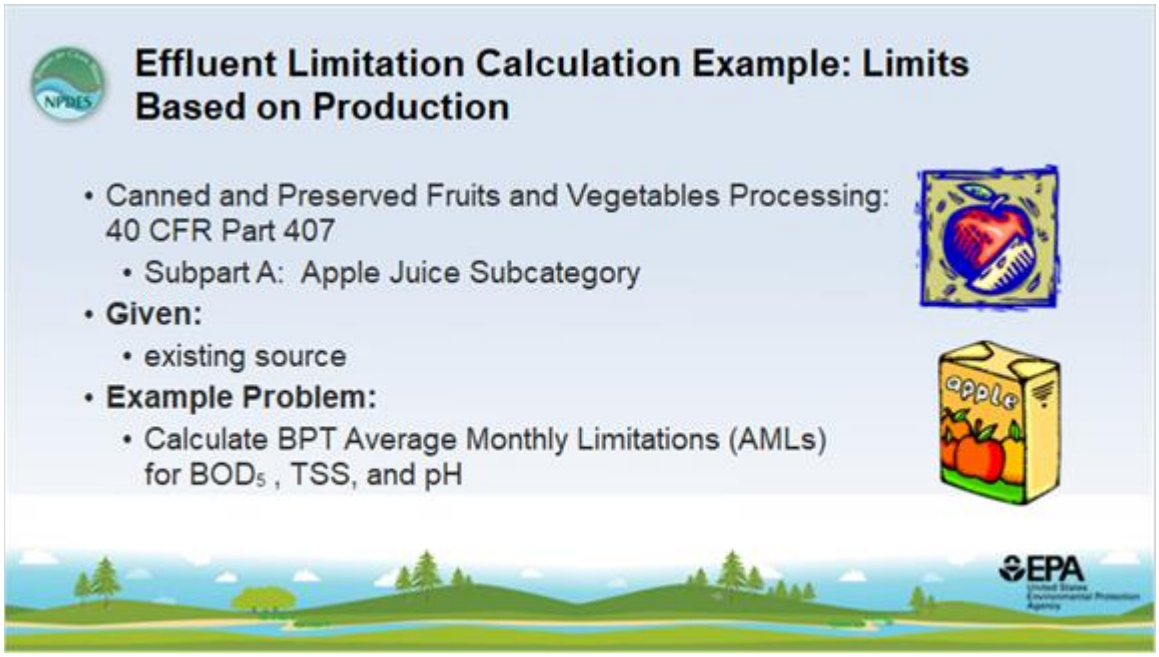


Notes:

When we've identified the applicable technology standards and get to the point of calculating effluent limitations, we need to remember a few important requirements:

- First, we need to account for all pollutants regulated by the effluent guideline. If there is a standard for the pollutant, we must include a limit for that pollutant in the permit.
- Second, we should remember that in the case where EPA, as part of the effluent guideline development process, considered a pollutant but decided that a standard was not necessary, the permit should not include technology-based effluent limitations for that pollutant. This is a situation where review of the development document for the effluent guidelines is very helpful. An exception to this general rule would be where the state has a specific provision allowing it, or even requiring it, to develop technology-based standards, even where EPA determined that such standards are not needed to meet Clean Water Act requirements.
- Third, we need to remember that the regulations require that we include both maximum daily and average monthly limitations for non-POTWs, and both are generally included in the effluent guidelines.
- Fourth, the regulations require us to develop mass limits unless one of the exceptions in the regulations is met. For most of the effluent guidelines, the numeric standards are expressed in terms of mass and are based on some measure of the level of production at the facility. There are a few cases, however, where the standards might require other forms of limits. For example, the metal finishing effluent guidelines require concentration limits.

1.22 Effluent Limitation Calculation Example: Limits Based on Production



Notes:

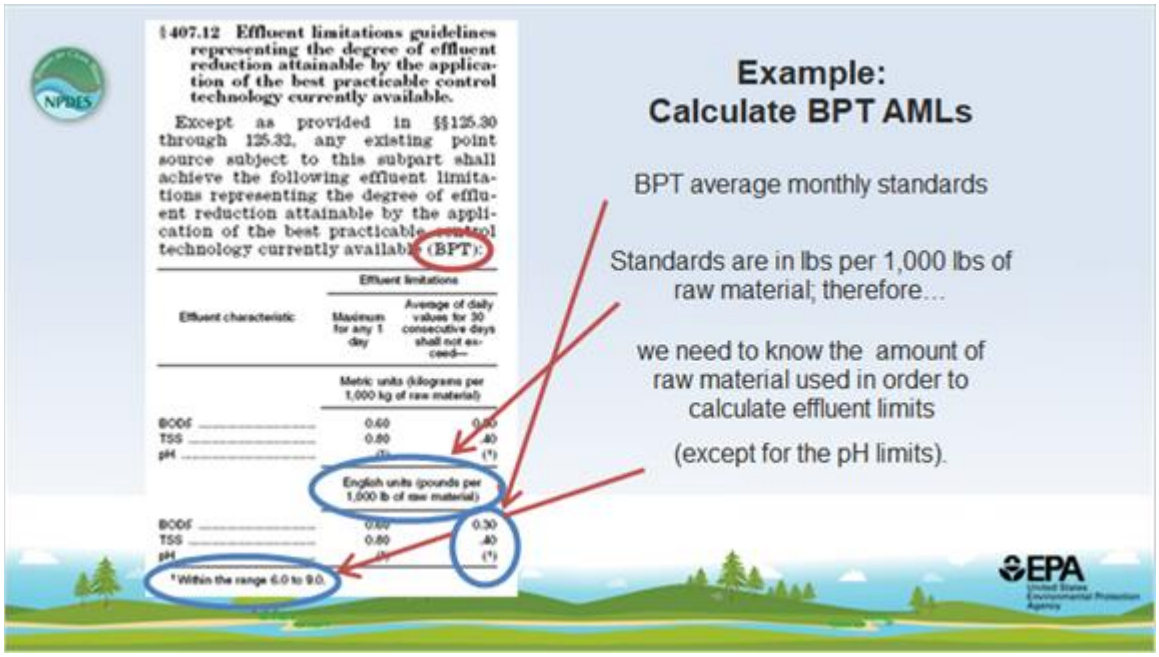
Let's look at an example where the effluent guidelines include mass-based limitations based on production.

Here we are considering the Canned and Preserved Fruits and Vegetables Processing category in 40 CFR 407.12.

We are permitting an existing source covered by Subpart A, which is the Apple Juice Subcategory.

To keep this example brief, we'll calculate only the BPT average monthly limitations for BOD_5, TSS, and pH. Remember that, for a real permit, we need to calculate the maximum daily and average monthly limitations for all pollutants and all levels of control.

1.23 Untitled Slide



Notes:

Here's an excerpt from 40 CFR Part 407 containing the BPT standards for the Apple Juice subcategory.

For this example, we're just calculating the average monthly limitations and we'll use English units. So here are the BPT average monthly standards in English units.

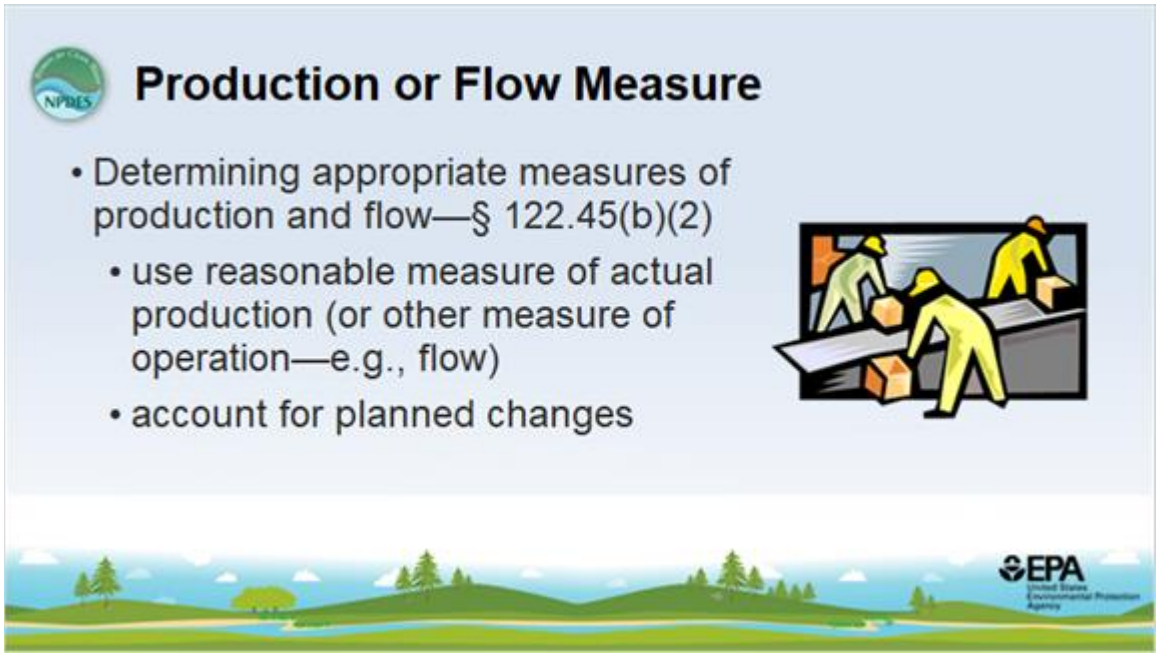
These limitations are expressed as pounds of pollutant that may be discharged per thousand pounds of raw material used in the production process.

Therefore, we need to know the amount of raw material used in order to calculate the applicable effluent limitations.

The pH limit is, of course, an exception that is simply expressed as a range of acceptable pH.

How do we determine the appropriate production figure to use in applying this effluent guideline?

1.24 Production or Flow Measure



Notes:

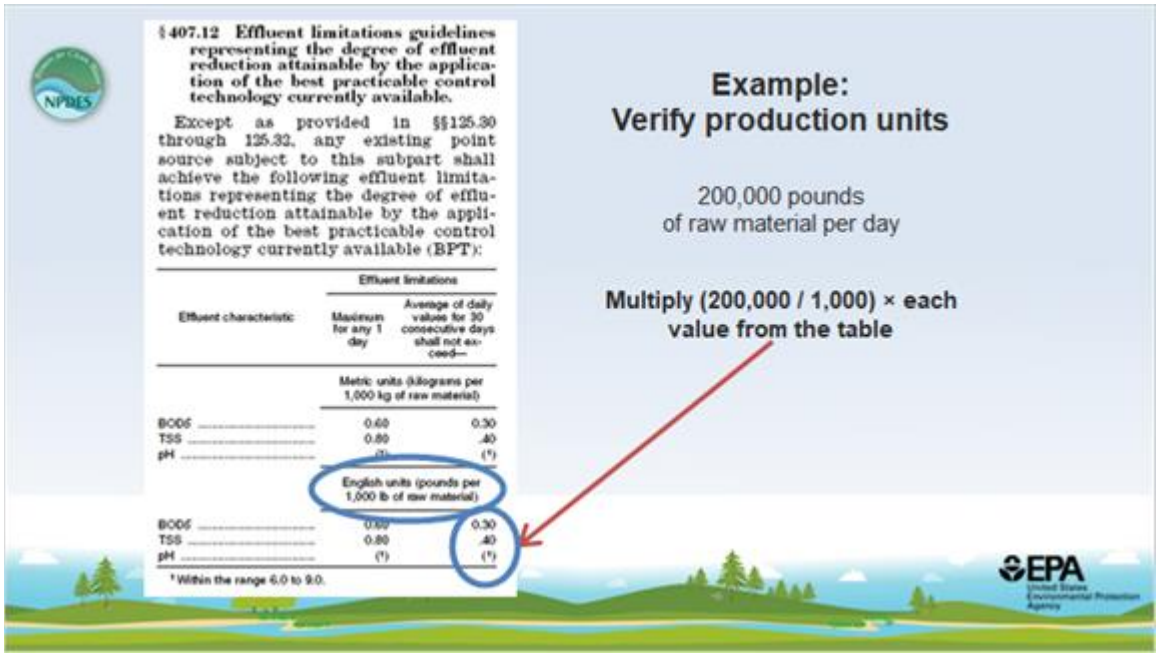
The regulation at 40 CFR 122.45(b)(2) requires that, for non-POTWs, we use a reasonable measure of the actual production, or other measure of operation, such as flow, to calculate limitations from the effluent guidelines.

For our apple juice producer, we would start by reviewing several years' worth of data to determine a production rate that is reflective of actual production.

If there are planned changes that would result in a change in production during the upcoming permit term, we could develop tiered limits in the permit. We'll talk more about tiered limits toward the end of the presentation.

The data that we need to establish a reasonable measure of actual production might or might not be in the permit application form. We might have to ask the facility to provide these data separately. In either case, the basis for our decision of what constitutes a reasonable measure of actual production should be explained in the fact sheet for the permit.

1.25 Untitled Slide



Notes:

Getting back to our apple juice producer, let's assume that we've determined that a reasonable measure of actual production corresponding to the measure used in the effluent guideline, raw material, is 200,000 pounds per day.

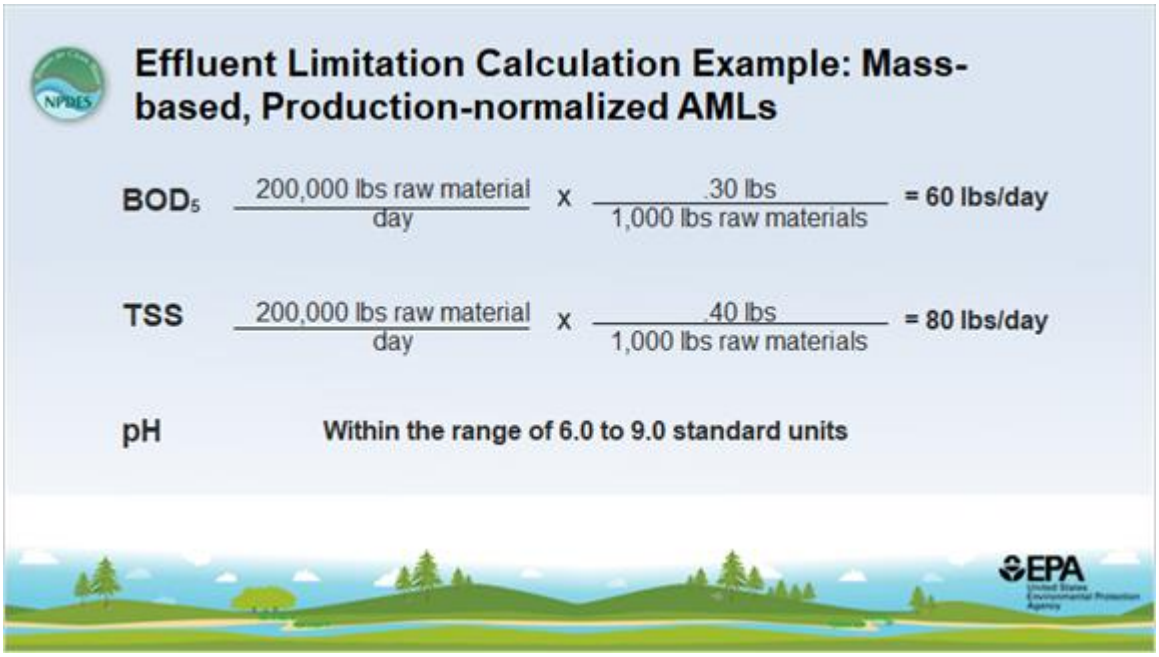
We should note here that in some effluent guidelines where there are multiple processes covered, the production measure used could vary from process to process.

For example, for some processes we might need to consider raw material used. For others we might need to know the amount of an intermediate or final product.

In our example here, we only have one process and one production figure to worry about: the amount of raw material used. We apply the effluent guidelines using that production figure by multiplying 200,000 pounds (our amount of raw material per day) by each of the values in the table and dividing by 1,000 pounds to get our average monthly limits.

Remember, the reason we have to divide by 1,000 pounds is that the allowances in the table for each pollutant are expressed as pounds per 1,000 pounds of raw material.

1.26 Effluent Limitation Calculation Example: Mass-based, Production-normalized AMLs



Notes:

Here are the calculations:

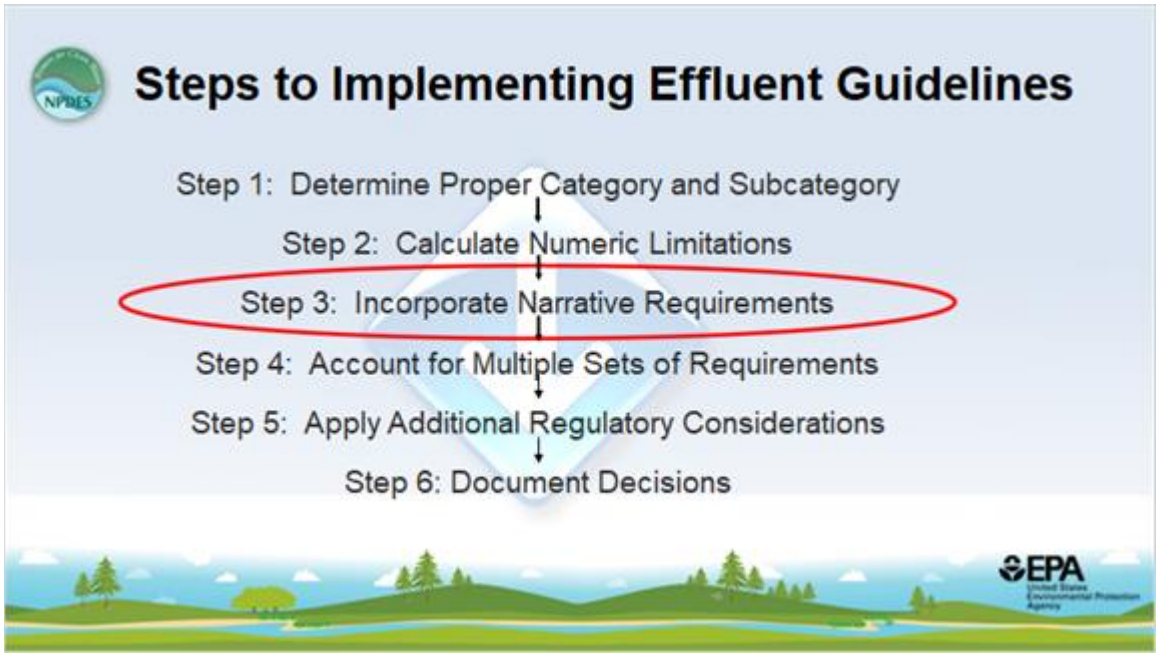
First, for BOD_5, we take our production rate of 200,000 pounds per day of raw materials and multiply by 0.30 pounds of BOD_5 allowed per 1,000 pounds of raw material. That gives us an average monthly limit for BOD_5 of 60 pounds per day.

For total suspended solids, or TSS, we take our production rate of 200,000 pounds per day of raw material and multiply by 0.40 pounds of TSS allowed per 1,000 pounds of raw material. That gives us an average monthly limit for TSS of 80 pounds per day.

Of course, our pH limit of 6.0 to 9.0 standard units is not dependent on production.

That's just one fairly simple example of how technology-based limits are calculated from an effluent guideline. Dave, what else do we need to think about?

1.27 Steps to Implementing Effluent Guidelines



Notes:

Well, Greg, I guess we need to think about the next step in our process, which is to develop permit conditions based on any narrative requirements from the effluent guidelines.

1.28 Step 3: Incorporate Narrative Requirements

Notes:

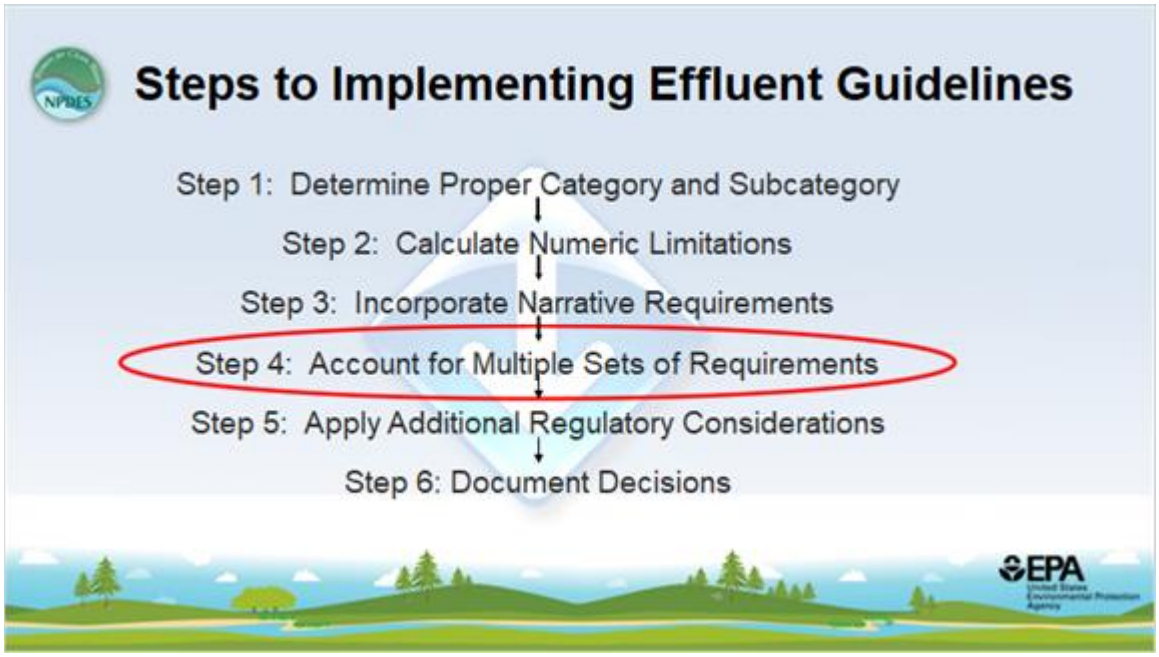
Several effluent guidelines contain both numeric and narrative performance standards and requirements, and some contain exclusively narrative standards. Examples of effluent guidelines that contain only narrative requirements are the guidelines applicable to concentrated aquatic animal production facilities and those that apply to concentrated animal feeding operations, or CAFOs. These effluent guidelines contain a suite of best management practices that must be incorporated into the NPDES permit if a facility is subject to the guideline.

Some narrative requirements might address the need for treatment practices. For example, because limitations in the metal finishing effluent guidelines are expressed in terms of concentration, there is a narrative requirement in the effluent guideline stating that facilities must not augment the use of process water or dilute the process wastewater in order to comply with the limits. This narrative requirement should be included as an enforceable condition of the permit.

Some guidelines also establish specific monitoring or reporting requirements unique to the discharge category.

We should carefully review each applicable guideline to ensure that all necessary terms and conditions are incorporated into the permit, including these types of narrative requirements.

1.29 Steps to Implementing Effluent Guidelines



Notes:

As if it hasn't been tough enough up to now, our fourth step is where applying effluent guidelines can get really complicated.

This step deals with cases where multiple sets of requirements apply to the same facility.

1.30 Step 4: Account for Multiple Sets of Requirements

Notes:

Thus far, we've looked only at examples where a single set of standards from the effluent guidelines apply to the facility.

In many cases, things aren't that simple.

A single facility could include:

- multiple processes within the same category or subcategory, and the effluent guidelines may account for that by regulating each process;
- production or services in more than one category or subcategory, so multiple effluent guidelines could apply;
- both new and existing sources, especially where one production process has been replaced;
- wastewater streams not containing the regulated pollutant, such as non-contact cooling water; or
- unregulated waste streams.

So, what should we do when these situations occur?

1.31 Step 4: Account for Multiple Sets of Requirements (cont.)

Notes:

When a facility falls under multiple industrial categories, is subject to both new source and existing source performance requirements, has waste streams not covered by the applicable effluent guideline, or has multiple processes sharing a common treatment system, there are some basic rules to keep in mind.

First, we must apply all applicable standards, taking into consideration that some standards might supersede others. The situation where one guideline supersedes another would be explained in the applicability section of the effluent guideline.

Where the regulations do not indicate that one set of standards supersedes the other, the permit writer is responsible for developing a site-specific approach to ensure that all standards are appropriately applied. The approach for any given facility will be dependent on how the guidelines are expressed and how the facility, wastewater flows, and treatment systems are configured.

To account for multiple regulated and unregulated waste streams sharing a common treatment system, there are several approaches that we might employ.

When developing mass-based limits, each process contributing flow to the treatment system receives an allowance for a particular pollutant, and the final technology-based limit is determined by adding these “building blocks” together to get the total allowance for the discharge.

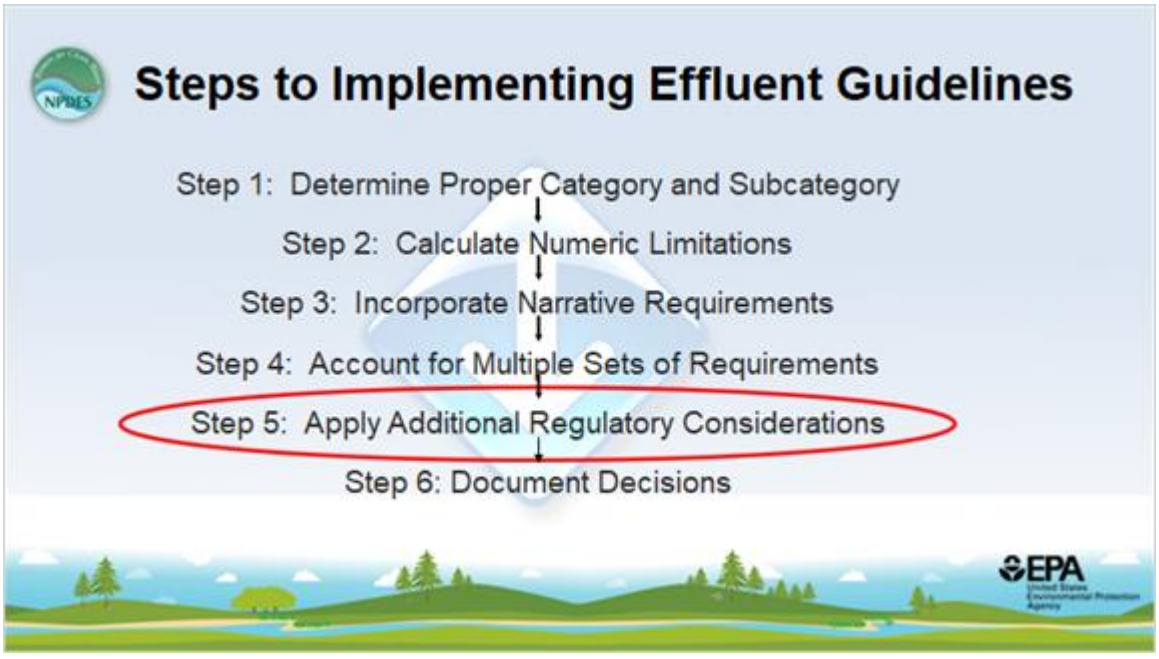
For concentration-based limits, we might need to flow-weight the requirements for the different process flows to develop a single concentration limit after the common treatment system.

Where waste streams not regulated by the effluent guideline are combined with regulated waste streams, the permit writer will need to use a best professional judgment, or BPJ, approach to determine the appropriate requirements for the unregulated portion. We'll talk about BPJ later in this presentation.

We should also note that there could be situations where it is appropriate, or even required by the effluent guideline, to apply limits at a point before the final outfall, which we refer to as an internal outfall. Internal outfalls are typically used where there is a concern that a pollutant concentration in the process wastewater stream might be masked when the wastewater combines with the flow that does not contain the pollutant. Combining the flows could dilute the pollutant concentration to a point where it's difficult or impossible to measure.

Finally, there are situations where various requirements that apply to a facility might express standards or production measures in different units. We need to be aware of those differences and account for them in our limit calculations.

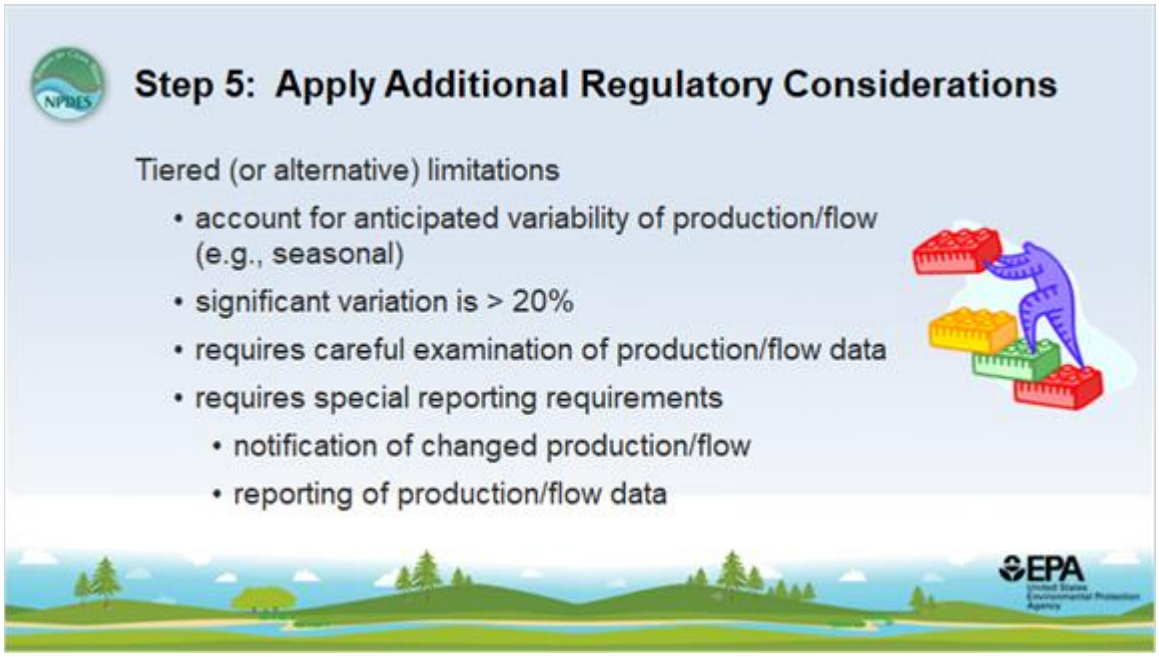
1.32 Steps to Implementing Effluent Guidelines



Notes:

Moving on to Step 5, we now need to apply any additional considerations that address unique situations at the facility we are permitting.

1.33 Step 5: Apply Additional Regulatory Considerations



Notes:

In this step, we'll look briefly at one last consideration that could affect how we develop effluent limits based on effluent guidelines.

Earlier, we discussed how we establish production-based limits using a reasonable measure of actual production. In some cases, we could find that production is expected to vary significantly over the term of the permit. In this situation, the regulations provide an approach to account for these variations using tiered limits.

Tiered limits are multiple limits established in a permit at different levels for the same parameter. Determining which limits apply at a given time would be based on conditions specified in the permit, usually related to production.

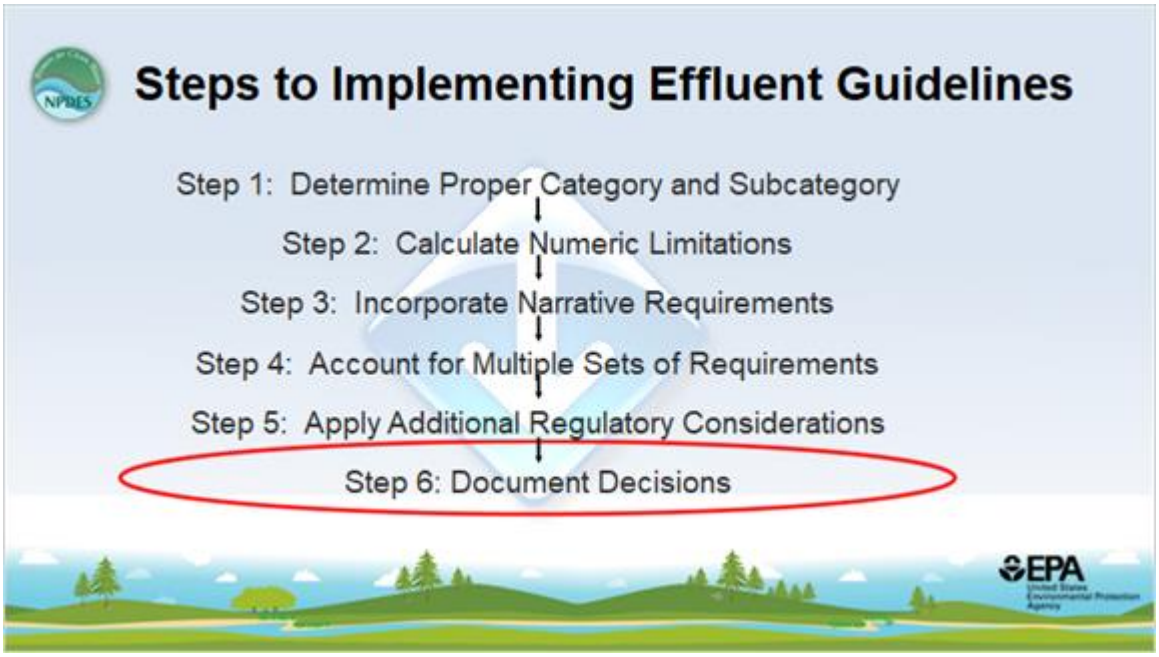
Typically, a change in production of greater than 20 percent is considered significant and would warrant consideration of tiered limits.

Tiered limits can include:

- different limits for different times of the year, such as seasonal limits;
- different limits applied from year to year to account for anticipated changes in production; or
- different limits to address planned expansion that will take place during the life of the permit. After the expansion, a different set of limits would apply than those that were adopted at the beginning of the permit term.

We need to keep in mind that tiered limits are not easy to implement, particularly when tracking compliance. These types of limits require detailed documentation in the fact sheet and clear directions in the permit, including specific monitoring and reporting requirements for both effluent quality and production levels.

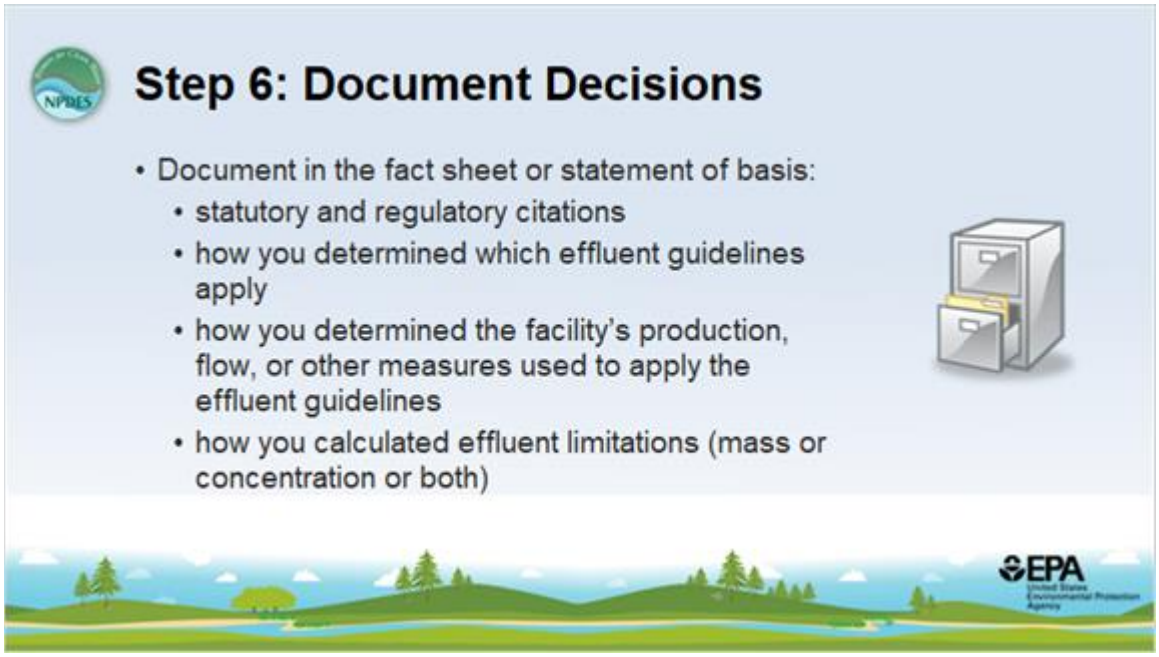
1.34 Steps to Implementing Effluent Guidelines



Notes:

And now, our final step is, of course, documentation.

1.35 Step 6: Document Decisions



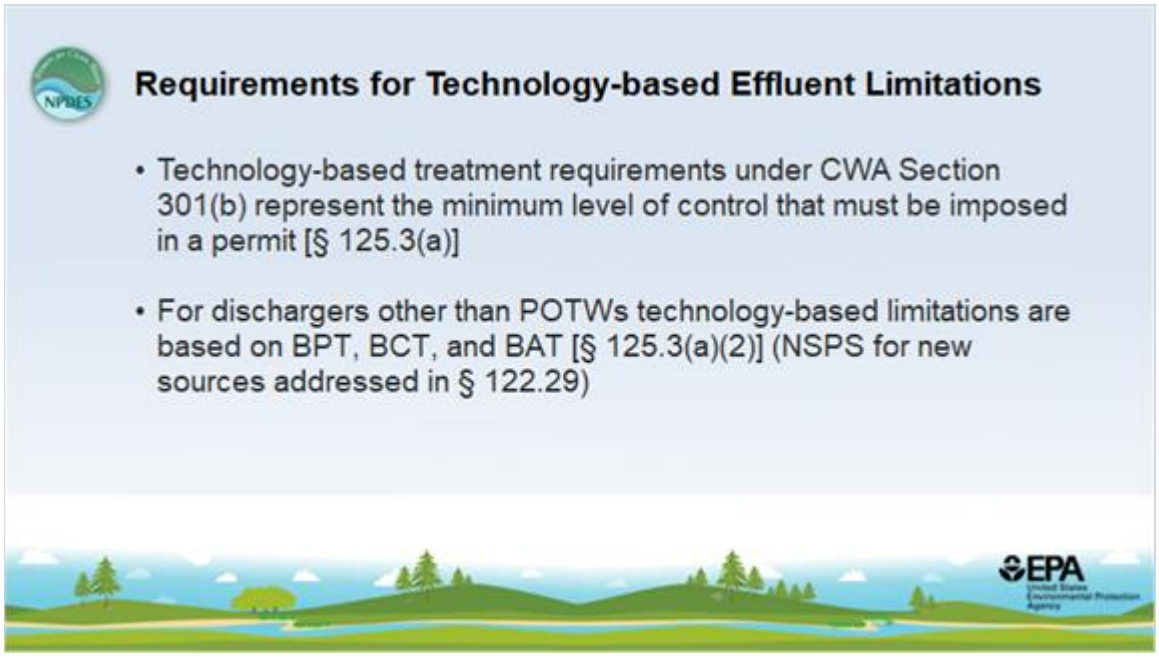
Notes:

We need to always carefully document our work in applying effluent guidelines in the fact sheet or statement of basis for the permit.

It is important to cite the statutory and regulatory basis for effluent limits and show how the limits were calculated, including an explanation of how production, flow, and other measures used to implement the effluent guidelines were determined.

Well, that about wraps up our discussion of effluent guidelines. Are we finished yet, Greg?

1.36 Requirements for Technology-based Effluent Limitations



Notes:

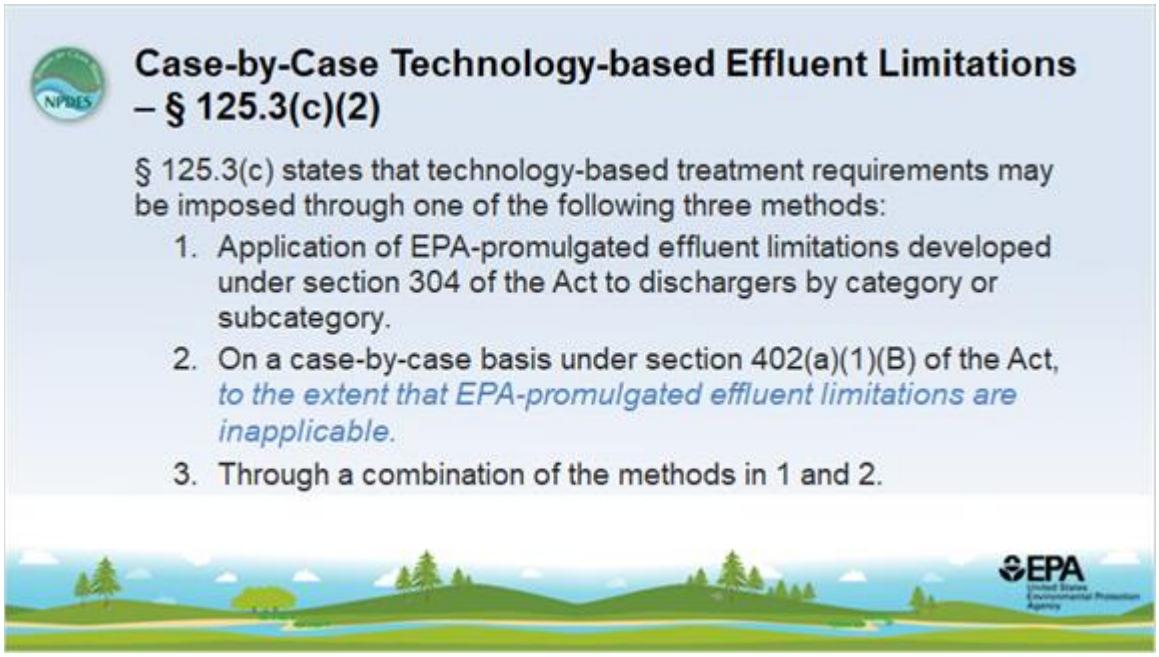
Not so fast, Dave.

All of this discussion of effluent guidelines and how to apply them is terrific, but we know that EPA has not developed effluent guidelines for every manufacturing, industrial, or commercial category.

Remember, 40 CFR 125.3(a) indicates that technology-based requirements are a minimum level of control that must be imposed in an NPDES permit, and that for dischargers other than POTWs, these technology-based requirements are based on BPT, BCT, BAT, or NSPS.

So, what do the Clean Water Act and NPDES regulations say about the situation where we have no effluent guidelines as the basis for technology-based effluent limits?

1.37 Case-by-Case Technology-based Effluent Limitations – § 125.3(c)(2)

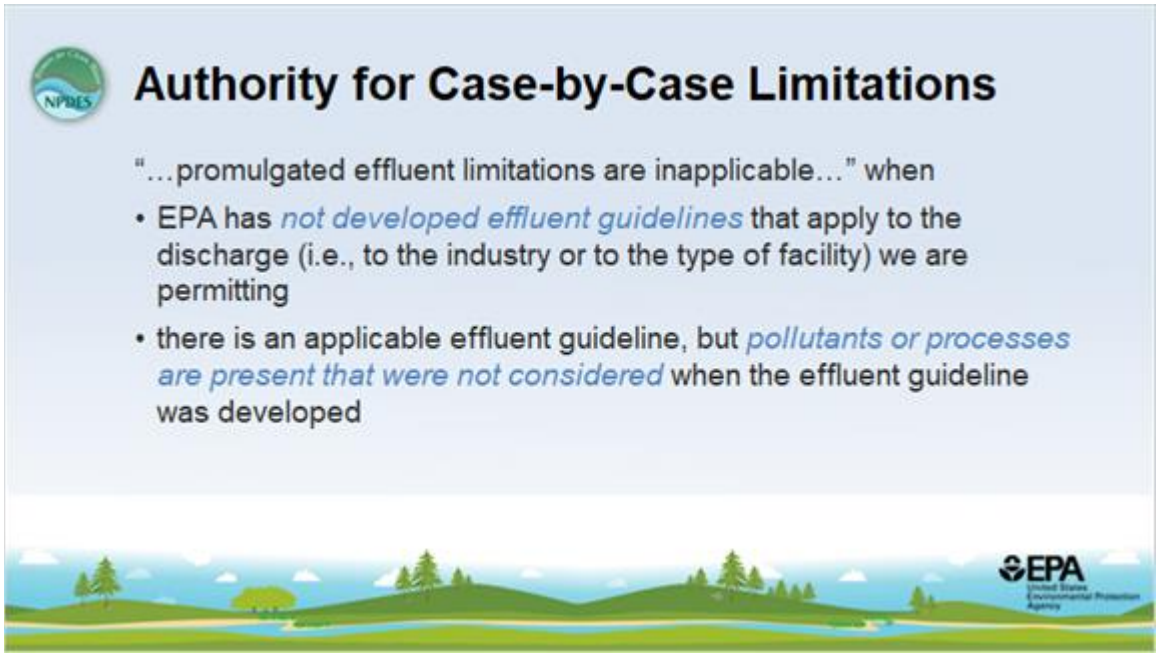


Notes:

40 CFR 125.3(c)(2) tells us that, where there are no applicable EPA effluent guidelines, permit writers have the authority to develop technology-based limitations on a case-by-case basis under section 402(a)(1)(B) of the Clean Water Act.

Let's take a closer look at what this regulation means.

1.38 Authority for Case-by-Case Limitations



Notes:

What does the regulation mean when it says "when promulgated effluent limitations are inapplicable…?" Well, it means that either:

- EPA has not developed effluent guidelines that apply to the industrial category we are permitting or
- there is an applicable effluent guideline, but the facility that we're permitting discharges pollutants or conducts activities that generate wastewater that were not considered by EPA when the effluent guideline was developed.

1.39 How are Case-by-Case Limits Developed?

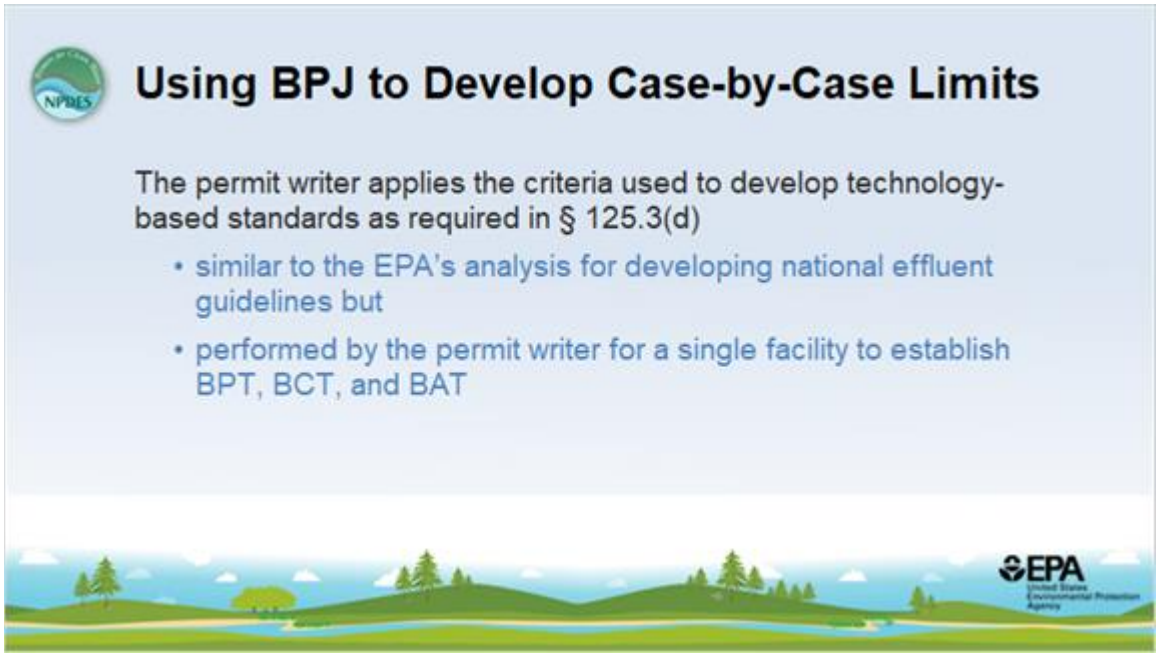
Notes:

It's in one of these situations that the permit writer would develop technology-based effluent limitations on a case-by-case basis.

This is where the permit writer gets to do a lot of thinking because case-by-case limits are developed based on the permit writer's best professional judgment or BPJ.

You might hear the term "BPJ" used in a lot of different contexts. When talking about NPDES permitting, BPJ specifically refers to the approach used by a permit writer to establish technology-based effluent limitations on a case-by-case basis in the absence of national standards of performance.

1.40 Using BPJ to Develop Case-by-Case Limits



Notes:

The regulations have a few things to say about how a permit writer develops case-by-case technology-based limits using BPJ.

As it turns out, a permit writer follows the same basic approach taken by EPA when it develops BPT, BCT, and BAT requirements in effluent guidelines.

The difference, of course, is that EPA establishes requirements for an entire manufacturing, industrial, or commercial category, but a permit writer determines BPT, BCT, and BAT for a single facility.

1.41 BPJ Considerations – § 125.3(d)

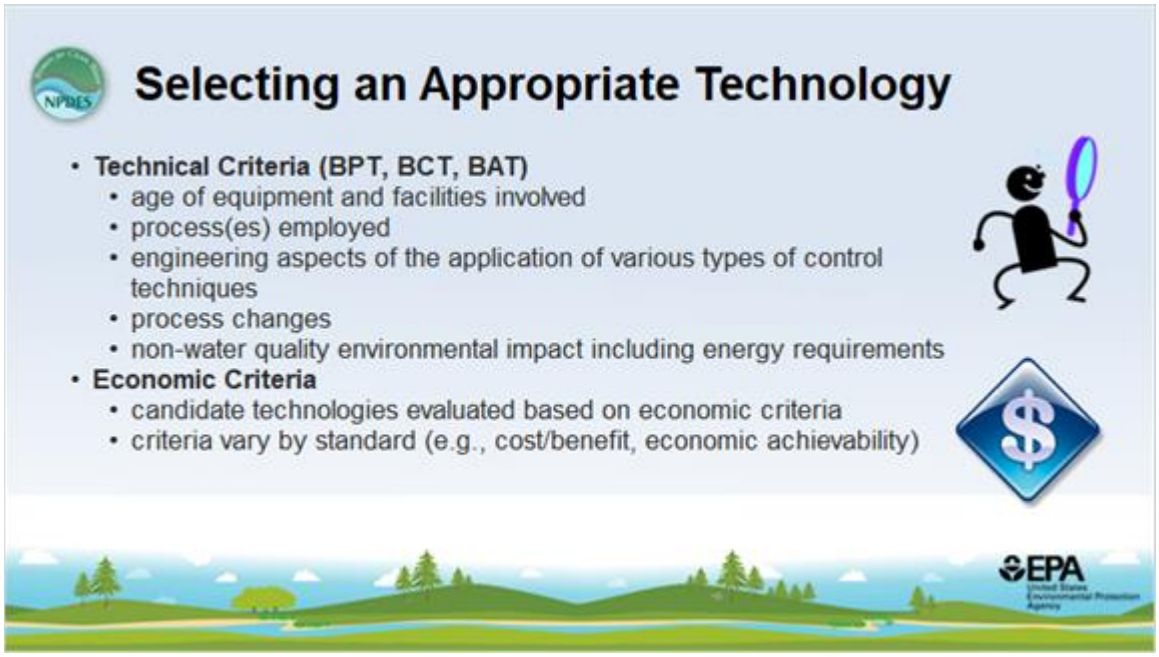
Notes:

What does a permit writer consider when developing case-by-case limitations using BPJ?

Remember, we need to establish BPT, BCT, and BAT, which are specific performance levels. We do not require a facility to use a specific technology.

The performance levels, however, must be based on what we think is achievable using an available control technology that could be implemented at the facility. We also would consider any unique factors related to that facility and its operations.

1.42 Selecting an Appropriate Technology



Notes:

Here are the specific factors that 40 CFR 125.3(d) say that we have to consider when establishing the performance levels that represent BPT, BCT, and BAT.

First, there is a set of common technical considerations, including:

- the age of the equipment and facilities we are permitting;
- the processes employed at those facilities;
- engineering aspects of the application of various types of control techniques (for example, we might consider the feasibility of retrofitting existing systems);
- process changes, such as those that could be part of the control technology; and
- non-water quality environmental impacts of implementing the technology, including energy requirements.

In addition to these technical criteria, there are economic criteria. For a technology to be considered viable, it has to not only be technically feasible, but also pass an economic test. EPA has published guidance on implementing the economic criteria for each performance standard and has made that guidance available through the publications page of the NPDES Web site.

Dave, what are some of the tools available to help permit writers developing case-by-case limits using BPJ?

1.43 BPJ Tools and Resources

Notes:

Well Greg, one very helpful resource would be a permit for a similar facility, particularly if that permit includes case-by-case limits. Finding a similar facility with limitations for the same pollutant provides a good start to developing case-by-case limits using BPJ. Using the rationale for the similar facility, a permit writer may be able to identify candidates for model technologies; learn about the treatment efficiencies for these candidate model technologies; and understand the costs of implementing these technologies.

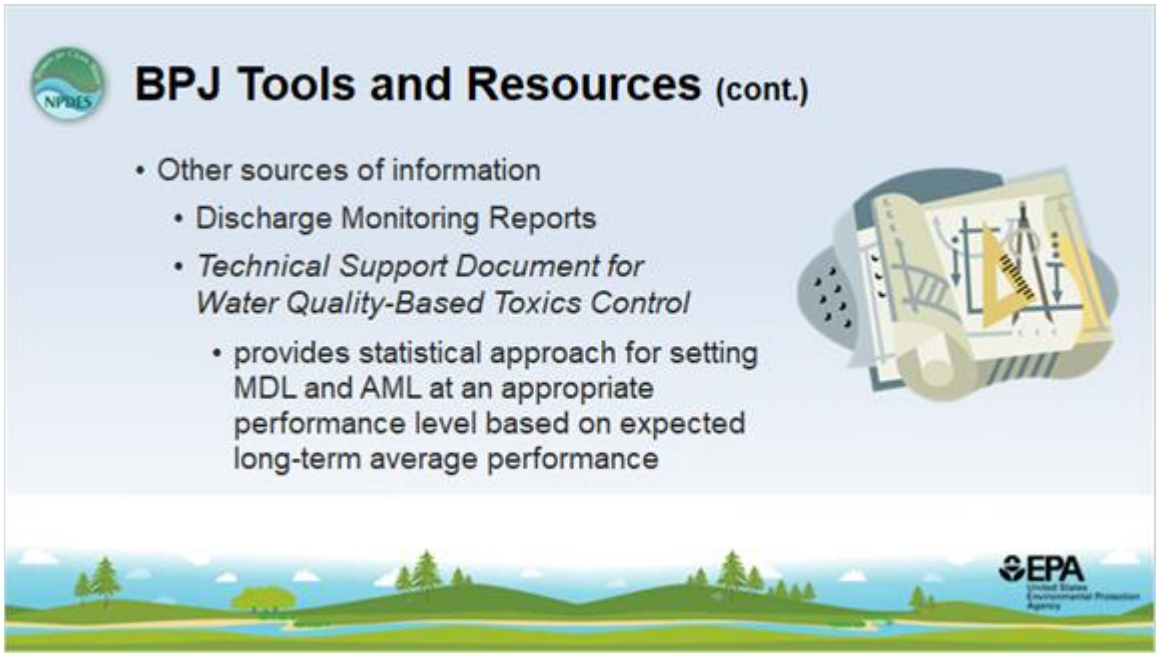
Information from the effluent guidelines program might also be helpful:

- Development documents provide background information on how the effluent guidelines were developed. These documents can be extremely helpful in determining what treatment technologies might be available for similar types of industries and in providing cost information for those technologies.
- Proposed effluent guidelines that apply to the facility, though not yet final regulations, could also be used as the basis for developing case-by-case limits.
- Sometimes EPA produces a report on an industry for which it decided not to promulgate effluent guidelines. These studies include valuable information on pollutants and treatment technologies for that industry.

As Greg mentioned, EPA has developed guidance on performing the BCT and BAT cost tests and made them available through the “Publications” section of the NPDES Web site.

EPA’s effluent guidelines Web site has links to additional information, including final and proposed regulations, data on treatment technologies, and other data resources and tools.

1.44 BPJ Tools and Resources (cont.)

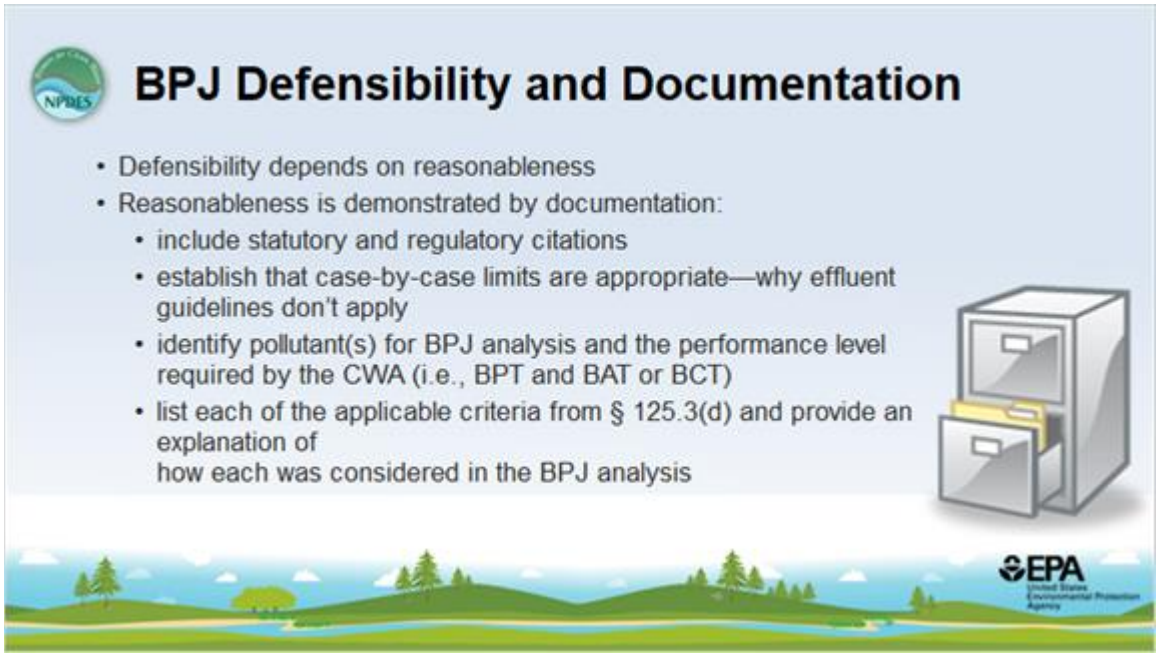


Notes:

Another source of information that permit writers might consider is the Discharge Monitoring Reports for the facility being permitted or for similar facilities. These reports provide information on pollutants present and their concentrations.

Finally, the *Technical Support Document for Water Quality-Based Toxics Control*, which is EPA's national guidance for developing water quality-based effluent limits from water quality standards, is a useful tool. It could be helpful here because the statistical procedures described in this document are the same as the statistical procedures used in the development of effluent guidelines. A permit writer who has determined the average expected performance of a model technology could apply these statistical procedures to develop average monthly and maximum daily limits from that expected long-term performance.

1.45 BPJ Defensibility and Documentation



Notes:

And, as always, let's talk about documentation.

If a case-by-case limit is challenged, the basis for defending that limit is whether or not the permit writer has taken into account the considerations listed in the regulations for case-by-case limits and applied them to the facility in a reasonable manner.

How would we demonstrate that our approach to limit development was reasonable? The answer, of course, is documentation.

What documentation of case-by-case limits should be included in the fact sheet?

Well, first, the fact sheet should include references to all relevant statutes and regulations.

Second, the fact sheet should establish that case-by-case limits are appropriate by explaining why effluent guideline requirements do not apply.

Third, the fact sheet should identify the pollutants for BPJ analysis and the performance levels required by the Clean Water Act.

Fourth, the fact sheet should list each of the applicable criteria from 40 CFR 125.3(d) and provide an explanation of

how each was considered in the BPJ analysis used to develop case-by-case technology-based effluent limits.