

# Water Quality Standards: Discharger Variances

By  
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**Washington Department of Ecology**

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# What you'll see in this presentation:

- Short review of variances – what, why, when, where, and how
- How: Specific information about the discharger variance request and submittal.

Information Ecology needs to evaluate whether a variance is needed and whether rule-making can be supported.

- Additional resources for the variance discussion:

Lindsay Guzzo - USEPA Reg.10 Seattle – telephone

EPA HQ staff – Washington D.C. - telephone

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### What is a Variance?

**Definitions:**  
173-01A-020  
"Variance" is a time-limited degraded use and criterion as defined in 40 C.F.R. 131.3, and must be adopted by rule.

**40 CFR 131.3 (c)** A water quality standards variance (WQS variance) is a time-limited degraded use and criterion for a specific pollutant(s) or water quality parameter(s) that reflect the highest attainable condition during the term of the WQS variance.


**In more direct terms:**  
A WQS variance is a path to improve water quality over time.

**Regulations on variance:**  
40 C.F.R. 131.3 (c)  
40 C.F.R. 131.3 (d)



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Over time, pollutant concentrations decrease and the highest attainable use is met.



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**A variance:**

Is a change to the WQ Standards that requires rule-making and EPA review and approval.

Contains enforceable conditions that are placed in permits, including development and implementation of a Pollution Prevention Plan.



<https://www.pexels.com/photo/black-rotary-phone-207456/>

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## Definitions:

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Regulations on variances:

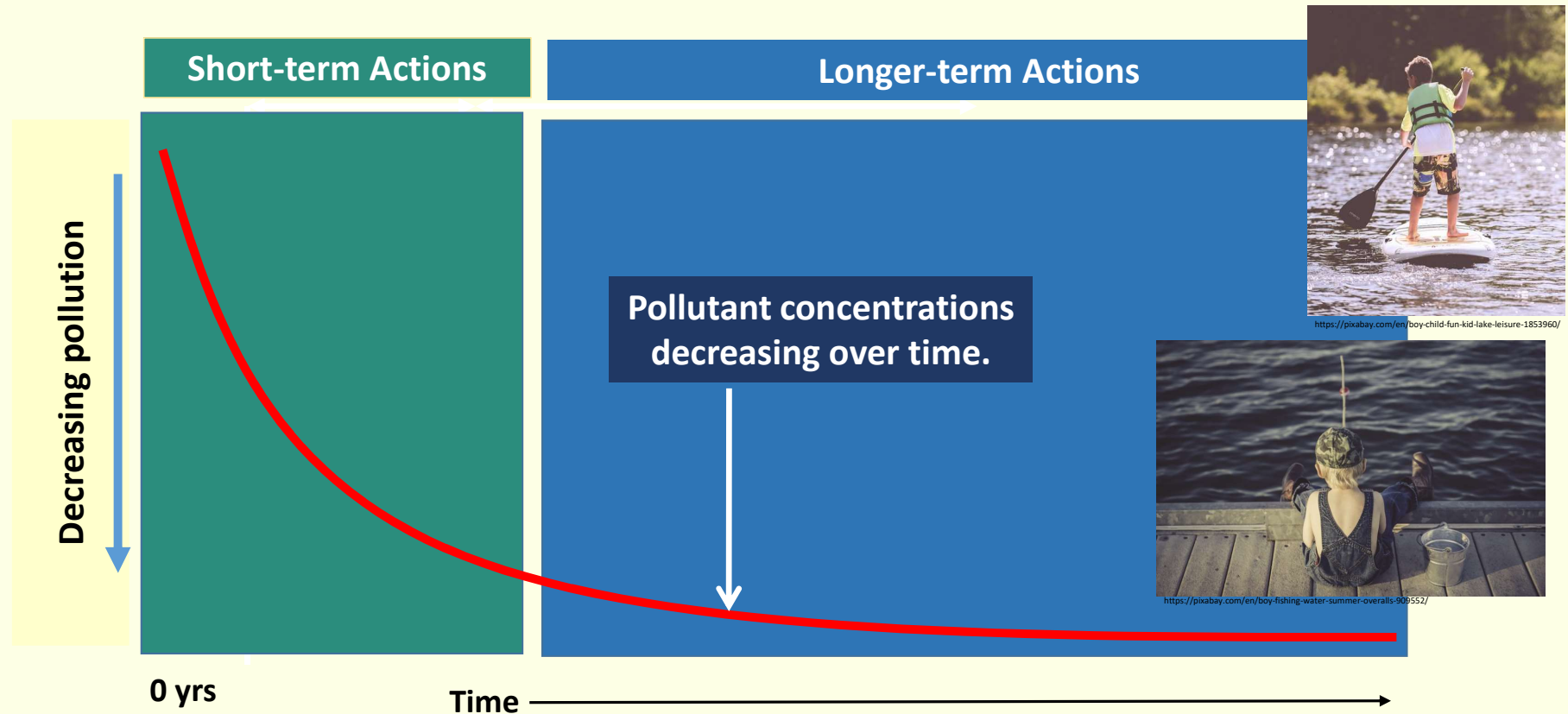
40 CFR 131.14

WAC 173-201A-420



<https://pixabay.com/en/rowing-rowing-boat-water-river-898008/>

**Over time, pollutant concentrations decrease and the highest attainable use is met.**



## A variance:

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Is a change to the WQ Standards that requires rule-making and EPA review and approval.

Contains enforceable conditions that are placed in permits, including development and implementation of a Pollution Prevention Plan.

Is always focused on meeting WQS by working toward the highest attainable condition.

Includes a 5-year re-evaluation. The re-evaluation can result in additional requirements, and, if the requirements of the variance are not being met then the variance can be removed



A WQS variance is a path to improve water quality over time.



## Key concepts when thinking about variances:

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Focus is on meeting CWA requirements – meet criteria and protect uses as soon as possible.

Focus is on extended timelines, only where needed, that are tied to activities to meet CWA requirements.

Focus is on providing a predictable regulatory environment through clear and relevant timeframes for pollution control activities to occur.

Focus is on accomplishing short-term work and ensuring that long-term work occurs.



A WQS variance is a path to improve water quality over time.



## Why consider a variance?

We have challenges with use protection and permitting solutions in many waterbodies.

In some cases we don't know if effluent limits or water quality standards can be met in the future, but we know we can make progress reducing pollutants.

In some of these cases variances can be used to help reduce pollution, attain the highest condition possible for the waterbody and effluent, and provide certainty and compliance in permitting while pollution controls continue.

A variance can provide a structured set of enforceable actions to continually keep the water at the highest attainable condition.



<https://www.flickr.com/photos/usepagov/sets/72157634706332559/>

## When a discharge or waterbody situation is evaluated – how do you choose the appropriate tool? When is a variance appropriate?

Use this permitting tool...	When...
Compliance schedule	The effluent limit can't be met now, but can be met after a period of time.
Use this Water Quality Standards tool...	When...
Site specific criterion	The attainable condition of existing and designated uses would be fully protected using an alternate criterion.
Variance	We <b>don't know</b> if the designated use can be attained or effluent limit met, but progress toward them can be made.
Use Attainability Analysis	We <b>know</b> that the designated use or effluent limit <u>cannot</u> be attained, and we <b>know</b> what level of use and/or effluent quality <u>can</u> be attained.



## Where? Variances can apply to dischargers or to waterbodies

### Discharger variances (individual or multiple)

- A time-limited designated use and parameter-specific change to the standard(s) of the receiving water body for a specific discharger.
- The temporary standard(s) **only apply at the point(s) of compliance for the individual facility.**

### Waterbody variances

- A time-limited designated use and parameter-specific change to the standard(s) that **applies to a stretch of waters.**
- In that stretch of waters (or waterbody), dischargers of the specific pollutant can be covered under the variance, as long as they meet the requirements spelled out in the variance.

## Variance Terminology:

The **Highest Attainable Condition (HAC)** is a key requirement of a variance

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The core concept of a variance, whether we are addressing a discharger or a waterbody variance, is that the highest attainable condition must be maintained throughout the term of the variance.

The Highest Attainable Condition is called the HAC.

The EPA structure for variances is built on the concept of the HAC, which determines the type of variance that is most appropriate for the situation.

The development and determination of the HAC is critical to a variance  
(we just can't get there without it).

**Discharger Variance, Path 3, and the information that must be submitted to support this variance path, is the focus of this presentation.**

Discharger variances HAC	HAC Requirements
Path 1: The highest attainable <b>interim criterion</b> = HAC.	Requires estimation of the highest attainable ambient water quality
Path 2: The <b>interim effluent condition</b> that reflects the <u>greatest pollutant reduction achievable</u> = HAC.	Requires knowledge of the best quality effluent that is achievable. When that quality is achieved the variance ends.
★ Path 3: If no additional feasible pollutant control technology can be identified, <b>the interim criterion or interim effluent condition</b> that reflects the <u>greatest pollutant reduction achievable with the pollutant control technologies installed at the time the State adopts the WQS variance, and the adoption and implementation of a Pollutant Minimization Program.</u>	<p>Requires installation of feasible control technologies.</p> <p>The HAC is expressed as the best ambient water quality condition, or the best effluent condition, once the feasible control technology is installed.</p> <p>Technology must be installed or guaranteed at the time the variance is granted.</p> <p>A PMP is required, and it is the continued implementation of the PMP that allows the duration of the variance to extend beyond the time of installation of the technology.</p>

## How to obtain a variance?

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Assemble all the required information and submit it to Ecology, along with a request for a variance.

Ecology will evaluate the submittal and determine whether or not to initiate rule-making.

Before beginning, Ecology strongly recommends:

- Contact Ecology WQS to discuss the situation. We will coordinate with your permit manager and EPA to help ensure that you get the information that can help you build a successful submittal.

For information about this presentation or about variances to the Water Quality Standards, contact Cheryl Niemi at 360-407-6440 or [cnie461@ecy.wa.gov](mailto:cnie461@ecy.wa.gov)

## Requesting a Variance – 2 parts

**Part 1. Request Form.** This is currently available in draft, and will be finalized prior to April 2019. This form requires standard types of information, such as required for an NPDES Permit application.

**Part 2. Information Submittal.** As specified in the table below:

1. The criteria and designated use(s) proposed to be modified by the variance, and the proposed duration of the variance.
2. A demonstration that attaining the water quality standard is not feasible for the requested duration of the variance based on 40 C.F.R. 131.14.
3. An evaluation of treatment or alternative actions that were considered to meet effluent limits based on the underlying water quality criteria, and a description of why these options are not technically, economically, or otherwise feasible.
4. Sufficient water quality data and analyses to characterize receiving and discharge water pollutant concentrations.
5. A description and schedule of actions that the discharger(s) proposes to ensure the HAC is attained within the variance period.
6. Dischargers are also required to submit a schedule for development and implementation of a pollutant minimization plan for the subject pollutant(s).

## How is the information submittal used?

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### The submittal supports:

1. A demonstration that meeting the water quality based effluent limit is not feasible.
2. Evaluation and identification of the best feasible pollution control alternatives for the facility, including the quality of the effluents that the different alternatives can produce, and the time needed to put the improvements in place.
3. Development of a Pollution Minimization Plan that uses adaptive management to continually work toward increased pollution reduction.

### Development of the HAC

The information above will form the basis of the HAC:

- The highest attainable interim effluent condition and the development and implementation of a Pollutant Minimization Program.



A WQS variance is a path to improve water quality over time.



**Next – we will discuss each of the 6 required portions of the submittal package.**

<b>Six components of the information submittal for a <u>Discharger Variance, Path 3</u></b>	
1. The criteria and designated use(s) proposed to be modified by the variance, and the proposed duration of the variance. (Note: the underlying criteria and designated use remains, and the interim criteria and use become effective <u>only</u> for NPDES and 401's for the duration of the variance.)	
2. A demonstration that attaining the water quality standard is not feasible for the requested duration of the variance based on 40 C.F.R. 131.14.	
3. An evaluation of treatment or alternative actions that were considered to meet effluent limits based on the underlying water quality criteria, and a description of why these options are not technically, economically, or otherwise feasible.	
4. Sufficient water quality data and analyses to characterize receiving and discharge water pollutant concentrations.	
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## How the next several slides are set up:

The slide header describes the topic. In the slide below this is the EPA justification factor number 6. In some slides it will be the text of the specific submittal requirement.

This tells what submittal package requirement we are talking about

Information Submittal #2

**"Factor 6" Economic Analysis**

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

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The economic impacts considered are those that result from treatment beyond the technology-based requirements in regulation and law.

Each analysis of economic impacts must demonstrate that:

- The polluting entity, whether privately or publicly owned, would face substantial financial impacts due to the costs of the necessary pollution controls (substantial impacts or would interfere with development),

**AND**

- The affected community will bear significant adverse impacts if the entity is required to meet existing or proposed water quality standards (widespread impacts or important development).

Information in this slide based on: *Interim Economic Guidance for Water Quality Standards Workbook*, March 1995, EPA-823-B-95-002, <https://www.epa.gov/sites/production/files/2016-03/documents/econworkbook-complete.pdf>

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## Information Submittal, #1. The criteria and designated use(s) proposed to be modified by the variance, and the proposed duration of the variance.

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Name the **specific WQ standards** that are proposed to be temporarily modified.

For example:

Criterion	Designated (freshwater) use
Total PCBs, 7 pg/L	Harvest
Temperature, 17.5 degrees C	Salmonid spawning, rearing, and migration

Develop and submit a **proposed duration** for the requested variance.

The variance regulations have no upper limit on the length of a variance, but the variance should only be as long as the time estimated to either meet the underlying criterion or to reach or determine the highest attainable effluent quality or use in the waterbody.



A WQS variance is a path to improve water quality over time.



## **Information Submittal, #2. A demonstration that attaining the water quality standard is not feasible for the requested duration of the variance based on 40 C.F.R. 131.14.**

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One of the following seven conditions from the Federal Regulations must be used for this part of the submittal. Numbers 3 and 6 will be discussed in this presentation.

- (1) Naturally occurring pollution 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 water conservation requirements to enable uses to be met; or
- (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; or

(continued next slide)

(7 conditions - continued from previous slide)

(4) Dams, diversions, or other types of hydrologic 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 the use; or

(5) Physical conditions related to the natural features of the water body, such as lack of 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 § 301 (b) and 306 of the Act would result in substantial and widespread economic and social hardship.

(7) Actions necessary to facilitate lake, wetland, or stream restoration through dam removal or other significant reconfiguration activities preclude attainment of the designated use and criterion while the actions are being implemented.

These 7 factors are found in 40 CFR 131.10(g) and 40 CFR 131.14.

**How to demonstrate “Factor 3”**

**(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**

**Provide information to show that human caused conditions prevent the designated use from being attained.**

For example:

- The pollutant causing the problem does not occur naturally (e.g., PCBs)
- The pollutant causing the problem occurs naturally but is at high concentrations because of human actions (e.g., mercury, temperature)

**AND**

**Provide information to show that the problem cannot be remedied....**

For example:

- No known controls to remove pollutant from system.
- Controls are beyond the power of the NPDES discharger (pollutant is from the atmosphere or from upstream sources)

**or - would cause more environmental damage to correct than to leave in place.**

Example:

- Removing the pollutant would require removal of widespread amounts of sediments and biota that would irreparably harm the aquatic system

**EPA interprets this to mean “by either the discharger or the state.”**

## “Factor 6” Economic Analysis

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

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The economic impacts considered are those that result from treatment beyond the technology-based requirements in regulation and law.

Each analysis of economic impacts must demonstrate that:

- The polluting entity, whether privately or publicly owned, would face substantial financial impacts due to the costs of the necessary pollution controls (substantial impacts or would interfere with development),
- AND**
- The affected community will bear significant adverse impacts if the entity is required to meet existing or proposed water quality standards (widespread impacts or important development).

## “Factor 6” Economic Analysis

### How substantial impacts for a public entity are summarized:

The **Secondary Score** is based on:

Bond rating  
Overall net debt  
Unemployment  
MHI  
Property tax revenues  
Property tax collection rate

Substantial Impacts Matrix			
Secondary Score	Cost based on Median Household Income (annualized)		
	Less than 1.0%	Between 1 and 2%	Greater then 2.0%
<1.5 (weak economy)	Impact unclear	Substantial impact	Substantial impact
Between 1.5 and 2.5 (mid-range economy)	Not likely to be substantial	Impact unclear	Substantial impact
>2.5 (strong economy)	Not likely to be substantial	Not likely to be substantial	Impact unclear

Details of this analysis, for both public and private entities, are in EPA’s 1995 *Interim Economic Guidance for Water Quality Standards Workbook* ( <https://www.epa.gov/sites/production/files/2016-03/documents/econworkbook-complete.pdf> )

EPA has developed spreadsheets that can calculate these values for you. ( <https://www.epa.gov/wqs-tech/economic-guidance-water-quality-standards> )

Information in this slide based on: *Interim Economic Guidance for Water Quality Standards Workbook*, March 1995, EPA-823-B-95-002, <https://www.epa.gov/sites/production/files/2016-03/documents/econworkbook-complete.pdf>

## “Factor 6” Economic Analysis

### The widespread impacts analysis

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Widespread means that financial impacts could cause far-reaching and serious impacts to the community.

Step 1 - Define the geographic area - town, city, region, county or some combination.

Step 2 - Discuss the *types* of impacts that might occur (on next slide).

There are no economic ratios or tests per se to evaluate socioeconomic impacts. Instead, the relative magnitude of a group of indicators should be taken into account.

The “widespread” analysis is not as well defined as the “substantial” evaluation.

If you are evaluating Factor 6, please communicate with Ecology and/or EPA early in your process to determine how to address this.

## “Factor 6” Economic Analysis

### How widespread impacts are evaluated – *types of impacts*

For public sector entities, estimate the change in these socio-economic conditions that would occur as a result of compliance:

Median Household Income	Community Unemployment Rate	Overall Net Debt as a Percent of Full Market Value of Taxable Property
Percent of Households Below Poverty Line	Impact on Community Development Potential	Impact on Property Values

For private-sector entities, consider many of the same socioeconomic conditions as the public entity analysis, and also consider these:

Effect of decreased tax revenues if the private-sector entity were to go out of business	Income losses to the community if workers lose their jobs	Indirect effects on other businesses
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**Information Submittal, #3. An evaluation of treatment or alternative actions that were considered to meet effluent limits based on the underlying water quality criteria, and a description of why these options are not technically, economically, or otherwise feasible.**

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This is a feasibility analysis to determine the best treatment alternatives or actions for the facility.

**Treatment alternatives:** This analysis is specifically aimed at the facility and the type of waste it produces.

This analysis of treatment options should include literature searches and engineering analyses.

- Searches often show many results that are not applicable to the facility.

Examples: based on different media (soils) or detection levels too high to be relevant to the specific variance situation being evaluated.

- In some cases no treatment alternatives will be available that are applicable to a specific facility.

**Information Submittal, #3. An evaluation of treatment or alternative actions that were considered to meet effluent limits based on the underlying water quality criteria, and a description of why these options are not technically, economically, or otherwise feasible.**

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**Alternative actions:** This analysis evaluates whether other actions exist that would allow the facility to continue to run and at the same time reduce the pollutant of concern.

This is an analysis specifically aimed at the facility and the type of waste it produces.

Alternative actions that should be evaluated include:

- Reducing flows via water conservation, recycling, or process changes
- Removing discharges from the surface water entirely
- Consolidation with other treatment facilities

## Information Submittal, #3. An evaluation of treatment or alternative actions ...a description of why these options are not technically, economically, or otherwise feasible.

Describe and rank the alternatives that you examined. Factors that should be used include:

Technical feasibility?	Applicable to facility?	Environmental feasibility?
Meet effluent limit?	Economic feasibility?	Performance at removing pollution?

Use a table to summarize the ranking!

Alternative	Applicable to facility?	Technically feasible	Economically feasible?	Environmentally feasible	Additional factors....
Alternative #1					
Alternative #2					
Alternative #3					
Additional Alternatives					

## Information Submittal, #4. Sufficient water quality data and analyses to characterize receiving and discharge water pollutant concentrations.

### Receiving water analyses

Use existing information if possible

For receiving waters – typical information includes:

- Discuss the waterbody and watershed.
- Provide maps.
- Show sources
- Show upstream and downstream pollutant concentrations.
- Pay attention to analytical methods.
- Temporal analyses might be needed.
- Statistics: measures of central tendency, ranges, confidence levels



<https://pixabay.com/en/river-rapids-gulch-water-stream-1209025/>

The data needed will be situation specific, in some cases more and in some cases less. Please contact Ecology to get advice on the type and scope of sampling data needed to fulfill this requirement.

## Information Submittal, #4. Sufficient water quality data and analyses to characterize receiving and discharge water pollutant concentrations.

### Effluent analyses

Use existing information if possible

Typical information includes:

- Provide a facility and service area map.
- Show recent and historic effluent pollutant data
- Pay attention to analytical methods
- Temporal analyses might be needed.
- Statistics: measures of central tendency, ranges, confidence levels, for mass and concentration

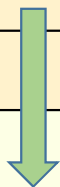


[https://www.123rf.com/stock-photo/sewage\\_treatment\\_plant.html?st=rm1rk7d3qwmvtqh6zlxj&mediapopup=15836792](https://www.123rf.com/stock-photo/sewage_treatment_plant.html?st=rm1rk7d3qwmvtqh6zlxj&mediapopup=15836792)

The data needed will be situation specific, in some cases more and in some cases less. Please contact Ecology to get advice on the type and scope of sampling data needed to fulfill this requirement.

**Information Submittal, #5. A description and schedule of actions that the discharger(s) proposes to ensure the HAC is attained within the variance period.**

Action	Schedule	Description
Technology X installed	At time of variance or within 3 years of variance	Install and operate...
Feedstock X substituted	In shortest time possible (e.g., 6 years)	Substitute material Y for material X ....
Implement the Pollution Prevention Plan	Duration of variance (e.g. 15 years)	Implement actions, use adaptive management, describe binding agreements, etc.



## Information Submittal, #6. Dischargers are also required to submit a schedule for development and implementation of a pollutant minimization plan for the subject pollutant(s).

Pollutant Minimization Program (40 CFR 131.3): *“...a structured set of activities to improve processes and pollutant controls that will prevent and reduce pollutant loadings.”*

Regulatory language:

State WQS require discharger to: *“...submit a schedule for development and implementation...”* WAC 173-201A-420(3)(e)

Federal Regulations require states to submit to EPA, as part of the Discharger Path 3 variance: *“...adoption and implementation of a Pollutant Minimization Program.”* 40 CFR 131.14(b)(ii)(A)(3)

### A PMP is Required

Must be developed with a schedule for implementation. Must include adaptive management.

The PMP and its implementation must be adopted as part of the variance.

## What else (other than the HAC) does a variance contain?

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Any Discharger-specific Path 3 variance will contain **at least** the following contents:

- The duration of the variance
- Geographic area or specific waters
- A description of the discharger covered by the variance.
- Requirements to minimize pollution.
- 5-year re-evaluations. The re-evaluation can result in additional requirements, and, if the requirements of the variance are not met then the variance can be removed.
- A provision allowing the department to reopen and modify permits as a result of the mandatory interim review of the variance

**The variance requirements are incorporated as enforceable conditions in permits.**



## Additional Information:

### Resources on variances:

- Water Quality Standards for Surface Waters of the State of Washington, Chapter 173-201A WAC (2016) - <https://fortress.wa.gov/ecy/publications/documents/0610091.pdf> (see part IV, section 420)
- EPA's Water Quality Standards regulation: 40 CFR 131.14
- EPA's Water Quality Standards Variance Building Tool - <https://www.epa.gov/wqs-tech/water-quality-standards-variance-building-tool>
- EPA's Water Quality Standards Variance Building Tool Flow Chart - <https://www.epa.gov/sites/production/files/2017-07/documents/variance-building-tool-chart.pdf>
- EPA's Interim Economic Guidance for Water Quality Standards (1995) – <https://www.epa.gov/wqs-tech/economic-guidance-water-quality-standards> This document provides guidance to understand the economic factors that may be considered, and the types of tests that can be used, to determine if a designated use cannot be attained, if a variance can be granted, or if degradation of high-quality water is warranted.

### Ecology contact information:

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# Questions/comments about Variances?



<https://pixabay.com/en/question-question-mark-survey-2736480/>