



navigating Numeric Action Levels

The next step after sampling.

Numeric Action Levels. Although it sounds a bit cryptic, it's actually a pretty straight forward requirement of the Industrial General Permit. As an industrial facility in California, these apply to you – and since California has already received a couple decent sized storm events, you, hopefully, have already submitted at least one round of storm water samples to a laboratory for testing. When you get your samples back, you will need to compare the results with the NAL levels listed in Table 2 of the Industrial General Permit. What are these action levels? In this month's edition of **The Rain Events** we are going to take a look at NALs and how they can affect your facility.

So, what are NALs? NAL stands for Numeric Action Level and is used as a gauge to help industrial facilities determine the effectiveness of their storm water program in preventing storm water pollution. As defined by the IGP, NALs are "Pollutant concentration levels used to evaluate if best management practices are effective and if additional measures are necessary to control pollutants. NALs are not effluent limits. The exceedance of an NAL is not a permit violation." *Take note of that last phrase - exceeding an NAL is not a Permit violation!*

As you may be familiar with already, there are two different types of NAL exceedances – Annual NAL exceedances, and Instantaneous NAL exceedances. According to Attachment C, these exceedances are defined as:

“Annual NAL exceedance - the Discharger shall determine the average concentration for each parameter using the results of all the sampling and analytical results for the entire facility for the reporting year (i.e., all "effluent" data) and compare this to the corresponding Annual NAL values in Table 2. For Dischargers using composite sampling or flow measurement in accordance with standard practices, the average

concentrations shall be calculated in accordance with the U.S. EPA Guidance Manual for the Monitoring and Reporting Requirements of the NPDES Multi-Sector Storm Water General Permit. An annual NAL exceedance occurs when the average of all the analytical results for a parameter from samples taken within a reporting year exceeds an annual NAL value for that parameter listed in Table 2 (or is outside the NAL pH range);

Instantaneous maximum NAL exceedance

- the Discharger shall compare all sampling and analytical results from each distinct sample (individual or composite) to the corresponding Instantaneous maximum NAL values in Table 2. An instantaneous maximum NAL exceedance occurs when two or more analytical results from samples taken for any

parameter within a reporting year exceed the instantaneous maximum NAL value (for TSS and O&G), or are outside of the instantaneous maximum NAL range (for pH).” Both of these NALs are based on the benchmark numbers included in the EPA’s Multi-Sector General Permit. Unlike the

NAL REFERENCE SHEET				
<small>(Taken from Table 2 on Page 43 of the Industrial General Permit – 2014-0057-DWG)</small>				
PARAMETER	TEST METHOD	REPORTING UNITS	ANNUAL NAL	INSTANTANEOUS MAXIMUM NAL
pH*	See Section XI.C.2 of the IGP	pH units	N/A	Less than 6.0; greater than 9.0
Suspended Solids (TSS)*, Total	SM 2540-D	mg/L	100	400
Oil & Grease (O&G)*, Total	EPA 1664A	mg/L	15	25
Zinc, Total (H)	EPA 200.8	mg/L	0.26**	
Copper, Total (H)	EPA 200.8	mg/L	0.0332**	
Cyanide, Total	SM 4500-CN C, D, or E	mg/L	0.022	
Lead, Total (H)	EPA 200.8	mg/L	0.262**	
Chemical Oxygen Demand (COD)	SM 5220C	mg/L	120	
Aluminum, Total	EPA 200.8	mg/L	0.75	
Iron, Total	EPA 200.7	mg/L	1.0	
Nitrate + Nitrite Nitrogen	SM 4500-NO3-E	mg/L	0.68	
Total Phosphorus	SM 4500-P B+E	mg/L	2.0	
Ammonia (as N)	SM 4500-NH3 B+ C or E	mg/L	2.14	
Magnesium, Total	EPA 200.7	mg/L	0.064	
Arsenic, Total (c)	EPA 200.8	mg/L	0.15	
Cadmium, Total (H)	EPA 200.8	mg/L	0.0053**	
Nickel, Total (H)	EPA 200.8	mg/L	1.02**	
Mercury, Total	EPA 245.1	mg/L	0.0014	
Selenium, Total	EPA 200.8	mg/L	0.005	
Silver, Total (H)	EPA 200.8	mg/L	0.0183**	
Biochemical Oxygen Demand (BOD)	SM 5210B	mg/L	30	

previous version of the Industrial General Permit, which did not include any procedures or guidelines to assess sampling results, the current IGP has included NALs to provide industrial facilities with a guideline to measure the effectiveness of their pollution prevention programs. The list of current NALs can be found in Table 2 of the IGP.

An Annual NAL exceedance occurs when the average analytical result for one or more sampling parameters (say, Oil and Grease) is higher than the Annual NAL listed in Table 2 for that parameter. Basically, at the end of the reporting year, each industrial facility in California will need to compile all their analytical results and calculate the arithmetic mean (average) for each parameter. The benefit of this method of reporting is that it smooths out the rough edges of your analytical results – in other words, a slightly high analytical result for Oil and Grease from one storm event can be brought under control by averaging it with lower Oil and Grease numbers from the next storm event. *If you need a refresher on how to calculate an arithmetic mean: simply add all of the numbers together and divide the result by how many numbers are in the series.*

pH is a unique parameter in the fact that it doesn't have an annual NAL exceedance. If pH goes above or below its limits (6.0 or 9.0) it automatically is an Instantaneous NAL Exceedance. And action will need to be taken before the next storm event so another Instantaneous NAL Exceedance doesn't occur and trigger the next phase of ERAs (*keep reading to find out more...*)

Contrary to what the term may suggest, an Instantaneous NAL exceedance is not a one-time exceedance of a sampling parameter. According to the Permit, *an Instantaneous NAL exceedance occurs when the analytical results for any single parameter exceeds the instantaneous maximum NAL values for two or more storm events per reporting year.* The good news is that only three parameters currently have instantaneous NAL exceedances – pH, TSS, and Oil and Grease. Each time you collect storm water samples; you will need to check your results against the NAL list in Table 2. If the pH, TSS, or O&G results are outside or above the NAL value range, you will want to take action to make sure they behave for the next storm event so that you don't trigger an Instantaneous NAL Exceedance.

What happens if you have an annual or instantaneous NAL exceedance?

The Permit has a lot to say about that. For each parameter that has an exceedance, your facility status will move from Baseline to Level 1, and you will be required to take what the Permit calls "Exceedance Response Actions" (or ERAs) to make sure those parameters are brought under control. And as seen in this following excerpt from the IGP, not complying with ERAs will result in a violation of the Permit: "The NALs are not intended to serve as technology-based or water quality-based numeric effluent limitations. The NALs are not derived directly from either BAT/BCT requirements or receiving water objectives. The TNALs serve as BMP-based water quality-based effluent limitations. The NAL/TNAL exceedances defined in this General Permit are not, in and of themselves, violations of this General Permit. A Discharger that does not fully comply with the Level 1 status and/or Level 2 status ERA requirements, when required by the terms of this General Permit, is in violation of this General Permit." Check out this [past Rain Events article](#) for more information.

To help you track your results and calculate all the averages, we put together an NAL evaluation spreadsheet you can use to enter all the sampling data and track your sample results so you can stay on top of any exceedances. This template has space to enter data for 6 separate storm events and three different outfalls. You can download this template for free: [Template NAL Evaluation Worksheet](#)

So when it comes to NALs, don't wait until you have an exceedance to start caring about your storm water quality – be proactive and do the best you can to make sure your storm water is as clean as possible. There's little doubt that it's more cost-effective to prevent an exceedance than it is to respond to one.

The Rain Events

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Analytical Results Worksheet
 Enter facility name in Global Settings
Outfall 1

Parameter	Units	Annual NAL	Instantaneous NAL	Storm Events						Average	Annual NAL Exceeded for this Discharge Point? (Yes/No)	Instantaneous NAL Exceeded for this Drainage Point? (Yes/No)
				First Storm	Second Storm	Third Storm	Fourth Storm	Fifth Storm	Sixth Storm			
				Date	Date	Date	Date	Date	Date			
pH	pH units	N/A	Less than 6.0 Greater than 9.0									No
Suspended Solids (TSS), Total	mg/L	100	400								No	No
Oil & Grease (O&G), Total	mg/L	15	25								No	No
Zinc, Total	mg/L	0.30	None								No	
Copper, Total	mg/L	0.030	None								No	
Cyanide, Total	mg/L	0.020	None								No	
Lead, Total	mg/L	0.200	None								No	
Chemical Oxygen Demand (COD)	mg/L	137	None								No	
Aluminum, Total	mg/L	0.75	None								No	
Iron, Total	mg/L	1	None								No	
Nitrate + Nitrite Nitrogen	mg/L as N	0.68	None								No	
Total Phosphorus	mg/L as P	3	None								No	
Acetone (as C)	mg/L	0.14	None								No	
Magnesium, Total	mg/L	0.064	None								No	
Manganese, Total	mg/L	0.10	None								No	
Selenium, Total	mg/L	0.0050	None								No	
Mercury, Total	mg/L	1.00	None								No	
Vanadium, Total	mg/L	0.004	None								No	
Bismuth, Total	mg/L	0.006	None								No	
Silver, Total	mg/L	0.0100	None								No	
Biochemical Oxygen Demand (BOD)	mg/L	30	None								No	
Chromium, Total	mg/L	None	None								No	
Tin	mg/L	None	None								No	

Annual NAL Evaluation Worksheet
 Enter facility name in Global Settings

Parameter	Units	Annual NAL	Outfall 1						Outfall 2						Average	Annual NAL Exceeded?	Instantaneous NAL Exceeded?
			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
pH	pH units	N/A															No

Attention!

Does your facility need help with its industrial storm water program?

Yes

Remind me later

we're here to help.

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Industrial General Permit Order

TABLE 2: Parameter NAL Values, Test Methods, and Reporting Units

PARAMETER	TEST METHOD	REPORTING UNITS	ANNUAL NAL	INSTANTANEOUS MAXIMUM NAL
pH*	See Section XI.C.2	pH units	N/A	Less than 6.0 Greater than 9.0
Suspended Solids (TSS)*, Total	SM 2540-D	mg/L	100	400
Oil & Grease (O&G)*, Total	EPA 1664A	mg/L	15	25
Zinc, Total (H)	EPA 200.8	mg/L	0.26**	n/a***
Copper, Total (H)	EPA 200.8	mg/L	0.0332**	n/a***
Cyanide, Total	SM 4500–CN C, D, or E	mg/L	0.022	n/a***
Lead, Total (H)	EPA 200.8	mg/L	0.262**	n/a***
Chemical Oxygen Demand (COD)	SM 5220C	mg/L	120	n/a***
Aluminum, Total	EPA 200.8	mg/L	0.75	n/a***
Iron, Total	EPA 200.7	mg/L	1.0	n/a***
Nitrate + Nitrite Nitrogen	SM 4500-NO3- E	mg/L as N	0.68	n/a***
Total Phosphorus	SM 4500-P B+E	mg/L as P	2.0	n/a***
Ammonia (as N)	SM 4500-NH3 B+ C or E	mg/L	2.14	n/a***
Magnesium, total	EPA 200.7	mg/L	0.064	n/a***
Arsenic, Total (c)	EPA 200.8	mg/L	0.15	n/a***
Cadmium, Total (H)	EPA 200.8	mg/L	0.0053**	n/a***
Nickel, Total (H)	EPA 200.8	mg/l	1.02**	n/a***
Mercury, Total	EPA 245.1	mg/L	0.0014	n/a***
Selenium, Total	EPA 200.8	mg/L	0.005	n/a***
Silver, Total (H)	EPA 200.8	mg/L	0.0183**	n/a***
Biochemical Oxygen Demand (BOD)	SM 5210B	mg/L	30	n/a***

SM – Standard Methods for the Examination of Water and Wastewater, 18th edition

EPA – U.S. EPA test methods

(H) – Hardness dependent

* Minimum parameters required by this General Permit

** The NAL is the highest value used by U.S. EPA based on their hardness table in the 2008 MSGP.

*** [Note: these cells were included for website accessibility reasons to create a complete table.]

Storm Water Contest...

Each month, we invite our readers to participate in a contest to test their knowledge of the Industrial General Permit and show their storm water compliance program. We enter all submittals to our monthly newsletter question into a drawing and one person is selected at random to receive a \$25 gift card.

Where are regulated industrial activities listed in the IGP?

Congratulations to Melissa who answered, “*The regulated industrial activities are listed in the IGP’s Attachment A.*” We hope you enjoy your next shopping trip to Home Depot.

...This Month's Contest

Is an NAL exceedance a violation of the Industrial General Permit?

We need industrial storm water sleuths to help us with this month’s question. Submit your answers by Friday, February 7th. Email your answer to jteravskis@wgr-sw.com. One winner will be selected by a random drawing to receive a \$25 gift card to Outback Steakhouse.

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