Pretreatment in NPDES Permits

Colorado River Basin Regional Water Board Pretreatment Training
Palm Desert, CA
July 21, 2015

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What Will Be Discussed?

- How NPDES Permits are Developed
- What Information and Data Assist With Permit Development?
- What Information is Related to Pretreatment?
- What Pretreatment Requirements Will Be in a Permit?
Permit Components

Components Specific to Non-POTWs
- Effluent Guidelines
- Case by Case Limitations

Components of All Permits
- Cover Page
- Effluent Limitations
  - Technology-based
  - Water Quality-based
- Monitoring and Reporting
- Special Conditions
  - Additional Monitoring/Special Studies
  - Best Management Practices
  - Compliance Schedules
- Standard Conditions

Components Specific to POTWs
- Secondary
- Equivalent to Secondary
- Pretreatment
- Municipal Sewage Sludge
- CSOs
Major Steps to Develop and Issue Individual NPDES Permits

1. Review application form and any additional information
2. Develop technology-based effluent limitations (TBELs)
3. Develop water quality-based effluent limitations (WQBELs)
4. Determine final effluent limitations
5. Develop monitoring and reporting requirements
6. Develop special conditions
7. Incorporate standard conditions
8. Complete administrative process
Background Information

• Gather regulatory and guidance documents for permit development:
  – California Water Code
  – NPDES regulations
  – National Effluent Limitations Guidelines (ELG)
  – California Toxics Rule and State Implementation Plan
  – Applicable Basin Plan(s) and Ocean Plan
  – EPA National Recommended WQ Criteria
  – Compilation of Water Quality Goals
  – Maximum Contaminant Levels (MCLs) and Secondary MCLs (for discharges to waters designated MUN)
  – Department of Health standards for recycled water
Permit Application Form 2A – Basic Requirements

• Facility and applicant information (e.g., name, address, contact information)
• Collection system type, areas served, and total population served
• Discharges and other disposal methods
• Description of outfalls, receiving waters, and treatment
• Effluent testing data (flow, temperature, pH, BOD, TSS, fecal coliform)
• Certification and signature
Form 2A – Additional Data Requirements

- Facilities with design flow $\geq 0.1$ mgd
  - inflow and infiltration estimates
  - process and O&M information
  - data for certain conventional and nonconventional pollutants (e.g., TDS, chorine, DO, oil and grease)

- Facilities with design flow $\geq 1.0$ mgd or required to have a pretreatment program
  - three priority pollutant scans
  - at least four whole effluent toxicity test results

- For some POTWs
  - information on industrial users
  - information on combined sewer systems

Technology-based Requirements in NPDES Permits for POTWs

• Secondary treatment standards are found in 40 CFR Part 133

• §§ 122.44(a) and 125.3 require NPDES permits for POTWs to include technology-based effluent limitations based on secondary treatment standards
## Secondary Treatment Standards – § 133.102

<table>
<thead>
<tr>
<th>Parameter</th>
<th>30-Day Average</th>
<th>7-Day Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-Day Biochemical Oxygen Demand (BOD(_5))</td>
<td>30 mg/L (25 mg/L 5-day Carbonaceous BOD [CBOD(_5)])</td>
<td>45 mg/L (40 mg/L CBOD(_5))</td>
</tr>
<tr>
<td>Total Suspended Solids (TSS)</td>
<td>30 mg/L</td>
<td>45 mg/L</td>
</tr>
<tr>
<td>Removal</td>
<td>85% BOD(_5) (or CBOD(_5)) and TSS</td>
<td>—</td>
</tr>
<tr>
<td>pH</td>
<td>Maintained within the limits of 6.0 – 9.0 standard units*</td>
<td>—</td>
</tr>
</tbody>
</table>

* Unless the POTW demonstrates that inorganic chemicals are not added to waste stream as part of treatment process and that contributions from industrial sources do not cause pH to be out of the specified range

**Note:** Compliance Deadline was 7/1/88
Equivalent to Secondary Standards – § 133.105

<table>
<thead>
<tr>
<th>Parameter</th>
<th>30-Day Average</th>
<th>7-Day Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD$_5$</td>
<td>Not to exceed 45 mg/L</td>
<td>Not to exceed 65 mg/L</td>
</tr>
<tr>
<td></td>
<td>(40 mg/L CBOD$_5$)</td>
<td>(60 mg/L CBOD$_5$)</td>
</tr>
<tr>
<td>TSS</td>
<td>Not to exceed 45 mg/L</td>
<td>Not to exceed 65 mg/L</td>
</tr>
<tr>
<td>Removal</td>
<td>As low as 65% BOD$_5$ (or CBOD$_5$)</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>and TSS</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>Maintained within the limits of 6.0 – 9.0 standard units</td>
<td></td>
</tr>
</tbody>
</table>

* Unless the POTW demonstrates that inorganic chemicals are not added to waste stream as part of treatment process and that contributions from industrial sources do not cause pH to be out of the specified range
Implementing Water Quality Requirements in NPDES Permits

- Water quality standards and implementing procedures (including NPDES requirements) specify how we:
  - identify applicable water quality standards
  - characterize effluent and receiving water
  - determine the need for WQBELs
  - calculate WQBELs
Applicable Water Quality Criteria

- Water quality criteria
  - California Toxics Rule (“CTR”) criteria
    - CTR Excel workbook – criteria sheet
  - Basin Plan Numeric Criteria
    - Basin Plan vs. CTR criteria for priority pollutants
    - Additional Basin Plan Criteria for non-priority pollutants
    - Basin Plan implementation requirements for certain discharges
  - Narrative Criteria
    - Interpreting narrative criteria (check with Regional Board)
      - Numeric interpretation and whole effluent toxicity
      - Tools for numeric interpretation of narrative criteria
Identify Pollutants of Concern

Pollutants of concern are pollutants:
- with an applicable TBEL
- with a WLA from a TMDL or watershed analysis
- identified as needing WQBELs in the previous permit
- identified as present in the effluent through monitoring
- otherwise expected to be present in the discharge
Is a WQBEL Needed?

– Reasonable Potential (with no TMDL)
  • Priority Pollutants (CTR/NTR/Basin Plan)
    – Use SIP procedure with most stringent criterion
    » CTR Excel workbook
  • Other Pollutants (Basin Plan/Narrative Interpretation)
    – EPA Technical Support Document
    – SIP Procedures
  • No dilution for Reasonable Potential Analysis
  • If applicable technology-based limits do not attain WQ standards – THERE IS REASONABLE POTENTIAL
Calculate WQBELs

- **Calculate WQ-based Effluent Limits**
  - SIP and TSD procedures identical
    - CTR Excel workbook – Final Limits spreadsheet
  - **Dilution**
    - Default assumption is no dilution
    - Check with Regional Board for requirements
    - Special condition in permit for dilution study
  - **AMEL and MDEL**
    - EPA recommendation for toxic pollutants
    - Other averaging periods for certain pollutants (e.g., nutrients) or in unique circumstances (e.g., very limited exposure time)
Establish Final Effluent Limits

• Final Limits
  – Do one last comparison between technology-based and water quality based limitations
  – The most stringent applicable limits are the final limits
  – Both sets of limits should be explained in the Fact Sheet (Information Sheet)
Develop Special Provisions

- Special Provisions
  - Additional monitoring for CTR pollutants
    - Insufficient data
    - Dilution study
    - Site-specific criteria
  - Best Management Practices
    - BMP plan
    - Site-specific BMPs
    - Storm water requirements
Develop Special Provisions (continued)

- Special Conditions for Municipal Discharges
  - Pretreatment program requirements
  - Sludge requirements
  - CSO requirements

- Receiving Water Limitations
  - Generally in every California permit
  - Incorporate receiving water limits for all parameters where there is a Basin Plan Water Quality Objective and you do not have a corresponding effluent limitation
  - Separate section of the permit
Purpose of Monitoring

- Determine compliance with permit conditions
- Establish a basis for enforcement actions
- Provide data for evaluating treatment efficiencies
- Improve characterization of the effluent during permit reissuance
Develop Monitoring and Reporting Program

• **Effluent Monitoring**
  – Include effluent monitoring for every pollutant limited in the permit (some waivers available for ELG limits)
  – Location
    • Accessible
    • Representative of the discharge
    • Consistent with where the effluent limitations apply
  – Frequency
    • Begin with existing permit
    • Increase or decrease depending on pollutant, status of receiving water, amount of existing data, compliance history, etc.
Develop Monitoring and Reporting Program (continued)

– Method

• Must use EPA-approved methods where available (40 CFR 136)
• If available, specify a method with a minimum level (ML) that is less than the effluent limit (or specify the required ML)
  – See SIP for required MLs for priority pollutants
Analytical Methods

• 40 CFR Part 136
  – Test methods in Appendix A to Part 136
  – Standard Methods for the Analysis of Water and Wastewater
  – Methods for the Chemical Analysis of Water and Wastes
  – Test Methods: Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater

• See National Environmental Methods Index (NEMI) at http://www.nemi.gov/home

• Alternative methods
Develop Monitoring and Reporting Program (continued)

• Influent Monitoring
  – Required where net limits are applied (e.g., POTWs for TSS and BOD5) or intake credits given
  – May be required for special study
• Receiving Water Monitoring
  – Specify locations in the monitoring program
  – Use Receiving Water Limitations as a guide
  – Same frequency considerations as for effluent monitoring
Develop Monitoring and Reporting Program (continued)

• Reporting
  – Monthly reporting required (may be quarterly for some minors)
  – Generally, an annual report also is required
    • Summarizes monthly monitoring
    • Records of calibration, operator certification, etc.
Other Requirements

Permitting authorities sometimes include other requirements related to monitoring, reporting, and recordkeeping with routine monitoring requirements or as special conditions:

- special studies
- visual monitoring of treatment systems
- equipment inspection records
- postings or public notice
Additional Monitoring/Special Studies

• Used to supplement effluent limitations
• May be used to collect data for future limitation development
• Examples:
  – dilution studies
  – sediment samples
  – bioconcentration studies
  – ambient monitoring
  – Toxicity Identification Evaluation (TIE) and Toxicity Reduction Evaluation (TRE)
Special Provisions for POTWs: Pretreatment

Who is required to have a pretreatment program?

- POTWs > 5 MGD with dischargers subject to standards
- POTWs < 5 MGD with past problems
- unless state assumes total responsibility for program implementation [§ 403.10(e)]
IU Information – NPDES Permit Application

SUPPLEMENTAL APPLICATION INFORMATION

PART F. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES
All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete Part F.

GENERAL INFORMATION:

F.1. Pretreatment Program. Does the treatment works have, or is it subject to, an approved pretreatment program?

   Yes  No

F.2. Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works.

   a. Number of non-categorical SIUs.
   b. Number of CIUs.

SIGNIFICANT INDUSTRIAL USER INFORMATION:

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

   Name:
   Mailing Address:

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU’s discharge.
Technical Information – IWS
(Review of NPDES Permit Application)

### SUPPLEMENTAL APPLICATION INFORMATION

**PART F.  INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES**

All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete Part F.

#### GENERAL INFORMATION:

- **F.1.** Pretreatment Program. Does the treatment works have, or is it subject to, an approved pretreatment program?
  - [ ] Yes
  - [x] No

- **F.2.** Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works.
  - a. Number of non-categorical SIUs.
  - b. Number of CIUs.

#### SIGNIFICANT INDUSTRIAL USER INFORMATION:

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, cover questions F.3 through F.8 and provide the information requested for each SIU.

- **F.3.** Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.
  - Name: 
  - Mailing Address: 

- **F.4.** Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU's discharge.
  
- **F.5.** Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.
  - Principal product(s): 
  - Raw material(s): 

- **F.6.** Flow Rate.
  - a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.
  - b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

- **F.7.** Pretreatment Standards. Indicate whether the SIU is subject to the following:
  - a. Local limits
  - b. Categorical pretreatment standards

- **F.8.** If subject to categorical pretreatment standards, which category and subcategory?

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40 CFR 122.21(j)(6)
See also 40 CFR 122.21(j)(7)
[not shown]
Technical Information – IWS
(Review of NPDES Permit Application)

**FACILITY NAME AND PERMIT NUMBER:**

**SUPPLEMENTAL APPLICATION INFORMATION**

**PART D. EXPANDED EFFLUENT TESTING DATA**

Refer to the directions on the cover page to determine whether this section applies to the treatment works.

Effluent Testing: 1.0 mgd and Pretreatment Treatment Works. If the treatment works has a design flow greater than or equal to 1.0 mgd or it has (or is required to have) a pretreatment program, or is otherwise required by the permitting authority to provide the data, then provide effluent testing data for the following pollutants. Provide the indicated effluent testing information and any other information required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be on data collected through analyses conducted using 40 CFR Part 136 methods. In addition, these data must comply with QAQC requirements of 40 CFR Part 136 and other appropriate QAQC requirements for standard methods for analytes not addressed by 40 CFR Part 136. Indicate in the blank rows provided below any data you may have on pollutants not specifically listed in this form. At a minimum, effluent testing data must be based on at least three pollutant scores and must be no more than four and one-half years old.

<table>
<thead>
<tr>
<th>Outlet number:</th>
<th>(Complete once for each outfall discharging effluent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLLUTANT</td>
<td>MAXIMUM DAILY DISCHARGE</td>
</tr>
<tr>
<td>Conc</td>
<td>Units</td>
</tr>
<tr>
<td>METALS (TOTAL RECOVERABLE), CYANIDE, PHENOL, AND NITRATES</td>
<td></td>
</tr>
<tr>
<td>ANTIMONY</td>
<td></td>
</tr>
</tbody>
</table>

**SUPPLEMENTAL APPLICATION INFORMATION**

**PART E. TOXICITY TESTING DATA**

POTWs meeting one or more of the following criteria must provide the results of whole effluent toxicity tests for acute or chronic toxicity for each of the facility's discharge points: 1) POTWs with a design flow rate greater than or equal to 1.0 mgd. 2) POTWs with a pretreatment program (or those that are required to have one under 40 CFR Part 403); or 3) POTWs required by the permitting authority to submit data for these parameters. At a minimum, these results must include quarterly testing for a 12-month period within the past year using multiple species (minimum of two species), or the results from four tests performed at least annually in the four and one-half years prior to the application. Provided the results show no appreciable toxicity, and testing for acute and/or chronic toxicity, depending on the range of receiving water dilution. Do not include information on combined sewer overflows in this section. All information reported must be on data collected through analyses conducted using 40 CFR Part 136 methods. In addition, these data must comply with QAQC requirements of 40 CFR Part 136 and other appropriate QAQC requirements for standard methods for analytes not addressed by 40 CFR Part 136.

- In addition, submit the results of any other whole effluent toxicity tests from the past four and one-half years. If a whole effluent toxicity test conducted during the past four and one-half years revealed toxicity, provide any information on the cause of the toxicity or any results of a toxicity reduction evaluation, if one was conducted.

- If you have already submitted any of the information requested in Part E, you need not submit it again. Rather, provide the information requested in question 4 for previously submitted information. If EPA methods were not used, insert the reasons for using alternate methods. If test summaries are available that contain all of the information requested below, they may be submitted in place of Part E.

If no information/data is required, do not complete Part E. Refer to the Application Overview for directions on which other sections of the form to complete.

E.1. Required Tests.

- Indicate the number of whole effluent toxicity tests conducted in the past four and one-half years. 
  - chronic: 
  - acute:

E.2. Individual Test Data. Complete the following chart for each whole effluent toxicity test conducted in the last four and one-half years. Allow one column per test (where each species constitutes a test). Copy this page if more than three tests are being reported.

<table>
<thead>
<tr>
<th>Test number</th>
<th>Test number</th>
<th>Test number</th>
</tr>
</thead>
</table>

40 CFR 122.21(j)(4) & (5)
Incorporation into NPDES Permit: Approved Program

- The NPDES permit must be modified to incorporate the approved program as enforceable conditions of the permit [40 CFR 403.8(c), 122.44(j), and 122.63(g)]
Incorporation into NPDES Permit: Sample Language

6. Special Provisions for POTWs

a. Pretreatment Program

(1) Pretreatment Program: The Discharger shall implement and enforce its approved pretreatment program in accordance with federal Pretreatment Regulations (40 CFR § 403), pretreatment standards promulgated under Sections 307(b), 307(c), and 307(d) of the Clean Water Act, pretreatment requirements specified under 40 CFR § 122.44(j), and the requirements in Attachment H, “Pretreatment Requirements.” The Discharger’s responsibilities include, but are not limited to:

i. Enforcement of National Pretreatment Standards of 40 CFR §§ 403.5 and 403.6;

ii. Implementation of its pretreatment program in accordance with legal authorities, policies, procedures, and financial provisions described in the General Pretreatment regulations (40 CFR § 403) and its approved pretreatment program;

iii. Submission of reports to USEPA, the State Water Board, and the Regional Water Board, as described in Attachment H “Pretreatment Requirements”.

iv. Evaluate the need to revise local limits under 40 CFR § 403.5(c)(1); and within 180 days after the effective date of this Order, submit a report acceptable to the Executive Officer describing the changes with a plan and schedule for implementation. To ensure no significant increase in the discharge of copper, and thus compliance with antidegradation requirements, the Discharger shall not consider eliminating or relaxing local limits for copper in this evaluation.

(2) The Discharger shall implement its approved pretreatment program and the program shall be an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Regional Water Board, the State Water Board, or the USEPA may take enforcement actions against the Discharger as authorized by the Clean Water Act.
e. Pretreatment Requirements

1) The discharger shall be responsible for the performance of all pretreatment requirements contained in 40 CFR 403 and shall be subject to enforcement actions, penalties, fines and other remedies by the USEPA, or other appropriate parties, as provided in the Clean Water Act, as amended (33 USC 1351 et seq.) (Hereafter "Act"). The Discharger shall implement and enforce its Approved POTW Pretreatment Program. The Discharger's approved POTW pretreatment program is hereby made an enforceable condition of this permit. USEPA or the Board may initiate enforcement action against an industrial user for noncompliance with applicable standards and requirements as provided in the Act.

2) The Discharger shall enforce the requirements promulgated under Sections 307(b), 307(c), 307(d) and 402(b) of the Act. The Discharger shall cause industrial users subject to federal Categorical Standards to achieve compliance no later than the date specified in those requirements or, in the case of a new industrial user, upon commencement of the discharge.

3) The Discharger shall perform the pretreatment functions as required in 40 CFR 403, including, but not limited to:

a) Implement the necessary legal authorities as provided in 40 CFR 403.8(f)(1);

b) Enforce the pretreatment requirements under 40 CFR 403.5 and 403.6;

c) Implement the programmatic functions as provided in 40 CFR 403.8(f)(2); and

d) Provide the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3).
Example Permit Language – Approved Program

i. The Discharger shall be responsible and liable for the performance of all Control Authority pretreatment requirements contained in 40 CFR Part 403, including any subsequent regulatory revisions to 40 CFR Part 403. Where 40 CFR Part 403 or subsequent revisions place mandatory actions upon the Discharger as Control Authority but does not specify a timetable for completion of the actions, the Discharger shall complete the required actions within six months from the issuance date of this permit or the effective date of the Part 403 revisions, whichever comes later.

ii. The Discharger shall implement its approved pretreatment program and the program shall be an enforceable condition of this Order. For violations of pretreatment requirements, the Discharger shall be subject to enforcement actions, penalties, fines and other remedies by the Colorado River Basin Water Board and the USEPA or other appropriate parties, as provided in the CWA.

iii. The Discharger shall enforce the Pretreatment Standards promulgated under sections 307(b), 307(c), 307(d) and 402(b) of the CWA with timely, appropriate, and effective enforcement actions. The Discharger shall require all nondomestic users subject to federal categorical standards to achieve compliance no later than the date specified in those requirements or, in the case of a new nondomestic user, upon commencement of the discharge.

iv. The Discharger shall perform the pretreatment functions required by 40 CFR Part 403 including, but not limited to:

(a) Implement the necessary legal authorities as provided in 40 CFR 403.8(f)(1);
(b) Enforce the pretreatment requirements under 40 CFR 403.5 and 403.6;
(c) Implement the programmatic functions as provided under 40 CFR 403.8(f)(2);
(d) Provide the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3); and
(e) Publish a list of significant non-compliance as required by 40 CFR 403.8(f)(2)(vii).
b. Pretreatment

i. In the event that (i) the facility has a treatment capacity greater than 5 MGD and Industrial Users [40 C.F.R. § 403.3(j)] are discharging pollutants which Pass Through [40 C.F.R. § 403.3(p)] or Interfere [40 C.F.R. § 403.3(k)] with the operation of the wastewater treatment facility or are otherwise subject to National Pretreatment Standards [40 C.F.R. § 403.3(l)], (ii) Section 2233 of title 23 of the CCRs requires the facility to have and enforce an adequate pretreatment program, or (iii) the Colorado River Basin Water Board or its Executive Officer determines that other circumstances warrant in order to prevent Interference with the wastewater treatment facility or Pass Through, then:

(a) The Discharger shall be responsible for the compliance with all pretreatment requirements contained in 40 C.F.R part 403, and shall be subject to enforcement actions, penalties, and other remedies by the U.S. EPA, or the Colorado River Basin Water Board, as provided in the CWA.

(b) Within one year of notification that a pretreatment program in required, the Discharger shall submit a formal Pretreatment Program Submission for approval by the Colorado River Basin Water Board.

The Discharger must seek approval of its Pretreatment Program from the Colorado River Basin Water Board subject to Provision VI.C.1.c of this Order in the event a Pretreatment Program is developed.
Questions?