Industrial Pretreatment Program

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Introduction

Union Sanitary District has provided sewer service to the residents of southern Alameda County for more than ninety years. The area served by the Union Sanitary District encompasses the Cities of Fremont, Newark and Union City. Cooperation with these cities over the years during the planning, building and operating of the extensive sewerage facilities in this large service area has resulted in efficiencies and economies which have become synonymous with the District's operation. The District owns, manages, maintains, and operates approximately 780 miles of sewer mains and the Alvarado Wastewater Treatment Plant, which treats approximately 30 million gallons of wastewater per day. The sewer system serves some 330,000 residents and an extensive industrial and commercial base.

Federal and Local Regulations

The Federal Water Pollution Control Act (Clean Water Act) of 1972 (and subsequent amendments) established a permitting system for wastewater dischargers known as the National Pollutant Discharge Elimination System (NPDES) Permit Program to control the release of pollution into the nation's water bodies. The Union Sanitary District operates under an NPDES Permit for its discharge of treated wastewater into the San Francisco Bay. Municipal wastewater treatment plants, like the District's, are primarily designed to treat domestic wastewater. Industrial pollutants have the potential to interfere with treatment plant processes and to pass through the treatment plant to the Bay, untreated. In recognition of these issues, the Clean Water Act also established the National Pretreatment Program to regulate discharges of industrial wastewater to municipal sewer systems and treatment plants.

The National Pretreatment Program requires the District to develop and implement a local pretreatment program. This local program must enforce all the national pretreatment standards and requirements in addition to any more stringent local requirements necessary to protect site-specific conditions. The three types of standards (or limits), that must be enforced are described in the following paragraphs.

Prohibited Discharge Standards forbid the discharge of any pollutants to a treatment plant that cause pass-through or interference. These national standards apply to all Industrial Users, which include all non-domestic sources of pollutants discharged to the treatment plant. These standards are intended to provide general protection for the treatment plant.

Prohibited discharges include the following (summarized):

- Pollutants that create a fire or explosion hazard;
- Pollutants that cause corrosive structural damage to the sewer system;
- Solid or viscous pollutants in amounts that obstruct flow;

- Any pollutant, including biological oxygen demanding pollutants (BOD), in quantities or concentrations that interfere with treatment plant processes;
- Wastes that cause the temperature at the treatment plant headworks to exceed 104^{O}F;
- Petroleum oil, non-biodegradable cutting oil, or products or mineral origin in amounts that pass through or interfere with the treatment plant processes;
- Wastes which contain or result in the production of toxic, corrosive, explosive or malodorous gases (which may create worker health and safety problems);
- Trucked or hauled wastes, except at discharge points designated by the District.

Categorical Pretreatment Standards limit the pollutant discharges to the treatment plant from specific process wastewaters of particular industrial categories. Such industries are called Categorical Industrial Users. The standards are promulgated by EPA. Regulated industry categories are listed in Table 1, below.

Table 1. Industry Categories with Existing Federal Effluent Regulations

Industry Category	40 CFR Part	First Promulgated
Airport Deicing	449	2012
Aluminum Forming	467	1983
Asbestos Manufacturing	427	1974
Battery Manufacturing	461	1984
Canned and Preserved Fruits and Vegetable Processing	407	1974
Canned and Preserved Seafood (Seafood Processing)	408	1974
Carbon Black Manufacturing	458	1978
Cement Manufacturing	411	1974
Centralized Waste Treatment	437	2000
Coal Mining	434	1985
Coil Coating	465	1983
Concentrated Animal Feeding Operations (CAFO)	412	1974
Concentrated Aquatic Animal Production (Aquaculture)	451	2004
Copper Forming	468	1983
Dairy Products Processing	405	1974
Electrical and Electronic Components	469	1983
Electroplating	413	1981
Explosives Manufacturing	457	1976
Ferroalloy Manufacturing	424	1974
Fertilizer Manufacturing	418	1974
Glass Manufacturing	426	1974
Grain Mills Manufacturing	406	1974
Gum and Wood Chemicals	454	1976
Hospitals	460	1976

Industry Category	40 CFR Part	First Promulgated
Ink Formulating	447	1975
Inorganic Chemicals	415	1982
Iron and Steel Manufacturing	420	1982
Landfills	445	2000
Leather Tanning and Finishing	425	1982
Meat and Poultry Products	432	1974
Metal Finishing	433	1983
Metal Molding and Casting (Foundries)	464	1985
Metal Products and Machinery	438	2003
Mineral Mining and Processing	436	1975
Nonferrous Metals Forming and Metal Powders	471	1985
Nonferrous Metals Manufacturing	421	1984
Oil and Gas Extraction	435	1979
Ore Mining and Dressing (Hard Rock Mining)	440	1982
Organic Chemicals, Plastics and Synthetic Fibers (OCPSF)	414	1987
Paint Formulating	446	1975
Paving and Roofing Materials (Tars and Asphalt)	443	1975
Pesticide Chemicals Manufacturing, Formulating and Packaging	455	1978
Petroleum Refining	419	1982
Pharmaceutical Manufacturing	439	1983
Phosphate Manufacturing	422	1974
Photographic	459	1976
Plastic Molding and Forming	463	1984
Porcelain Enameling	466	1982
Pulp, Paper and Paperboard	430	1998
Rubber Manufacturing	428	1974
Soaps and Detergents Manufacturing	417	1974
Steam Electric Power Generating	423	1982
Sugar Processing	409	1974
Textile Mills	410	1982
Timber Products Processing	429	1981
Transportation Equipment Cleaning	442	2000
Waste Combustors	444	2000

Source: http://water.epa.gov/scitech/wastetech/guide/industry.cfm accessed May, 2013.

Local Limits reflect the specific needs and capabilities at individual treatment plants and are designed to protect the collection system, treatment plant, receiving waters and biosolids disposal practices. Regulations promulgated by 40 CFR 403 require the District to develop Local Limits. Local Limits are included in the District's

Ordinance No. 36. These Local Limits are reviewed periodically and adjusted after a public review and comment period. Local Limits are summarized in **Table 2**, below.

Table 2. Local Limits

Pollutant		Limit for any 1 Sample[1]
Arsenic		0.35 mg/L
Cadmium		0.2 mg/L
Chromium		2.0 mg/L
Copper		2.0 mg/L
Lead		1.0 mg/L
Nickel		1.0 mg/L
Mercury		0.01 mg/L
Silver		0.5 mg/L
Zinc		3.0 mg/L
Cyanide		0.65 mg/L
Formaldehyde		50.0 mg/L
Oil and Grease (Animal & Vegetable)		300 mg/L
Oil and Grease (Mineral)		100 mg/L
Phenols		5.0 mg/L
Total Toxic Organics[2]		2.13 mg/L
pH		Between 6.0 and 12.0
Temperature		No higher than 150°F
Ammonia[3]	Average Flow	
	<10,000 gallons per day	225 mg/L as N
	10,000-25,000 gallons per day	150 mg/L as N
	>25,000 gallons per day	75 mg/L as N

1. Limitations may be more stringent for discharges that are regulated by EPA categorical standards.
2. Total toxics organics are the sum of various organic pollutants. These pollutants are listed separately in Sewer Use Ordinance No. 36.
3. The Ammonia limit above is based on the discharger's average daily flow rate as calculated annually to establish sewer service charges. Ammonia compliance determination shall be based on the average of all valid and representative **analyses occurring within a 6-month period.**

The District's Sewer Use Ordinance No. 36 also provides the Environmental Compliance Team the authority to implement the various aspects of the District's Industrial Pretreatment Program, including:

- Requiring industries to submit permit applications and obtain discharge permits;
- Requiring pretreatment of industrial wastes to meet discharge standards;
- Requiring segregation of regulated waste streams;
- Requiring that the discharger provide an appropriate sampling location;
- Establishing the right of access to the District for inspection and sampling of industries;
- Providing for enforcement of discharge limitations and suspension of sewer service for violation of the District's ordinances; and
- Establishing permit fees for industrial wastewater dischargers.

Industrial Waste Discharge Permitting

The Environmental Compliance Team issues three types of Industrial Wastewater Discharge Permits to different types of Industrial Users.

- **Class 1** permits are issued to Significant Industrial Users, which include Categorical Industrial Users and other Industrial Users that exceed certain process wastewater flow thresholds or have been designated as such by the District if they are determined to have reasonable potential to cause problems at the treatment plant.
- **Class 2** permits are issued to Non-Significant Industrial Users whose wastewater requires pretreatment to consistently meet discharge standards.
- **Zero Discharge** permits are issued to industries with Categorical Industrial processes from which wastewater is *not* currently being discharged to the District's sewer system.

If it is clear that an industry will need a permit, industry representatives will be asked to fill out an Industrial Wastewater Discharge Permit Application, which includes general information about the industry as well as a thorough description of the quantity and characteristics of the facility's wastewater. For other industries, a preliminary Wastewater Discharge Survey may be required in order to evaluate the need for a discharge permit.

Permitting Process Steps
1. Industry completes an Industrial Wastewater Discharge Permit Application and submits it to the District.
2. The Permit Application is reviewed, an inspection is conducted and a Permit Fee and, if necessary, an Industrial Capacity fee are invoiced.
3. An Industrial Wastewater Discharge Permit is issued after payment of fees.
4. The provisions of the permit are initiated (compliance monitoring, report submittals, etc.).

The Environmental Compliance Team carefully reviews all permit applications and meets with industry representatives to discuss the application and Industrial Pretreatment Program requirements. An Environmental Compliance Team Inspector also visits the facility to verify flows and discharge locations, assess the potential for the introduction of pollutants of concern from manufacturing processes or material storage facilities to the sanitary sewer system, assess existing pretreatment equipment or equipment needs, and to identify self-monitoring and compliance sampling locations. The information obtained from the permit application and the site visit is used to establish appropriate Industrial Wastewater Discharge Permit conditions. Class 1 and Zero Discharge permits are effective for two years and Class 2 permits are effective for three years, at which point they must be renewed. Industries may also be required to update permit information to reflect operational changes during a permit term.

Permits may include the following elements (as appropriate, based on the industry): prohibitions on certain discharges, local limits, categorical limits, general program requirements, pretreatment system operations and maintenance requirements, a time schedule to complete specific actions, and self-monitoring and reporting requirements.

In addition to the self-monitoring and reporting that may be required by individual Industrial Wastewater Discharge Permits, the Environmental Compliance Team also collects wastewater samples regularly at established locations to monitor compliance at each industrial facility.

The Environmental Compliance Team may initiate an enforcement action if an industry is found to be out-of-compliance with a discharge limitation or reporting requirement. Most enforcement actions include some type of investigative and corrective action to prevent repeat violations, and some carry fines.

Sewer Service Charges and Industrial Capacity Fees

Industrial Users are subject to annual sewer service charges as well as initial capacity fees, in accordance with District Ordinances Nos. 31 and 35, respectively. Both sewer services charges and capacity charges are based on the Industrial User's total annual flow and chemical oxygen demand (COD) and suspended solids (SS) loadings. Capacity charges allow Users to buy a share of the District's treatment capacity for the discharge of their wastewater. The capacity charge exists to fund facilities and assets that increase or maintain system capacity. Capacity fees are invoiced in annual installments spread out over four years. The initial installment of the capacity fee must be paid before an Industrial Wastewater Discharge Permit is issued. Initial charges are based on estimated annual flows and loadings, while subsequent installments are based on the previous year's use.

Tips for Industrial Users: Financial Incentives and Public Relations

Industrial Users may find that there are additional incentives for optimizing pretreatment and implementing environmentally-responsible practices beyond simply maintaining compliance and avoiding fines.

Financial Incentives: Annual service charges and capacity fees are based on flow, chemical oxygen demand and suspended solids. Optimizing pretreatment to reduce the quantities of chemical oxygen demand and suspended solids discharged to the sanitary sewer may result in significantly lower wastewater charges. Increasing water efficiency in industrial processes may also result in significant savings in both wastewater charges and water supply costs.

Industrial pretreatment and water efficiency can be interrelated. For example, industrial pretreatment may allow for on-site recycling (thereby reducing potable water consumption), while treating smaller volumes of wastewater may result in savings related to treatment chemicals and equipment needs.

Public Relations: With increasing public awareness of environmental issues, the public relations impact of environmental compliance may be considerable. Compliance with wastewater discharge standards, as well as other voluntary measures taken by an industry to reduce the discharge of pollutants, may be seen as an indication of an industry's responsible concern for the environment. On an annual basis, the Environmental Compliance Team awards Certificates of Merit to recognize Significant Industrial Users (Class 1 industries) with perfect compliance records for the year.

Conversely, Federal regulations require that the Union Sanitary District annually publish the names of industries with significant violations of wastewater discharge requirements. The negative public relations aspects of this requirement should certainly not be overlooked.