Ames Procedural Requirements

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Chapter 5 - Industrial Wastewater Management

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5.1 Applicability

This chapter is applicable to all civil servants, contractor employees, and tenant personnel and NASA Research Park Partners at Ames Research Center (Ames), and Crows Landing Flight Facility, who handle, generate, or otherwise manage industrial wastewater. This chapter does not apply to domestic wastewater discharges.

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5.2 Purpose

This chapter prescribes the roles and responsibilities and establishes minimum environmental requirements and limitations for all Ames and MFA personnel who discharge industrial wastewater to the sanitary sewer systems. It is to be used to assist Ames and MFA personnel to comply with Federal, state, and local sanitary sewer and wastewater pretreatment regulations and ordinances.

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5.3 Policy

It is the policy of the Ames Research Center to:

- 1. Comply with all Federal, state, and local regulatory requirements related to
- 2. the discharge of industrial wastewater to the sanitary sewer.
- 3. Promote employee awareness of water conservation methods.

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- 4. Consult, as appropriate, with Federal, state, and local agencies, including:
 - U.S. Environmental Protection Agency (EPA)
 - San Francisco Bay Regional Water Quality Control Board
 - City of Sunnyvale Water Pollution Control Plant
 - City of Palo Alto Regional Water Quality Control Plant

5.4 Authority

All relevant Federal, state, and local environmental laws and regulations pertaining to the management of industrial wastewater, including, but not limited to:

- 1. City of Sunnyvale Sewer Use Ordinance, Title 12
- 2. NASA-Ames Wastewater Discharge Requirements contained in the permit #1132 issued by the City of Sunnyvale Water Pollution Control Plant (WPCP)
- 3. City of Palo Alto Sewer Use Ordinance, Chapter 16.09
- 4. NASA-Ames Wastewater Discharge Requirements contained in the permit #96101 issued by the City of Palo Alto Regional Water Quality Control Plant (PARWQCP)
- 5. Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 and the Water Quality Act of 1987 (33 U.S.C. 1251 et seq.)
- 6. 40 Code of Federal Regulations (CFR) Part 403--General Pretreatment Regulations for Existing and New Sources of Pollution
- 7. California Regional Water Quality Control Board (RWQCB), San Francisco Bay Basin Plan
- 8. California Code of Regulations, Title 23, Waters

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5.5 Responsibilities

5.5.1 Generators of Industrial Wastewater

- Notify the Environmental Services Office, Code QE (Environmental Office) during the
 planning or design of new or modified equipment or processes that will discharge to the
 sanitary sewer. City approval of the design may be required. The city may require installation
 of specific sampling ports or flow meters.
- 2. Conduct operations in compliance with local, state, and Federal regulations applicable to the collection, treatment, and disposal of industrial wastewater to the sanitary sewer system.
- 3. Ensure that the following wastes do not enter the sanitary system:
 - a. Wastes that may, either directly or indirectly by interaction with other substances:

Cause a fire or explosion.

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- Damage the cities wastewater collection, treatment, or disposal facilities.
- Obstruct flow in a sewer system or otherwise interfere with, inhibit, or disrupt the cities' plant processes or operations.
- Result in the plant's use of sludge in noncompliance with any applicable requirements.
- Prevent city wastewater treatment plant's effluent from attaining water reclamation or discharge standards.
- b. Sand, cement, cinders, ashes, metal, glass, or other heavy solids; straw, shavings, animal hair, feathers, or other fibrous matter; tar, asphalt, resins, plastics, or other viscous substances.
- c. Wastewaters containing constituents at concentrations in excess of the established limits, or that do not meet the limitations shown in Appendix A of this chapter.
- d. Radioactive wastes.
- e. Hazardous wastes, including, but not limited to, organic solvents, pesticides and pesticide mixtures, oils and lubricating fluids, and corrosive materials.
- f. Diluting waters (as defined in Section 5.6, Definitions).
- 4. Label all containerized industrial wastewater. Labels shall include:
 - a. Source of the wastewater.
 - b. Generator name, company (if contractor), code, and phone number.
 - c. Accumulation starts date.
 - d. Suspected constituents.
- 5. Contact the Environmental Office representative to obtain approval prior to the discharge of unknown or unauthorized incidental industrial wastewater into the sanitary sewer system.
- 6. Remove all sediments and sludge from industrial wastewaters prior to discharge, as outlined in Section 5.7, General Management Requirements.
- 7. Keep records of all industrial wastewater discharges and other applicable information, as outlined in Section 5.10, Monitoring.
- 8. If the intent is to discharge to the Industrial Wastewater Pre-Treatment Facility (N271), then the generator shall follow the steps outlined in the Standard Operating Procedures (SOPs) developed for all wastewater being processed through the facility (See Appendix C for SOP).

5.5.2 Environmental Services Office, Code QE

- Prepare and distribute environmental requirements for industrial wastewater management at ARC.
- 2. Prepare and renew discharge permits with the City of Palo Alto and the City of Sunnyvale, as outlined in Section 5.8.6, Discharge Permits. Obtain approval to discharge of incidental industrial wastewaters to the sanitary sewer system.
- 3. Monitor and report, as required under each sanitary sewer permit.

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- 4. Serve as technical point of contact for regulatory agency inspections.
- 5. Operate the Industrial Wastewater Pre-Treatment Facility ().
 - a. Record flow measurements and sample to ensure discharge requirements are met.
 - b. Approve all wastewater to be processed through damage the facility.
 - c. Maintain records of all wastewater approved.
- 6. Maintain and calibrate the Industrial Wastewater Pretreatment Facility flow meters semiannually. Data shall be entered into the MAXIMO system.

5.5.3 Plant Engineering Branch, Code JFP

- Maintain and operate the ion-exchange industrial wastewater treatment system at the nonsewerable water is treated, call the Environmental Office for further analysis to determine if the treated industrial wastewaters are sewerable for HVAC wastewaters.
- 2. Record and submit form AEH 5B-Request for Incidental Sewer Discharge to the Environmental Office for
- 3. Maintain and read flow meters and provide data to the Environmental Office.
- 4. Maintain and calibrate continuous pH meter (at in the Palo Alto discharge permit.
- 5. Contact QE to obtain ISD approvals for discharge of industrial wastewater when necessary (i.e., wastewater generated from cooing tower PM, boiler PM, etc.)

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5.5.4 Thermo-Physics Facilities Branch, Code ASF, and Wind Tunnel Operations Branch, Code AOO



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5.5.5 Construction Manager

- Manage job sites to prevent discharges of liquid and solid substances to the sanitary sewer and storm drain systems. Systematic inspections of the job site are required to ensure that construction, demolition, and excavation materials (liquid or solid) are not entering sanitary or storm drain systems.
- 2. Submit an incidental discharge request form (Form AEH 5B, Appendix B of this chapter) and receive authorization from the Environmental Office before discharging water generated from construction activities into the sanitary system. See Section 5.8.6 for permit application requirements.
- 3. Plug or block drains, especially along street gutters if necessary, when working with wet concrete or cutting waters. These substances are not permitted to enter storm or sanitary sewer drains.
- 4. Place residual concrete/asphalt cutting effluent that remains in equipment in the bermed area and allow to evaporate. The dry residue can then be removed and discarded as solid waste. Do not discharge these waters or residues to the sanitary or storm systems.
- 5. Tanks and containers
 - If large amounts of wastewater are to be generated, construction managers shall arrange to store the water in tanks to allow for sampling and analysis prior to discharge.
 - Containers and/or tanks of wastewater shall be labeled "wastewater pending analysis."
 Labels shall also include the following: contact name, phone number, description of water source, suspected contaminants, and date.
 - Soils, sediments, and other particulates that settle out of the water onto the tank bottom shall not be flushed to the sanitary sewer. Sediments shall be filtered or otherwise captured during discharge, as required in Section 5.7.
 - Tanks shall be rented by the construction manager directly from the vendor. The Environmental Office can provide assistance in recommending vendors and ordering tanks, if necessary. The Environmental Office, as explained in Section 5.8.6, must authorize all discharges of industrial wastewater from tanks to the sanitary sewer system.
- 6. Use shovels and brooms instead of water for cleaning streets and construction site surfaces. Do not hose off sidewalks and streets such that soil, concrete, or other debris is flushed down storm or sanitary sewer drains.
- 7. Street sweepers may be used provided no debris is discharged into any sanitary or storm water drain.
- 8. See Chapter 12: Storm Water Management and Chapter 17: Environmental Requirements For Construction Projects for additional requirements.

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5.6 Definitions

The following words and terms are defined as indicated for the purposes of this chapter.

5.6.1 Diluting Waters

Cooling water, potable water, domestic sewage, groundwater, surface drainage, or other waters

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not part of an industrial process for which pretreatment limitations apply, but which are combined with industrial process wastewater prior to a monitoring point.

5.6.2 Domestic Sewage (or Domestic Waste)

Liquid and waterborne wastes derived from ordinary living processes, free from industrial wastes and of such character as to permit disposal into the sanitary sewer system without treatment.

5.6.3 Groundwater

All water in or from the zone of saturation (i.e., the subsurface zone in which voids in soil or rock are filled with water), including water from aguifers and underground streams.

5.6.4 Industrial Wastewater

Waste and wastewater from any maintenance, production, manufacturing, fabrication, research, development, or processing activity, where water is used to remove waste derived from nondomestic sources from processes connected to or flowing otherwise to the sanitary sewer system.

5.6.5 Incidental Industrial Wastewater

Waste and wastewater generated from any nonroutine activity. Such wastewater sources include, but are not limited to, construction dewatering, utility vault pumping, groundwater excavation, rainwater in secondary containment, cooling tower maintenance wastestreams, and boiler blowdown.

5.6.6 Point of Discharge

A point at which wastewater enter the sanitary sewer, or the point at which wastewater leaves the process or wastewater-generating system or operation. A point of discharge can be specified in a permit and includes, but is not limited to, a manhole, floor drain, sump, etc.

5.6.7 Prohibited Discharge

Any discharge of waste to the sanitary sewer system that is not authorized in Ames permits or that is in violation of any applicable regulations.

5.6.8 Sanitary Sewer (or Sanitary Sewer System)

All sewers, treatment plants, and other facilities owned and operated by the City of Mountain View, the City of Palo Alto, the City of Sunnyvale, or Ames for carrying, collecting, treating, and disposing of sanitary sewage and industrial wastes.

5.6.9 Storm Drain (or Storm Drain System)

The system of pipes and channels primarily designed to convey storm water, surface water, street wash, drainage, or other storm run-off to the wetlands and other surface waters at the northern end of Ames.

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5.7 General Management Requirements

- 1. All industrial wastewater discharges require permission as per Section 5.8.
- 2. Industrial wastewaters generated from the following activities shall be filtered, allowed to separate by retention, or otherwise captured to remove sludge or suspended solids prior to discharge to the sanitary sewer:
 - Cleaning of cooling towers and boilers.
 - Construction dewatering,
 - Building and equipment washing.

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5.8 Specific Management Requirements

5.8.1 New Cooling Systems

Components of new cooling systems and components within existing systems to be replaced shall be of nonmetallic or noncorrosive composition (e.g., plastics, fiberglass, anodized aluminum, stainless steel) when practical.

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5.8.2 Cooling Tower Treatment Chemicals

No treatment chemicals (e.g., biological growth, scale, corrosion inhibitors, and dispersants) containing detectable levels of copper, zinc, chromium (total), or tributyltin compounds shall be added to cooling system waters that discharge or will be discharged to the sanitary sewer.

Note: Contact the Environmental Office to sample and analyze new treatment chemical, because metal content may not be accurately described in the Material Safety Data Sheet (MSDS).

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5.8.3 Storm Water

- 1. No storm water, groundwater, rain water, street drainage, subsurface drainage, roof, or yard drainage shall be discharged to the sanitary sewer unless specifically authorized by the Environmental Office. The Environmental Office, upon approval by the city, may authorize such discharges when no reasonable alternative method for disposal is available.
- 2. No piping shall be connected such that storm water discharges to the sanitary sewer.
- All storm drain inlets shall be clearly marked with the words "No Dumping! Flows to Bay."

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5.8.4 Laboratory Operations

To ensure compliance with the City of Palo Alto and City of Sunnyvale sanitary sewer

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- limitations, laboratory users shall not dispose of hazardous chemicals and first rinsings generated from washing glassware that has come into contact with hazardous chemicals into the sanitary system. All such waste must be containerized for proper disposal.
- 2. Nonhazardous solutions and first rinsings with pH between 2 and 6 or between 10.5 and 12.5 may be neutralized and discharged to the sanitary system. However, the pH shall be measured both before and after neutralization and recorded to document compliance. For guidance on determining the sewerability of nonhazardous solutions and first rinsings in your laboratory, contact the Environmental Office.
- 3. Personnel performing pH adjustment on wastewaters shall record the following information in a log book: Note: Personnel shall not adjust the pH of wastewaters with a pH<2 or >12.5 unless the appropriate hazardous waste treatment authorization has been obtained. Contact the Environmental Office to obtain this authorization. Provide and record the following information:
 - Initial pH of the solution to be adjusted.
 - Final pH of the solution to be disposed into the sanitary system.
 - Volume of solution and date(s) of discharge to the sanitary system.

5.8.5 Limitation on Points of Discharge

- 1. General discharges
- 2. Unless authorized, all discharges to the sanitary sewer shall be through an approved building sewer connection.
- 3. Manholes
 - No person shall discharge any substance directly into a city-owned manhole or other opening to the sanitary sewer not within the property of Ames. Contact the Environmental Office if manhole identity and/or system is not clear.
 - Discharges to Ames-owned manholes must be in accordance with specific permit conditions.

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5.8.6 Discharge Permits

Persons planning to discharge industrial wastewaters (routine or incidental) to the sanitary sewer must apply for and obtain approval from the Environmental Office prior to commencing discharge.

5.8.6.1 Discharge Permit Application for Routine Industrial Wastewater

Discharges of routine industrial wastewater to the sanitary system must be permitted by the City of Palo Alto RWQCP or City of Sunnyvale WPCP. Requesters shall submit the following to the Environmental Office at least 70 days prior to discharge:

1. Location of project and proposed discharge point.

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- 2. Process description (e.g., photoprocessing, laboratory wastewater, glassware washing, equipment washing, hydrostatic test water, cooling water, compressor condensate, etc.).
- 3. Estimated or actual discharge rate in gallons per day (GPD) for continuous discharges or as total gallons per event and frequency of discharge for batch discharges.
- 4. Suspected contaminants and concentrations, if known. Knowledge of process and MSDS for any products used are useful in determining suspected contaminants.
- 5. Project contact or person responsible for discharge, including phone number, organization code, contract and subcontract company name, and mailstop.

5.8.6.2 Discharge Permit Application for Incidental Industrial Wastewater

Discharges of incidental industrial wastewater require a permit prior to discharge to the sanitary system. Dependent upon the nature, volume, or wastewater treatment plant receiving the incidental wastestream, both Environmental Office and external regulatory authorization may be required. Therefore, requests for the discharge of incidental industrial wastewater (see Appendix B) must be completed by the generator of the wastestream and submitted to the Environmental Office at least ten working days prior to the planned date of discharge. Incidental industrial wastewater discharge request forms shall include:

- 1. Project location and proposed discharge point (e.g., manhole number).
- 2. Project description and diagram (e.g., excavation, dewatering for pipeline installation/repair).
- 3. Total estimated discharge quantity.
- 4. Duration of discharge.
- 5. Suspected contaminants and concentrations, if known (e.g., known groundwater contamination from leaking underground storage tanks or regional groundwater solvent plume).
- 6. Project contact or person responsible for discharge, including phone number, organization code, contractor and subcontractor company name, and mailstop.

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5.8.6.3 Discharge Approval

The Environmental Office will prepare and submit the application to the appropriate city agency based on the information provided by the requester in accordance with Subsection 5.9.1. After approval has been received from the city, the Environmental Office will notify the requester of the approval and any associated conditions. No discharges shall be made until approval has been granted through the Environmental Office. When the Environmental Office receives authorization, a copy of the approval and any associated permit conditions will be provided to the requester.

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5.8.6.4 Permit Modification

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- 1. Generators discharging routine industrial wastewaters to the sanitary system must contact the Environmental Office if any of the following occur:
 - The quantity or quality of waste discharged to the sanitary sewer changes (e.g., changes in chemicals or materials or parts coming into contact with the wastewater, changes in the operational capacity of the system).
 - The use of facilities is not in conformance with the existing discharge permit (e.g., changes in pretreatment devices, materials, and parts worked on or involved with the process).
- 2. An application to modify or amend a permit shall be submitted to the Environmental Office 70 calendar days prior to commencing or changing any routine industrial discharge, and 10 working days prior to incidental industrial discharges.

5.8.6.5 Expedited Approvals

The City of Palo Alto or City of Sunnyvale may expedite discharge approvals when circumstances prevent the discharge requester from submitting an application in a timely manner. Such circumstances would include emergencies involving broken water mains, ruptured vessels, pipelines, and other unplanned events, and certain constraints due to project scheduling and deadlines.

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5.8.6.6 Existing Unpermitted Discharge Activities

Persons currently discharging nondomestic wastes are responsible for determining if their discharge process or activity is covered under an existing permit. The Environmental Office is available to assist in this determination. If an existing discharge activity is not permitted, the user shall apply for Environmental Office approval immediately, as described in Section 5.8.6.

5.9 Internal Notifications

5.9.1 Prohibited Discharge Notification

The Environmental Office shall be notified immediately of prohibited discharges (as defined in Subsection 5.6.7). Persons knowledgeable of the prohibited discharge shall provide the Environmental Office with the information necessary to enable proper notification of the involved agency or agencies.

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5.9.2 Responsibilities

Persons responsible for a prohibited discharge shall:

1. Report the discharge to the Environmental Office and provide, if known, information

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- regarding the date, time, location, cause, nature, volume, and characteristics of the discharged material.
- 2. Provide the Environmental Office with a written statement detailing the incident. The statement shall:
 - Be submitted to the Environmental Office within two working days of the date of the discharge.
 - Detail the causes of the discharge, actions taken in immediate response to the discharge, and corrective measures taken or planned to prevent recurrence.
 - Be signed by a supervisor, manager, or appropriate representative of the responsible organization.
 - Serve as documentation for use by the Environmental Office to provide written notification to involved agencies, as required.

5.10 Monitoring

The Environmental Office will perform all required industrial wastewater monitoring for facility-wide industrial wastewater permits, incidental industrial wastewater discharges, and wastewaters treated onsite.

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5.10.1 Sampling

The Environmental Office will perform all routine sampling and analysis in compliance with all POTW requirements

The requester shall notify the Environmental Office, at least ten working days in advance of the planned discharge date, to sample the waste to be discharged. Unless otherwise arranged, the Environmental Office shall collect all required samples upon being notified by the requester. The requester shall provide all information necessary or otherwise assist the Environmental Office with collecting the sample or samples representing the waste to be discharged.

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5.10.2 Recordkeeping

The requester shall record all discharge information, as required by the permit. For wastewaters that have been determined to be nonsewerable and treated onsite by the ion-exchange treatment system, at the Plant Engineering Branch is responsible for recording and submitting form AEH 5B-Request for Incidental Sewer Discharge. For wastewaters treated and discharged by the Industrial Wastewater Pretreatment Facility, related information will be recorded in accordance with discharge monitoring requirements provided by the Environmental Office. The discharge record shall be maintained by the Plant Engineering Branch and the Thermo-Physics Facilities Branch and made available to the Environmental Office upon request.

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5.10.3 Reporting

Dischargers shall report the required discharge information to the Environmental Office. The Environmental Office shall report monitoring information to the City of Palo Alto or City of Sunnyvale based on the information reported by the discharger, in accordance with the conditions of the approved permit and all applicable regulations.

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5.11 Metrics

- a. Percent compliance with all POTW discharge limitations Goal: 100%
- Percent compliance with PRCC and Permit Applications time constraints.
 Goal: 100%
- c. Percent Operational readiness Goal: 100%

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5.12 Sources Of Additional Information or Assistance

- 1. Building Emergency Action Plans (BEAPs)
- 2. Environmental Services Office
- 3. City of Palo Alto Sewer Use Ordinance, Chapter 16.09
- 4. City of Sunnyvale Sewer Use Ordinance, Chapter 12.04
- 5. NASA-Ames Industrial Wastewater Discharge Permit #96101 (City of Palo Alto)
- 6. NASA-Ames Industrial Wastewater Discharge Permit #1132 (City of Sunnyvale)
- 7. Environmental Office WWW home page at http://dq.arc.nasa.gov

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5.13. Appendices

5.13.1 Appendix A: Sewer Discharge Limits for the Cities of Palo Alto and Sunnyvale

NO. TOXICANT/POLLUTANT
PALO ALTO
Max. allowable
concentration
(mg/L) unless
otherwise
specified*
SUNNYVALE
Max. allowable
concentration
(mg/L) unless
otherwise
specified

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1	Antimony		1.0
2	Arsenic	0.1	0.3
3	Barium	5.0	1.0
4	Beryllium	0.75	0.5
5	Boron	1.0	
6	Cadmium	0.1	0.1
7	Chromium, hexavalent	1.0	
8	Chromium (total)	2.0	1.7
9	Cobalt	1.0	1.0
10	Copper	2.00 0.25* For CTas discharging	(24 hr. comp. 0.5) (grab 0.7)
		> 2000 gpd 0.5	
11	Cyanide(s)	1.0	0.5
12	Formaldehyde	5.0	
13	Lead	0.5	0.5
14	Manganese	1.0	
15	Mercury	0.05	0.01
16	Nickel	0.5	(24 hr. comp.) 0.25 (grab) 0.5
17	Phenols	1.0	1.0
18	Selenium	1.0	1.0
19	Silver	0.25	0.2
20	Zinc	2.0	1.48
21	рН	5.5-11.0**	6.0-10.5
22	Oil & Grease (total)	200	100
23	Single toxic organics	0.75	1.0
24	Total toxic organics	1.0	1.0
25	Chlorinated hydrocarbons (pesticides)		0.02
26	Cresols		2.0
27	Temperature	120°F***	140°F
28	Flash point (closed cup)	<140°F	<140°F
29	Mercaptans and dissolved sulfides	0.1	
30	Suspended 6000		

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	solids (SS)	
31	Total dissolved solids (TDS)	10,000
32	Fluoride	65
33	Methyl Tertiary Butyl Ether	0.75

^{*}These limits are for discharges less than 50,000 gallons. The limits for metals are halved for discharges greater than 50,000 gallons, except for silver and nickel.

5.13.2 Appendix B: Request for Incidental Industrial Sewer Discharge Form

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^{**} Where the pH is monitored continuously, no individual deviation from the stated range shall exceed 10 minutes in length for discharges less than 10,000 gallons per day nor 5 minutes in length for discharges greater than 10,000 gallons per day. The total time of deviations during any seven calendar day period shall not exceed a total of 30 minutes.

^{***:&}lt;30 gpm and <30 minutes all other times.

REQUEST FOR INCIDENTAL SEWER DISCHARGE (ISD)

(Revision: 4-6-March-2003)

Project location:			
(please attach map with location indicated)			
Expected start date: Today's date:			
Project duration:			
Project description (include description of wastewater-generating source):			
Check one:			
Groundwater Surface water Construction Boiler			
Cooling tower Excavation/remediation			
Other			
Discharge type (check one):			
Batch (from tanks, containers, etc.) Continuous			
If batch: Qty/batch(gallons), Estimated No. of batches/week:			
If continuous:(estimated gallons/day),(days/week)			
Estimated total discharge qty. for project:			
Requested discharge point(s):			
(i.e., sewer manhole number(s)) Requested discharge rate (gallons/minute):			
Material to be discharged (if known product is to be added to water, please attach MSDS and/or analytical results):			
Suspected constituents:			
Discharger:Phone:M/S			
SUBMIT COMPLETED REQUEST TO			
(Request to discharge permitted when QE returns completed portion below.)			
Date request received from discharger:			
QE contact:Phone/Fax: M/S:			
Date agency notified: Date request submitted:			
(if applicable) (if applicable)			
Agency:Agency contact/phone:			
Projected discharge date/conditions:			
Approval for Discharge by QE (signature and date):			
Approval for Discharge by Agency (signature and date):			
Requester notified (date):			
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END OF DOCUMENT			

THIS DOCUMENT IS UNCONTROLED WHEN PRINTED

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