UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

December 6, 2006

In Reply Refer To: WTR-7

Mary Hall, President
Electro Plating Specialties
2436 American Avenue
Hayward, California 94545

Re: April 7, 2006 Clean Water Act Inspection

Dear Ms. Hall:

Enclosed is the November 27, 2006 report for our April 7 inspection of Electro Plating Specialties. Please submit a short response to the findings in Sections 2 through 5 of this report, to EPA, Hayward, and the Regional Water Quality Control Board, by **February 28, 2007**.

The main findings are summarized below:

1 EPS qualifies as a job-shop metal finisher subject to the Federal standards for both metal finishing new sources and electroplating existing sources. Full application of the new source standards cannot be determined without better descriptions of shop upgrades.

2 Treatment is both equivalent in design to the models used in setting the Federal standards and operated to perform better than predicted, so continued consistent compliance is expected. However, rinses were not observed running on-demand which may render the sampling unusable to determine compliance. Rinses should be operated on-demand.

3 A drainage line leading to batch treatment should be extended into the shop in order to eliminate the need for long hoses, thereby minimizing treatment bypass potential.

4 Hayward should also sample for amenable cyanide and oil and grease.

I certainly appreciate your helpfulness extended to me during this inspection, especially your willingness to let me come back to photograph shop practices. I remain available to you and Hayward to assist in any way. Please call (415) 972-3504 or e-mail at arthur.greg@epa.gov.

Sincerely,
Original signed by:
Greg V. Arthur

Greg V. Arthur
CWA Compliance Office

Enclosure

cc: Debra Kunisawa, SBSA
Michael Chee, RWQCB-Oakland

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION 9

CLEAN WATER ACT COMPLIANCE OFFICE

NPDES COMPLIANCE EVALUATION INSPECTION REPORT

Industrial User:	Electro Plating Specialties, Inc. 2436 American Avenue, Hayward, California 94545 40 CFR 413 Subparts A, D, E, and F – Job-Shop Electroplating 40 CFR 433 – Metal Finishing New Source
Treatment Works:	City of Hayward Water Pollution Control Facility Through the East Bay Dischargers Authority Outfall (NPDES Permit CA00337867)
Dates of Inspection:	April 7, 2006 and April 21, 2006

Inspection Participants:

US EPA:	Greg V. Arthur, Region 9, CWA Compliance Office, (415) 972-3504
RWQCB-Oakland:	None
City of Hayward:	Debra Kunisawa, Senior WPC Inspector, (510) 881-7993 Dije Ndreu, WPC Administrator, (510) 881-7960
Electro Plating Specialties:	Mary Hall, President, (510) 768-1881 Lorenzo Armendariz, General Manager, (510) 786-1881 Jim Miille, President, Chemical Solutions, Inc., (925) 606-8000 Paul Kawulok, Engineering, (408) 259-2526

Report Prepared By:	Greg V. Arthur, Environmental Engineer December 6, 2006

1.0 Scope and Purpose

On April 7 and 21, 2006, EPA, and the City of Hayward conducted a compliance evaluation inspection of Electro Plating Specialties ("EPS") in Hayward, California. The purpose was to ensure compliance with the Federal regulations covering the discharge of non-domestic wastewaters into the sewers. In particular, it was to ensure:

- Classification in the proper Federal categories;
- Application of the correct standards at the correct sampling points;
- Consistent compliance with the standards; and
- Fulfillment of Federal self-monitoring requirements.

EPS is a significant industrial user ("SIU") within the Hayward sewer service area whose compliance was assessed as part of an on-going EPA evaluation of industrial users in EPA Region 9 by sector. The inspection participants are listed on the title page. Arthur conducted the inspection on April 7 and took photographs on April 21.

1.1 Process Description

EPS is a full-service metal finishing job-shop.

Electroless Nickel - Line K involves alkaline cleaning, alkaline electrocleaning, hydrochloric-acid pickling, acid-nickel strike, acid-tin plating, electroless-nickel plating, nitric-acid stripping, and alkaline zincate coating.

Aluminum Anodizing - Lines E and F involve alkaline cleaning, alkaline etching, sulfuric/nitric-acid deoxidation, nitric-acid desmut, sulfuric-acid Type III hard anodizing, sulfuric-acid Type II anodizing, metal dyeing, and nickel acetate sealing.

Zinc/Cadmium - Lines A, B, G, and part of Lines C and D involve alkaline cleaning, alkaline electrocleaning, hydrochloric-acid pickling, hydrochloric-acid descaling, cyanide-copper strike, cyanide-zinc plating, cyanide-zinc barrel plating, cyanide-cadmium plating, cyanide stripping, dichromate sealing, clear chromate sealing, gold chromate sealing, and citric-acid passivation.

Miscellaneous - The rest of Lines C and D involve acid-bright nickel plating, sulfuric-acid activation, acid-bright tin plating, and alodining. Line P involves alkaline cleaning, iron-phosphating, and dichromate sealing.

EPS does not own parts that undergo metal finishing on-site. EPS started up in 1973 and expanded in 1978. EPS installed secondary containment divided between cyanide bearing and non-cyanide bearing areas in 1986. EPS rebuilt and upgraded the electroless nickel Line K in 1997 and added the phosphating Line P in 1996. EPS discharges its non-domestic wastewaters to the Hayward domestic sewers through a single sewer connection designated in this report by permit number as IWD-76038. Domestic sewage discharges through separate connections downstream of the industrial wastewater connection.

1.2 Facility SIC Code

EPS is assigned the SIC code for electroplating (SIC 3471).

1.3 Facility Wastewater Sources

The metal finishing lines generate spents, rinses, scrap plate-out, and residuals. ***See*** Appendix 1. For the purposes of this report, the tank designations are by metal finishing line:

A - copper strike
B - zinc/cadmium plating line
C - chromium conversion coating
D - bright nickel/tin, citric passivation
E - Type II anodizing line
F - Type III anodizing line and dyeing
G - alkaline/acid preparation line
K - electroless-nickel line
P - steel phosphating line

Spent Solutions – The imparted contamination from the processing of parts and the progressive drop in solution strength results in the generation of spent solutions. EPS batch treats most spents on-site, hauls off-site for disposal cyanide-strip spents and cyanide-plating sludges, and regenerates everything else through additions. The list of spents follows below.

On-Site Batch Treatment	Hauled Off-site to Haz	Regenerated By Additions
C4 - clear chromate seal E10 - alkaline clean E8 - alkaline etch E6 - acid deoxidation E3/4 - acid desmut F10 - nickel acetate seal K18 - alkaline clean K15/16 - alk electroclean K13 - acid pickling K4/8 - e-less nickel plate ✓ P1 - alkaline clean P2 - iron phosphating ✓ w/ in-tank recirc filtering	B1/2 - cyanide-zinc plate ✓ B19 - cyanide-strip ✓ w/ in-tank solids removal	A1 - cyanide-Cu strike B4 - cyanide-Zn barrel plate B5 - cyanide-Cd plate C2 - gold chromate seal C5 - alodine D1 - bright nickel plate D2 - citric passivation D7 - alodine D11 - acid activation D12 - bright tin plate D14 - dichromate seal E1 - Type III anodizing F1 - Type II anodizing F4 - black dye F6 - gold dye F5/7 - red dye F9 - blue dye K12 - acid-nickel strike K11 - acid-tin plate K22 - alk zincate coating P5 - dichromate seal
Discharge to IWD-76038	Philip Services Corp – NV	No Release

Rinses – EPS generally employs first-stage on-demand overflow rinses some of which serve multiple solutions of compatible chemistry. Nearly all overflow rinses are treated through an on-site flow-through industrial wastewater treatment plant ("IWTP") prior to discharging to the sewers. The exceptions include the rinses for alkaline cleaning and electrocleaning, which bypass untreated to the sewers. In addition, the other rinses from the electroless nickel plating Line K bypass the IWTP through ion exchange prior to discharging to the sewers. Spent drag-out rinses generally return to their respective solution tanks as make-up. The list of rinses follows below.

On-Demand Overflows		Static Drag-Out Rinses
G3 - alk electroclean 1° ✓ G5 - alk clean 1° ✓ K17 - alk clean/e-clean 1°✓ E9 - alk clean 1° ✓ ✓ Bypasses IWTP	A3 - cyanide-Cu strike 2° B3 - cyanide-Zn/Cd plate 1° C3 - dichromate seal 1° D4 - alodine 1° D13 - bright tin plate 1° D14 - dichromate seal 1° E2 - Type II anodize 1° E5 - deox/desmut 1° E7 - alk etch 1° F2 - Type III anodize 1° F3 - Type III anodize 2° F5 - black dye 1° F9 - color dye/Ni-seal 1° G1 - pickling/descale 1° K14 - pickle/Ni-strike 1° ✓ K9 - electroless-Ni 1° ✓ K3 - nitric-acid strip 1° ✓ K21 - zincate 1° ✓ P4 - iron phosphate 1° ✓ P6 - alk clean 1° ✓ ✓ Not Treated thru IWTP	A2 - cyanide-Cu strike 1° B9a - cyanide strip 1° D1a - bright-Ni plate 1° D1b - bright-Ni plate 2° ✓ D2a - citric passivate 1° ✓ On-site Batch Treatment
Untreated Discharge to IWD-76038	Treated Discharge to IWD-76038	No Release

Residuals – EPS extends the useful life of the cadmium and zinc plating solutions through the removal of tank sludges, and the electroless nickel plating solutions through circulation of the tank contents through a filter bag.

Tank Sludges to Haz	Spent Filters to Haz	Other Residuals to Haz
B1 - cyanide-zinc plate B2 - cyanide-zinc plate B4 - cyanide-cadmium plate	K4/8 - e-less nickel plate	2nd-containment drainage IWTP filter press cake IWTP e-less Ni plate-out
Philip Services Corp – NV		

1.4 Facility Process Wastewater Composition

The process wastewaters listed in section 1.3 above would be expected to contain cadmium, copper, chromium, lead, nickel, silver, zinc, amenable cyanide, and acidity, as well as oil & grease, salts, and surfactants, iron, aluminum, free oils, suspended solids, and other pollutants in the surface grime cleaned off of parts.

1.5 Facility Process Wastewater Treatment

EPS provides on-site batch treatment for numerous spent solutions and flow-through industrial wastewater treatment for most rinses. Some low-strength rinses bypass the on-site IWTP for untreated or partially treated discharge to the sewers. All treated and untreated process-related wastewaters discharge to the sewers through a single connection designated in this report after the Hayward permit number as IWD-76038. The 2004 permit indicates that EPS discharges an average of ~25,000 gallons per day ("gpd") to the sewers. ***See*** Appendix 1.

Delivery – All spent solutions are delivered by portable pump and hosing to one of two dedicated batch treatment tanks located adjacent to the IWTP. The rinses are hard-piped by type to a delivery sump for segregated treatment through the flow-through treatment unit. The sumps, pumps and lines are all clearly labeled.

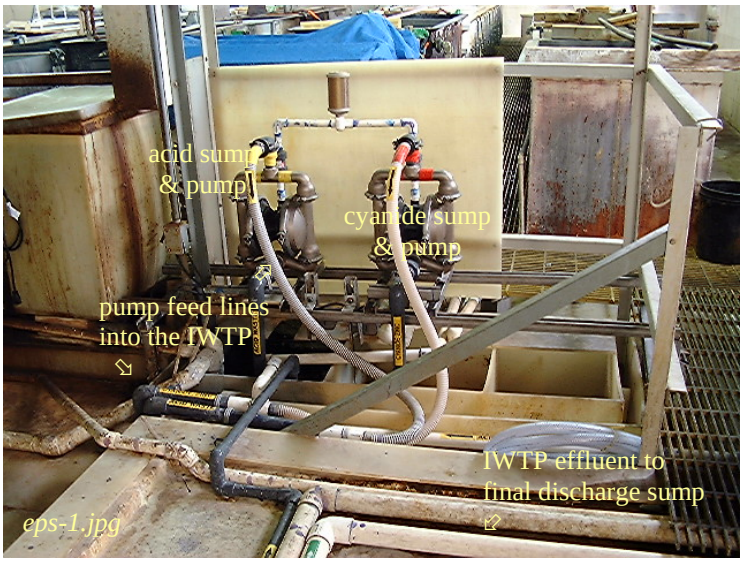


Photo: Rinse Water Delivery Sump to the IWTP
Taken By: Greg V. Arthur
Date: 04/21/06

Photo: Pump Hoes for Delivery of Spents
Taken By: Greg V. Arthur
Date: 04/21/06

Batch Treatment – The batch treatment consists of two dedicated reaction tanks, one for electroless nickel plating spents, and the other for all other spent solutions. Spent solutions are delivered on a schedule by portable pump and hose from the solution tanks directly into the batch treatment tanks. The general service batch treatment tank holds 1000 gallons and is used to perform chromium reduction, hydroxide metals precipitation, flocculation, and if

necessary, alkaline chlorination of amenable cyanide. The electroless nickel batch treatment tank involves the steel wool cementation of nickel. Treated contents from the general batch treatment tank are pumped through the IWTP filter press with the filtrate returned to the IWTP. Treated contents of the electroless nickel batch treatment tank are pumped to the acid sump for treatment through the IWTP with the cementation plate-out sludges removed for off-site hauling and disposal.

Flow-Through Chemical Treatment – The flow-through treatment consists of two inlet delivery sumps that separately handle alkaline/cyanide-bearing and general acidic/chromium-bearing wastewaters. Each delivery sump is outfitted with a pump that feeds to a dedicated treatment tank, one for chromium reduction, and the other for cyanide destruction through alkaline chlorination. The preconditioned wastewaters are then combined for treatment through metals precipitation, flocculation, Lamella plate settling clarification, and walnut-shell media polish filtration. Plate settling solids are handled through a sludge holding tank that feeds the filter press. Press filtrate and sludge holding decant return to metals precipitation for re-treatment. Treated wastewaters are hard-piped back onto the facility to the final discharge sump for discharge through IWD-76038 to the sewers.

Photo: IWTP- Exterior
Taken By: Greg V. Arthur
Date: 04/21/06

Photo: IWTP Top View of CN/Cr Reaction Tanks
Taken By: Greg V. Arthur
Date: 04/21/06

Ion Exchange – EPS installed ion exchange in July of 2005 to handle the electroless nickel plating Line K rinses from acid-pickling, acid-nickel strike, electroless-nickel plating, nitric-acid strip, and hot DI rinsing. These rinses drain to a sump that feeds to two ion exchange columns for delivery to the final discharge sump for discharge through IWD-76038 to the sewers. The ion exchange columns are not operated lead-lag as of yet, but instead, EPS tests for breakthrough by hand. EPS intends to regenerate the columns on-site.

Final Discharge Sump – IWTP treated wastewaters combines with the bypassed wastewaters in the final discharge sump. The bypassed wastewaters comprise untreated rinses and ion exchange treated rinses from the electroless nickel plating Line K, the untreated alkaline cleaning and electrocleaning rinses for the anodizing Lines E/F and plating preparation Line G, and the untreated rinses from the steel phosphating Line P. ***See*** the photos of the next page.

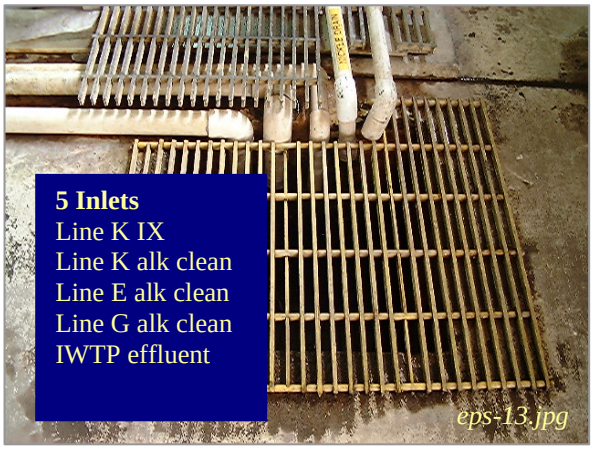


Photo: Final Discharge Sump
Taken By: Greg V. Arthur
Date: 04/21/06

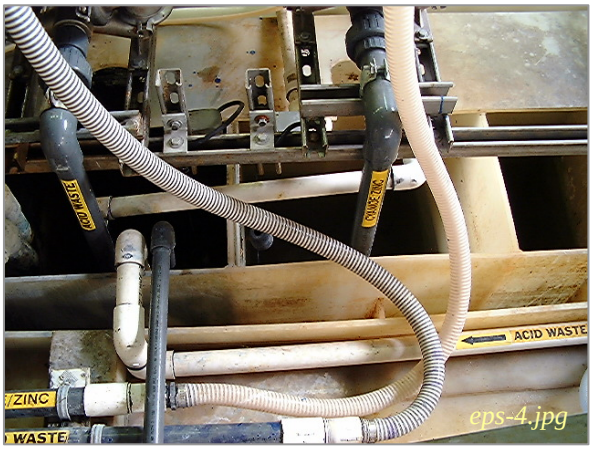


Photo: Delivery Piping Labeling Detail
Taken By: Greg V. Arthur
Date: 04/21/06

Residuals Handling – Clarifier solids proceed to a sludge holding tank for dewatering through the filter press. The press filtrate and sludge holding decant return to the IWTP metals precipitation step. Filter press cake is hauled off-site for disposal as hazardous to Philip Services Corporation in Nevada.

Operational Controls – EPS employs a number of operational controls that improve the performance of the batch and flow-through treatment units. First, the reaction tanks in the flow-through treatment unit are operated with built-in chemical reaction end-point telemetry (both ORP and pH meters) in order to ensure completion of cyanide destruction, chromium reduction, and metals precipitation steps. Second, non-compatible alkaline and low-strength ion exchange wastewaters bypass the flow-through chemical treatment. Third, high-strength spents are first batch treated with the tail waters fed through the filter press back into the flow-through treatment as press filtrate returns. Finally, the delivery is well controlled with segregated and clearly labeled hard-piping of rinses and manual delivery of spents.

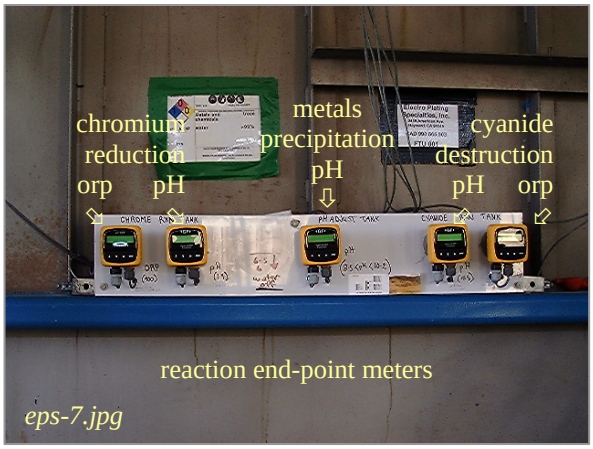
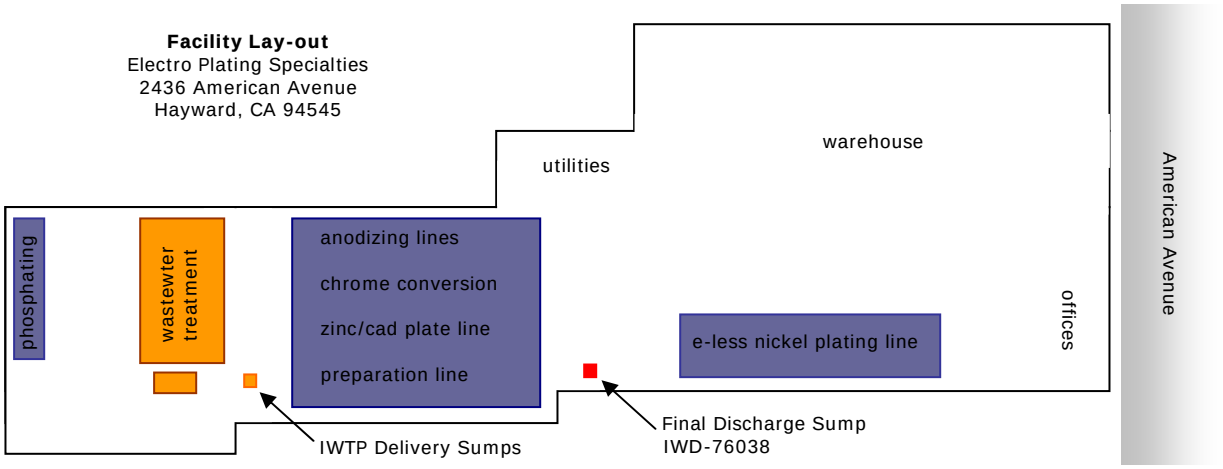


Photo: IWTP Metering and Telemetry
Taken By: Greg V. Arthur
Date: 04/21/06

Photo: IWTP Metering Probes
Taken By: Greg V. Arthur
Date: 04/21/06

These operational controls reduce the operational variability not only inherent in the waste-water treatment, but also imparted into treatment from the sources, thereby improving the system performance. On the other hand, the delivery by pump and hose of spents for batch treatment poses a potential to bypass treatment (through the misdirection of hose outlets to an undesignated drain like the final discharge sump) that would not exist with hard piping.

Sewer Discharge – The final discharge sump connection to the sewer is designated as the permitted compliance sampling point, IWD-76038.



1.6 POTW Legal Authorities

The City of Hayward – Hayward is one of the member agencies that comprise the East Bay Dischargers Authority ("EBDA"). Hayward and the other member agencies operate their own wastewater treatment facilities, which discharge together to the San Francisco Bay through the EBDA Joint Outfall. Hayward and the other member agencies also operate individual approved pretreatment programs as required by the State of California in the San Francisco RWQCB's Waste Discharge Requirements, No. R2-00-087, reissued to EBDA in 2000 and serving as NPDES Permit No. CA0037869. Hayward has established a sewer use ordinance that applies to all industrial users in its sewer system. Under this authority, Hayward issued industrial user permit No. 76-038 covering the sewer discharge from EPS.

1.7 Photo Documentation

Arthur took 13 photos of EPS on April 21 stored under the file names *eps-1.jpg* through *eps-13.jpg*. Eight of the 13 photos are depicted in this report. The others were duplicates.

1.8 Sampling Record

All compliance samples are collected by Hayward from the final discharge sump within the facility at IWD-76038. ***See*** Appendix 3 for a summary of the 2004-2006 sampling.

2.0 Sewer Discharge Standards and Limits

Federal categorical pretreatment standards (where they exist), national prohibitions, and the local limits (where they exist) must be applied to the sewered discharges from industrial users. (40 CFR 403.5 and 403.6).

Summary

The Federal standards in 40 CFR 433 for new source metal finishers and 40 CFR 413 for existing source job-shop metal finishers discharging over 10,000 gallons per day together apply to all process wastewater discharges from EPS through IWD-76038. Line P qualifies as a new source, however, Line K or even the entire facility may also qualify. The ratio qualifying as a new source cannot be determined at this time. The Hayward permit does not advance combined standards reflecting the application of both sets of Federal standards. The Hayward permit does correctly apply local limits. The application of Federal standards, national prohibitions, and local limits was determined through visual inspection. ***See*** Appendix 2.

Requirements

- The permit must apply combined standards to IWD-76038 that reflect both the Federal job-shop electroplating standards for existing sources in 40 CFR 413 and the Federal metal finishing standards for new sources in 40 CFR 433.

Recommendations

- EPS should submit a report detailing the construction involved in the installation of secondary containment in 1986, the initial installation of Line K, and the rebuilding of Line K in 1997.

2.1 Classification by Federal Point Source Category

EPS qualifies as a job-shop metal finisher subject to both the Federal metal finishing standards for new sources in 40 CFR 433 and the Federal job-shop electroplating standards for existing sources in 40 CFR 413. Hayward correctly classified EPS but did not correctly apply combined standards. Federal standards are self-implementing which means they apply to regulated waste streams whether or not they are implemented in a local permit. The Federal rules in 40 CFR 403.6 define domestic sewage and non-contact wastewaters to be dilution waters.

New or Existing Sources – EPS no longer continues to be subject solely to the Federal standards for existing sources. Under the definitions in 40 CFR 403.3(k), a process constructed at an existing source job-shop metal finisher after August 31, 1982 is a new source (1) if it entirely replaces a process which caused a discharge from an existing source or (2) if it is substantially independent of the existing sources on-site. This means new source standards apply to the original installation of the metal finishing lines, rebuilt or moved lines, or

existing lines converted to do new operations. This also means that the new source standards generally do not apply to the piecemeal replacement of tanks for maintenance in otherwise intact metal finishing lines, nor do they apply to treatment upgrades without altering production. The preamble to the final 1988 Federal rule states that the new source standards apply when "an existing source undertakes major construction that legitimately provides it with the opportunity to install the best and most efficient production process and wastewater treatment technologies" (*Fed Register, Vol.53, No.200, October 17, 1988, p.40601*).

There have been a number of configuration changes at EPS since the upgrade in 1978. Specifically, EPS installed secondary containment divided between cyanide bearing and non-cyanide bearing areas in 1986, rebuilt and upgraded the electroless nickel Line K in 1997, and added the phosphating Line P in 1996. A new source versus existing source determination for EPS depends on a number of factors.

Line P - First, the steel phosphating Line P is an entirely new installation and as a result the wastewaters generated by Line P are regulated under new source standards.

Line K - Next, if the electroless nickel Line K was rebuilt in 1997 as indicated by EPS during this inspection, then the new source standards would also apply to the wastewaters generated by Line K. "Rebuilt" would mean construction that "legitimately provides it with the opportunity to install the best and most efficient production process and wastewater treatment technologies". It appears from this inspection, that that opportunity was available because Line K now employs ion exchange, on-demand rinsing, and the bypassing of low-strength alkaline rinses and ion exchange tail waters around the chemical treatment, all of which together would be considered the most efficient production and process and wastewater treatment technologies for electroless nickel plating.

Secondary Containment - If the installation of the secondary containment involved the physical relocation and re-installation of entire lines, then that would qualify as construction that "legitimately provides it with the opportunity to install the best and most efficient production process and wastewater treatment technologies". In that case, then the entire facility would qualify as a new source.

Estimated Flow Rates (gpd)	Qualifying as New Source		
	Line P Only	Lines P and K	Entire Facility
Existing Source 40 CFR 413 Job-Shop Electroplating	25200	19200	0
New Source 40 CFR 433 Metal Finishing	400	6400	25600
Dilution Waters 40 CFR 403.6(e)	0	0	0

The flow rate estimates are based solely on the ratio of rinse tanks from lines qualifying as new or existing sources. Better estimates could be based on actual wastewater delivery.

2.2 Local Limits and National Prohibitions

Local limits and the national prohibitions are meant to express the limitations on non-domestic discharges necessary to protect the sewers, treatment plants and their receiving waters from adverse impacts. In particular, they prohibit discharges that can cause the pass-through of pollutants into the receiving waters or into reuse, the operational interference of the sewage treatment works, the contamination of the sewage sludge, sewer worker health and safety risks, fire or explosive risks, and corrosive damage to the sewers. The national prohibitions apply nationwide to all non-domestic sewer discharges. The Hayward local limits apply to non-domestic discharges in the Hayward service area.

2.3 Federal Categorical Pretreatment Standards
Existing Source Job-Shop Electroplating >10,000 gpd - 40 CFR 413

40 CFR 413 >10kgpd	Cd	Cr	Cu	Pb	Ni	Ag	Zn	CNt	TTO	TM
daily-maximum (mg/l)	1.2	7.0	4.5	0.6	4.1	-	4.2	1.9	2.13	10.5
four-day average (mg/l)	0.7	4.0	2.7	0.4	2.6	-	2.6	1.0	-	6.8
stat conversion to mo-avgs	0.5	2.5	1.8	0.3	1.8	-	1.8	0.55	-	5.0

Applicability - The Federal job-shop electroplating standards apply to job-shop metal finishers that do not own more than 50% of the parts processed and were in operation in their present configuration before the August 31, 1982 proposal date of the Federal metal finishing rule. This means the job-shop electroplating standards in 40 CFR 413.14(c)(g), 413.44(c)(g), 413.54(c)(g), and 413.64(c)(e) for dischargers over 10,000 gallons per day apply to process wastewater discharges from existing source lines at EPS to the sewers through IWD-76038.

Basis of the Standards – The job-shop electroplating standards were based on a model pretreatment unit that comprises metals precipitation, settling, sludge removal, source control of toxic organics, and if necessary, cyanide destruction and chromium reduction. For dischargers of less than 10,000 gallons per day, the model pretreatment unit was applied only to process wastewaters bearing cadmium, lead, amenable cyanide, or total toxic organics. The best-available-technology standards were set where printed circuit board manufacturers and other job-shop metal finishers with model treatment operated at a long-term average and variability that achieved a compliance rate of 99% (1 in 100 chance of violation).

Adjustments – The Federal categorical pretreatment standards at IWD-76038 need to be adjusted to account for dual Federal categories because the wastewaters through this compliance sampling point qualify as Federally-regulated under either 40 CFR 413 or 40 CFR 433. The statistical equivalent monthly-average standards for 40 CFR 413 must be used in the place of the 4-day averages in order to calculate the monthly-average standards for IWD-76038 using the combined wastestream formula in 40 CFR 403.6(e).

Compliance Deadline - Existing source job-shop metal finishers were required to comply with all Federal job-shop electroplating standards by the final compliance deadline of July 31, 1986.

2.4 Federal Categorical Pretreatment Standards New Source Metal Finishing - 40 CFR 433.17

40 CFR 433.17	Cd	Cr	Cu	Pb	Ni	Ag	Zn	CNt	CNa	TTO
daily-maximum (mg/l)	0.11	2.77	3.38	0.69	3.98	0.43	2.61	1.20	0.86	2.13
month-average (mg/l)	0.07	1.71	2.07	0.43	2.38	0.24	1.48	0.65	0.32	-

Applicability - Under 40 CFR 433.10(a), the metal finishing standards apply to the process wastewaters from EPS because the facility's operations involve electroplating, electroless plating, chemical coating, anodizing, and etching. The metal finishing standards "... apply to plants that perform ..." the core operations of electroplating, electroless plating, etching, anodizing, chemical coating, or printed circuit board manufacturing and they extend to other on-site operations, such as cleaning, deburring, painting, machining, and assembly associated with metal finishing and specifically listed in 40 CFR 433.10(a). If any of the core operations are performed, the new source metal finishing standards apply to discharges from any of the new source core or associated operations. As a result, the metal finishing standards apply to the new source process wastewater discharges to IWD-76038.

Basis of the Standards - The new source metal finishing standards were based on a model pretreatment unit that comprises metals precipitation, settling, sludge removal, source control of toxic organics, no discharge of cadmium-bearing wastewaters, and if necessary, cyanide destruction, chromium reduction. The best-available-technology standards were set where metal finishers with model treatment operated at a long-term average and variability that achieved a compliance rate of 99% (1 in 100 chance of violation).

Adjustments – Under 40 CFR 433.12(c), the cyanide standards as applied to metal finishing wastewater discharges must be adjusted to account for dilution from non-cyanide bearing waste streams. For EPS, cyanide-bearing wastewaters are generated by cadmium and zinc electroplating and chromium conversion coating. The cyanide standards as applied to the new source discharges through IWD-76038 must be adjusted proportionally downward to account for dilution from the non-cyanide bearing waste streams. If the entire facility qualifies as a new source, then EPA estimates the dilution at IWD-76308 to be ~4:1 based on the number of rinses, resulting in an adjustment downward of the daily-maximum and monthly average metal finishing standards for total cyanide to 0.300 and 0.163 mg/l. If only Line P or Lines P and K qualify, then none of the new source discharges are cyanide bearing, and the metal finishing cyanide standards remain unadjusted by default at 1.20 and 0.65 mg/l.

Compliance Deadline - New sources were required to comply on the first day of discharge.

2.5 Point(s) of Compliance

The permit designates the final discharge sump inside the facility as the compliance point (designated in this report as IWD-76038).

Federal Standards - Federal categorical pretreatment standards apply end-of-process-after-treatment to all Federally-regulated discharges to the sewers. The sample point IWD-76038

is also a suitable end-of-process-after-treatment sample point representative of the day-to-day discharge of Federally-regulated wastewaters.

Local Limits - Local limits and the national prohibitions apply end-of-pipe to all non-domestic flows from EPS. The sample point designated as IWD-76038 is a suitable end-of-pipe sample point representative of the day-to-day non-domestic wastewater discharges.

2.6 Compliance Sampling

The national prohibitions are instantaneous-maximums and are comparable to samples of any length including single grab samples. Federal categorical pretreatment standards are daily-maximums comparable to 24-hour composite samples. The 24-hour composite samples can be replaced with single grabs or manually-composited grabs that are representative of the sampling day's discharge.

3.0 Compliance with Federal Standards

Industrial users must comply with the Federal categorical pretreatment standards that apply to their process wastewater discharges. 40 CFR 403.6(b).

Categorical industrial users must comply with the prohibition against dilution of the Federally-regulated waste streams as a substitute for treatment. 40 CFR 403.6(d).

Industrial users must comply with the provision restricting the bypass of treatment necessary to comply with any pretreatment standard or requirement. 40 CFR 403.17(d).

Summary

EPS employs wastewater treatment equivalent to the models used in originally setting the Federal standards. The treatment in-place is operated in a number of ways that result in performance better than expected of job-shop metal finishers. The good design and delivery of wastewater for treatment was installed in response to enforcement by the City of Hayward in 2005. As a result, the sample record did not indicate consistent compliance with Federal standards until October 2005. Past violations differ depending on what qualifies as a new source at EPS. In particular, there would have been no cadmium violations if only Line-P qualifies. Since October 2005, there has been a single possible violation of the Federal standards. One shortcoming is the use of portable pumps and hoses for the delivery of spent solutions, thereby providing an the opportunity to bypass treatment. A second shortcoming is rinses running continuously without parts processing, thereby causing the sampling results to be provisionally useable for determining compliance. ***See*** Appendix 3.

Requirements

- None.

Recommendations

- The running rinses should be operated on-demand when there are parts undergoing processing or the rinses should be retrofitted to be conductivity-controlled.
- A hard plumbed line leading to the batch treatment units should be extended into the shop in order to eliminate the need for long hoses.
- Hayward should measure compliance for amenable instead of total cyanide if the entire facility qualifies as a new source.

3.1 Sampling Results

The 2004-2006 sample records for EPS collected by Hayward from the monitoring box inside of the facility consist of quarterly sampling. All metals samples were 24-hour

composites. All cyanide samples were grabs. All sample results are provisionally usable for determining compliance with the Federal standards because they account for all rinses and spents discharged, however they may be diluted by rinses observed to be running continuously without parts undergoing processing. EPS is exempted from total toxic organics sampling because it operates under an approved toxic organics management plan, as set forth in 40 CFR 413 and 433. ***See*** item 5.0 of this report.

3.2 Best-Available-Technology Treatment

The treatment in-place is equivalent in design and performance to the best-available-treatment ("BAT") technology models used in originally setting the Federal standards. The treatment-in-place incorporates an number of features that improve BAT performance by managing the variabilities inherent in wastewater generation, treatment, and discharge. The BAT treatment at EPS is particularly improved by:

- reaction end-point metering,
- metals precipitation operated near the pH set point optimum of 9.2 for the amphoteric nature of zinc,
- the segregated batch treatment of high-strength spent solutions,
- ion exchange treatment of non-compatible electroless nickel wastewaters,
- diversion of non-compatible and low-strength wastewaters around treatment, and
- well controlled delivery methods.

The sampling results provisionally indicate that EPS, as currently designed and operated, now consistently complies with its Federal standards. Since October 2005, all but one sample easily met all Federal standards. One lone possible violation was of the monthly-average total cyanide standard (as adjusted for dilution from non-cyanide bearing flows and only if EPS qualifies as entirely PSNS). The results also may be biased in favor of compliance because the overflowing rinses were observed running without parts undergoing processing. It is not clear whether excessive rinsing is a practice at EPS. It is also not clear how the observed rinses can be considered to operate on-demand as claimed by the facility personnel. Excessive rinsing produces samples that are diluted by excess make-up water, a practice which can be prohibited by the Federal rule against dilution as a substitute for treatment. Composite sampling for all Federally-regulated pollutants from IWD-76038 would be fully usable to determine compliance with the Federal BAT standards once the overflow rinses either are retrofitted to operate on-demand. ***See*** sections 3.3 and 5.0 below.

3.3 Dilution as a Substitute for Treatment

The Federal standards in 40 CFR 403.6(d) prohibit "dilution as a substitute for treatment" in order to prevent compromising BAT model treatment with dilute waste streams. In particular, this prohibition applies when sample results for a diluted waste stream are below the Federal standards and the apparent compliance is used to justify discharge without treatment. There are two conditions that need to be established in order to make a determination of non-compliance with this prohibition. First, some or all of the Federally-regulated

wastewaters must discharge without undergoing BAT model treatment or its equivalent. Second, there must be some form of excess water usage within a Federally-regulated process.

EPS meets the first condition since a number of running rinses bypass treatment. EPS may meet the second condition if any of these bypassing rinses are among those that do not in fact operate on-demand.

3.4 Bypass Provision

The Federal standards in 40 CFR 403.17 prohibit the bypassing of any on-site treatment necessary to comply with standards unless the bypass was unavoidable to prevent the loss of life, injury, or property damage, and there were no feasible alternatives. This provision explicitly prohibits bypasses that are the result of a short-sighted lack of back-up equipment for normal downtimes or preventive maintenance. It also explicitly prohibits bypasses that could be prevented through wastewater retention or the procurement of auxiliary equipment. It specifically allows bypasses that do not result in violations of the standards as long as there is prior notice and approval from the sewerage agency or State.

There is the possibility of unauthorized bypassing of treatment at EPS. Spent solutions are delivered from the tanks to the batch treatment tanks by portable pump and long extension of hosing. The hose outlets can be directed to any location on-site including disposal points that bypass the treatment. It would be better to have a hard-plumbed line or set of lines, with stand-pipe inlets in the metal finishing area, leading to the batch treatment tanks. This would not preclude the use of portable pumps to deliver the spents to batch treatment but it would eliminate the need for long hose lengths. Maintaining only short hose lengths prevents the delivery of spent solution to improper disposal points bypassing the treatment necessary to comply.

4.0 Compliance with Local Limits and National Prohibitions

All non-domestic wastewater discharges to the sewers must comply with local limits and the national prohibitions. 40 CFR 403.5(a,b,d).

Industrial users must comply with the provision restricting the bypass of treatment necessary to comply with any pretreatment standard or requirement. 40 CFR 403.17(d).

Summary

EPS has the treatment capacity and capability to consistently comply with the local limits. There have been no violations of the local limits since the upgrading of the IWTP was completed by October 2005. The corrective actions to improve the performance of BAT treatment would further lessen the chance of a local limit violation. ***See*** Appendix 3. Also ***see*** Sections 3.0 and 5.0 of this report.

Requirements

- None.

Recommendations

- None.

4.1 National Objectives

The general pretreatment regulations were promulgated in order to fulfill the national objectives to prevent the introduction of pollutants that:

(1) cause operational interference with sewage treatment or sludge disposal,
(2) pass-through sewage treatment into the receiving waters or sludge,
(3) are in any way incompatible with the sewerage works, or
(4) do not improve the opportunities to recycle municipal wastewaters and sludge.

This inspection did not include an evaluation of whether achievement of the national objectives in 40 CFR 403.2 have been demonstrated by the Hayward wastewater treatment plant through consistent compliance with their sludge and discharge limits.

4.2 Local Limits for Oxygen Demanding Pollutants and The National Prohibition Against Interference

The process-related wastewaters discharged to the sewers are not expected to be high enough in organics strength to pose a risk of interference, with wastewater strengths significantly less than domestic sewage. Sampling bears out this conclusion with BOD and TSS concentrations always found to be below typical domestic wastewater quality.

4.3 Local Limits for Toxic Metals, Cyanide, and Other Pollutants and The National Prohibition Against Pass-Through

Metals and Cyanide – There were no violations of the local limits for arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, zinc, and cyanide, since completion of the IWTP upgrades by October 2005. **See** section 3.2 of this report.

Organics – There was a single sample result for toxic organics, and no sample results for phenolics, and oil and grease. Concentrations much over the detection limits of the toxic organics would not be expected to be generated by EPS. These locally-regulated pollutants are effectively addressed through the continued certification authorized in 40 CFR 413 and 433 of a solvent management plan in lieu of the required self-monitoring for toxic organics. EPS can generate surfactants and oil and grease through alkaline cleaning of oily or grimy parts.

4.4 Flammability

Flammability would not be expected because the discharges to the sewer are expected to entrain only negligible amounts of volatile organics.

4.5 Local Limits for pH and Sulfides, and The National Prohibitions Against Safety Hazards and Corrosive Structural Damage

Sewer collection system interferences related to the formation of hydrogen sulfide and the resulting acidic disintegration of the sewers are not expected because the wastewaters discharged to the sewers are not high-strength in biodegradable organics, and they are adjusted through the treatment to not be acidic in nature. Furthermore, EPS employs continuous final pH metering.

5.0 Compliance with Federal Monitoring Requirements

Significant industrial users must self-monitor for all regulated parameters at least twice per year unless the sewerage agency monitors in place of self-monitoring. 40 CFR 403.12(e) & 403.12(g).

Each sample must be representative of the sampling day's operations. Sampling must be representative of the conditions occurring during the reporting period. 40 CFR 403.12(g) and 403.12(h).

Summary

The sample record for EPS does not involve self-monitoring but rather consists of only monitoring conducted by Hayward. All of the Hayward monitoring is representative of the overall discharge of treated and untreated wastewater from EPS over the sampling day as well as over the six-month reporting period.

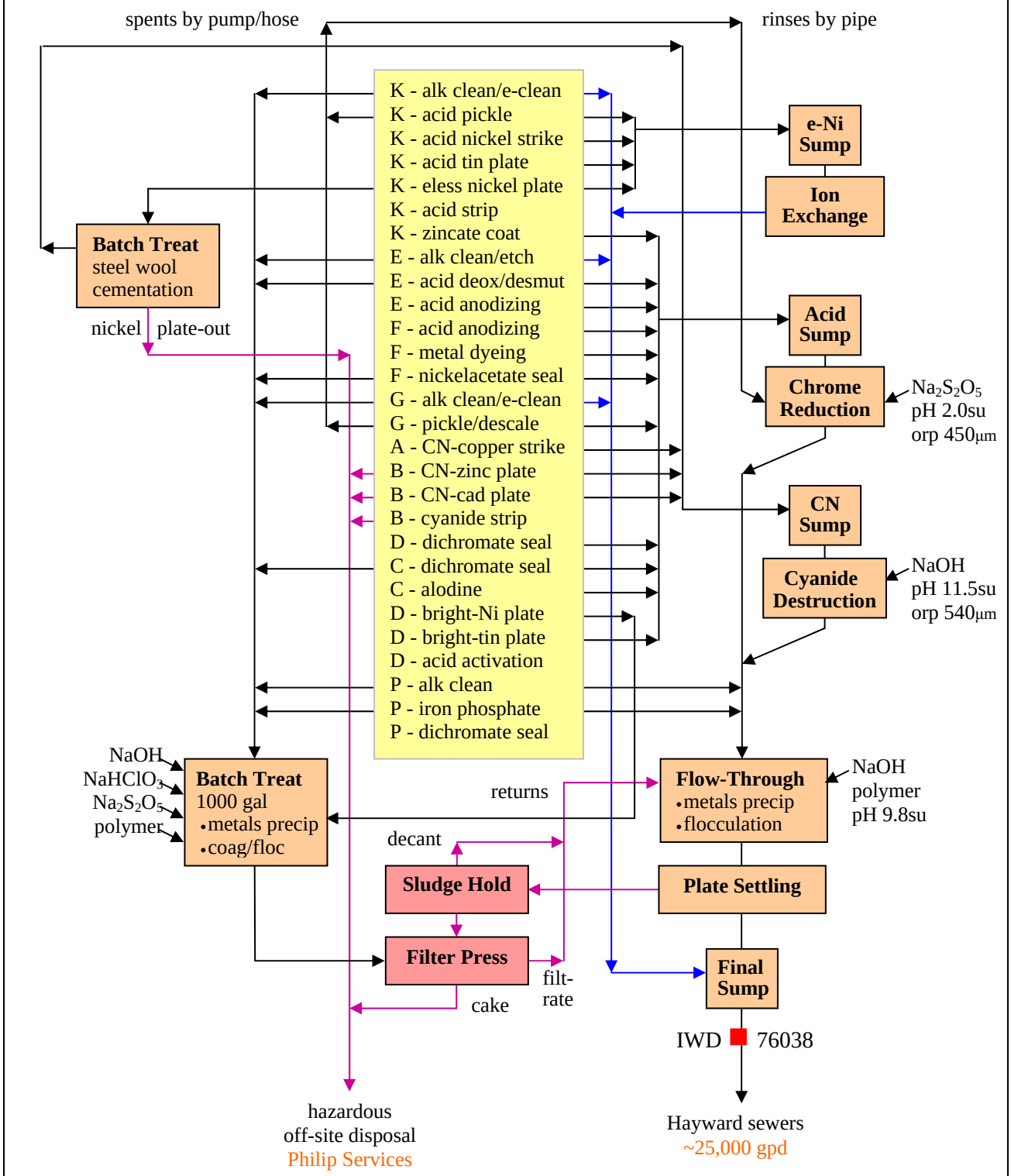
Requirements

- None.

Recommendations

- The Hayward monitoring should include twice per year oil and grease results.

Appendix 1
Electro Plating Specialties
Schematic of the Wastewater Collection and Treatment



Appendix 2
Sewer Discharge Standards and Limits
Electro Plating Specialties @ IWD-76038

pollutants of concern (mg/l)	Federal categorical standards ⑤						local limits nat'l prohib (instant)	monitoring frequency IWD-76038
	Entire Facility		Lines K and P		Line P Only			
	(d-max)	(mo-av)	(d-max)	(mo-av)	(d-max)	(mo-av)		
arsenic	-	-	-	-	-	-	1.0	monthly
cadmium	0.11	0.07	0.93	0.39	1.18	0.49	0.2	monthly
chromium	2.77	1.71	5.94	2.30	6.93	2.49	2.0	monthly
copper	3.38	2.07	4.22	1.87	4.48	1.80	2.0	monthly
lead	0.69	0.43	0.62	0.33	0.60	0.30	1.0	monthly
mercury	-	-	-	-	-	-	0.01	quarterly
nickel	3.98	2.38	4.07	1.95	4.10	1.81	1.0	monthly
silver	0.43	0.24	0.43	0.24	0.43	0.24	0.5	monthly
zinc	2.61	1.48	3.80	1.72	4.18	1.80	3.0	monthly
total cyanide	0.30	0.16	1.72	0.58	1.89	0.55	0.6	monthly
total metals	-	-	10.5	5.0	10.5	5.0	-	monthly
toxic organics	2.13	-	2.13	-	2.13	-	2.0	④ semi-ann
oil & grease-petro	-	-	-	-	-	-	100.	semi-annual
oil & grease-total	-	-	-	-	-	-	300.	③
phenol	-	-	-	-	-	-	5.0	③
flow (gpd)	-	-	-	-	-	-	-	daily
pH min (s.u.)	-	-	-	-	-	-	6.0 s.u.	continuous
explosivity	-	-	-	-	-	-	① ②	③
temperature (°F)	-	-	-	-	-	-	150°F	③

① National-prohibitions – Closed-cup flash point <140°F and pH <5.0 su.
② Narrative prohibition against the introduction of flammable or explosive substances
③ As part of periodic priority pollutant scans in order to identify changes in discharge quality
④ Solvent management plan self-certifications in lieu of self-monitoring
⑤ Federal standards for multiple categories determined using the combined wastestream formula in 40 CFR 403.6(e). ***See*** Sections 2.1, 2.3, and 2.4 of this report for the equation input values.

$$C_{76038} = \frac{C_{433}Q_{433} + C_{413}Q_{413}}{Q_{433} + Q_{413}} \times \frac{Q_{76308} - Q_{dilution}}{Q_{76308}}$$

C_{76038}	Fed standards at IWD-76038
C_{433}	Fed stds 40 CFR 433
C_{413}	Fed stds 40 CFR 413
Q_{76038}	Flow rate at IWD-76038
Q_{433}	Flow regulated 40 CFR 433
Q_{413}	Flow regulated 40 CFR 413
$Q_{dilution}$	Dilution flow 40 CFR 403.6

Appendix 3
Electro Plating Specialties Sampling Results @ IWD-76038
January 2004 – November 2006

pollutant (µg/l)	Jan04-Nov06			Oct05-Nov06		Jan04-Sep05		violation rates ① ②			samp
	mean	99th%	max	mean	99th%	mean	99th%	d-max	month	local	count
arsenic	65	249	172	108	273	42	220	-	-	0/14	14
cadmium	127	432	395	35	77	173	498	**5/15**	**7/15**	**4/15**	15
chromium	330	1087	1190	108	285	441	1249	0/15	0/15	0/15	15
copper	161	478	585	143	350	170	539	0/15	0/15	0/15	15
lead	17	54	53	21	59	15	52	0/15	0/15	0/15	15
mercury	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	-	0/15	6
nickel	235	633	744	300	920	203	441	0/15	0/15	0/15	15
silver	2	7	6	3	7	1	5	0/15	0/15	0/15	15
zinc	1142	4178	5180	271	632	1577	4871	**1/15**	**3/15**	**1/15**	15
total cyanide	110	639	780	73	233	132	799	**1/11**	**2/11**	**1/11**	11
total metals	1902	5901	6754	822	1915	2577	7024	0/13	0/13	-	13
tox organics	65	65	65	-	-	-	-	0/1	0/1	0/1	1
flow (gpd)	-	-	-	-	-	-	-	-	-	-	-
pH min pH max (su)	10.3 ③	- -	3.0 11.4	10.3 ③	- -	10.3 ③	- -	**1/11**	-	**1/11**	11

① No violations after IWTP upgrade Oct05
② Viols determined against full PSNS Fed stds – No cadmium viols against Line-P PSNS Fed stds
Fewer cyanide viols against Line-P PSNS Fed standard (***See*** Appendix 2).
③ pH median