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

November 19, 2009

In Reply Refer To: WTR-7

Duane Korytko, Location Manager
Pimalco, Gila River Operations
36833 West Willis Road
Chandler, Arizona 85226

Re: August 11, 2009 Clean Water Act Inspection

Dear Mr. Korytko:

Enclosed is the November 19, 2009 report for our August 11, 2009 inspection of Pimalco. Please submit a short response to the findings in Sections 2 through 5 of this report, to EPA, Chandler, and ADEQ, by **January 30, 2010**. The main findings are summarized below:

1 Pimalco qualifies as a new and existing source aluminum former regulated under the Federal rules in 40 CFR 467C and 467E. The standards advanced in this report differ somewhat from the Chandler permit limits with the discrepancies a result of a revised list of Federally regulated operations, and adjustments derived from flow estimates.

2 Without model treatment in-place, Pimalco nearly always complied with its Federal standards and local limits because model flow reductions were in-place, and there were no significant contributing sources of contamination. Thus model treatment is likely not needed to achieve compliance with the Federal standards. The few violations are likely an artifact of the rising influence of dilution waters. In response, domestic sewage could be plumbed below the sampling point and the outdoor cleaning pads could be covered.

3 Since Pimalco always complied with the Federal total toxic organics standards, the alternate oil and grease standards do not apply to oil and grease sample results.

4 Self-monitoring is representative over the sampling day and six-month reporting period.

I appreciate your helpfulness extended to me during this inspection. I remain available to the City of Chandler, and to you to assist in any way. Please do not hesitate to call me at (415) 972-3504 or e-mail at arthur.greg@epa.gov.

Sincerely,

Original signed by:

Greg V. Arthur
CWA Compliance Office

Enclosure

cc: Luis Provencio, Senior Inspector, City of Chandler
Moses Olade, Environmental Hydrologist, ADEQ

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION 9

CLEAN WATER ACT COMPLIANCE OFFICE

NPDES COMPLIANCE EVALUATION INSPECTION REPORT

Industrial User:	Pimalco, Gila River Operations 6833 West Willis Road, Chandler, Arizona 85226 New and Existing Source Aluminum Extrusion (40 CFR 467)
Treatment Works:	City of Chandler Lone Butte Wastewater Treatment Plant No NPDES Permit or Arizona Aquifer Protection Permit Reuse Under Contract with the Gila River Indian Community
Pretreatment Program:	City of Chandler
Date of Inspection:	August 11, 2009

Inspection Participants:

US EPA:	Greg V. Arthur, Region 9, CWA Compliance Office, (415) 972-3504
Arizona DEQ:	Moses Olade, Environmental Hydrologist, (602) 771-4552
City of Chandler:	Ray Figueroa, Pretreatment Supervisor, (480) 782-3734 Luis Provencio, Senior Industrial Waste Inspector, (480) 782-3732 Lande Adams, Industrial Waste Inspector, (480) 782-3733
Pimalco:	Julie Camp, Envr. Health and Safety Manager, (480) 598-2201 Alex Golombek, Environmental Manager Duane Korytko, Location Manager, (480) 598-2244

Report Prepared By: Greg V. Arthur, Environmental Engineer
November 19, 2009

1.0 Scope and Purpose

On August 11, 2009, EPA and the City of Chandler conducted a compliance evaluation inspection of the Pimalco, Gila River Operations, ("Pimalco") in the Lone Butte Industrial Park, which is on the tribal land of the Gila River Indian Community. 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.

This inspection covered Pimalco, which is a significant industrial user ("SIU") within sewer service areas administered by the City of Chandler. The inspection participants are listed on the title page. Arthur conducted this inspection on August 11, 2009.

1.1 Process Description

Pimalco is a subsidiary of Alcoa Global. Pimalco forms aluminum in a number of buildings sited on both sides of West Willis Road. The operations, which began in 1971, involve billet casting, sawing, lathe reduction, extrusion, and tube drawing. However, the drawing and billet casting operations were mothballed in November 2008.

- IBC Bldg 1 (shut down) – aluminum billet direct chill casting, contact cooling, billet cooling pit, molten aluminum degassing.

- Lathe Bldgs 2A/2B – lathe removal of scale, lathe sizing to diameter, non-destructive ultrasonic testing, caustic etching (shut down), sand papering finish (shut down), billet sawing with synthetic oil lubricant, log cleaning pad.

- Aerospace Bldg – aluminum extrusion, extrusion water quenching, heat treatment, heat treat water quenching, heat treat glycol/water quenching, inside die cleaning (alkaline etching, nitric-acid desmut), outside die cleaning (alkaline etching, ultrasonic cleaning), non-contact cooling tower, reverse osmosis demineralization.

- PSI Bldg 3 – aluminum extrusion, extrusion water quench, die cleaning (alkaline etching, nitric-acid desmut), non-contact cooling tower, equipment steam cleaning pad.

- DTM Bldg 4 – aluminum draw tube mill (shut down).

1.2 Facility SIC Code

Pimalco is assigned the SIC code for aluminum extruded products (SIC 3354), and aluminum rolling and drawing (SIC 3355).

1.3 Facility Wastewater Sources

The aluminum forming steps generate wash waters, spent solutions, rinse waters, contact and non-contact cooling waters, reverse osmosis reject, and hydraulic press leakage. A collection sewer receives domestic and non-domestic wastewaters from each of the buildings for combined discharge through an oil water separator to a single connection to the Chandler sewers.

<u>Billet Casting</u> – Prior to November 2008, Pimalco melted aluminum scrap into billet with four direct chill casting machines. The direct chill casting contact cooling water circulated through a cooling tower with the bleeds discharged to the collection sewer. The molten aluminum was hydrogen degassed. Since November 2008, all of these operations have been shut down with scrap now sent off-site to Alcoa Lafayette in Indiana.

<u>Lathe Reduction</u> – Lathe work is used to reduce billet diameters to size and remove scale. The logs are sawn using synthetic oil and water rinsed on an outside pad which drains to the collection sewer. A non-destructive ultrasonic testing station also drains rinses to the collection sewer. A caustic etching station is shut down. <u>See</u> Photo #1 in Section 1.7 on page 5.

<u>Extrusion</u> – Extrusion presses are operated in the Aerospace and PSI Buildings. Billets are heated and forced through dies using hydraulic presses sited over pits to capture the oily hydraulic press leakage. Extrusion press leakages are collected to an on-site filter for oil reuse with the water fraction likely drained to the collection sewer. The specifics, in particular the disposal method for the filtrate, were not determined during in this inspection.

<u>Die Cleaning</u> – There are three operating die cleaning stations. All three stations involve alkaline etching, and spray rinsing. Two stations involve nitric-acid desmut. One involves ultrasonic cleaning. The etching and desmut baths are either regenerated through additions only and thus do not generate spents, or hauled off-site for disposal. Losses from the "adds-only" baths therefore are through solution drag-out into the rinses, since baths without outlets would foul or fail through use. The spray rinses are collected for hauling off-site disposal.

gals	Tank Designations and Contents		Gals	Tank Designations and Contents	
Aerospace Bldg – Die Cleaning (inside)			PSI Bldg – Die Cleaning		
200	A-1	alkaline etching	200	P-1	alkaline etching
200	A-2	alkaline etching	200	P-2	alkaline etching
200	A-3	1° spray rinse for A1/A2/A4	200	P-3	alkaline etching
200	A-4	nitric-acid desmut	200	P-4	1° spray rinse for P1/P2/P3/P5
Aerospace Bldg – Die Cleaning (outside)			200	P-5	nitric-acid desmut
500	A-5	alk etch w/overtank spray rinse			
100	A-6	ultrasonic cleaning	Tank designations for the purposes of this report.		

<u>Draw Tube Mill</u> – The operations in the DTM Bldg involve tube drawing and further tube draw reduction. The draw tube mill has been decommissioned since November 2008.

<u>Heat Treatment</u> – Extruded parts are water quenched following extrusion in quench tanks which circulate through cooling towers. The cooling towers utilize non-molybdenum anti-corrosives as additives (*2-phosphorobutane, 1,2,4-tricarboxylic acid*) with blowdowns

drained to the collection sewer. Some parts are also further heat treated in following steps involving water or water/glycol quenches. Quench tank overfill drains to the collection sewer once per week. Water preconditioning through filtering and reverse osmosis produces reject and backwash to the collection sewer. See Photos #2 and #4 in Section 1.7 on page 5.

Equipment Cleaning – A steam cleaning pad located outside of the PSI Bldg and exposed to storm water is used to clean plant equipment. Steam cleaning drainage and storm water run-off drains through an underground oil water separator to the collection sewer. See Photo #3 in Section 1.7 on page 5.

1.4 Facility Process Wastewater Handling

Discharge – Process and domestic wastewaters from all Pimalco buildings drain into a single collection sewer, laid out in the shape of a "J", starting on north side of the street and bending back along the south side. The collection sewer discharges to the Lone Butte Industrial Park sewers through an underground oil water separator. The oil water separator outfall is identified in the Chandler permit as the final compliance sample point, designated for the purposes of this report, after as IWD-19. The Chandler permit lists an average process-related discharge of 20,000 gpd. Effluent metering averaged 65,076 gpd since 2005. See Appendix 1 on page 18 for the configuration and layout. Also see Photo #5 in Section 1.7 on page 5.

Composition - The process-related wastewaters listed in section 1.3 above would be expected to contain aluminum, alloying elements (*copper, zinc, manganese, magnesium*), oily waters (*lube, press leakage, grime*), acidity, alkalinity, and minerals entrained in the water supply.

Delivery – All wastewaters discharged from Pimalco to the Lone Butte Industrial Park sewers are hard-piped into the collection sewer. The die cleaning spents and rinses are drained to totes for off-hauling as hazardous to Heritage Environmental.

Treatment – Treatment consists of a final oil water separator for all discharges and a small oil water separator for the equipment steam cleaning pad. As a result, the discharge quality depends on source controls, primarily the off-site disposal of die cleaning spents and rinses.

1.5 POTW Legal Authorities

The City of Chandler has enacted an ordinance to implement a pretreatment program in the areas serviced by the Lone Butte Water Reclamation Plant, which operates under contract with the Gila River Indian Community. Under this authority, the City issued permit No.19 authorizing discharge of non-domestic wastewater from Pimalco to the sewers.

1.6 Sampling Record

Pimalco self-monitors semi-annually as required by the City of Chandler permit. The City of Chandler also collects its own samples quarterly.

1.7 Photo Documentation

Five of the six photographs taken during this inspection are depicted below and saved as *pimalco-01.jpg through -06.jpg.*

Photo #1: Outside Lathe Bldg 2A – Log Clean Pad
Taken By: Greg V. Arthur
Date: 08/11/09

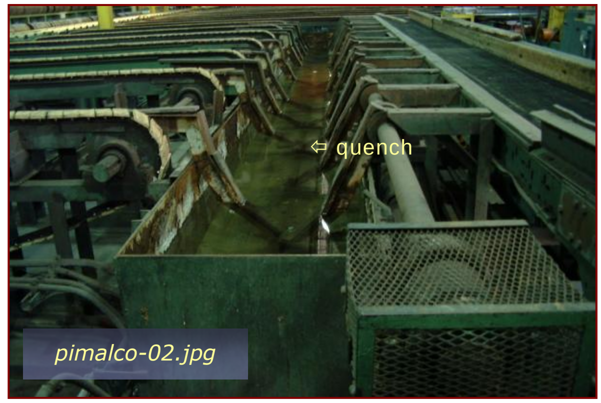


Photo #2: Aerospace Bldg – Extrusion Press Quench
Taken By: Greg V. Arthur
Date: 08/11/09

Photo #3: PSI Bldg – Steam Cleaning Pad
Taken By: Greg V. Arthur
Date: 08/11/09

Photo #4: PSI Bldg – Extrusion Press Quench
Taken By: Greg V. Arthur
Date: 08/11/09

Photo #5: Final Discharge Point (IWD-19)
Taken By: Greg V. Arthur
Date: 08/11/09

2.0 Sewer Discharge Standards and Limits

Federal categorical pretreatment standards (where they exist), national prohibitions, State groundwater reclaim and 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 new source and existing source standards in 40 CFR 467 Subpart C and Subpart E for aluminum extrusion and drawing apply to all process wastewater discharges from Pimalco through IWD-19. For the most part, the Chandler permit correctly advances the application of the Federal standards and local limits. The application of Federal standards, national prohibitions, and local limits was determined through visual inspection. See Appendix 2 on page 19-21 of this report for the permit limits and example calculations.

Requirements

- The Federal standards must be based on allocations for extrusion core, press leakage, press heat treat cooling, direct chill casting, solution heat treat cooling, and drawing core.

Recommendations

- The Chandler permit should incorporate flow rate estimates, for dilution and unregulated wastewaters as percentages of the total, into the calculation of the Federal standards.

2.1 Classification by Federal Point Source Category

Pimalco qualifies as a new source and existing source aluminum former subject to the Federal standards in 40 CFR 467 Subparts C and E.

Table 2.1
Pimalco Waste Streams by Federal Point Source Category

	IBC chill cast cooling tower blowdown	467C	✓	Aero heat treat glycol quench overfill	467C
	IBC billet washdown	467C	✓	Aero quench filter backwash	467C
✓	Lathe ultrasonic NDT rinses	unreg	✓	Aero non-contact cooling blowdown	dilute
✓	Lathe log saw cleaning/storm drainage	467C	✓	Aero quench water r/o reject	dilute
✓	Lathe air compressor condensate	dilute		Aero outside die clean/ultrasonic spents	467C
✓	Lathe utility sink drainage	467C	✓	Aero air compressor condensate	dilute
✓	Lathe laundry tail water	unreg	✓	Aero swamp cooler bleed	dilute
✓	Lathe swamp cooler bleed	dilute	✓	PSI press quench cooling blowdown	467C
✓ (red)	Aero oil reuse filter filtrate	467C	✓	PSI non-contact cooling blowdown	dilute
✓	Aero press quench cooling blowdown	467C	✓	PSI equipment steam clean drainage	unreg
	Aero inside die clean spray rinse	467C		PSI die clean rinses	467C
✓	Aero heat treat water quench overfill	467C		DTM draw wastewaters	467E
✓	Discharges to the sewers through IWD-19.		✓ (red)	Unverified but likely discharges to sewers.	

New or Existing Sources – Pimalco is partially subject to Federal standards for new sources. Under the definitions in 40 CFR 403.3(k), aluminum forming processes constructed after October 24, 1986 are new sources (1) if they entirely replace processes which caused a discharge from existing sources or (2) if they are substantially independent of existing sources on-site. This means that after the 1986, new source standards apply to the original installations of aluminum forming lines, rebuilt or moved lines, or existing lines converted to do new operations. 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, Oct. 17, 1988, p.40601*).

Six of eight aluminum extrusion presses and the tube draw lines at Pimalco qualify as new sources because they were installed and began operating after 1986. These six new source presses are those known by brand or billet size as Breda, 4.5", Sutton, Lowey, and Morrison in the Aerospace Bldg, and Ube in the PSI Bldg. The remaining two extrusion presses installed before 1986, are also known by billet size as 3.5", and 6.5" in the Aerospace Bldg.

2.2 Federal Categorical Pretreatment Standards
Aluminum Forming - 40 CFR 467.35(b)(c), 467.36(c), and 467.56

Production-based Standards (mg/off-kg)		Cr	CN	Zn	TTO	O&G
40 CFR 467.35(c) extrusion core existing source	daily-maximum	0.15	0.098	0.49	0.23	18.0
	month-average	0.061	0.041	0.21	-	8.8
40 CFR 467.36(c) extrusion core new source	daily-maximum	0.13	0.070	0.35	0.24	3.40
	month-average	0.050	0.030	0.15	-	3.40
40 CFR 467.35(c) extrusion press leakage existing source	daily-maximum	0.65	0.43	2.16	1.02	77.0
	month-average	0.27	0.18	0.90	-	39.0
40 CFR 467.36(c) extrusion press leakage new source	daily-maximum	0.11	0.060	0.31	0.21	2.98
	month-average	0.050	0.030	0.13	-	2.98
40 CFR 467.35(c) direct chill casting existing source	daily-maximum	0.59	0.39	1.94	0.92	69.0
	month-average	0.24	0.16	0.81	-	35.0
40 CFR 467.36(c) heat treat contact cooling new source	daily-maximum	0.76	0.41	2.08	1.41	20.37
	month-average	0.31	0.17	0.86	-	20.37
40 CFR 467.35(c) heat treat contact cooling existing source	daily-maximum	0.90	0.59	2.98	1.41	110.0
	month-average	0.37	0.25	1.25	-	53.0
40 CFR 467.56 drawing (w/oils) core new source	daily-maximum	0.019	0.010	0.051	0.035	0.50
	month-average	0.008	0.004	0.021	-	0.50

Applicability - Under 40 CFR 467.01, the aluminum forming standards apply to rolling, drawing, extruding, and forging, as well as to the related operations, performed on-site, of heat treatment, direct chill casting, continuous rod casting, and surface treatments such as anodizing, conversion coating, chemical etching, and chemical cleaning. The aluminum forming standards assign mass-based allocations based on production rates through regulated processes. Under 40 CFR 467.31, the standards for aluminum extrusion apply to "core" operations, which includes die cleaning and sawing, irrespective of whether there are identifiable and associated wastewater discharges, as well as to wastewater discharges from the "ancillary" operations of direct chill casting, heat treatment, surface treatment, and extrusion press hydraulic fluid leakage. Likewise, under 40 CFR 467.51, the standards for aluminum drawing apply to the "core" operations, irrespective of whether there are identifiable and associated wastewater discharges, and to specific wastewater discharges from the "ancillary" operations of continuous rod casting, heat treatment, and surface treatment.

For Pimalco, the aluminum forming standards apply to the wastewater discharges associated with the following Federally-regulated processes:

- <u>Extrusion Presses</u> – The new source extrusion core standards in 40 CFR 467.36(c) apply mass-based allocations to facility wastewaters for the six extrusion presses installed after 1986. Likewise, the existing source extrusion core standards in 40 CFR 467.35(c) apply mass-based allocations to facility wastewaters for the remaining two extrusion presses installed before 1986.

- <u>Extrusion Press Leakage</u> – The extrusion press leakage is collected for on-site filtering and reuse, with the filtrate water fraction expected to be discharged to the sewers. If so, the new source extrusion press leakage standards in 40 CFR 467.36(c) apply mass-based allocations to the filtrate contributions from the six new source presses. Likewise, the existing source extrusion press leakage standards in 40 CFR 467.35(c) apply mass-based allocations to the filtrate contributions from the two existing source presses.

- <u>Direct Chill Casting</u> – The existing source direct chill casting standards in 40 CFR 467.35(c) apply mass-based allocations to the cooling tower blowdown discharges from the associated IBC Bldg cooling tower.

- <u>Cleaning and Etching</u> – The existing source cleaning and etching standards in 40 CFR 467.35(c) **<u>do not</u>** apply to the washing of the billets either directly through water washing or indirectly through direct chill casting. The cleaning and etching allocations apply only to wastewaters associated with the chemical surface treatment of the aluminum, specifically involving surface finishing steps such as caustic etching, chromium conversion coating, zincating, and anodizing.

- <u>Heat Treat Contact Cooling</u> – The existing source standards in 40 CFR 467.35(c) for press and solution heat treatment contact cooling apply mass-based allocations to (1) the press contact water quench blowdowns from the associated cooling towers, (2) the heat treat quench tank water overfill, (3) the heat treat glycol/water overfill, and (4) the quench water filter backwash.

- <u>Drawing</u> – The new source drawing core standards in 40 CFR 467.56 apply mass-based allocations to indeterminate wastewaters generated by the tube drawing and tube reduction process in the DTC Bldg.

<u>Production Rate</u> – The annual production rates listed here are summarized from the self-monitoring reports submitted by Pimalco. There has been a steady drop in production since 2005 across all forms of aluminum processing except direct chill casting, with the 2009 rates reflecting a structural change in production from the decommissioning of chill casting and drawing. As a result, for determinations of compliance in this report, four-year average production rates are used for 2005-2008 when all processes were in operation, and a single-year rate is used for 2009 after the shut-down of chill casting and drawing.

Pimalco 5-year Daily Production Rates		Extrusion ✦	Extrusion	DirChillCast	CastClean	HeatTreat	Drawing ✦
		lbs-extruded	lbs-extruded	lbs-cast	lbs-clean	lbs-quenched	lbs-drawn
2005 avg	μ_{2005}	1460172	132010	2825585	0	774863	1049735
2006 avg	μ_{2006}	1457939	184624	3405455	0	582142	841188
2007 avg	μ_{2007}	892561	147144	3235107	0	472717	178324
2008 avg	μ_{2008}	779953	197720	3638069	0	314338	197307
2009 avg	μ_{2009}	465649	98719	0	0	141193	0
4-yr mean	$\mu_{4\text{-YEAR}}$ ✧	1123255	162693	3196456	0	563290	566638
std dev	$\sigma_{n-1\ 4\text{-YEAR}}$	418773	49733	1267621	n/a	235888	415280
5th% mo	$z_{5th\%\ 4\text{-YEAR}}$	430604	80436	1111220	n/a	173132	n/a
25th% mo	$z_{25th\%\ 4\text{-YEAR}}$	841002	129173	2342080	n/a	404302	286740
75th% mo	$z_{75th\%\ 4\text{-YEAR}}$	1405508	196213	4050833	n/a	722279	846537

✦ New sources installed after October 24, 1986 (<u>See</u> Section 2.1 on page 8 of this report).

✧ Four-year statistics based on 2005-2008 before the shut-down of billet casting and drawing.

<u>Regulated Flow Rate</u> – Discharge from Pimalco through IWD-19 averaged 65,076 gpd, according to the 2005-2009 self-monitoring reports. The regulated flows, which are those associated with aluminum forming, are estimated here in this report to account for 30% of the total discharge. The unregulated process-related flows comprise equipment steam cleaning and associated storm water run-off, and the in-plant laundry. The unregulated dilution flows comprise domestic sewage, non-contact cooling tower blowdowns, air compressor condensate, r/o/ reject, and swamp cooler bleed. <u>See</u> Table 2.1 on page 6 of this report.

- EPA estimates that unregulated domestic wastewaters account for approximately 60% of the discharge. Domestic sewage itself accounts for an estimated 50% of the discharge based on the observations that domestic sewage from a transient workforce (half-strength at ~80 mg/l BOD) is the sole significant source of conventional organics in the discharge, and that the reported BOD averages were 39 mg/l. The other dilution waters are estimated for the purposes of this report to account for an added 10%. These percentages should remain relatively unchanged with changes in production since both process-related flows and domestic flows are proportional to the number of employees.

- EPA estimates unregulated process-related wastewaters primarily from the equipment steam cleaning pad, and laundry to be the remaining 10%. A specific breakdown of the percentages does not exist in the permit documentation.

<u>Basis of the Standards</u> - The existing source aluminum forming standards were based on (1) best-available-technology (“BAT”) model treatment comprising oil skimming, lime precipi-

tation, and settling, and (2) BAT model flow reductions using circulating cooling towers, and two-stage counter current cascade rinsing, resulting in 81.6 gal/ton extrusion core flows, 3.1 gal/ton die cleaning rinses, 355 gal/ton extrusion press leakage, 488.5 gal/ton heat treatment quench, 318.96 gal/ direct chill casting, and 11.95 gal/ton drawing core flow. The new source standards were based on the BAT model treatment with added filtration, and the BAT model flow reductions with added recycling of extrusion press leakage, resulting in 71.5 gal/ton extrusion press leakage. The Federal standards were set where aluminum formers with model treatment and model flow reductions operated at a long-term average and variability that achieved a compliance rate of 99% (1 in 100 chance of violation).

Adjustments – There are no adjustments specific to the aluminum forming rule. Under 40 CFR 403.6(e), combined standards must be calculated since the aluminum forming discharges are combined with unregulated process-related flows and dilution waters. See Section 2.6 on page 11 for adjustments to the combined standards.

Compliance Deadline – Existing sources were required to comply by October 24, 1986. New sources were required to comply on the first day of discharge.

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 City of Chandler local limits apply to non-domestic discharges in the Lone Butte WRP service area.

2.5 Compliance Sampling and Point(s) of Compliance

The permit identifies the parshall flume on the north side of the Aerospace Bldg as the location of the secured sampling point, designated in this report as IWD-19.

Federal Standards - Federal categorical pretreatment standards for metals, cyanide, toxic organics, and oil and grease apply end-of-process-after-treatment to all Federally-regulated discharges to the sewers. The sample point IWD-19 is a suitable end-of-process-after-treatment sample point representative of the day-to-day discharge of Federally-regulated wastewaters from Pimalco for all Federally-regulated parameters.

Local Limits - Local limits and the national prohibitions apply end-of-pipe to non-domestic flows. The sample point designated as IWD-19 is a suitable end-of-pipe sample point representative of the day-to-day non-domestic discharges from Pimalco.

Sampling Protocols – The national prohibitions are instantaneous-maximums comparable to samples of any length. Federal categorical pretreatment standards are daily-maximums comparable to 24-hour composites. The 24-hour composites can be replaced with single grabs or manually-composited grabs representative of the sampling day's discharge. The City of Chandler permit specifies these sampling protocols by parameter (Permit Part I.D). See Section 4.0 on page 12 and Appendix 2 on page 19.

2.6 Combined Federal Standards

The Federal standards for aluminum forming are combined with unregulated and dilution wastewaters following treatment to apply to IWD-19 using the combined wastestream formula for alternate mass limits in 40 CFR 403.6(e). See the example calculations in Appendix 2 on pages 20-21.

The adjusted Federal standards for combined flows are proportionally dependent on production rates. However, they are also dependent on the percentage of the discharge qualifying as regulated, unregulated, and dilution, and in particular the ratio of unregulated to regulated flows. For the purposes of this inspection report, these regulated and unregulated flows were estimated to account for 30% and 10% of the total discharge, respectively, with the remaining ~60% considered to be dilution flows. The mass-based and alternate concentration-based standards are increased by a multiplier in order to apply the Federal standards to the unregulated portion of the flow. As a result, even with the same 60% estimate for dilution flows, as the ratio tilts more toward increased unregulated flows, the combined standards applied to the overall discharge geometrically increase. This multiplier is 1.0 if there are no unregulated flows. It increases to 1.33 at the current 3:1 regulated to unregulated ratio, to 2.0 at a 1:1 ratio, and to 4.0 at a 1:3 ratio. As a result, the calculations are sensitive to this ratio. Pimalco and Chandler should identify each waste stream as regulated, unregulated, or dilution, and then verify these percentages.

2.7 Federal Prohibitions

The Federal standards in 40 CFR 403.6(d) and 403.17(d) prohibit dilution as a substitute for treatment, and the bypassing of any on-site treatment necessary to comply with standards, respectively. The City of Chandler permit establishes these prohibitions through incorporation of provisions against the dilution as a substitute for treatment (Permit Part II.A.8) and bypassing treatment necessary to comply (Permit Part IV.K.2-4).

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).

Sample results from Pimalco nearly always complied with the Federal standards for zinc, chromium, total cyanide, and total toxic organics. Also, since Pimalco always complied with the Federal total toxic organics standards, the alternate oil and grease standards do not apply to oil and grease sample results. Model flow reductions were in-place, and there were almost no significant sources of the regulated pollutants. Thus model best-available-technology treatment is unlikely to be needed to achieve and maintain compliance with the Federal standards. In particular, (1) the operations did not involve surface finishing, (2) all die cleaning wastewaters are hauled off-site for disposal, (3) the equipment cleaning pad and the oil reclaim filtering, as the only heavily contaminated sources, both involved pretreatment for the removal of oil, (4) cooling involved circulating cooling towers, and (5) all flows discharge through final oil water separation. As a result, the few Federal standards violations are likely an artifact of the domination of the combined discharge by unregulated domestic wastewaters. See Appendix 3 on page 22 for summaries of the sampling record and permit violations.

Requirements

- None.

Recommendations

- The two outdoor clean pads should be roofed or covered in some way to restrict the collection of storm water run-off into the discharge to the sewers.

- The identified sources of domestic sewage should be diverted downstream of the Pimalco compliance sampling point, IWD-19.

3.2 Best-Available-Technology Treatment and Flow Reductions

The design and operation of the treatment on-site and the flow reductions involved in the operations would be expected to result in consistent compliance with the Federal standards. The mass-based best-available-technology ("BAT") Federal standards are based on both model flow reductions and model treatment, normalized to site-specific production rates. At Pimalco, the flow reductions, in particular involving circulating quench cooling and filtered extrusion press leakage, are largely equivalent in design to the flow reduction models, while the on-site treatment is not.

The model BAT treatment should not be necessary because there were nearly no significant sources of the Federally-regulated pollutants discharging to the sewers. First, on-site operations do not involve the surface treatment of extrusions and drawn product. The most significant sources of the Federally-regulated pollutants expected at aluminum forming facilities come from surface treatment steps such as anodizing (*chromium*), chromium conversion coating (*chromium, cyanide),* zincating (*zinc*), and etching, cleaning, and deoxidation (*zinc, oil*). Second, all wastewaters from the die cleaning steps are collected for hauling to off-site disposal. Third, the equipment cleaning pad and the oil reclaim filtering, which were two of the very few heavily contaminated sources, both employed pretreatment for the removal of oils. Finally, all wastewaters discharged to the sewers were treated through oil water separation equivalent to the portion of the model BAT treatment for oil.

As a result, over the past five years beginning in October 2004, Pimalco has for the most part achieved consistent compliance with all Federal standards. The samples always or nearly always met standards for cyanide, toxic organics, chromium, and zinc, resulting in calculated average and 99th% peak concentrations of 0.032 and 0.077 mg/l chromium, 0.168 and 0.826 mg/l zinc, 0.017 and 0.053 mg/l total cyanide, and 0.094 and 0.420 mg/l total toxic organics. In addition, the average and 99th% peaks were 13.4 and 35.5 mg/l oil and grease.

- Chromium and Zinc – The statistical probability of violating Federal chromium and zinc standards was essentially 0% prior to the drop in production decommissioning of process in 2009. The few violations occurred after the drop in production, and proportional drop in the standards, that occurred without a proportional drop in the discharge flow rate. As a result, the violations appear to be an artifact of a resulting rise in the ratio of dilution to process-related flows in the final discharge through IWD-19. The Federal standards do not allocate loadings for the Federally-regulated pollutants to the dilution waters which nevertheless are likely to entrain trace levels of the pollutants.

- Total Cyanide and Toxic Organics – The statistical probabilities of violating the Federal standards for toxic organics and total cyanide are essentially 0% per sample.

- Oil and Grease – The Federal standards for oil and grease are alternates allowed by permit to replace the standard for total toxic organics. Since Pimalco consistently complies with the toxic organics standards, the Chandler permit does not and should not apply the alternate standards for oil and grease. However, if they were applied Pimalco would not consistently comply with the alternate standards primarily because oil water separation does not consistently remove free oils down to 5 – 15 mg/l range required by the Federal standards. Once again, a drop in the ratio of dilution to process-related flows in the final discharge would increase the concentration-based conversion of the Federal standards for oil and grease.

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. This prohibition applies when sample results for a diluted waste stream are below the Federal standards and the apparent compliance is used to justify untreated discharge. Two conditions need to be established in order to make a determination of non-compliance. First, some or all of the Federally-regulated wastewaters must discharge without undergoing BAT model treatment or its equivalent. Second, there must be excess water usage within the regulated process. The second condition can never happen in with Federal production-based standards since the mass-based allocations are based on BAT treatment and flow reductions, and do not apply to dilution waters. As a result, any dilution waters from dilutions sources or excess water usage cannot change the production-based Federal standards.

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 were no observed methods of bypassing at Pimalco. In particular, all waste streams were observed to discharge through treatment and the permitted compliance sample point.

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).

The sample record indicates that Pimalco always has complied with its local limits for a range of metals, anions, cyanide, toxic organics, oil and grease, and conventional pollutants. All Federal standards are more stringent than the corresponding local limits. See Appendix 3 on page 22 for summaries of the sample record and permit violations.

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 Chandler wastewater treatment plant through consistent compliance with its sludge and discharge limits.

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

High-Strength Organics - 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 the organics strength derived primarily from domestic sewage significantly less than typical domestic sewage.

Metals and Cyanide – There were no violations of any local limit and thus no evidence that any discharge resulted in or contributed to any interference in the operations of the Chandler sewer system and wastewater treatment plant.

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

Metals, Anions, and Cyanide – There were no violations of any local limits and thus no evidence that any discharge resulted in or contributed to any pass-through of pollutants through the Chandler wastewater treatment plant into the recharge aquifer or into the treatment plant sludge in violation of its Arizona Aquifer Protection permit.

Toxic Organics – There are no local limits for toxic organics.

Oil and Grease – There were no violations of the local limits for oil and grease and thus no evidence that any discharge resulted in or contributed to a pass-through of the Chandler wastewater treatment plant.

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

Corrosion - Sewer collection system interferences related to the formation of hydrogen sulfide and the resulting acidic disintegration of the sewers are possible but not expected. The wastewaters discharged to the sewers are not high-strength in biodegradable organics nor acidic in nature. The wastewaters feeding into the final oil water separator comprise pH neutral waste streams. There were no violations of the local limits for pH and dissolved sulfides and thus no evidence of discharge-related corrosive structural damage.

Flammability - Flammability would not be expected because sampling shows that the discharges to the sewer entrain negligible amounts of volatile organics.

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).

Permit Requirements – Pimalco has successfully fulfilled the self-monitoring requirements set forth in the Chandler permit. Over the past four fiscal years, the sample record shows that Pimalco (1) submitted sample results for all permit listed parameters at the required frequency, (2) collected all samples from the designated compliance sampling point, (3) correctly obtained 24-hour composites for metals and grabs for the other pollutants, and (4) followed appropriate chain-of-custody procedures.

Representativeness - The sample record also appears representative of the discharge to the sewers over the sampling day and the six-month reporting period. Quarterly sampling for the Federally-regulated pollutants ensures that the sample record accounts for the consistent contributions from the various sources. The frequency of sampling and self-monitoring appears to be adequate because most of the pollutants are present at concentrations well below the Federal standards and local limits. See Appendix 2 on page 19 for the self-monitoring and Chandler monitoring requirements for IWD-19, considered representative of the discharge.

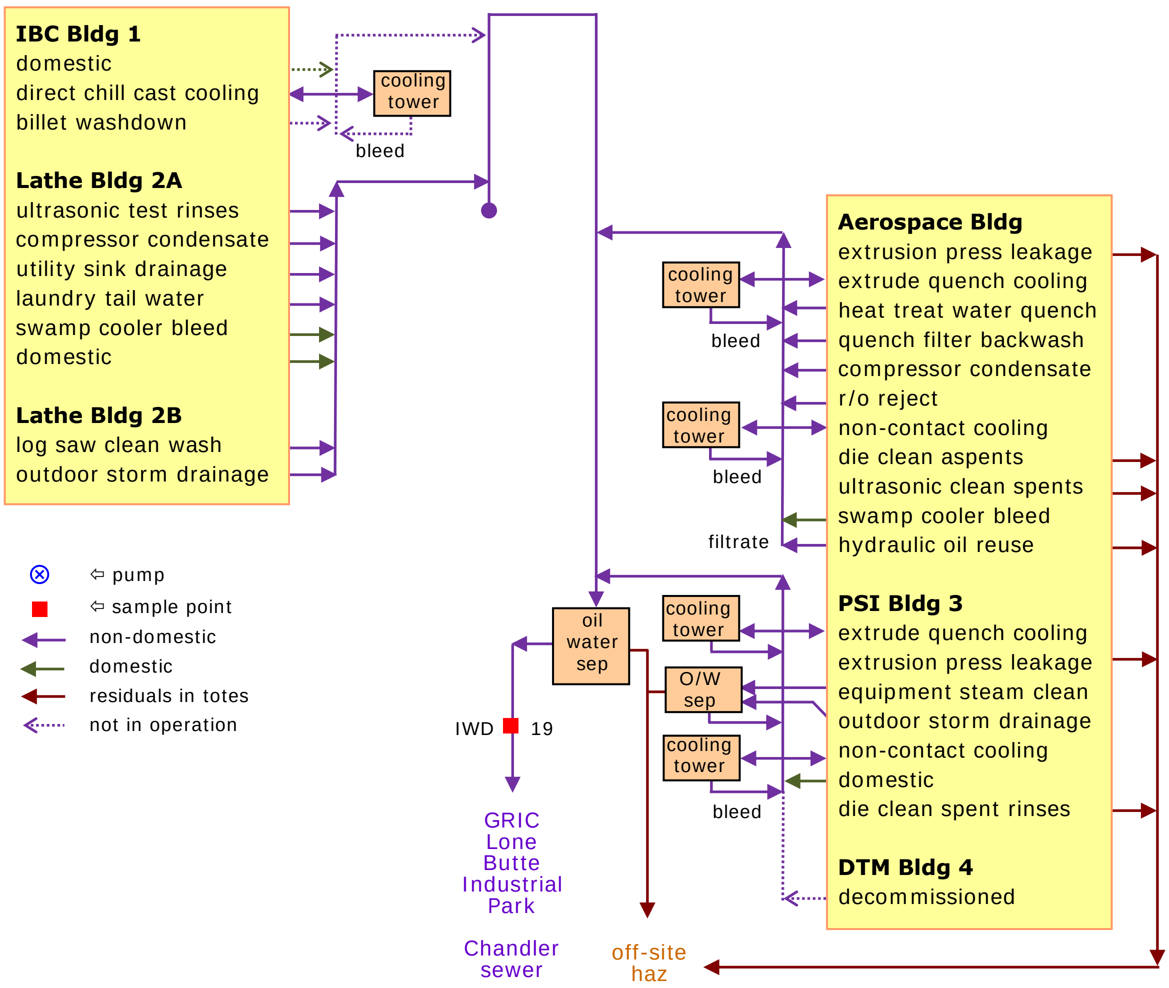
Requirements

- None.

Recommendations

- Self-certification statements should include copies of the hazardous waste manifests documenting the off-hauling of spents, slurries, and residuals.

Appendix 1
Pimalco - Configuration and Layout



Appendix 2
Sewer Discharge Standards and Limits for Pimalco @ IWD-19

Federal Categorical Standards and OCSD Local Limits

pollutants of concern (mg/l)	Fed stds d-max①	Fed stds mo-av①	Fed stds d-max②	Fed stds mo-av②	local lim instant	monitoring freq ④ discharger	district
arsenic	-	-	-	-	0.30	-	quarterly
boron	-	-	-	-	2.40	-	quarterly
Cadmium	-	-	-	-	0.40	-	quarterly
Chromium	0.308	0.126	0.106	0.043	4.40	quarterly	quarterly
copper	-	-	-	-	3.30	-	quarterly
fluoride	-	-	-	-	10.0	-	quarterly
lead	-	-	-	-	0.50	-	quarterly
Manganese	-	-	-	-	48.0	-	quarterly
Mercury	-	-	-	-	0.30	-	quarterly
nickel	-	-	-	-	3.70	-	quarterly
Selenium	-	-	-	-	1.20	-	quarterly
silver	-	-	-	-	0.90	-	quarterly
zinc	0.965	0.402	0.312	0.130	17.0	quarterly	quarterly
total cyanide	0.192	0.080	0.062	0.026	0.40	1/six-mos	quarterly
total toxic organics	0.508	-	0.185	-	-	1/six-mos	quarterly
oil+grease (mg/l)	28.1 ③	15.3 ③	6.70 ③	4.15 ③	100.0	1/six-mos	quarterly
total sulfides (mg/l)	-	-	-	-	0.50	-	quarterly
BOD (mg/l)	-	-	-	-	300	-	quarterly
TSS (mg/l)	-	-	-	-	350	-	quarterly
flow (gpd)	-	-	-	-	200000	quarterly	-
pH (s.u.)	-	-	-	-	5.5-11.0	1/six-mos	quarterly
explosivity	-	-	-	-	<10%LEL	-	⑤

① Federal standards based for 2005-2008. See page 20 for example calculations.
② Federal standards based for 2009. See page 21 for example calculations.
③ Alternate Federal standards in lieu of total toxic organics monitoring.
④ Recommended reductions in green. Recommended increases in red.
⑤ As part of periodic priority pollutant scans in order to identify changes in discharge quality

Appendix 2 (continued)
Example Calculations for Pimalco 2005-2008

Step 1 – Calculate the daily-maximum aluminum forming mass allocations for chromium

$$M_{467Cr} = P_{Ex\text{-}psns} \cdot (Cr_{ext\text{-}psns} + Cr_{leak\text{-}psns} + Cr_{press\text{-}psns}) + P_{Ex\text{-}pses} \cdot (Cr_{ext\text{-}pses} + Cr_{leak\text{-}pses} + Cr_{press\text{-}pses}) + P_{Cast} \cdot Cr_{cast\text{-}pses} + P_{Heat} \cdot Cr_{heat\text{-}pses} + P_{Draw} \cdot Cr_{draw\text{-}psns}$$

$$= [\,1123255 \cdot (0.13 + 0.11 + 0.76) + 162693 \cdot (0.15 + 0.65 + 0.90) + 3196456 \cdot 0.59 + 563290 \cdot 0.90 + 566638 \cdot 0.019\,] \times \frac{1\ \text{kg}}{2.2\ \text{lbs}} \times \frac{1\ \text{mo}}{30.4\ \text{days}}$$

$$= 56870\ \text{mg-Cr/day}$$

M_{467Cr}	=	Al Forming Stds (mg/day)
$P_{Ex\text{-}pses}$	=	PSES Extrude Prodxn (lbs/mo)
$P_{Ex\text{-}psns}$	=	PSNS Extrude Prodxn (lbs/mo)
P_{Cast}	=	PSES ChillCast Prodxn (lbs/mo)
P_{Heat}	=	PSES HeatTreat Prodxn (lbs/mo)
P_{Draw}	=	PSES Drawing Prodxn (lbs/mo)
$Cr_{ext\text{-}psns}$	=	D-max Cr 467.36 ExtrudeCore
$Cr_{ext\text{-}pses}$	=	D-max Cr 467.35 ExtrudeCore
$Cr_{leak\text{-}psns}$	=	D-max Cr 467.36 PressLeak
$Cr_{leak\text{-}pses}$	=	D-max Cr 467.35 PressLeak
$Cr_{cast\text{-}pses}$	=	D-max Cr 467.35 ChillCast
$Cr_{heat\text{-}pses}$	=	D-max Cr 467.35 SolnHeatTreat
$Cr_{press\text{-}psns}$	=	D-max Cr 467.36 PressHeat
$Cr_{press\text{-}pses}$	=	D-max Cr 467.35 PressHeat
$Cr_{draw\text{-}psns}$	=	D-max Cr 467.56 DrawCore

See Section 1.1 on page 3 for production rates. Calculations here use 4-yr avgs.

Step 2 – Calculate the daily-maximum combined standard for chromium

40 CFR 403.6(e)(ii)
Alternate Mass Limits at IWD-19

$$M_{IWD\text{-}19} = M_{467} \times \frac{Q_{IWD\text{-}19} - Q_{dilution}}{Q_{467}}$$

$$= 56870\ \text{mg/day} \times \frac{100\% - 60\%}{30\%}$$

$$= 75827\ \text{mg-Cr/day}$$

$M_{IWD\text{-}19}$	=	Combined Fed Limit (mg/day)
M_{467Cr}	=	Al Forming Stds (mg/day)
$Q_{IWD\text{-}19}$	=	Combined Flow (gpd)
Q_{467}	=	Al Forming Flow (gpd)
$Q_{dilution}$	=	Dilution Flow (gpd)

Step 3 – Convert to concentration limits for chromium applied to IWD-19

$$C_{IWD\text{-}19} = M_{IWD\text{-}19} \,/\, Q_{IWD\text{-}19}$$

$$= \frac{75827\ \text{mg}}{\text{day}} \times \frac{\text{day}}{65076\ \text{gal}} \times \frac{\text{gal}}{3.785\ \text{L}}$$

$$= 307.8\ \mu\text{g/l-Cr}$$

$C_{IWD\text{-}19}$	=	Combined Fed Limit (mg/l)
$M_{IWD\text{-}19}$	=	Combined Fed Limit (mg/day)
$Q_{IWD\text{-}19}$	=	Combined Flow (gpd)

Appendix 2 (continued)
Example Calculations for Pimalco 2009

Step 1 – Calculate the daily-maximum aluminum forming mass allocations for chromium

$$M_{467Cr} = P_{Ex\text{-}psns} \cdot (Cr_{ext\text{-}psns} + Cr_{leak\text{-}psns} + Cr_{press\text{-}psns}) + P_{Ex\text{-}pses} \cdot (Cr_{ext\text{-}pses} + Cr_{leak\text{-}pses} + Cr_{press\text{-}pses}) + P_{Cast} \cdot Cr_{cast\text{-}pses} + P_{Heat} \cdot Cr_{heat\text{-}pses} + P_{Draw} \cdot Cr_{draw\text{-}psns}$$

$$= [\,465649 \cdot (0.13 + 0.11 + 0.76) + 98719 \cdot (0.15 + 0.65 + 0.90) + 0 \cdot 0.59 + 141193 \cdot 0.90 + 0 \cdot 0.019\,]$$

$$\times \frac{1\text{ kg}}{2.2\text{ lbs}} \times \frac{1\text{ mo}}{30.4\text{ days}}$$

$$= 11372\text{ mg-Cr/day}$$

M_{467Cr}	=	Al Forming Stds (mg/day)
$P_{Ex\text{-}pses}$	=	PSES Extrude Prodxn (lbs/mo)
$P_{Ex\text{-}psns}$	=	PSNS Extrude Prodxn (lbs/mo)
P_{Cast}	=	PSES ChillCast Prodxn (lbs/mo)
P_{Heat}	=	PSES HeatTreat Prodxn (lbs/mo)
P_{Draw}	=	PSES Drawing Prodxn (lbs/mo)
$Cr_{ext\text{-}psns}$	=	D-max Cr 467.36 ExtrudeCore
$Cr_{ext\text{-}pses}$	=	D-max Cr 467.35 ExtrudeCore
$Cr_{leak\text{-}psns}$	=	D-max Cr 467.36 PressLeak
$Cr_{leak\text{-}pses}$	=	D-max Cr 467.35 PressLeak
$Cr_{cast\text{-}pses}$	=	D-max Cr 467.35 ChillCast
$Cr_{heat\text{-}pses}$	=	D-max Cr 467.35 SolnHeatTreat
$Cr_{press\text{-}psns}$	=	D-max Cr 467.36 PressHeat
$Cr_{press\text{-}pses}$	=	D-max Cr 467.35 PressHeat
$Cr_{draw\text{-}psns}$	=	D-max Cr 467.56 DrawCore

See Section 1.1 on page 3 for production rates. Calculations here use 2009 avgs.

Step 2 – Calculate the daily-maximum combined standard for chromium

40 CFR 403.6(e)(ii)
Alternate Mass Limits at IWD-19

$$M_{IWD\text{-}19} = M_{467} \times \frac{Q_{IWD\text{-}19} - Q_{dilution}}{Q_{467}}$$

$$= 11372\text{ mg/day} \times \frac{100\% - 60\%}{30\%}$$

$$= 15162\text{ mg-Cr/day}$$

$M_{IWD\text{-}19}$	=	Combined Fed Limit (mg/day)
M_{467Cr}	=	Al Forming Stds (mg/day)
$Q_{IWD\text{-}19}$	=	Combined Flow (gpd)
Q_{467}	=	Al Forming Flow (gpd)
$Q_{dilution}$	=	Dilution Flow (gpd)

Step 3 – Convert to concentration limits for chromium applied to IWD-19

$$C_{IWD\text{-}19} = M_{IWD\text{-}19}\ /\ Q_{IWD\text{-}19}$$

$$= \frac{15162\text{ mg}}{\text{Day}} \times \frac{\text{day}}{37892\text{ gal}} \times \frac{\text{gal}}{3.785\text{ L}}$$

$$= 105.7\ \mu\text{g/l-Cr}$$

$C_{IWD\text{-}19}$	=	Combined Fed Limit (mg/l)
$M_{IWD\text{-}19}$	=	Combined Fed Limit (mg/day)
$Q_{IWD\text{-}19}$	=	Combined Flow (gpd)

Appendix 3
Wastewater Discharge Quality for Pimalco from Oct 2004 – June 2009

Sample Record Summary

pollutants (µg/l)	effluent sampling results				violation rate		sample count
	mean	99th%	min	max	sample	period ①	
arsenic	3.9	13.4	<6.3	13	0/19	-	19
boron	242.1	401.6	150	410	0/19	-	19
Cadmium	<1.0	<3.0	<1	<3	0/19	-	19
Chromium	31.6	76.5	<10	94	0/32	**2/25**	32
copper	33.9	89.8	<10	100	0/19	-	19
fluoride	751.6	1251.6	400	1400	0/19	-	19
lead	<15.0	<15.0	<15	<15	0/19	-	19
manganese	12.9	29.6	<10	27	0/19	-	19
Mercury	<0.2	<0.2	<0.2	<0.2	0/19	-	19
nickel	3.8	16.4	<10	21	0/19	-	19
selenium	9.2	18.2	<1	16	0/19	-	19
silver	<10.0	<10.0	<5	<10	0/19	-	19
zinc	168.1	826.0	<50	1500	**1/32**	**1/25**	32
total cyanide	16.8	52.8	<10	89	0/28	0/25	28
total toxic organics	93.6	419.7	<5	460	0/27	-	27
oil+grease (mg/l) ②	13.4	35.5	5.0	47.0	0/25	-	25
dissolved sulfides (mg/l)	51.2	206.7	<40	210	0/19	-	19
BOD (mg/l)	38.8	89.0	7.0	87.0	0/19	-	19
TSS (mg/l)	37.4	90.6	10.0	95.0	0/19	-	19
flow (gpd)	65076	145048	15000	134454	0/23	-	23
pH (s.u.)	7.67 median		7.35 min - 8.22 max		0/19	-	19

Federal standard violations

sample dates	type	sampler	Fed standards / local limits ①		violations	days
Apr 2009	24-hr	IU	chromium – Fed mo-avg	0.043 mg/l	0.089	30
Feb 2009	24-hr	IU	chromium – Fed mo-avg	0.043 mg/l	0.058	28
01/22/09	24-hr	POTW	zinc – Fed d-max	0.312 mg/l	1.50	1
Jan 2009	24-hr	POTW + IU	zinc – Fed mo-avg	0.130 mg/l	0.865	31
10/09/08	24-hr	POTW	oil+grease – Fed d-max	28.1 mg/l	47.0	②
Oct 2008	24/grab	POTW + IU	oil+grease – Fed mo-avg	15.3 mg/l	38.0	②
Oct 2007	24-hr	IU	oil+grease – Fed mo-avg	15.3 mg/l	19.0	②
Jul 2007	grab	POTW	oil+grease – Fed mo-avg	15.3 mg/l	24.0	②
Oct 2004	24-hr	POTW	oil+grease – Fed mo-avg	15.3 mg/l	18.0	②
					total days of violation	**90**

① Monthly averages calculated by calendar month of both self-monitoring and Chandler sampling
② No violation of the alt Fed stds for oil and grease since TTO samples were in compliance.