UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Oct 08, 2004

In Reply Refer To: WTR-7

Larry McCulloch, Mfg Engr Manager
Lares Research
295 Lockheed Avenue
Chico, California 95928

Dear Mr. McCulloch:

Enclosed is the report for EPA's June 10 and 11, 2004, compliance sampling inspection of Lares Research. We request that you submit a short response to each specific finding in the numbered items 2.0 - 5.0 of this report by November 30, 2004.

This inspection was one of many that we conducted as part of our evaluation of the City's program to control non-domestic discharges into its sewers. EPA will issue an overall report to the City later this month. The main findings regarding Lares Research are summarized below:

1 The Chico permit has for the most part correctly applied the applicable Federal standards and local limits to Lares Research.

2 The handling of the metal finishing wastewaters for off-site disposal is excellent.

3 It is unlikely that the discharges can consistently comply with the Federal standards because the treatment in use falls short in design of the models used to set the standards. The untreated discharges are also expected to at times exceed the local oil & grease limit.

4 It is often more efficient to off-haul small volumes than to treat and discharge.

We thank you for your cooperation during our inspection. Please send copies of any submittal to the City of Chico as well as to us. If you have any questions, please feel free to contact me at (415) 972-3504 or by e-mail at arthur.greg@epa.gov.

Sincerely yours,

Original signed by:
Greg V. Arthur

Greg V. Arthur, Envr. Engr.
CWA Compliance Office

Enclosure

cc: Ron Manwill, City of Chico

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION 9

CLEAN WATER ACT COMPLIANCE OFFICE

NPDES COMPLIANCE EVALUATION INSPECTION REPORT

Industrial User:	Lares Research 295 Lockheed Avenue, Chico, California 95928 Metal Finishing (40 CFR 433)
Treatment Works:	Chico Water Pollution Control Plant (NPDES Permit CA0079081)
Dates of Inspection:	June 10 and 11, 2004

Inspection Participants:

US EPA:	Greg V. Arthur, CWA Compliance Office, (415) 972-3504
RWQCB:	No Representative
City of Chico:	Ron Manwill, Industrial Waste Inspector, (530) 895-4967
Lares Research:	Larry McCulloch, Mfg Engr Manager, (530) 345-1767 Peter LeDuc, (530) 345-1767

Report Prepared By:	Greg V. Arthur, Environmental Engineer September 30, 2004

Section 1

Introduction and Background

1.0 Scope and Purpose

On June 10 and 11, 2004, EPA conducted a compliance sampling inspection of Lares Research in Chico. 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 points;
- Consistent compliance with the standards; and
- Fulfillment of Federal self-monitoring requirements.

Lares Research is one of three significant industrial users ("SIUs") and three other industries in Chico service area whose compliance was assessed as part of EPA's 2004 evaluation of the Chico pretreatment program. Chico and Lares Research received individual reports. The inspection participants are listed on the title page. Arthur conducted the inspection on June 10 and collected samples on June 11.

1.1 Process Description

Lares Research manufactures dental equipment, such as high-speed drills and dental laser systems. Lares Research also repairs dental equipment. The bar stock used in manufacturing parts consists of stainless steel, brass, and aluminum, as well as some titanium for prototypes. The operations primarily involve machining using both water-based and neat oil coolants. Machine shop operations include turning, CNC turning, grinding, and wet and dry centerless grinding. The secondary operations include small vibratory deburring units, and a small parts washer, as well as bench scale-sized passivation, alodining, black oxide coating, and alcohol/acetone parts degreasing, all performed under a drain-blind laboratory hood. The operations began at 295 Lockheed Avenue in Chico in 1990.

1.2 Waste Streams

The secondary finishing operations generate a small volume of wastewater for discharge to the sewers. These wastewaters comprise vibratory deburring tailwater, cleaning sink drainage, and parts washer overflow and spents. The secondary finishing operations also generate spent solutions and rinse waters from the bench scale black oxide, alodining, passivating, and degreasing steps, all of which are hauled off-site for disposal. The

machining operations generate spent water-based and neat oil coolants which are also hauled off-site to Chico Drain and Oil for disposal and recovery.

1.3 Wastewater and Waste Handling

Lares Research discharges its wastewater to the sewers through a small industrial wastewater treatment unit (IWT) that removes solids and organic contaminants. The vibratory deburring tailwaters, cleaning sink drainage, and parts washer drainage discharge through a canister filter, small sump, and a cartridge filter prior to filling a holding tank, named Tank 7. The parts washer soap spents are treated through ultrafiltration prior to filling Tank 7 while the parts washer rinsing overflows fill Tank 7 untreated. The contents of Tank 7 drain through a cartridge carbon filter for discharge into a floor drain to the sewers through compliance sampling point IWD-1. The ultrafiltration backwash is hauled off-site for disposal. DI water columns are changed-out by the vendor. See Appendix 1.

The wastestreams discharged to the sewers through the compliance sampling point, IWD-1, are the following:

- vibratory deburring tailwaters
- drainage from cleaning sink located in the finishing area of the facility
- parts washer spent soaps
- parts washer circulating rinse water overflows

The waststreams hauled-off site are the following:

- ultrafiltration backwash
- spent black oxide solutions and rinses
- spent alodining solution and rinses
- spent passivation solution and rinses
- spent water-based machining coolant to recycler
- spent neat oil machining coolant to recycler
- centerless wet grinding spents to recycler

1.4 Wastewater Discharge Permitting

Chico issued issued permit No. 006 to Lares Research authorizing the discharge of process wastewaters to the sewers through one sewer inlet. A tap on the wastewater discharge line from the cartridge carbon filter to a floor drain leading to the sewers serves as the compliance sample point, referred to in this report as IWD-1. The permit establishes limits and self-monitoring requirements for IWD-1. The permit also specifies sampling protocols and includes the general provisions of the Chico municipal code (§15.40.020) that apply to all non-domestic discharges to the Chico sewers.

Section 2

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.

2.0 Summary

The Federal categorical pretreatment standards in 40 CFR 433 for metal finishing apply to the process wastewater discharges from Lares Research through IWD-1. The Chico permit correctly applies the Federal standards and local limits. The application of Federal categorical standards, national prohibitions and local limits was determined through visual inspection. See Appendix 2 for the Federal standards, local limits and national prohibitions.

Requirements

- None.

Recommendations

- The permit should apply narrative prohibitions against causing adverse impacts to the Chico sewerage works.

2.1 Classification by Federal Point Source Category

Lares Research qualifies as a metal finisher subject to the Federal standards in 40 CFR 433 for new sources ("psns") in 40 CFR 433.17 because operations began after 1983. Federal standards are self-implementing which means they apply irrespective of whether they are implemented in a permit. The Federal rules in 40 CFR 403.6(e) also define domestic sewage, non-contact cooling waters, and other non-contact wastewaters to be dilution waters. The non-domestic sewer discharges from Lares Research fall into the following classifications:

Type of Non-Domestic Wastewater	Sample Point	Classification
• vibratory deburring tailwater	IWD-1	433 psns
• cleaning sink drainage	IWD-1	unregulated
• parts washer spents	IWD-1	433 psns
• parts washer rinse overflows	IWD-1	433 psns

Section 2 – Sewer Discharge Standards and Limits

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 sewerage 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 Chico local limits apply to non-domestic discharges in its service area.

2.3 Federal Categorical Pretreatment Standards
Metal Finishing - 40 CFR 433

Applicability - Under 40 CFR 433.10(a), the metal finishing standards apply to the process wastewaters from Lares Research because the finishing steps involve chemical coating (passivation, alodining, black oxide). 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 40 other on-site operations, such as cleaning (parts washing), machining, grinding, tumbling (deburring), and polishing, associated with metal finishing and specifically listed in 40 CFR 433.10(a). There is no minimum cut-off. In other words, if a core operation is performed, no matter how small or infrequently, the standards apply to discharges from any of the core or associated operations. The application of the standards does not depend on whether a core operation discharges wastewaters to the sewers, only on whether any of them are performed on-site.

Standards - The standards for new sources in 40 CFR 433.17 for the metal finishing wastewater discharges at Lares Research to the sewers follow below.

New Source ("psns") Standards from 40 CFR 433.17

(in mg/l)	Cd	Cr	Cu	Pb	Ni	Ag	Zn	CN(t)	CN(a)	TTO
Daily-Max	0.11	2.77	3.38	0.69	3.98	0.43	2.61	1.20	0.86	2.13
Month-Avg	0.07	1.71	2.07	0.43	2.38	0.24	1.48	0.65	0.32	-

Under 40 CFR 433.12(c), cyanide standards must be adjusted to account for dilution from non-cyanide bearing wastestreams. Alodining spents and rinses constitute the only cyanide bearing wastestreams at Lares Research. However, the alodining wastewaters are not discharged to the sewers. At facilities without cyanide-bearing discharges to the sewers, unadjusted cyanide standards apply by default. Amenable cyanide standards do not apply at because Lares Research does not treat for cyanide.

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 and 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 - The Federal metal finishing standards at IWD-1 do not have to be adjusted to account for dilution or multiple Federal categories because all of the wastewaters through this compliance sampling points either qualify as Federally-regulated under the metal finishing or are unregulated.

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

2.4 Point(s) of Compliance

See section 1.5 for the description and location of IWD-1. Federal categorical pretreatment standards apply end-of-process-after-treatment to all Federally-regulated flows at IWD-1. Local limits and national prohibitions apply end-of-pipe to all non-domestic flows from Lares Research at IWD-1.

2.5 Compliance Sampling

Federal standards are daily-maximums and are comparable to 24-hour composite samples collected either manually or automatically to be representative of the sampling day's operations. At IWD-1, since the Federally-regulated wastewaters discharge in batches as Tank 7 is drained through the carbon filter, the Federal standards are comparable to grab samples. Local limits and the national prohibitions are instantaneous-maximums and are comparable to samples of any length including single grab samples.

2.6 Pollutants of Concern

Pollutants of Concern - The permit appropriately advances local limits and self-monitoring requirements for cadmium, chromium, copper, lead, molybdenum, nickel, oil & grease, and zinc, since the discharge includes these pollutants and Chico is regulated for them by the NPDES permit or the Federal sludge standards. The Chico permit also appropriately advances local limits for pH since there are alkaline. There are no other identified pollutants of concern.

Other Pollutants – The permit advances local limits for beryllium, silver, 1,1,1-trichloro-ethane which are present in the discharge but for which Chico is not regulated by the NPDES permit nor the Federal sludge standards. The permit also advances local limits for antimony, arsenic, benzene, carbondisulfide, chloroethane, chloroform, chloromethane, cyanide, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, dichloromethane, ethylbenzene, hexachloroethane, mercury, selenium, tetrachloroethylene, and toluene which are not present in the discharge.

Section 3

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).

3.0 Summary

Even though there have been no violations since 2002, the 2001-2004 sample record indicates that it is statistically unlikely that the process-related wastewaters discharged to the sewers consistently comply with the Federal standards. The likely reason is that the treatment in use falls short in design of the model treatment used to set the Federal standards. It is often more efficient to off-haul small discharges than to treat and discharge them. The sample record appears to be usable to determine compliance with the Federal standards.

Requirements

- Lares Research must consistently comply with the Federal standards for zinc and lead.

Recommendations

- If there is no substantive reasons for the better sampling results since 2002, Lares Research should (1) install chemically-aided settling to discharge only clear decant to the sewers or (2) cease the discharge altogether through off-hauling of all wastewaters.

- The unused floor drain near the vibratory deburring area should be sealed.

3.1 Sampling Records

The 2001-2004 sample record for Lares Research consists of three representative samples per year from IWD-1 for toxic metals, cyanide, volatile organics, semi-volatile organics, and oil & grease. The sample record includes a 2004 EPA sample collected from IWD-1 for toxic metals, cyanide, and minerals. The sample record also includes follow-up samples collected after violations for specific pollutants. All samples from IWD-1 appear to be usable for

determining compliance with the Federal standards. See Appendix 3 for a summary of the sampling record and Appendix 4 for the EPA sampling results.

3.2 Compliance with Metals Standards

Lares Research would not be expected to consistently comply with the Federal standards for toxic metals at IWD-1 because the metals removal steps fall short in design to the models used in setting the Federal standards. Lares Research should not need to provide the part of the model treatment involving the precipitation of metals-bearing solids from dissolved metals in solution, because the deburring and parts washing steps would not be expected to generate dissolved metals. However, the model treatment follows precipitation with chemically-aided settling which removes metal precipitates far more efficiently than the various filters in use at Lares Research (bag, paper cartridge, ultra filtration for spents, carbon for organics).

Although the last violations for zinc were in 2002, the average and calculated 99th% peak are 2.26 and 9.23 mg/l, which results in a ~40% and ~60% statistical chance of violating the daily-maximum and monthly-average Federal standards. For lead, the average and calculated 99th% peak are 0.20 and 0.86 mg/l, which results in ~5% and ~25% statistical chance of violating the daily-maximum and monthly-average Federal standards. The sample peaks for the other Federally-regulated metals were 0.03 mg/l cadmium, 0.19 mg/l chromium, 0.16 mg/l copper, 0.05 mg/l nickel, <0.01 mg/l silver, which are all below the Federal standards.

Other controls considered equivalent in performance to the model best-available-technology treatment for metal finishing include evaporation with slurry off-hauling, dedicated ion exchange columns, or off-hauling all solutions.

3.3 Compliance with Cyanide Standards

Lares Research would be expected to consistently comply with the Federal standards for cyanide at IWD-1 because none of the wastewaters discharged to the sewers are cyanide-bearing. The average and calculated 99th% peaks for cyanide are <0.01 and 0.02 mg/l which is low enough to result in a negligible <1% chance of exceeding Federal standards.

3.4 Compliance with Toxic Organics Standards

Lares Research would be expected to consistently comply with the Federal standards for toxic organics because the only potential source of organics is tramp oil washed off machined parts in the parts washer. The presence of tramp oil is indicated by oil & grease in the samples and the concurrent samples for toxic organics were all well below the standards. The oil & grease average was 133 mg/l, while the average and calculated 99th% peak for toxic organics are <0.01 and 0.02 mg/l which is low enough to result in a negligible <1% chance of exceeding Federal standards.

Section 3 – Compliance with Federal Standards

3.5 Dilution as a Substitute for Treatment

There is no evidence of "dilution as a substitute for treatment" because all wastewaters are only generated on-demand.

3.6 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 no evidence of bypassing although the configuration of wastewater handling is not designed to eliminate the opportunity to bypass. In particular, the inlets to the sewers are open floor drains into which wastewaters can be diverted, and one of the floor drains is not in use.

Section 4

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).

4.0 Summary

The discharges nearly always comply with the local limits. The rare violations would likely be corrected through the efforts taken to achieve consistent compliance with the Federal standards. See Appendix 3 for the sampling summary for IWD-1 and Appendix 4 for EPA sampling results.

Requirements

- Lares Research must consistently comply with its zinc and oil & grease local limits.

Recommendations

- Non-flammability should be demonstrated using the closed cup flashpoint test.

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 evaluation did not include an evaluation of whether achievement of the national objectives in 40 CFR 403.2 have been demonstrated by consistent compliance with the sludge and discharge limits at the Chico wastewater treatment plant. That analysis will be available later as part of the EPA evaluation report for Chico expected for release in late October 2004.

4.2 Compliance with Toxic Metals, Oil & Grease, and Other Pollutants

Toxic Metals – Ten of 13 samples (77%) complied with the local limits for toxic metals. Three samples simultaneously exceeded the local limit and the Federal standards for zinc, but met the local limits for the other metals. It would be expected that any corrective action to achieve consistent compliance with the Federal standards would also result in compliance with the local limit for zinc.

Oil and Grease – Ten of 11 samples (91%) complied with the local limits for oil & grease. It is likely that emusified oils make up much of the oil & grease in the wastewater since the parts washer involves alkaline soap. As a result, improving the oil removals would necessitate emulsion breaking through either acidification or heat. Achieving consistent compliance with the Federal standards through off-hauling would of course achieve compliance with the oil & grease local limits.

Other Pollutants – All eleven samples (100%) complied with the local limit for total cyanide. All ten (100%) samples complied with the local limits for various toxic organics. The locally-regulated toxic organics detected in at least one sample were 1,1-dichloroethane, 1,1,1-trichloroethane, and bis(2-ethylhexyl)phthalate.

4.3 Local Limits for Solvents and
The National Prohibition Against Flammability

Flammability is not expected to be a risk because of an expected lack of organic solvents in the waste streams and the expected emulsification of the removed oils from the parts washer. However, there are no sampling results for closed cup flashpoint that would demonstrate that the removed oils are not themselves flammable in the sewers.

4.4 Local Limits for pH and
The National Prohibition Against Corrosive Structural Damage

The discharges do not involve acidic wastewaters nor the introduction of acids for treatment. As a result, the discharges are not expected to pose a risk of causing corrosive structural damage to the Chico sewers.

Section 5

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) & 403.12(h).

5.0 Summary

The sample record may not satisfy the Federal minimum requirement for Lares Research to self-monitor all process wastewaters twice per year. There are three separate wastestreams generated by process operations each on independent schedules and each of which may or may not be accounted for two times per year in the sample record. The only parameter of concern not evident in the sample record is pH.

Requirements

- If operating schedules make it impossible to obtain samples representative of all wastewaters, then two separate samples per year for all regulated pollutants must be collected for each wastestream (parts wash overflow, parts wash spents, deburring tailwaters).
- Composite sampling must be performed if the sampling day's discharge exceeds the holding capacity of Tank 7.

Recommendations

- Lares Research should submit a toxic organics management plan for the discharge under the requirements of 40 CFR 433.12.
- Final discharge to IWD-1 should be from a holding tank large enough to impound a week's worth of wastewaters.

5.1 Federal Minimum Self-Monitoring Requirements

Sampling Frequency – Qualifying for the minimum frequency requires each sample to be representative of the sampling day and the sample record to be statistically representative over the reporting period, which is every six months for IWD-1 as required by the Chico permit to Lares Research. The sample record would meet the first qualifier if its discharges

through Tank 7 are less than 100 gallons per day. The sample record would only meet the second qualifier if the samples are collected when all three wastestreams are generated (parts washer overflows, parts washer spents, deburring tailwaters). It may be possible to collect samples when the process operations are generating all three wastestreams, however Lares Research would have to provide some sort of certifying statement to that effect in the self-monitoring reports. If the operating schedules make it impossible to collect combined samples, then separate samples from IWD-1 accounting twice per year for each wastestream would have to be obtained. Combined samples would become representative with the installation of a holding tank before or after the carbon filter large enough to impound a week's worth of wastewaters.

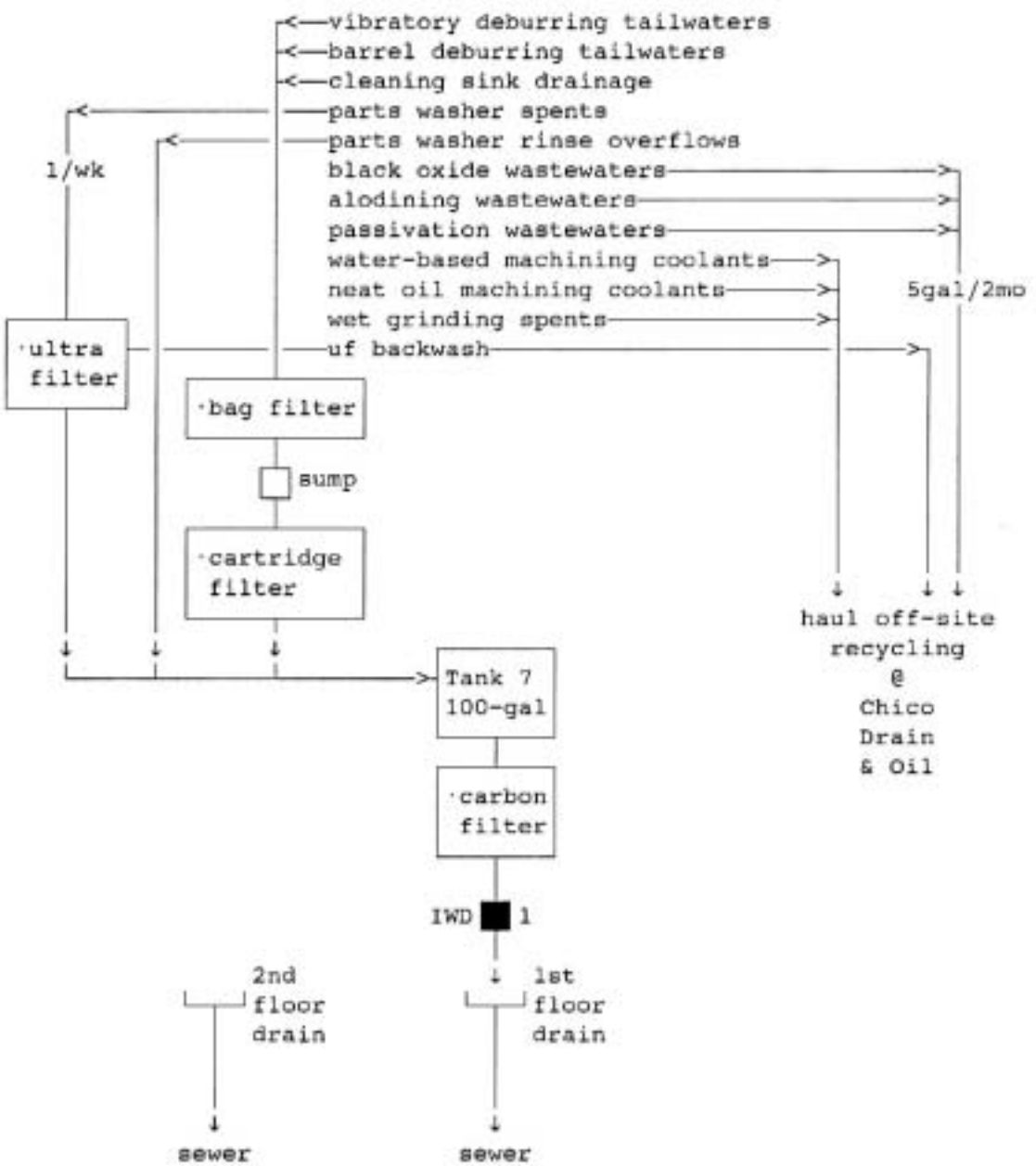
Pollutants – The samples must be for the Federally-regulated pollutants (*cadmium, chromium, copper, lead, nickel, silver, zinc, cyanide, total toxic organics*) and for the other locally-regulated pollutants of concern (*pH, molybdenum, oil & grease*).

5.2 Self-Certifications

The Federal standards allow self-certifications twice per year instead of self-monitoring at IWD-1 for total toxic organics with the submittal of a toxic organics management plan under 40 CFR 433.12. The "TOMP" would have to state that there is no opportunity for any of the toxic organics to be discharged because they are not used on-site, or physically separated from the sewer system.

Appendix 1

Lares Research, Chico, California
Schematic of the Wastewater Collection and Treatment



Appendix 2

Clean Water Act Requirements - Lares Research, Chico
Deburring and Parts Washing @ IWD-1

Specific Numeric Limits (mg/l)	Fed Cat Stds @ IWD-1 only d-max	mo-av	Nat'l a/ Prohib inst	Local Limits inst	
cadmium	0.11	0.07	-	0.17	
chromium	2.77	1.77	-	1.71	
copper	3.38	2.07	-	2.6	
lead	0.69	0.43	-	1.55	
nickel	3.98	2.38	-	1.19	
silver	0.43	0.24	-	1.74	
zinc	2.61	1.48	-	3.03	
cyanide-total	1.20	0.65	-	0.29	
oil+grease	-	-	-	300.	
benzene	-	-	-	0.13	
total toxic organics	2.13 b/	-	-	-	
pH min (s.u.)	-	-	5.0	5.0	
pH max (s.u.)	-	-	-	11.5	
closed cup flashpoint	-	-	≥140°F	-	
Regulations	·40 CFR 433 pens		·Muni Code c/ Chapt 15.40.060 ·40 CFR 403.5		

a/ National prohibitions and Chico local limits also include narrative prohibitions against pass-through, interference, sludge contamination, obstruction, toxic gases/fumes, fire/explosion hazard, or causing heat >104°F at the municipal wastewater treatment plant

b/ Federal standards allow self-certification to following an approved toxic organics management plan in lieu of self-monitoring for total toxic organics

c/ Additional Chico local limits for the following pollutants not present in the discharge -- antimony, arsenic, beryllium, carbon disulfide, chloroethane, chloroform, chloromethane, cyanide, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, dichloromethane, ethylbenzene, hexachloroethane, mercury, silver, tetrachloroethylene, toluene

Appendix 3

Discharge Quality at IWD-1
Lares Research, Chico

Pollutants (µg/l)	Jan-2001 to Aug-2004 mean	99%*	max	Fed-Violations-Local d-max	mo-av	inst	sampl count
aluminum			220	ns	ns	ns	1
antimony	<1.0	<1.0	<1.0	ns	ns	0/11	11
arsenic	<1.0	<1.0	<1.0	ns	ns	0/11	11
barium			5.1	ns	ns	ns	1
beryllium	3.1	26.0	33.	ns	ns	0/11	11
cadmium	2.9	20.3	25.	0/11	0/11	0/11	11
chromium	31.9	191.0	230	0/11	0/11	0/11	11
cobalt			2.4	ns	ns	ns	1
copper	45.4	156.5	167	0/11	0/11	0/11	11
cyanide	3.2	15.1	16.	0/11	0/11	0/11	11
iron			130	ns	ns	ns	1
lead	204.4	862.1	1010	→2/15	→2/13	0/15	15
manganese			12.	ns	ns	ns	1
mercury	<0.03	<0.03	<0.03	ns	ns	0/11	11
molybdenum			0.5	ns	ns	ns	1
nickel	14.4	49.0	49.	0/11	0/11	0/11	11
selenium	<1.0	<1.0	<1.0	ns	ns	0/11	11
silver			<1.0	0/11	0/11	0/11	11
TTO (tox organics)	3.4	20.9	25.	0/10	0/10	0/10	10
zinc	2255	9227	9780	→3/13	→4/13	→3/13	13
(mg/l)	mean	99th%	max	d-max	mo-av	inst	count
boron			17.0	ns	ns	ns	1
chloride			2.7	ns	ns	ns	1
hardness			3.1	ns	ns	ns	1
oil & grease	133.3	396.8	370	ns	ns	→1/11	11
phosphorus			0.5	ns	ns	ns	1
sodium			32.0	ns	ns	ns	1
sulfates			1.0	ns	ns	ns	1
TDS (dsslvd solids)			180	ns	ns	ns	1

ns no standard
* Computed statistics

→ Computed Statistical Probability of Violation

limits	mean	std dev	probability	percent
Fed-Pb (dmax)	µ = 204.4	σ = 284.7	α(690) = 0.0440	4%
Fed-Pb (moav)	µ = 216.6	σ = 303.7	α(430) = 0.2412	24%
Fed-Zn (dmax)	µ = 2255	σ = 3018	α(2610) = 0.4532	45%
Fed-Zn (moav)	µ = 2255	σ = 3018	α(1480) = 0.6014	60%
Loc-Zn (inst)	µ = 2255	σ = 3018	α(3030) = 0.3986	40%
Loc-O&G (inst)	µ = 133.3	σ = 396.8	α(300) = 0.3372	34%

Appendix 4

Sampling Results - Lares Research, Chico
June 11, 2004

Sample Results (mg/l)	Lares Research @ IWD-1	Lares Research @ IWD-1	Chico WWC Influent @ IWD-CH1	Chico WCP Influent @ IWD-CH1
aluminum	0.220	-	0.810	0.880
antimony	<0.0010	-	<0.0010	<0.0010
arsenic	<0.0005	-	0.00068	0.00080
barium	0.0051	-	0.0310	0.0330
beryllium	<0.0005	-	<0.0005	<0.0005
cadmium	<0.0010	-	<0.0010	<0.0010
chromium	0.0026	-	0.0021	0.0022
cobalt	0.0024	-	<0.002	<0.002
copper	0.015	-	0.0082	0.0110
iron	0.130	-	0.820	0.880
lead	0.032	-	0.0025	0.0028
manganese	0.012	-	0.0200	0.0210
mercury	<0.00003	-	0.00026	0.00037
molybdenum	0.00052	-	0.0016	0.0020
nickel	0.0010	-	0.0031	0.0029
selenium	<0.0010	-	0.00093	0.00089
silver	<0.0005	-	0.0008	0.0010
vanadium	<0.020	-	0.020	0.020
zinc	0.330	-	0.086	0.092
cyanide-total	<0.010	<0.010	-	-
hardness	3.1	-	140	140
boron	17.0	-	0.200	0.200
sodium	32.0	-	82.0	82.0
chloride	2.7	-	-	-
ammonia as N	-	-	-	-
nitrate as N	-	-	-	-
oil & grease	-	-	-	-
phosphorus-total	0.46	-	-	-
sulfate	0.95	-	-	-
total dissolved solids	180	-	520	490
pH (s.u.)	-	-	-	-
EC (µmohs/cm)	-	-	-	-
closed cup flashpoint (°F)	-	-	-	-
Sample Number	CH004	CH007	CH009	CH011
Date	06/11/04	06/11/04	07/06/04	07/06/04
Type	grab	duplicate	4-h comp	dupe 009

All samples collected, kept in custody, and delivered to the laboratory by Greg V. Arthur. Samples analyzed by EPA Richmond Lab. Sampling documentation including chain of custody and quality control results are part of the April 2004 pretreatment program evaluation report for Yuba City.

Appendix 5

Definition of Total Toxic Organics - 40 CFR 433.11(3)

Total toxic organics is the summation of all quantifiable values greater than 0.010 mg/l for the following toxic organics:

acenaphthene	4-chlorophenyl phenyl ether	chrysene
acrolein	4-bromophenyl phenyl ether	acenaphthylene
acrylonitrile	bis(2-chloroisopropyl) ether	anthracene
benzene	bis(2-chloroethoxy) methane	1,12-benzoperylene
benzidine	methylene chloride	fluorene
carbon tetrachloride	methyl chloride	phenanthrene
chlorobenzene	methyl bromide	1,2,5,6-dibenzanthracene
1,2,4-trichlorobenzene	bromoform	indeno(1,2,3-cd)pyrene
hexachlorobenzene	dichlorobromomethane	pyrene
1,2-dichloroethane	chlorodibromomethane	tetrachloroethylene
1,1,1-trichloroethane	hexachlorobutadiene	toluene
hexachloroethane	hexachlorocyclopentadiene	trichloroethylene
1,1-dichloroethane	isophorone	vinyl chloride
1,1,2-trichloroethane	naphthalene	aldrin
1,1,2,2-tetrachloroethane	nitrobenzene	dieldrin
chloroethane	2-nitrophenol	chlordane
bis(2-chloroethyl)ether	4-nitrophenol	4,4-DDT
2-chloroethyl vinyl ether	2,4-dinitrophenol	4,4-DDE
2-chloronaphthalene	4,6-dinitro-o-cresol	4,4-DDD
2,4,6-trichlorophenol	n-nitrosodimethylamine	alpha-endosulfan
parachlorometa cresol	n-nitrosodiphenylamine	beta-endosulfan
chloroform	n-nitrosodi-n-propylamine	endosulfan sulfate
2-chlorophenol	pentachlorophenol	endrin
1,2-dichlorobenzene	phenol	endrin aldehyde
1,3-dichlorobenzene	bis(2-ethylhexyl) phthalate	heptachlor
1,4-dichlorobenzene	butyl benzyl phthalate	heptachlor epoxide
3,3-dichlorobenzidine	di-n-butyl phthalate	alpha-BHC a/
1,1-dichloroethylene	di-n-octyl phthalate	beta-BHC
1,2-trans-dichloroethylene	diethyl phthalate	gamma-BHC
2,4-dichlorophenol	dimethyl phthalate	delta-BHC
1,2-dichloropropane	1,2-benzanthracene	PCB-1242 b/
1,3-dichloropropylene	benzo(a)pyrene	PCB-1254
2,4-dimethylphenol	3,4-benzofluoranthene	PCB-1221
2,4-dinitrotoluene	11,12-benzofluoranthene	PCB-1232
2,6-dinitrotoluene		PCB-1248
1,2-diphenylhydrazine		PCB-1260
ethylbenzene		PCB-1016
fluoranthene		Toxaphene
		2,3,7,8-tetrachlorodibenzo-p-dioxin

a/ hexachlorocyclohexane b/ polychlorinated biphenyls