



AD-A279 641



**WASTEWATER CHARACTERIZATION SURVEY,
HAYWARD AIR NATIONAL GUARD STATION
(ANGS), CALIFORNIA**

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February 1994

Final Technical Report for Period 29 March 1993 - 7 April 1993

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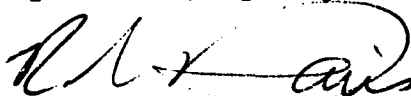
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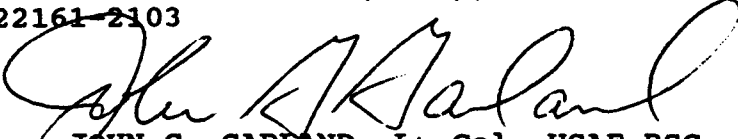
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REPORT DOCUMENTATION PAGEForm Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE February 1994	3. REPORT TYPE AND DATES COVERED Final 29 March 1993 - 7 April 1993	
4. TITLE AND SUBTITLE Wastewater Characterization Survey, Hayward Air National Guard Station (ANGS), California			5. FUNDING NUMBERS	
6. AUTHOR(S) Robert P. Davis				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Armstrong Laboratory (AFMC) Occupational and Environmental Health Directorate Bioenvironmental Engineering Division 2402 E Drive Brooks Air Force Base, TX 78235-5114			8. PERFORMING ORGANIZATION REPORT NUMBER AL/OE-TR-1993-0188	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) A wastewater characterization survey was conducted at Hayward ANGS, California, from 29 March - 7 April 1993 by personnel from the Water Quality Branch of Armstrong Laboratory. The purpose of the survey was to identify and characterize the wastewater, analyze sediments from oil/water separators for hazardous waste characteristics, and perform dye studies at the Vehicle Maintenance Battery shop and washrack. During the period of the survey, the station's discharge to the city of Hayward had significant levels of chloroform and 1,4-dichlorobenzene. With the exception of chloroform and 1,4-dichlorobenzene, all quantifiable levels of pollutants discharged to the city of Hayward were below the maximum discharge requirements.				
14. SUBJECT TERMS Wastewater Characterization, Hayward ANGS, California chloroform, 1,4-dichlorobenzene, oil and grease, metals, biochemical oxygen demand, chemical oxygen demand			15. NUMBER OF PAGES 114	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL	

TABLE OF CONTENTS

	<u>PAGE</u>
INTRODUCTION.....	1
DISCUSSION.....	1
Background.	1
Wastewater Sources, Collection and Treatment.....	1
Sampling Strategy.....	2
Sampling Methods.....	2
Water Quality Standards.....	3
Field Quality Assurance/Quality Control.....	4
Armstrong Laboratory Quality Assurance/ Quality Control.....	4
Sampling Site Descriptions.....	5
RESULTS.....	6
Dye Study Results	7
Quality Assurance/Quality Control Results.....	7
Background Drinking Water Results.....	8
Sample Results by Sample Site.....	8
CONCLUSIONS AND RECOMMENDATIONS.....	11
REFERENCES.....	13
APPENDIXES:	
A REQUEST LETTER.....	15
B CITY OF HAYWARD WASTEWATER DISCHARGE REGULATIONS.....	19
C SAMPLING STRATEGY AND MAP	53
D SAMPLE METHOD, PRESERVATION AND HOLDING TIME.....	61
E QUALITY ASSURANCE/QUALITY CONTROL.....	63
F HAZARDOUS MATERIAL DATA FOR SITE 10.....	69
G SAMPLING RESULTS.....	81

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TABLES

<u>Table No.</u>	<u>PAGE</u>
1 City of Hayward Maximum Requirements for Wastewater Discharge.....	3
2 Significant Daily Sampling Notes.....	6
3 Strength of Typical Domestic Sewage Parameters.....	8

[In Appendixes]

<u>Table No.</u>	<u>PAGE</u>
D-1 Wastewater Analyses and Preservation Methods.....	62
E-1 Results of Spike Sample Analyses.....	64
E-2 Results of Duplicate Sample Analyses.....	65
E-3 Results of Equipment and Reagent Blank Sample Analyses.....	67
G-1 Results for Site 1, Manhole Located in the Street West of the 216th Gas Station, Bldg 20.....	83
G-2 Results for Site 2, 2'X 4' Pit located at the 216th Gas Station, Bldg 20.....	86
G-3 Results for Site 3, The 216th Vehicle Washrack.....	90
G-4 Results for Site 4, Manhole located in the street in front of the 216th Vehicle Maintenance Shop, Bldg 8.....	92
G-5 Results for Site 5, Manhole located in the gravel on the south side of Building 1.....	94
G-6 Results for Site 6, Oil/Water separator located in a dirt field West of the Marines Aircraft Apron....	97
G-7 Results for Site 7, Oil/Water Separator Located behind the Marine Vehicle Maintenance Shop, Bldg 16...	100
G-8 Results for Site 8, 234th CCS Vehicle Maintenance Shop Oil/Water Separator, Bldg 9.....	102
G-9 Results of Background Drinking Water Analyses.....	103

FIGURES

<u>Figure No.</u>		<u>Page</u>
G - 1	MSgt Wilson showing Site 1	82
G - 2	MSgt Wilson showing Site 2	85
G - 3	MSgt Wilson showing Site 3	89
G - 4	MSgt Wilson showing Site 4	91
G - 5	MSgt Wilson showing Site 5	93
G - 6	MSgt Wilson showing Site 6	95
G - 7	Oil/water separator at Site 7	99
G - 8	MSgt Wilson showing Site 8	101

ACKNOWLEDGMENT

The author would like to acknowledge the support given by Major King and his staff, MSgt Wilson of Bioenvironmental Engineering, and the personnel at the 216th EIS Vehicle Maintenance Shop. Thanks for the outstanding support.

The author would also like to acknowledge the technical support given by TSgt Mary K. Fields. Thanks for the excellent support.

WASTEWATER CHARACTERIZATION SURVEY, HAYWARD AIR NATIONAL GUARD STATION,
CALIFORNIA

INTRODUCTION

Armstrong Laboratory Occupational and Environmental Health Directorate, Water Quality Branch (AL/OEBW) conducted a wastewater characterization survey at Hayward Air National Guard Station (ANGS) from 29 March 1993-7 April 1993. This survey was conducted in response to a formal request from the 129th Air National Rescue Guard Clinic/SGPB. The request letter is located in Appendix A.

The purpose of the survey was to provide Hayward ANGS with the necessary documentation to comply with a major deficiency cited by an Environmental Compliance Assessment and Management Program (ECAMP) team audit. The ECAMP audit was conducted in May 1991.

From 25-26 Feb 1993, SSgt Robert Davis conducted a presurvey at Hayward ANGS and coordinated the survey logistics, sampling sites, and analytical parameters with the station's Civil Engineering office representative and the Bioenvironmental Engineering Services (BES) office.

TSgt Mary Fields and SSgt Robert Davis conducted the field survey.

DISCUSSION

Background

Hayward ANGS is located 15 miles south of Oakland and approximately 28 miles southeast of San Francisco in Hayward, California. The station's property covers 44 acres of land situated on the western-most portion of the Hayward Municipal Airport.

Hayward ANGS is home of the 234th Combat Communication Squadron (CCS), and host to the 216th Electronic Intelligence Squadron (EIS), and the Marine Corps 4th LAAM BN., 4th MAW.

The station has approximately 500 military personnel assigned. During weekly operations, the station's population is approximately 150 full-time Guard and Marine personnel.

Hayward ANGS receives its Bioenvironmental Engineering Service support from the 129 ANG/SGPB, located at Moffett Naval Air Field in Sunnyvale, California.

Wastewater Sources, Collection, and Treatment

The wastewater generated at Hayward ANGS is derived from domestic and industrial sources. All of the wastewater generated by the station is discharged to the city of Hayward Water Pollution Control Agency, where treatment is accomplished. Presently, there is no wastewater discharge permit imposed on Hayward ANGS by the City of Hayward Pollution Control Agency. In the

absence of permit limitations, comparison of results were made with the City of Hayward Wastewater Discharge Regulations, Municipal Code Section 11-3.380, Appendix A, located in Table 1.

The industrial sources of wastewater at Hayward ANGS include: Aerospace Ground Equipment (AGE) maintenance, Vehicle Maintenance Shops, and Vehicle Washracks. The wastewater discharged from the Vehicle Maintenance Shops and Vehicle Washracks enters the sanitary system via oil/water separators, with the exception of the 216th EIS's Vehicle Maintenance Shop and Washrack. Wastewater discharged from these locations flows directly into the sanitary sewage system.

Sampling Strategy

A sampling strategy was developed to quantitatively characterize the wastewater at Hayward ANGS. This strategy was coordinated with Headquarters 162d Combat Communication Group Civil Engineering, 129th ANG/SGPB, and the Hayward ANGS's Commander.

The information used to facilitate the development of the sampling strategy was gathered during the presurvey at Hayward ANGS. This information included the following:

1. The City of Hayward Wastewater Discharge Regulations, Municipal Code Section 11-3.380, Appendix A, was reviewed. Discussions were also held with the Station's Civil Engineering representative in reference to historical discharge information and pertinent discharge problems.

2. A G-2 Sewerage System Master Plan Map was used to locate all of the facilities and corresponding manholes which service those facilities, and any other contributing wastestreams.

3. Each industrial facility's function, chemical usage, and chemical disposal procedures was reviewed, and site and manhole assessments were conducted.

4. By utilizing the aforementioned information, 10 sites were selected and analytical parameters were developed to characterize the station's wastewater. The sampling strategy can be found in Appendix C, along with a map of the station depicting sampling locations.

Sampling Methods

Wastewater samples were typically collected over a 24-hour period as time-proportional composites. Sampling at designated sampling sites included: oil and grease, total petroleum hydrocarbons, cyanide, phenol, total residue, volatile aromatics, volatile halocarbons, chemical oxygen demand (COD), and metals. Selected sites were sampled for 5-day biochemical oxygen demand (BOD), and Total Toxic Organics (TTO's). Temperature and pH were recorded each day a sample was collected. Any unusual characteristics (color, odor, etc.) of samples were recorded as well. All samples were collected and analyzed using Environmental Protection Agency (EPA) approved procedures. Sample preservation was in accordance with the Air Force Occupational and Environmental (AFOEHL) Sampling Guide, March 1989 (1). Appendix D lists the method, preservation, and holding times for each analysis.

Composite samples were poured directly from the sampler's 10-liter (2.5-gallon) glass collection jar into sample containers in the field. Samples were then preserved upon returning to the on-site laboratory. Grab samples were captured directly from the wastestream and poured into the appropriate container on-site. These samples were also preserved as needed upon return to the on-site laboratory.

Water Quality Standards

Excerpts from the City of Hayward Wastewater Discharge Regulations are contained in Appendix B. The information in this regulation contains the maximum discharge requirements for the city of Hayward. The sampling parameters for the Hayward ANGS wastewater characterization are based on these requirements.

Table 1, lists the maximum wastewater discharge limits for the city of Hayward.

Table 1. City of Hayward Maximum Requirements for Wastewater Discharge.

<u>Limits (mg/l)</u>	<u>Pollutant</u>
0.1	Arsenic
0.2	Cadmium
2.0	Cyanide
1.0	Lead
0.01	Mercury
1.0	Nickel
0.2	Silver
0.5	Total chromium
3.0	Zinc
300.0	Oil/Grease (Food Origin)
100.0	Oil/Grease (Petroleum Origin)
0.02	Total Identifiable Chlorinated Hydrocarbons
1.0	Phenolics

Field Quality Assurance/Quality Control (QA/QC)

A field QA/QC program was used during this survey to verify the accuracy and reproducibility of laboratory results. This program included collection of equipment field blanks, reagent blanks, spike samples, and duplicate samples. The field QA/QC results can be found in Appendix E.

The following are the procedures used to collect QA/QC samples:

Equipment Field Blank Samples. Equipment field blank samples were collected by pumping a liter of laboratory-grade distilled water through the pump/purge cycle of the sampler into the appropriate sample container. Preservation was then accomplished. These samples serve as a check on cross contamination due to sampling equipment.

Reagent Blank Samples. Reagent blank samples were collected by filling the appropriate analysis sample container with laboratory-grade distilled water and placing the preservative into the container. This series serves as a check on the purity of the reagents used and elimination of any preservatives contributing to false analytical results.

Spike Samples. Spike samples were collected by filling the appropriate sample containers with a preprepared quantity of spike standard solution. The spike standard solutions were prepared in accordance with the manufacturer instructions by Armstrong Laboratory Analytical Service Division (AL/OEA) Quality Assurance, Quality Control Branch. This series of samples in conjunction with AL/OEA Quality Assurance Plan serves as a check on the sample collection, preservation, and reproducibility of analytical results. The commercially purchased spike standards contain certified values equalling up to 100% of each parameter in the indicated standard. Advisory ranges are listed as guidelines for acceptable recoveries given the limitations of the EPA methodologies commonly used to determine these parameters.

Duplicate Samples. Duplicate samples are 2 aliquots samples taken from the same source, and analyzed independently. These samples serve as a measure of precision, which is the agreement between a set of replicate measurements without assumption or knowledge of the true value. Duplicate samples were collected at sites #1 and #5. It should be noted that obtaining truly duplicate samples in the field is very difficult.

Armstrong Laboratory Quality Assurance/Quality Control (QA/QC)

The Armstrong Laboratory Analytical Services Division Quality Assurance Plan establishes the guidelines and rules necessary to meet the analytical laboratory requirements of 43 states, U.S. Environmental Protection Agency, and private accrediting agencies. Specific QA/QC activities include: (a) inserting a minimum of one blind sample control for each parameter analyzed on a monthly basis, (b) periodic auditing of the laboratory quality assurance items from each branch, (c) all instruments are calibrated each day of use, (d) at least one National Institute Standards and Technology/Standards Reference Materials (NIST/SRM) traceable standard and control sample will be included with each analytical run, (e) corrective action is documented every time a quality assurance parameter is not met, (f) all sample data will have established detection limits, (g) the laboratory participates in numerous proficiency surveys and interlaboratory quality evaluation programs, and (h) all quality control samples are plotted and tracked by the individual analytical services and are validated on a periodic basis by Armstrong Laboratory

personnel. Armstrong Laboratory is certified by the State of California for wastewater analysis.

Sampling Sites Descriptions

Site 1. Site 1 is a manhole located in the street west of the 216th EIS Gas Station, Bldg 20, and south of the 216th EIS Headquarters, Bldg 10. Wastewater from Site 1 includes discharges from the Marine Corps Vehicle Maintenance Shop, 216th EIS Vehicle Maintenance Shop, the Consolidated Warehouse, Aircraft Hangar, the Marine Corps AGE Shop, Bldg 5, and Dining Facility, Bldg 4. All wastewater discharged from this site flows directly to the city of Hayward. Composite and grab samples were collected from this site from 1-7 April 1993.

Site 2. Site 2 is a 2' X 4' concrete vault located in front of the 216th EIS Gas Station, Bldg 20. Grab samples were taken from this site on 4 April 1993.

Site 3. Site 3 is the 216th EIS Vehicle Washrack, located directly behind the 216th Gas Station, Bldg 3. This site discharges to the sanitary sewage system. Grab samples were taken from this site on 6 April 1993.

Site 4. Site 4 is a manhole located in the street directly in front of the 216th EIS Vehicle Maintenance Shop, Bldg 3. This site receives wastewater discharge from the Consolidated Warehouse, Bldg 11, and the Marine Corps Aircraft Hangar, Bldg 1. Composite and grab samples were collected from this site from 1-7 April 1993.

Site 5. Site 5 is a manhole located in the gravel on the south side of the Bldg 1, Marine Corps Aircraft Hangar. This site receives wastewater discharge from Building 1; Marine Corp AGE Shop, Bldg 5; and the Dining Facility, Bldg 4. Composite and grab samples were collected from 1-6 April 1993.

Site 6. Site 6 is an oil/water separator located in a dirt field west of the Marine Corps aircraft parking area and east of the Marine Corps Vehicle Maintenance Shop, Bldg 16. At one time, this site received wastewater discharge from the Marine Vehicle Washrack. Due to discharge concerns, the use of this washrack has been discontinued. This site receives stormwater discharge via storm drains located in the western sector of the station. Grab samples were taken from this site on 5 April 1993.

Site 7. Site 7 is an oil/water separator which services the Marines Corps Vehicle Maintenance Shop, Bldg 16. This separator is located behind Bldg 16. Grab samples were taken from this site on 5 April 93.

Site 8. Site 8 is an oil/water separator which services the 234th CCS Vehicle Maintenance Shop and Vehicle Washrack. This separator is located at the northeast portion of Bldg 9. Grab samples were collected on 4 April 1993.

Sites 9 and 10 were not sampled due to insufficient flow and the team's inability to gain access to the sewer through cleanout portals. Additionally, Site 8 results will characterize the discharge to Site 9. The Air Force Forms 2761, "Hazardous Materials Data," gives chemical usage and disposal methods for operations which discharge to Site 10. The Air Force Forms are located in Appendix F.

RESULTS

The results discussed in this report reflect the quality of the wastewater during the period of the survey. Changes in operations, shop practices, chemical usages, population, etc., will change the composition of future wastewater discharged to the city of Hayward. Analytical results by site are shown in Appendix G. Significant daily sampling notes are shown in Table 2.

Table 2. Significant Daily Sampling Notes

<u>Date</u>	<u>Sites</u>	<u>Note</u>
30 March	9 & 10	Unsuccessful attempts were made to gain access to the sanitary sewage line on the west side of Bldg 9.
30 March	1 and 4	Samplers were setup and started.
30 March	5	Sampler was setup, but not started due to inadequate flow.
31 March	9 & 10	Dug up clean-out portals in an attempt to get to the sanitary channel; flow was inadequate, removed sites from sampling strategy
1 April	1	Rained the previous night, minimal flow observed. Wastewater appears to have paint residue.
1 April	5	Started sampler.
2 April	1	Low flow, wastewater had a pine cleaner smell. Paint residue in sampling jar.
2 April	4	Moderate flow with slight sheen observed.
	6	

3 April	1, 4, and 5	First day of Unit Training Activity (UTA). Significant increase in flow.
4 April	1, 4, and 5	Last day of UTA. Some paint residue and soap noted.
4 April	2	Samples were taken from the 2-foot deep concrete vault. Vault contained water with a 1/2 inch of what appeared to be oil and fuel.
6 April	1, 4, and 5	The last day samples were collected.

Dye Study Result

Dye studies were done at the 216th Vehicle Maintenance's Battery Shop and Washrack. The purpose of the dye studies was to determine whether flow from these locations discharged to the storm or the sanitary sewage systems. The dye study was accomplished at the Battery Shop by placing fluorescent dye tablets in a floor drain. Dye was then traced from the floor drain to a storm drain located at the rear of Bldg 3. Dye could not be traced from the Washrack to the storm or sanitary sewage systems on Hayward ANG. There is a possibility that the washrack is connected to the sanitary sewage system between Site 1 and a manhole in the middle of West Winton Avenue. Substantial proof of this connection was not available since the team could not gain access to the manhole in West Winton Avenue.

Quality Assurance/Quality Control Results

All QA/QC results are contained in Appendix E. The spike results, Table E-1, with exceptions of silver and oil/grease, were well within the advisory ranges. Results show the laboratory's ability to successfully recover a large spectrum of analytes.

The duplicate metal results, Table E-2, shows cadmium, lead, and zinc, were not in agreement with their pairs. This dissimilarity is possible due to the particulates in wastewater which undergo leaching of metals upon preservation. This possibility makes comparison of duplicate sample results difficult.

The duplicate samples collected on 6 April 1992 from site 1 for oil and grease and total petroleum hydrocarbons showed poor agreement. As discussed earlier, obtaining true duplicate samples in the field is not always possible, and this is probably the cause of the poor duplicate results for oil and grease and total petroleum hydrocarbons.

The results of the equipment blanks, Table E-3, shows levels of 58.5 µg/l and 72 µg/l of zinc at site #1 and #5, respectively. These results may indicate a minor cross contamination problem or a laboratory anomaly in regards to zinc. Other analyses show no indication of cross contamination associated with the sampler.

The results of the reagent blank, Table E-3, shows no contamination associated with acids used for preservation.

Background Drinking Water Results

Table G-9 shows the results of the drinking water samples taken on 6 April 1993 from the Boiler House, Bldg 2. The results show levels of iron (527.5 $\mu\text{g/l}$), nickel (299.5 $\mu\text{g/l}$), arsenic (4.2 $\mu\text{g/l}$), bromodichloromethane (1.0 $\mu\text{g/l}$) and chloroform at (71.6 $\mu\text{g/l}$).

Sampling Results by Sample Site

For the common pollutant parameters used to describe wastewater strength, BOD, COD, oil and grease, and total solids, the average concentrations of the pollutants were compared to values cited by Metcalf and Eddy as typical(2). Table 3 shows typical values for weak, medium, and strong wastewater based on these parameter.

Table 3. Strength of Typical Domestic Sewage Parameters.

<u>Contaminant</u>	<u>Units</u>	<u>Concentration</u>		
		<u>Weak</u>	<u>Medium</u>	<u>Strong</u>
BOD	mg/l	110	220	400
COD	mg/l	250	500	1000
Oil & Grease	mg/l	50	100	150
Total Solids	mg/l	350	720	1200

Site 1:

Approximately 90% of the wastewater generated at Hayward ANGS discharges to the City of Hayward through Site #1. For this reason, analytical results from Site 1 are primary indicators of wastewater discharged to the city.

Table G-1, page 1, shows the results of sampling at Site 1. The table shows daily concentrations of pollutants found over a 7-day period. The oil and grease results were well below the 100 mg/l (mineral or petroleum origin) and 300 mg/l (animal or vegetable origin) general discharge limits set by the city of Hayward. The highest concentration noted during the sampling period was 96 mg/l on 6 April 1993.

Chemical Oxygen Demand (COD) samples were collected from each site during the survey. This test is used to measure the oxygen equivalent of the organic matter content of a sample that is susceptible to oxidation by a strong chemical oxidant. COD is considered a key indicator of wastewater strength(2). Concentrations ranged from 630 mg/l, on 3 April 1993 to 92 mg/l on 5 April 1993. The COD average over the period of sampling was 305 mg/l.

Biochemical Oxygen Demand (BOD) samples were collected from Site 1 for three consecutive days and were analyzed by Sequoia Laboratory, Hayward, CA. The BOD test is an empirical measurement of the oxygen requirements of municipal and industrial wastewater and sewage. The results generated from this analysis are used to determine wastewater strength and establish wastewater treatment processes. The BOD concentrations found at Site 1 averaged 101 mg/l. This value, when compared to Table 3, indicates weak domestic sewage. BOD results were in total agreement with COD results.

BOD results were in total agreement with COD results.

Phenol concentrations found at Site 1 were consistently below the 1.0 mg/l discharge limit. Phenol averaged 77 $\mu\text{g/l}$ (.077 mg/l) over the sampling period.

Notable metal concentrations included cadmium at 167.9 $\mu\text{g/l}$ and zinc levels at 612 $\mu\text{g/l}$ and 765 $\mu\text{g/l}$. All quantifiable metals results were below the metal values stipulated in the discharge permit limits.

Measurable Volatile Organic Hydrocarbons (VOH's) were detected at Site 1. Chloroform, 1,4-dichlorobenzene, and methylene chloride were consistently found during the sampling period. Chloroform typically is found in sewage as a disinfection by-product of potable water disinfection(6). Results ranged from 6.5 $\mu\text{g/l}$ to 33.3 $\mu\text{g/l}$. 1,4-Dichlorobenzene concentrations ranged from 4.7 to 81.8 $\mu\text{g/l}$. 1,4-Dichlorobenzene is commonly found in domestic sewage ranging from 7.4 $\mu\text{g/l}$ - 64 $\mu\text{g/l}$ (4), and is a component of solvents, disinfectants, and floor waxes(5). Methylene chloride results ranged from 0.5 $\mu\text{g/l}$ - 1.1 $\mu\text{g/l}$.

Volatile Organic Aromatic (VOA's) sampling yielded detectable concentrations of 1,4-dichlorobenzene, ethyl benzene, toluene, and xylene. Ethyl benzene and xylene isomers are constituents of fuels and paints(7). Appreciable levels of both analytes were found on the days paint pigment was observed at Site 1. Detectable amounts of toluene was found at site 1. Toluene is also a constituent of fuels and paints, and is a common laboratory contaminant(6).

A Total Toxic Organic (TTO) sample was collected on 6 April 1993. TTO is defined by EPA as a summation of all quantifiable concentrations of analytes found in EPA Methods 608, 624, and 625 greater than 0.01 mg/l. The sum of the quantifiable concentrations must not exceed 2.13 mg/l. Since the detection limits for EPA Methods 601 and 602 are lower than EPA Method 624, and has the same analytes, results of Methods 601 and 602 samples taken on 6 April 1993 were used to calculate the TTO concentration. The summation of the quantifying pollutants at Site 1 equal to 0.032 mg/l, well below the TTO discharge criteria.

Total suspended solids averaged 609 mg/l over the period of sampling. This concentration is typically found in a medium strength wastewater.

Site 2:

The purpose of sampling at Site 2 was to determine whether the water, which periodically accumulates inside the vault from rain infiltration or groundwater level fluctuation, can be discharged to the sanitary sewage system.

Table G-2 pages 1 and 2 shows the results of sampling at Site 2. The results from the hazardous waste characteristic sample showed the water didn't meet the RCRA hazardous waste criteria for ignitability, corrosivity, and reactivity. The sediment sample for VOA's (SW-846 8020) showed the presence of fuel components. Other noteworthy results were oil and grease levels at 18,400 mg/l, and total petroleum hydrocarbons (TPH) concentration at 16,000 mg/l. When oil and grease results are compared with TPH levels, it shows the oil and grease are composed of 87% petroleum constituents.

Although sampling showed the water in the chamber does not meet RCRA hazardous waste criteria, the levels of oil and grease prohibit the discharge of the water to the sanitary sewage. This is in accordance with the City of Hayward Wastewater Discharge Regulations section 2.08 (b), which prohibit

the discharge of wastewater containing more than 100 mg/l oil and grease of mineral or petroleum origin.

Site 3:

Table G-3 shows the results of sampling done at Site 3. No appreciable amount of pollutants was detected.

Site 4:

Table G-4 shows the results of sampling at Site 4. The oil and grease sample collected on 7 April 1993 showed a concentration of 105.6 mg/l. The TPH concentration on the same day was 4.8 mg/l, which indicates the oil and grease were predominately from a vegetable and/or animal origin.

Phenol results of 153 µg/l on 3 April and 99 µg/l on 5 April were considered to be noteworthy. Visible observation and odor detection on these days coincide with use of household/industrial cleaners and disinfectants.

VOH samples during the period yielded chloroform concentrations ranging from 3.1 µg/l to 67.7 µg/l. 1,4-Dichlorobenzene ranged from nondetected to 14.8 µg/l. Measurable amounts of methylene chloride were found in 3 of the 7 days of sampling.

VOA samples taken on 2 April showed significant amounts of ethyl benzene (2.7 µg/l) isomers of xylene (13.9 µg/l and 11.6 µg/l). These levels could imply the discharge of paints, lacquers, or fuels into the sanitary sewer. Interfering compounds affected the accuracy of detecting m-xylene.

Metal results at Site 4 show the highest concentrations of chromium found during the survey. Levels ranged from <50 µg/l to as high as 350 µg/l on 3 April. Nickel was found once during the survey, on 3 April, at a concentration of 372 µg/l. Zinc concentrations were detected each day at levels ranging from 111 µg/l to 954 µg/l.

Site 5:

Table G-5 shows the results of sampling done at Site 5. Oil and grease concentrations of 272 mg/l and 114.4 mg/l on 3 and 4 April 1993 coincides with the opening of the dining facility for the UTA weekend.

COD and BOD concentrations were within domestic wastewater levels(2), with the exception of the results reported on 4 April 1993. Since COD is always higher than BOD, the values reported on 4 April 1993 are suspect (COD 200 mg/l and BOD 280 mg/l), and may be due to sample collection or analytical error.

VOA and VOH results were typical of the levels at previous sites, with the exception of chlorobenzene concentration of 1.2 µg/l on 5 April 1993. Chlorobenzene is used in solvents and is a chemical intermediate in dyes and paints(7).

Zinc concentrations ranging from 92.5 µg/l to 710 µg/l were the only significant metal results from Site 5.

Site 6:

Table G-6 pages 1 and 2 shows the results of sampling at site 6. As shown in the table, the sample taken for the hazardous waste characteristic analyses did not meet the RCRA hazardous waste criteria for ignitability, corrosivity, and reactivity. The metal analyses showed levels of heavy metals: lead (1089.5 µg/l) nickel (106.5 µg/l), zinc (1,303 µg/l), barium (568 µg/l),

and iron (55,762 $\mu\text{g/l}$). With the exception of lead, detectable metals were below levels prescribed in the City of Hayward Maximum Requirements for Wastewater Discharge, Table 1.

Site 7:

Table G-7, shows the results of sampling at Site 7. The metal results showed detectable levels; however, none exceeded the levels cited in the City of Hayward Maximum Requirements for Wastewater Discharge, Table 1. Other notable results showed low levels of oil/grease (16 mg/l), and a detectable level of toluene (2.9 $\mu\text{g/l}$).

Site 8:

Table G-8, shows the results of sampling at Site 8. Elevated results for oil and grease, total petroleum hydrocarbons, and metals were due to the sampling team's inadvertent disturbance of the sediment matter while taking effluent samples from the separator. The results do indicate a potential discharge problem. The separator sediment contained elevated levels of heavy metals and oil/grease. Surprisingly, there were no aromatic hydrocarbons detected. The results of the SW-846(8010) analysis showed no quantifiable levels of chlorinated hydrocarbons were found in the sediment.

CONCLUSIONS AND RECOMMENDATIONS

The total identifiable chlorinated hydrocarbons discharged from Hayward ANGWS exceeded the City of Hayward maximum discharge requirement of 0.02 mg/l on 3 of the 7 days of sampling. The chlorinated hydrocarbons which were responsible for exceeding the requirement were chloroform and 1,4-dichlorobenzene. As mentioned in this report, these pollutants are commonly found in wastewater at lower levels. The chloroform concentration of 72.6 $\mu\text{g/l}$ discovered in the drinking water indicates the elevated levels of chloroform found in the wastewater may be attributed to the drinking water. Chloroform is a chlorination by-product found in some drinking water systems. It is believed that chloroforms and other haloforms are created through a process called "haloform reaction." This reaction occurs in natural waters which are chlorinated and organic compounds are present(8). It is recommended that Bioenvironmental Engineering Service sample the potable drinking water system to confirm the chloroform levels.

The high concentrations of 1,4-dichlorobenzene can be attributed to the paint residue and disinfectants found in the wastewater throughout the survey. Since 1,4-dichlorobenzene is found in most paint pigments, it is recommended that paint waste discharge to the sanitary sewage system be limited.

An investigation to determine the origin of the water which accumulates at Site 2 is needed. According to personnel at the station, water accumulates periodically in the concrete vault which is adjacent to the gas pumps. This may be due to rain water infiltration or fluctuation of the groundwater level. Nevertheless, a full investigation to substantiate these theories is warranted.

We recommend the accumulated water be pumped into a drum which complies with the design criteria specified in the 49 series of the Code of Federal Regulation Subchapter C, part 178(3). Since the components of water and sediment have possibly changed since the first samples were taken, it is recommended that additional samples be taken from the cavity and analyzed for Toxicity Characteristic Leachate Procedure (TCLP), without pesticides and herbicides.

The accumulation of heavy metals at Site 6 is attributed to past usage of the washrack and the parking lot runoff during rain events. The impact of the discharge from the water separator on the stormwater basin could not be determined during the survey. However, since plans are underway to remove this separator and seal the line, future discharge problems are eliminated.

Sludge levels at the 216th and 234th Washracks were extremely high during the survey. High levels of accumulated sludge can elevate the pollutant levels in the wastewater. Periodical removal of the sludge is recommended. Proper disposal procedures for the sludge must be in accordance with 40 CFR 260-263(g).

With the exception of the VOH results, all quantifiable levels of pollutants discharged to the city of Hayward were below the maximum discharge requirements. Based on values cited by Metcalf and Eddy as typical, an estimated 90% of the wastewater discharged from Hayward ANGS is considered to be domestic.

REFERENCES

1. Air Force Occupational and Environmental Health Laboratory (AFOEHL), AFOEHL Recommended Sampling Procedures. Brooks AFB, TX, March 1989.
2. Metcalf and Eddy, Inc., Wastewater Engineering - Treatment, Disposal and Reuse, 2nd Edition, McGraw-Hill, New York, 1979.
3. Code of Federal Regulations, Title 49, part 178, subchapter C, 1992.
4. Pooled Emission Estimation Program (PEEP), Final Report for Publicly Owned Treatment Works (POTWS), James M. Montgomery Consulting Engineers, Inc., December 1990.
5. Armstrong Aerospace Medical Research Laboratory. The Installation Restoration Program Toxicology Guide, Wright-Patterson AFB, OH. USAF AAMRL July 1989.
6. United States Environmental Protection Agency, Guidance for Data Useability in Risk Assessment, EPA/540/G-90/008, Washington, D.C., 1990.
7. United States Department of Health, Education, and Welfare, Occupational Disease Guide to Their Recognition, PUB NO. 77-181, June 1977.
8. Drinking Water and Health, Vol 2, page 140, National Academy Press, Washington D.C., 1980.
9. Code of Federal Regulation, Title 40, parts 260-263, July 1, 1992.

APPENDIX A
REQUEST LETTER

DEPARTMENT OF THE AIR FORCE
129TH AIR NATIONAL RESCUE GUARD
NAS MOFFETT FIELD, CALIFORNIA
94035-5006

REPLY TO

ATTN OF: SCFB (MSgt Wilson, AV 494-9062)

18 June 1991

SUBJECT: Request for Waste Water Survey

TO: OCCUPATIONAL & ENVIRONMENTAL HEALTH DIRECTORATE
BROOKS AFB TX 78235-5000
(ATTN: LT ACKER)

1. We would like to request the services of the Armstrong Laboratory's Bioenvironmental Engineering Division (AL/OEB) to perform an industrial waste water survey for the Hayward Air National Guard Station, Hayward California. This survey is required by AFR 91-32 and was recently cited as a major deficiency finding during the external Environmental Compliance Assessment Monitoring Program (ECAMP) audit of this installation.

2. During the ECAMP audit, it was identified that several buildings with industrial operations use chemicals which have the potential for entering the sanitary sewer system. Conducting an industrial waste water survey was recommended as part of our ECAMP to satisfy both Air Force and State Requirements. The survey should also include tracer dye studies.

3. Preliminary discussion have been held with Lt Acker, AL/OEB, concerning this request. We request this survey to be conducted as soon as possible within your current schedule of facilities requesting this service. If there are any questions, please contact me at DSN 494-9062.



PAUL R. WILSON, MSgt, CA ANG
NCOIC, Bioenvironmental Engineering

DEPARTMENT OF THE AIR FORCE
ARMSTRONG LABORATORY (AFMC)
BROOKS AIR FORCE BASE, TEXAS

22 JUL 1992

FROM: AL/OEB
Brooks AFB TX 78235-5000

SUBJ: Request for Waste Water Survey (129th ANG/SGPB Ltr, 18 June 92)

TO: 129 ANG/SGPB

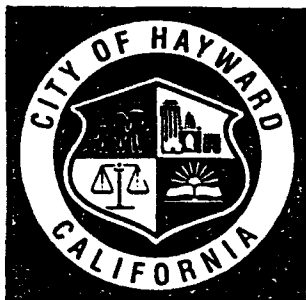
1. We would be glad to provide you a waste characterization survey as requested in the subject letter (received 13 Jul 92). We have tentatively scheduled the survey from 5 - 16 Oct 92 and the project officer at this time is Maj Garland (DSN 240-3305).

2. Please provide Maj Garland with a copy the sanitary maps for the base, copies of any permits the site has, and any unusual historical sampling data. We will coordinate a presurvey visit once we have reviewed the information.


EDWARD F. MAHER, Col, USAF, BSC
Chief, Bioenvironmental Engineering
Division

APPENDIX B

CITY OF HAYWARD WASTEWATER DISCHARGE REGULATIONS



WASTEWATER DISCHARGE REGULATIONS



FORWARD

This booklet contains the text of the City of Hayward Wastewater Discharge Regulations. This document is referenced in Section 11-3.380 of the Municipal Code of the City of Hayward and referred to therein as Appendix A.

The supplement included in this booklet contains selected parts of the Code of Federal Regulations (listed as 40 CFR) incorporated by reference in the Wastewater Discharge Regulations. Other 40 CFR parts, which are quite lengthy, are summarized here. More information relating to these references is available in the Water Pollution Control offices.

This booklet is provided for informational purposes only and does not contain all regulations and information relative to the sanitary sewer system. For further specifics consult the Municipal Code of the City of Hayward, Chapter 11, Article 3.

TABLE OF CONTENTS

Chapter 1 – General Provisions	1
1.01 Purpose and Policy	1
1.02 Definitions.....	1
1.03 Analytical and Sampling Methodology and Procedures.....	4
Chapter 2 – Regulations	5
2.01 Prohibitions on Discharge.....	5
2.02 Prohibitions on Storm Drainage and Ground Water.....	6
2.03 Prohibition on Unpolluted Water.....	6
2.04 Limitations on Radioactive Wastes	6
2.05 Limitations on the Use of Garbage Grinders	6
2.06 Limitations on Points of Discharge.....	6
2.07 Holding Tank Waste	7
2.08 Limitations on Wastewater Strength.....	7
2.09 Prohibition on Slug Discharges.....	8
2.10 Use of Dilution Prohibited	8
2.11 Prohibition of Bypass	8
2.12 Prohibition on Discharge of Process Solution Tanks	9
2.13 Prohibition on Discharge of Petroleum or Mineral Oil Causing Pass-through or Interference	9
2.14 Prohibition of the Discharge of Trucked or Hauled Wastes.....	9
Chapter 3 – Wastewater Volume Determination	10
3.01 Metered Water Supply	10
3.02 Metered Wastewater Volume and Metered Diversions	10
3.03 Estimated Wastewater Volume.....	10
Chapter 4 – Administration	11
4.01 Discharge Reports.....	11
4.02 Wastewater Discharge Permits	11
4.03 Monitoring Facilities	14
4.04 Inspection and Sampling	14
4.05 Pretreatment.....	15
4.06 Protection from Accidental Discharge	15
4.07 Confidential Information.	15
4.08 Special Agreements.....	15
4.09 Signature Requirement.....	16

Chapter 4 – Administration continued	
4.10 Retention of Records	16
4.11 Public Notification of Dischargers Found to be in Significant Non-Compliance.....	17
4.12 Notification of Changed Discharge	17
4.13 Notification of Hazardous Waste Discharge	17
Chapter 5 – Wastewater Charges and Fees.....	18
5.01 Schedule of Charges and Fees	18
5.02 Classification of Users	18
5.03 Types of Charges and Fees.....	18
5.04 Determination of User Charges and Fees.....	18
Chapter 6 – Enforcement	19
6.01 Notification of Discharge	19
6.02 Issuance of Cease and Desist Orders	19
6.03 Submission of Time Schedule	19
6.04 Appeals	19
6.05 Notices to Employees	20
6.06 Preventive Measures	20
Chapter 7 – Abatement.....	21
7.01 Public Nuisance	21
7.02 Injunction.....	21
7.03 Damage to Facilities	21
7.04 Civil Penalties.....	21
7.05 Criminal Penalties	21
7.06 Falsifying Information	21
7.07 Termination of Service	22
Chapter 8 – Severability	23
Supplement.....	24

Chapter 1

GENERAL PROVISIONS

1.01 **Purpose and Policy.** These Wastewater Discharge Regulations impose requirements for discharges into the wastewater collection and treatment systems and enable the Agency to comply with the administrative provisions of the Clean Water Grant Regulations, the water quality requirements set by the Regional Water Quality Control Board and the applicable effluent limitations, national standards of performance, toxic and pretreatment effluent standards, and any other discharge criteria which are required or authorized by state or federal law, and to derive the maximum public benefits by regulating the quality and quantity of wastewater discharged into the East Bay Dischargers Authority system. These regulations provide a means for determining wastewater volumes, the setting of user charges and fees for the equitable distribution of costs to all users, and the issuance of permits to certain users. Revenues derived from the application of these regulations shall be used to defray the Agency's costs of operating and maintaining adequate wastewater collection and treatment systems and to provide sufficient funds for capital outlay, bond service costs, capital improvements, and depreciation.

1.02 **Definitions.** Unless otherwise defined herein, terms shall be as adopted in the latest edition of *Standard Methods for the Examination of Water and Wastewater*, published by the American Public Health Association, the American Water Works Association, and the Water Pollution Control Federation.

- (a) *Agency.* The City of Hayward.
- (b) *Authority.* The East Bay Dischargers Authority.
- (c) *Beneficial Uses.* Uses of the waters of the state that may be protected against quality degradation include, but are not necessarily limited to, domestic, municipal, agricultural and industrial supply, power generation, recreation, aesthetic enjoyment, navigation and the preservation and enhancement of fish, wildlife and other aquatic resources or reserves, and other uses, both tangible or intangible, as specified by federal or state law.
- (d) *Building Sewer.* A sewer conveying wastewater from the premises of a user to the community sewer.
- (e) *Bypass.* The intentional diversion of wastestreams from any portion of a user's treatment facility.
- (f) *Community Sewer.* A sewer owned and operated by the Agency, a city, or other public agency tributary to a treatment facility operated by the Agency or the Authority.

- (g) **Compatible Pollutant.** Biochemical oxygen demand, suspended solids, pH and fecal coliform bacteria, plus additional pollutants identified in the Agency's National Pollutant Discharge Elimination System (NPDES) permit if the publicly owned treatment works was designed to treat such pollutants, and in fact does remove such pollutants to a substantial degree.
- (h) **Contamination.** An impairment of the quality of the waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease. Contamination shall include any equivalent effect resulting from the disposal of wastewater, whether or not waters of the state are affected.
- (i) **Critical User.** A user who is required to obtain a permit, as defined in section 4.02.1.
- (j) **Federal Act or Act.** The Federal Water Pollution Control Act, PL 92-500, and any amendments thereto; as well as any guidelines, limitations, and standards promulgated by the Environmental Protection Agency pursuant to the Act.
- (k) **Holding Tank Waste.** Any waste from holding tanks such as vessels, chemical toilets, campers, trailers, septic tanks, and vacuum pump tank trucks.
- (l) **Incompatible Pollutant.** Any pollutant which is not a compatible pollutant as defined in this section.
- (m) **Interference.** A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:
 - (1) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
 - (2) therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.
- (n) **Manager.** The manager of the Agency or his or her designated representative.
- (o) **Mass Emission Rate.** The weight of material discharged to the sewer system during a given time interval. Unless otherwise specified, the mass emission rate shall mean pounds per day of a particular constituent or combination of constituents.

- (p) *National Pretreatment Standard, Pretreatment Standard, or Standard.* Any regulation containing pollutant discharge limits promulgated by the EPA in accordance with section 307 (b) and (c) of the Act, which applies to industrial users. This term includes prohibitive discharge limits established pursuant to 40 CFR 403.5.
- (q) *Publicly Owned Treatment Works or "POTW".* A treatment works as defined by section 212 of the Act, which is owned by a state or municipality (as defined by section 502(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes, and other conveyances only if they convey wastewater to a POTW treatment plant. The term also means the municipality as defined in section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.
- (r) *POTW Treatment Plant.* That portion of the POTW which is designed to provide treatment (including recycling and reclamation) of municipal sewage and industrial waste.
- (s) *New Source.* Any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced after the publication of proposed pretreatment standards under section 307(c) of the Act which will be applicable to such source if such standards are thereafter promulgated in accordance with that section and subject to the terms outlined in 40 CFR 403.3(k)(1).
- (t) *Nuisance.* Anything which is injurious to health or is indecent or offensive to the senses or an obstruction to the free use of property so as to interfere with the comfort or enjoyment of life or property or which affects at the same time an entire community or neighborhood or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
- (u) *Pass Through.* A discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).
- (v) *Person.* Any individual, partnership, firm, association, corporation, or public agency including the State of California and the United States of America.
- (w) *Pollution.* An alteration of the quality of the waters of the state by waste to a degree which unreasonably affects such waters for beneficial use or facilities which serve such beneficial uses. Pollution may include contamination.
- (x) *Premises.* A parcel of real estate including any improvements thereon which is determined by the Agency to be a single user for purposes of receiving, using, and paying for service.

- (y) *Severe Property Damage.* Substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- (z) *Unpolluted Water.* Water to which no constituent has been added, either intentionally or accidentally, which would render such water unacceptable to the Agency having jurisdiction thereof for disposal to storm or natural drainages or directly to surface waters.
- (aa) *User.* Any person that discharges, causes, or permits the discharge of wastewater into a community sewer.
- (bb) *User Classification.* A classification of user based on the latest edition of the Standard Industrial Classification (SIC) Manual prepared by the Executive Office of Management and Budget.
- (cc) *Waste.* Includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation of whatever nature, including such waste placed within containers of whatever nature prior to, and for purposes of, disposal.
- (dd) *Wastewater.* Waste and water, whether treated or untreated, discharged into or permitted to enter a community sewer.
- (ee) *Wastewater Constituents and Characteristics.* The individual chemical, physical, bacteriological and radiological parameters, including volume and flow rate and such other parameters that serve to define, classify or measure the contents, quality, quantity, and strength of wastewater.
- (ff) *Waters of the State.* Any water, surface or underground, including saline waters within the boundaries of the state.

1.03 Analytical and Sampling Methodology and Procedures.

- (a) The method and procedures utilized for all analyses which are reported under the requirements of these regulations shall be as specified by the provisions of 40 CFR Part 136, including amendments thereto.
- (b) The methods and procedures utilized for all sampling performed and/or reported under the requirements of these regulations shall be as specified by the provisions of 40 CFR Part 136.

Chapter 2

REGULATIONS

2.01 Prohibitions on Discharge. No person shall discharge to a community sewer system wastes which cause, threaten to cause, or are capable of causing, either alone or by interaction with other substances:

- (a) a fire or explosion, including but not limited to discharges with a closed cup flashpoint of less than 140 F (60 C);
- (b) obstruction of flow in a sewer system or injury of the system or damage to the wastewater collection, treatment, or disposal facilities;
- (c) danger to life or safety of personnel;
- (d) a nuisance or prevention of the effective maintenance or operation of the sewer system, through having a strong, unpleasant odor;
- (e) air pollution by the release of toxic or malodorous gases or malodorous gas-producing substances;
- (f) interference with the wastewater treatment process;
- (g) the Agency's effluent or any other product of the treatment process, residues, sludges, or scums, to be unsuitable for reclamation and reuse or to interfere with the reclamation process;
- (h) a detrimental environmental impact or a nuisance in the waters of the state or a condition unacceptable to any public agency having regulatory jurisdiction over the Agency;
- (i) discoloration or any other condition in the quality of the Agency's treatment works effluent in such a manner that receiving water quality requirements established by law cannot be met;
- (j) conditions at or near the Agency's treatment works which violate any statute or any rule, regulation, or ordinance of any public agency or state or federal regulatory body;
- (k) quantities or rates of flow which overload the Agency's collection or treatment facilities or cause excessive Agency collection or treatment costs, or may use a disproportionate share of the Agency facilities.
- (l) The evolution of toxic gases, fumes, or vapors in quantities injurious to the health and safety of Agency personnel.

2.02 Prohibitions on Storm Drainage and Ground Water. Storm water, ground water, rain water, street drainage, subsurface drainage or yard drainage will not be discharged through direct or indirect connections to a community sewer unless a permit is issued by the Agency. The Agency may approve the discharge of such water only when no reasonable alternative method of disposal is available.

If a permit is granted for the discharge of such water into a community sewer, the user shall pay the applicable user charges and fees and meet such other conditions required by the Agency.

2.03 Prohibition on Unpolluted Water. Unpolluted water, including but not limited to cooling water, process water, or blow-down from cooling towers or evaporative coolers, will not be discharged through direct or indirect connection to a community sewer unless a permit is issued by the Agency. The Agency may approve the discharge of such water only when no reasonable alternative method of disposal is available.

If a permit is granted for the discharge of such water into a community sewer, the user shall pay the applicable user charges and fees and shall meet such other conditions as required by the Agency.

2.04 Limitations on Radioactive Wastes. No person shall discharge or cause to be discharged any radioactive waste into a community sewer except:

- (a) when a person is authorized to use radioactive materials by the State Department of Health or other governmental agency empowered to regulate the use of radioactive materials; and
- (b) when the waste is discharged in strict conformity with the requirements of the United States Nuclear Regulatory Commission, the United States Department of Energy, and/or the California Radiation Control Regulations; and
- (c) when the person is in compliance with all rules and regulations of all other applicable regulatory agencies.

2.05 Limitations on the Use of Garbage Grinders. Waste from garbage grinders shall not be discharged into a community sewer except:

- (a) wastes generated in preparation of food normally consumed on the premises; or
- (b) where the user has obtained a permit for that specific use from the Agency, and agrees to undertake whatever self-monitoring is required to enable the Agency to equitably determine the user charges based on the waste constituents and characteristics.

Such grinders must shred the waste to a degree that all particles will be carried freely under normal flow conditions prevailing in the community sewer. Garbage grinders shall not be used for grinding plastic, paper products, inert materials, or garden refuse.

2.06 Limitations on Points of Discharge. No person shall discharge any substances directly into a manhole or other opening in a community sewer other than through an approved building sewer unless, upon written application by the user and payment of the applicable user charges and fees, the Agency issues a permit for such direct discharges.

2.07 Holding Tank Waste. A user proposing to discharge holding tank waste in excess of 50 gallons per week into a community sewer must secure a permit. Unless otherwise allowed by the Agency under the terms and conditions of the permit, a separate permit must be secured for each separate discharge. This permit will state the specific location of discharge, the time of day the discharge is to occur, the volume of the discharge and the wastewater constituents and characteristics. If a permit is granted for discharge of such waste into a community sewer, the user shall pay the applicable user charges and fees and shall meet such other conditions as required by the Agency.

2.08 Limitations on Wastewater Strength.

2.08.1 No person shall discharge wastewater containing in excess of:

- 0.1 mg/L arsenic
- 0.2 mg/L cadmium
- 2.0 mg/L copper
- 1.0 mg/L cyanide
- 1.0 mg/L lead
- 0.01 mg/L mercury
- 1.0 mg/L nickel
- 0.2 mg/L silver
- 0.5 mg/L total chromium
- 3.0 mg/L zinc

2.08.2 No person shall discharge any wastewater:

- (a) having a temperature higher than 150 F (65.5 C), or any thermal discharge which as a result of temperature and/or volume causes the influent of the wastewater treatment plant to exceed 104 F (40 C);
- (b) containing more than 300 mg/L of oil or grease of animal or vegetable origin;
- (c) containing more than 100 mg/L of oil or grease of mineral or petroleum origin;
- (d) having a pH lower than 6.0;
- (e) containing in excess of 0.02 mg/L total identifiable chlorinated hydrocarbons which cannot be removed by the Agency's wastewater treatment process;
- (f) containing in excess of 1.0 mg/L phenolic compounds which cannot be removed by the Agency's wastewater treatment process.

2.08.3 Effluent limitations promulgated by the federal Act shall apply in any instance where they are more stringent than those in these regulations. Under section 307 (b) and (c) of the Act, federal pretreatment standards are designed to achieve two purposes: (1) to protect the operation of publicly owned treatment works, and (2) to prevent the discharge of pollutants which pass through such works inadequately treated. Users in industrial categories subject to effluent guidelines issued under section 304(b) of the Act which are discharging incompatible pollutants to publicly owned treatment works are required to adopt best control technology currently available, as defined by the U.S. Environmental Protection Agency administrator pursuant to section 304(b) of the Act.

2.09 Prohibition on Slug Discharges. No user shall discharge any pollutant, including oxygen-demanding pollutants, at a flow rate and/or pollutant concentration which causes or threatens to cause interference with the wastewater treatment process. For the purposes of this section, any discharge which, in concentration or quantity of flow, exceeds for any period more than ten times the average 24-hour concentration or flow rate during normal operation shall be deemed a slug discharge which threatens to cause interference with the wastewater treatment process.

2.10 Use of Dilution Prohibited. Except where expressly authorized to do so by an applicable pretreatment standard or requirement, no user shall increase the use of process water, or in any other way attempt to dilute a discharge as a partial or complete substitute for adequate pretreatment to achieve compliance with a pretreatment standard, requirement or discharge limitation. The Agency may impose mass limitations on industrial users which are using dilution to meet applicable pretreatment standards or requirements, or in other cases where the imposition of mass limitations is appropriate.

2.11 Prohibition of Bypass.

- (a) Bypass is prohibited and the Agency may take enforcement action against any user for bypass unless:
 - (i). bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - (ii) there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
 - (iii) the industrial user submitted notices as described in 40 CFR 403.17(c).
- (b) The Agency may approve an anticipated bypass, after considering its adverse affects, if the Agency determines that it will meet the three conditions specified in part (a) of this section.

2.12 Prohibition on Discharge of Process Solution Tanks. No user shall, without prior and explicit approval of the Agency, discharge the contents, in whole or part, of any process solution tank to the sewer system. For the purposes of this section, such materials include, but are not limited to, concentrated solutions utilized within any commercial or industrial operation, containerized liquids of any description whatsoever, spoiled or otherwise unusable raw materials of any description whatsoever, spoiled or otherwise unusable products of any description whatsoever.

2.13 Prohibition on Discharge of Petroleum or Mineral Oil Causing Pass-through or Interference. Notwithstanding the provisions of section 2.08.2(c), no user may discharge petroleum oil, non-biodegradable cutting oil or other products of mineral origin in any amount that causes interference or pass-through.

2.14 Prohibition of the Discharge of Trucked or Hauled Wastes. The discharge of any trucked or otherwise hauled wastes to the sanitary sewer system is prohibited except as the Agency may permit under the provisions of section 2.07.

Chapter 3

WASTEWATER VOLUME DETERMINATION

3.01 Metered Water Supply. User charges and fees shall be applied against the total amount of water used from all sources unless, in the opinion of the Agency, significant portions of water received are not discharged to a community sewer. The total amount of water used from public and private sources will be determined by means of public meters or private meters, installed and maintained at the expense of the user and approved by the Agency.

3.02 Metered Wastewater Volume and Metered Diversions. For users where, in the opinion of the Agency, a significant portion of the water received from any metered source does not flow into a community sewer because of the principal activity of the user or removal by other means, the user charges and fees will be applied against the volume of water discharged from such premises into a community sewer. Written notification and proof of the diversion of water must be provided by the user if the user is to avoid the application of the user charges and fees against the total amount of water used from all sources. The user may install a meter of a type and at a location approved by the Agency and at the user's expense. Such meters may measure either the amount of sewage discharged or the amount of water diverted. Such meters shall be tested for accuracy at the expense of the user when deemed necessary by the Manager.

3.03 Estimated Wastewater Volume.

3.03.1 Users Without Source Meters. For users where, in the opinion of the Agency, it is unnecessary or impractical to install meters, the quantity of wastewater may be based upon an estimate prepared by the Agency. This estimate shall be based upon a rational determination of the wastewater discharged and may consider such factors as the number of fixtures, seating capacity, population equivalent, annual production of goods and services, or such other determinants of water use necessary to estimate the wastewater volume discharged.

3.03.2 Users With Source Meters. For users who, in the opinion of the Agency, divert a significant portion of their flow from a community sewer, the user charges may be based upon an estimate of the volume to be discharged, provided the user obtains a Wastewater Discharge Permit and pays the applicable user charges and fees. The estimate must include the method and calculations used to determine the wastewater volume and may consider such factors as the number of fixtures, seating capacity, population equivalents, annual production of goods and services, or such other determinations of water use necessary to estimate the wastewater volume discharged.

Chapter 4

ADMINISTRATION

4.01 Discharge Reports. The Agency, or the Authority through the Agency, may require that any person discharging or proposing to discharge wastewater into a community sewer file a periodic discharge report. The discharge report may include, but not be limited to, nature of process, volume, rates of flow, mass emission rate, production quantities, hours of operation, number and classification of employees, or other information which relates to the generation of waste including wastewater constituents and characteristics in the wastewater discharge. Such reports may also include the chemical constituents and quantity of liquid or gaseous materials stored on site even though they may not normally be discharged. In addition to discharge reports, the Agency may require information in the form of Wastewater Discharge Permit applications and self-monitoring reports.

4.02 Wastewater Discharge Permits.

4.02.1 Mandatory Permits. ~~All critical~~ users proposing to connect or to discharge into a community sewer must obtain a Wastewater Discharge Permit before connecting to or discharging into a community sewer. All existing critical users connected to or discharging into a community sewer must obtain a Wastewater Discharge Permit within 90 days after the effective date of these regulations. For purposes of these regulations, a critical user is defined as:

- All users for which federal categorical standards have been promulgated;
- Any user that discharges 25,000 gallons per day of process wastewater or 50,000 gallons per day total wastewater;
- Any user that contributes a process waste stream which comprises five percent or more of the average dry weather hydraulic or organic (BOD, TSS, etc.) capacity of the wastewater treatment plant;
- Any user that has a reasonable potential, in the opinion of the manager or the pretreatment program approval authority to significantly or adversely affect the treatment plant;
- Any user classified as a critical user under the above definition, except critical users for which federal categorical pretreatment standards have been promulgated, may be de-classified as a critical user if, in the opinion of the Agency, the user has no reasonable potential for adversely affecting the collection and/or treatment system or for violating any pretreatment regulations.

4.02.2 Optional Permits. The Manager may issue a Wastewater Discharge Permit to any user, upon application, in accordance with the terms of this section in the following categories:

- (a) a user who requires the user charges and fees to be based on an estimation of wastewater flow, or
- (b) any user whose wastewater strength is less than the normal range for the user classification to which the user is assigned because of pretreatment, process changes or other reasons.

4.02.3 Permit Application. Users seeking a Wastewater Discharge Permit shall complete and file with the Manager an application in the form prescribed by the Manager and accompanied by the applicable fees. The applicant may be required to submit, in units and terms appropriate for evaluation, the following information:

- (a) name, address, and SIC number of applicant;
- (b) volume of wastewater to be discharged;
- (c) wastewater constituents and characteristics including, but not limited to, those mentioned in section 2.08 as determined by a laboratory approved by the Agency;
- (d) time and duration of discharge;
- (e) average and 30-minute peak wastewater flow rates, including daily, monthly, and seasonal variations, if any;
- (f) site plans, floor plans, mechanical and plumbing plans, and details to show all sewers and appurtenances by size, location, and elevation;
- (g) description of activities, facilities, and plant processes on the premises including all materials, processes, and types of materials which are or could be discharged;
- (h) each product produced by type, amount, and rate of production;
- (i) number and type of employees, and hours of work;
- (j) any other information as may be deemed by the Manager to be necessary to evaluate the permit application.

The Manager will evaluate the data furnished by the user and may require additional information. After evaluation and acceptance of the data furnished, the Manager may issue a Wastewater Discharge Permit subject to terms and conditions provided herein.

4.02.4 Permit Conditions. Wastewater Discharge Permits shall be expressly subject to all provisions of these regulations and all other regulations, user charges, and fees established by the Agency. The conditions of Wastewater Discharge Permits shall be uniformly enforced by the Manager in accordance with these regulations, and applicable state and federal regulations. Permits may contain the following:

- (a) the unit charge or schedule of user charges and fees for the wastewater to be discharged to a community sewer;
- (b) the average and maximum wastewater constituents and characteristics;
- (c) limits on rate and time of discharge or requirements for flow regulations and equalization;
- (d) requirements for installation of inspection and sampling facilities;
- (e) pretreatment requirements;
- (f) specifications for monitoring programs which may include sampling locations, frequency and method of sampling, number, types and standards for tests, and reporting schedule;
- (g) requirements for submission of technical reports or discharge reports, including, but not limited to baseline monitoring reports, compliance schedule progress reports, report on compliance with categorical pretreatment standard deadline, periodic report on continuous compliance, or any report required by 40 CFR 403.12;
- (h) requirements for maintaining plant records relating to wastewater discharge as specified by the Agency, and affording Agency access thereto;
- (i) mean and maximum mass emission rates, or other appropriate limits when incompatible pollutants (as defined by section 1.02(l)) are proposed or presented in the user's wastewater discharge;
- (j) other conditions as deemed appropriate by the Agency to insure compliance with these regulations.

4.02.5 Duration of Permits. Permits shall be issued for a specified time period, not to exceed five years. A permit may be issued for a period less than one year or may be stated to expire on a specific date. If the user is not notified by the Agency 30 days prior to the expiration of the permit, the permit shall be extended one additional year. The terms and conditions of the permit may be subject to modification and change by the Agency during the life of the permit as limitations or requirements as identified in section 2.08 are modified and changed. The user shall be informed of any proposed changes in his or her permit at least 30 days prior to the effective date of change. Any changes or new conditions in the permit shall include a reasonable time schedule for compliance.

4.02.6 Transfer of a Permit. Wastewater Discharge Permits are issued to a specific user for a specific operation. A Wastewater Discharge Permit shall not be reassigned or transferred or sold to a new owner, new user, different premises, or a new or changed operation.

4.02.7 Revocation of Permit. Any user who violates the following conditions of the permit or any conditions of these regulations, or applicable state and federal regulations is subject to permit revocation:

- (a) failure of the user to factually report the wastewater constituents and characteristics of his or her discharge;
- (b) failure of the user to report and obtain prior written approval for significant changes in operations, or wastewater constituents, characteristics, and/or flow rates;
- (c) refusal of reasonable access to the user's premises for the purpose of inspection or monitoring; or
- (d) violations of conditions of the permit.

4.03 Monitoring Facilities. The Agency may require the user to construct at his or her own expense, monitoring facilities to allow inspection, sampling, and flow measurement of the building sewer or internal drainage systems and may also require sampling or metering equipment to be provided, installed, and operated at the user's expense. The monitoring facility should normally be situated on the user's premises; but the Agency may, when such a location would be impractical or cause undue hardship on the user, allow the facility to be constructed in the public street or sidewalk area with the approval of the public agency having jurisdiction over that street or sidewalk, and located so that it will not be obstructed by landscaping or parked vehicles.

If the monitoring facility is inside the user's fence, there shall be accommodations to allow access for Agency personnel, such as a gate secured with an Agency lock. There shall be ample room in or near such sampling manhole to allow accurate sampling and compositing of samples for analysis. The manhole, sampling, and measuring equipment shall be maintained at all times in a safe and proper operating condition at the expense of the user.

Whether constructed on public or private property, the sampling and monitoring facilities shall be provided in accordance with the Agency's requirements and all applicable local agency construction standards and specifications. Construction shall be completed within 90 days following written notification by the Agency unless a time extension is otherwise granted by the Agency.

4.04 Inspection and Sampling. The Agency may inspect the facilities of any user to ascertain whether the purpose of these regulations is being met and all requirements are being complied with. Persons or occupants of premises where wastewater is created or discharged shall allow the Agency or its representative ready access at all reasonable times to all parts of the premises for the purposes of inspection or sampling or in the performance of any of their duties. The Agency shall have the right to set up on the user's property such devices as are necessary to conduct sampling or metering operations. Where a user has security measures in force which would require proper identification and clearance before entry into their premises, the user shall make necessary arrangements with their security personnel so that, upon presentation of suitable identification, personnel from the Agency will be permitted to enter without delay for the purposes of performing their specific responsibilities.

4.05 Pretreatment. Users shall make wastewater acceptable under the limitations established herein before discharging to any community sewer. Any facilities required to pretreat wastewater to a level acceptable to the Agency shall be provided and maintained at the user's expense. Detailed plans showing the pretreatment facilities and operating procedures shall be submitted to the Agency for review, and shall be acceptable to the Agency before construction of the facility. The review of such plans and operating procedures will in no way relieve the user from the responsibility of modifying the facility as necessary to produce an effluent acceptable to the Agency under the provisions of these regulations. Any subsequent changes in the pretreatment facilities or method of operation shall be reported to and be acceptable to the Agency.

4.06 Protection from Accidental Discharge. Each user shall provide protection from accidental discharge of prohibited materials or other wastes regulated by these regulations. Such facilities shall be provided and maintained at the user's expense. Detailed plans showing facilities and operating procedures to provide this protection shall be submitted to the Agency for review, and shall be acceptable to the Agency before construction of the facility.

The review of such plans and operating procedures will in no way relieve the user from the responsibility of modifying the facility as necessary to provide the protection necessary to meet the requirements of this section.

4.07 Confidential Information. All information and data on a user obtained from reports, questionnaires, permit application, permits, and monitoring programs, and from inspections, shall be available to the public or other governmental agency without restriction unless the user specifically requests and is able to demonstrate to the satisfaction of the Agency that the release of such information would divulge information, processes, or methods which would be detrimental to the user's competitive position.

When requested by the person furnishing a report, the portions of a report which might disclose trade secrets or secret processes shall not be made available for inspection by the public but shall be made available to government agencies for use in making studies; provided, however, that such portions of a report shall be available for use by the state or any state agency in judicial review or enforcement proceedings involving the person furnishing the report. Wastewater constituents and characteristics will not be recognized as confidential information.

Information accepted by the Agency as confidential shall not be transmitted to any other governmental agency until and unless prior and adequate notification is given to the user, except in emergency or extraordinary circumstances. The notification provision of this section shall not be construed to require the consent or approval of the user before such information is released.

4.08 Special Agreements. Special agreements and arrangements between the Agency and any persons or agencies may be established when, in the opinion of the Agency, unusual or extraordinary circumstances compel special terms and conditions. Under no circumstances, however, will any special agreement or arrangement be established which contravenes any federal pretreatment regulation, categorical pretreatment standard, or any other provision of federal law.

4.09 Signature Requirement. All reports and/or permit applications received and/or required under these regulations shall include the certification statement as set forth in 40 CFR 403.6(a)(2)(ii) and shall be signed:

- (a) by a responsible corporate officer, if the user submitting the reports is a corporation. For the purpose of this paragraph, a responsible corporate officer means:
 - (1) a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
 - (2) the manager of one or more manufacturing, production, or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
- (b) by a general partner or proprietor if the user submitting the reports is a partnership or sole proprietorship, respectively;
- (c) by a duly authorized representative of the individual designated in paragraph (a) or (b) of this section if:
 - (1) The authorization is made in writing by the individual designated in paragraph (a) or (b);
 - (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the facility from which the industrial discharge originates, such as the position of plant manager, operator of a well, or well field superintendent, or a position of equivalent responsibility, or having overall responsibility for environmental matters for the company; and
 - (3) The written authorization is submitted to the Agency.
- (d) If an authorization under paragraph (c) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for environmental matters for the company, a new authorization satisfying the requirements of paragraph (c) of this section must be submitted to the Agency prior to or together with any reports to be signed by an authorized representative.

4.10 Retention of Records. All records, including but not limited to discharge reports, permits, self-monitoring data, pretreatment system process control logs, and relevant correspondence (whether or not required by these regulations) must be maintained by the user for a period of not less than three years. All such records shall be made available for inspection and copying by a duly authorized representative of the Agency or any other governmental entity having jurisdiction.

4.11 Public Notification of Dischargers Found to be in Significant Non-Compliance. At an interval of not less than once per year, the Agency will publish the identities of any user(s) which is (are) found to be in significant non-compliance of any national pretreatment standard, discharge limitation or prohibition, or any other requirement of these regulations. The definition of significant non-compliance shall be as specified in 40 CFR 403.8(f)(2)(vii). The publication shall occur in the newspaper having the largest daily circulation within the service area of the Agency.

4.12 Notification of Changed Discharge. All users, whether or not controlled by permit under the provisions of section 4.02, must notify and obtain approval for any substantial changes in the volume or character of pollutants in their discharges.

4.13 Notification of Hazardous Waste Discharge.

- (a) All industrial users discharging any substance which, if otherwise disposed of, would be a hazardous or acutely hazardous waste under 40 CFR 261, must comply with the reporting requirements of 40 CFR 403.12(p)(1) and (3) unless exempted under the provisions of 40 CFR 403.12(p)(2).
- (b) In the case of any notification made under section (a) above, the industrial user shall certify that it has a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practical. The Agency may accept a copy of a hazardous waste reduction or minimization plan as otherwise required by law.

Chapter 5

WASTEWATER CHARGES AND FEES

5.01 Schedule of Charges and Fees. A schedule of charges and fees shall be adopted by the Agency which will enable it to comply with the revenue requirements of the State Clean Water Grant Program and charges and fees shall be determined in a manner consistent with regulations of the grant program.

5.02 Classification of Users. All users shall be classified by assigning each one to a "User Classification" category according to the principal activity conducted on the user's premises and appropriate non-industrial classifications as determined by the Agency. The purpose of such classification is to facilitate the regulation of wastewater discharges based on wastewater constituents and characteristics to provide an effective means of source control, and to establish a system of user charges and fees which will insure an equitable recovery of the Agency's cost.

5.03 Types of Charges and Fees. The charges for each wastewater constituent and characteristic shall be established by the Agency and set forth in the Agency's schedule of charges and fees, which may include, but not be limited to:

- (a) user classification charges;
- (b) fees for monitoring;
- (c) fees for permit applications;
- (d) appeal fees; or
- (e) charges and fees based on wastewater constituents and characteristics to include industrial cost recovery provisions of the federal Act.

5.04 Determination of User Charges and Fees. When user classification charges are established, they shall be based upon a minimum basic charge for each premise, computed on the basis of the characteristics of wastewater from a domestic premise. The quantitative values for the characteristics, including biochemical oxygen demand (BOD), suspended solids (SS), and volume of domestic wastewater (flow), are as follows:

BOD — 170 mg/L

SS — 198 mg/L

Flow — 200 gallons/day

or as may hereafter be revised from time to time by resolution of the Agency.

The charges for all classifications of users other than the basic domestic premise shall be based upon the relative difference between the average wastewater constituents and characteristics of that classification as related to those of a domestic premise.

The charges and fees established for permit users shall be based upon the measured or estimated constituents and characteristics of that user which may include, but not be limited to, BOD, SS, and volume.

Chapter 6

ENFORCEMENT

6.01 Notification of Discharge. Users shall notify the Agency immediately upon accidentally discharging wastes in violation of these regulations and/or discharging any slug loading to enable countermeasures to be taken by the Agency to minimize damage to the community sewer, treatment facility, treatment processes, and the receiving waters.

This notification shall be followed, within five days of the date of occurrence, by a detailed written statement describing the causes of the accidental discharge and the measures being taken to prevent future occurrence.

Such notification will not relieve users of liability for any expense, loss, or damage to the sewer system, treatment plant, or treatment process, or for any fines imposed on the Agency on account thereof under section 13350 of the California Water Code, or for violations of section 5650 of the California Fish and Game Code.

6.02 Issuance of Cease and Desist Orders. When the Agency finds that a discharge of wastewater has taken place in violation of prohibitions or limitations of these regulations, or the provisions of a Wastewater Discharge Permit, the Manager may issue an order to cease and desist, and direct that those not complying with such prohibitions, limits, requirements, or provisions:

- (a) comply forthwith;
- (b) comply in accordance with a time schedule set forth by the Agency; or
- (c) take appropriate remedial or preventive action in the event of a threatened violation.

6.03 Submission of Time Schedule. When the Agency finds that a discharge of wastewater has been taking place in violation of prohibitions or limitations prescribed in these regulations, or wastewater source control requirements, effluent limitations or pretreatment standards, or the provisions of a Wastewater Discharge Permit, the Agency may require the user to submit for approval, with such modifications as it deems necessary, a detailed time schedule of specific actions which the user shall take in order to prevent or correct a violation of the requirements.

6.04 Appeals. Any user, permit applicant, or permit holder affected by any decision, action, or determination, including cease and desist orders made by the Manager, interpreting or implementing the provisions of these regulations or in any permit issued herein, may file with the Manager a written request for reconsideration within ten days of such decision, action, or determination, setting forth in detail the facts supporting the user's request for reconsideration.

If the ruling made by the Manager is unsatisfactory to the person requesting reconsideration, he or she may, within ten days after notification of Agency action, file a written appeal to the Agency's governing body. The written appeal shall be heard by the body within 30 days from the date of filing. The Agency's governing body shall make a final ruling on the appeal within ten days of the close of the hearing. The Manager's decision, action, or determination shall remain in effect during such period of reconsideration.

6.05 Notices to Employees. In order that employees of users be informed of Agency requirements, users shall make available to their employees copies of these regulations together with such other wastewater information and notices which may be furnished by the Agency from time to time directed toward more effective water pollution control. A notice shall be furnished and permanently posted on the user's bulletin board advising employees whom to call in case of an accidental discharge in violation of these regulations.

6.06 Preventive Measures. Any direct or indirect connection or entry point for persistent or deleterious wastes to the user's plumbing or drainage system should be eliminated. Where such action is impractical or unreasonable, the user shall appropriately label such entry points to warn against discharge of such wastes in violation of these regulations.

Chapter 7

ABATEMENT

7.01 Public Nuisance. Discharge of wastewater in any manner in violation of these regulations or of any order issued by the Manager as authorized by these regulations, is hereby declared a public nuisance and shall be corrected or abated as directed by the Manager. Any person creating a public nuisance shall be subject to provisions of Agency codes or ordinances governing such nuisance.

7.02 Injunction. Whenever a discharge of wastewater is in violation of the provisions of these regulations or otherwise causes or threatens to cause a condition of contamination, pollution, or nuisance, the Agency may petition the superior court for the issuance of a preliminary or permanent injunction, or both, as may be appropriate in restraining the continuance of such discharge.

7.03 Damage to Facilities. When a discharge of wastes causes an obstruction, damage, or any other impairment to Agency facilities, the agency may assess a charge against the user for the work required to clean or repair the facility and add such charge to the user's charges and fees.

7.04 Civil Penalties. Any person who violates any provision of these regulations or permit conditions, or who discharges wastewater which causes pollution, or who violates any cease and desist order, prohibition, effluent limitation, national standard of performance, pretreatment or toxicity standard, shall be liable civilly to penalties imposed by the Agency against which the violation occurs. The attorney of the Agency, upon order of the Agency's governing body, shall petition the superior court to impose, assess, and recover such sums as may be applicable. In addition, the Agency may refer any violations of these regulations to the office of the Alameda County District Attorney for civil prosecution under any applicable statute or provision of law.

7.05 Criminal Penalties. Any person who violates any provision of these regulations, or of a permit or a cease and desist order issued pursuant to these regulations, is guilty of a public offense. The classification of such public offense and the punishment therefor shall be as provided by regulations of the Agency.

7.06 Falsifying Information. Any person who knowingly makes any false statements, representation, record, report, plan, or other document filed with the Agency, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under these regulations, shall be punished in accordance with the Agency codes or ordinances governing such falsifications. The attorney of the Agency, upon order of the Agency's governing body, shall petition the Superior Court to impose, assess, and recover such sums as may be applicable.

7.07 Termination of Service. The Agency may revoke any Wastewater Discharge Permit, or terminate or cause to be terminated wastewater service to any premises, if a violation of any provision of these regulations is found to exist or if a discharge of wastewater causes or threatens to cause a condition of contamination, pollution, or nuisance as defined in these regulations. Furthermore, whenever any discharge of wastewater is deemed by the Agency to be an imminent and significant threat to the operation of the wastewater treatment plant, an imminent and significant threat to the health and safety of Agency personnel, or the public, or an imminent and significant threat to the quality of the waters of the state, the Agency may, without prior notice and by whatever means or combination of means available, terminate wastewater service to any premises. This provision is in addition to other statutes, rules, or regulations, authorizing termination of service for delinquency in payment.

Chapter 8

SEVERABILITY

If any provision of these regulations or the application to any person or circumstances is held invalid, the remainder of the regulations or the application of such provisions to other persons or other circumstances shall not be affected.

SUPPLEMENT

This Wastewater Discharge Regulations Supplement includes selected Code of Federal Regulations parts (listed as 40 CFR) referred to in the main section of this document. Other 40 CFR parts, which are too lengthy to include in their entirety, are summarized. More information relating to these Federal Register references is available in the City of Hayward Water Pollution Control offices.

Federal Regulations are updated from time to time. This document contains current regulations as of June 1991. Compliance with any future federal regulations is the responsibility of the user.

40 CFR Part 136: Environmental Protection Agency Regulations on Test Procedures for the Analysis of Pollutants

(Summary) This part prescribes test procedures for performing analyses of wastewater constituents. Part 136 identifies test procedures and specifies application of and approval of alternate test procedures. Reprints of the introductory pages of this part are available upon request from Water Pollution Control.

40 CFR Part 261: Environmental Protection Agency Regulations for Identifying Hazardous Waste

(Summary) This part is commonly referred to as the RCRA regulations. It includes criteria for identifying the characteristics of hazardous waste, as well as characteristics of hazardous waste and lists of hazardous wastes.

40 CFR Part 403.3(k)(1): Definitions

The term "New Source" means any building, structure, facility or installation from which there is or may be a Discharge of pollutants, the construction of which commenced after the publication of proposed Pretreatment Standards under section 307(c) of the Act which will be applicable to such source if such Standards are thereafter promulgated in accordance with that section, *provided that:*

- (i) The building, structure, facility or installation is constructed at a site at which no other source is located; or
- (ii) The building, structure, facility or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or
- (iii) The production or wastewater generating processes of the building, structure, facility or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source should be considered

40 CFR Part 403.5: National pretreatment standards: Prohibited discharges

(Summary) This part is commonly referred to as the General Pretreatment Regulations.

403.5 National pretreatment standards: Prohibited discharges.

(a) (1) *General prohibitions.* A User may not introduce into a POTW any pollutant(s) which cause Pass Through or Interference. These general prohibitions and the specific prohibitions in paragraph (b) of this section apply to each User introducing pollutants into a POTW whether or not the User is subject to other National Pretreatment Standards or any national, State or local Pretreatment Requirements.

(2) *Affirmative Defenses:* A User shall have an affirmative defense in any action brought against it alleging a violation of the general prohibitions established in paragraph (a)(1) of this section and the specific prohibitions in paragraphs (b)(3), (4), (5), (6) and (7) of this section where the Users can demonstrate that:

(i) It did not know or have reason to know that its Discharge, alone or in conjunction with a discharge or discharges from other sources, would cause Pass Through or Interference; and

(ii)(A) A local limit designed to prevent Pass Through and/or Interference, as the case may be, was developed in accordance with paragraph (c) of this section for each pollutant in the User's Discharge that caused Pass Through or Interference, and the User was in compliance with each such local limit directly prior to and during the Pass Through or Interference; or

(B) If a local limit designed to prevent Pass Through and/or Interference, as the case may be, has not been developed in accordance with paragraph (c) of this section for the pollutant(s) that caused the Pass Through or Interference, the User's Discharge directly prior to and during the Pass Through or Interference did not change substantially in nature or constituents from the User's prior discharge activity when the POTW was regularly in compliance with the POTW's NPDES permit requirements and, in the case of Interference, applicable requirements for sewage sludge use or disposal.

(b) *Specific prohibitions.* In addition, the following pollutants shall not be introduced into a POTW:

(1) Pollutants which create a fire or explosion hazard in the POTW, including, but not limited to, wastestreams with a close cup flashpoint of less than 140°F or 60°C using the test methods specified in 40 CFR 261.21.

(2) Pollutants which will cause corrosive structural damage to the POTW, but in no case Discharges with pH lower than 5.0, unless the works is specifically designed to accommodate such Discharges;

(3) Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in Interference;

(4) Any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a Discharge at a flow rate and/or pollutant concentration which will cause Interference with the POTW.

(5) Heat in amounts which will inhibit biological activity in the POTW resulting in Interference, but in no case heat in such quantities that the temperature at the POTW Treatment Plant exceeds 40°C (104°F) unless the Approval Authority, upon request of the POTW, approves alternate temperature limits.

(6) Petroleum oil, nonbiodegradable cutting oil or products of mineral oil origin in amounts that will cause Interference or Pass Through;

(7) Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems;

(8) Any trucked or hauled pollutants, except at discharge points designated by the POTW.

(c) *When specific limits must be developed by POTW.* (1) Each POTW developing a POTW Pretreatment Program pursuant to paragraph 403.8 shall develop and enforce specific limits to implement the prohibitions listed in paragraphs (a)(1) and (b) of this section.

(1) Each POTW with an approved pretreatment program shall continue to develop these limits as necessary and effectively enforce such limits.

(2) All other POTW's shall, in cases where pollutants contributed by User(s) result in Interference or Pass Through, and such violation is likely to recur, develop and enforce specific effluent limits for Industrial User(s), and all other users, as appropriate, which, together with appropriate changes in the POTW Treatment Plant's facilities or operation, are necessary to ensure renewed and continued compliance with the POTW's NPDES permit or sludge use or disposal practices.

(3) Specific effluent limits shall not be developed and enforced without individual notice to persons or groups who have requested such notice and an opportunity to respond.

(d) *Local limits.* Where specific prohibitions or limits on pollutants or pollutant parameters are developed by a POTW in accordance with paragraph (c) above, such limits shall be deemed Pretreatment Standards for the purposes of section 307(d) of the Act.

(e) *EPA enforcement actions under section 309(f) of the Clean Water Act.* If, within 30 days after notice of an Interference or Pass Through violation has been sent by EPA to the POTW, and to persons or groups who have requested such notice, the POTW fails to commence appropriate enforcement action to correct the violation, EPA may take appropriate enforcement action under the authority provided in section 309(f) of the Clean Water Act.

(f) *Compliance deadlines.* Compliance with the provisions of this section is required beginning on March 16, 1981, except for paragraph (b)(5) of this section which must be complied with by August 25, 1981.

40 CFR Part 403.6(a)(2)(ii): National pretreatment standards: Categorical standards: Category determination requests.

Each request shall contain a statement citing evidence and reasons why a particular subcategory is applicable and why others are not applicable. Any person signing the application statement submitted pursuant to this section shall make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

40 CFR Part 403.8(f)(2)(vii): POTW pretreatment program requirements: Procedures.

The POTW shall develop and implement procedures to ensure compliance with the requirements of a Pretreatment Program. At a minimum, these procedures shall enable the POTW to:

(vii) Comply with the public participation requirements of 40 CFR part 25 in the enforcement of national pretreatment standards. These procedures shall include provision for at least annual public notification, in the largest daily newspaper published in the municipality in which the POTW is located, of industrial users which, at any time during the previous twelve months, were in significant noncompliance with

applicable pretreatment requirements. For the purposes of this provision, an industrial user is in significant noncompliance if its violation meets one or more of the following criteria:

(A) Chronic violations of wastewater discharge limits, defined here as those in which sixty-six percent or more of all the measurements taken during a six-month period exceed (by any magnitude) the daily maximum limit or the average limit for the same pollutant parameter;

(B) Technical Review Criteria (TRC) violations, defined here as those in which thirty-three percent or more of all the measurements for each pollutant parameter taken during a six-month period equal or exceed the product of the daily maximum limit or the average limit multiplied by the applicable TRC (TRC=1.4 for BOD, TSS, fats, oil, and grease, and 1.2 for all other pollutants except pH);

(C) Any other violation of a pretreatment effluent limit (daily maximum or longer-term average) that the Control Authority determines has caused, alone or in combination with other discharges, interference or pass through (including endangering the health of POTW personnel or the general public);

(D) Any discharge of a pollutant that has caused imminent endangerment to human health, welfare or to the environment or has resulted in the POTW's exercise of its emergency authority under paragraph (f)(1)(vi)(B) of this section to halt or prevent such a discharge;

(E) Failure to meet , within 90 days after the schedule date, a compliance schedule milestone contained in a local control mechanism or enforcement order for starting construction, completing construction, or attaining final compliance;

(F) Failure to provide, within 30 days after the due date, required reports such as baseline monitoring reports, 90-day compliance reports, periodic self-monitoring reports, and reports on compliance with compliance schedules;

(G) Failure to accurately report noncompliance;

(H) Any other violation or group of violations which the Control Authority determines will adversely affect the operation or implementation of the local pretreatment program.

40 CFR Part 403.12: Reporting requirements for POTWs and industrial users

(Summary) This part contains the monitoring and reporting requirements for baseline monitoring reports and other required reports such as the periodic report of continued compliance. It provides for:

1. Certification statements by an authorized representative of the IU,
2. Compliance schedules for meeting pretreatment standards,
3. Notice of potential problems, including slug loading,
4. Signatory requirements for industrial user reports,
5. Provisions governing fraud and false statements,
6. Record-keeping requirements,
7. Notification of hazardous waste discharges.

40 CFR Part 403.12 is crucial to the implementation of and compliance with IU self-monitoring and reporting. Reprints of this Part are available upon request from Water Pollution Control.

40 CFR Part 403.17(c): Bypass notification

(c) *Notice.* (1) If an Industrial User knows in advance of the need for a bypass, it shall submit prior notice to the Control Authority, if possible at least ten days before the date of the bypass.

(2) An Industrial User shall submit oral notice of an unanticipated bypass that exceeds applicable Pretreatment Standards to the Control Authority within 24 hours from the time the Industrial User becomes aware of the bypass. A written submission shall also be provided within 5 days of the time the Industrial User becomes aware of the bypass. The written submission shall contain a description of the bypass and its cause; the duration of the bypass, including exact dates and times, and, if the bypass has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass. The control Authority may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

APPENDIX C
SAMPLING STRATEGY AND MAP

AIR NATIONAL GUARD STATION

SAMPLING STRATEGY

1. All sampling locations and analyses were identified during the presurvey at Hayward ANG Station. Sampling locations were selected based on the following factors: accessibility, safety, direction of discharge, and the type of waste location receives. Analyses, with exception of cyanides and COD, were determined based on the City of Hayward Wastewater Discharge Regulations. The methods and procedures utilized for all sampling and analyses performed are in accordances with the provisions of 40 Code of Federal Regulations Part 136.

2. The following information is the Hayward Station's proposed wastewater characterization sampling strategy:

Site 1: Manhole located west of the 216th EIS gas station, Bldg 20, and south of the 216th Headquarters, Bldg 10. This location discharges directly to the city of Hayward.

<u>PARAMETERS</u>	<u>DAYS</u>	<u>TYPE OF SAMPLE</u>
Oil/Grease	7	grab
Total Petroleum-Hydrocarbon	7	grab
Phenol	7	24-hour composite
EPA 601	7	grab
EPA 602	7	grab
Metals	7	24-hour composite
Total Cyanide	7	24-hour composite
Chemical Oxygen	7	24-hour composite
Biochemical Oxygen-Demand	3	24-hour composite
Total Toxic Organics	1	grab
Total Suspend Solids	7	grab
pH	7	direct read
Temperature	7	direct read

(Continued)

Site 2: 2'X 4'pit located in front of the 216th Gas Station,
Bldg 20.

<u>PARAMETERS</u>	<u>DAYS</u>	<u>TYPE OF SAMPLE</u>
Oil/Grease	1	grab
Total Petroleum-Hydrocarbon	1	grab
EPA 601	1	grab
EPA 602	1	grab
Metals	1	grab
Chemical Oxygen Demand	1	grab
Hazardous Characterizations:		
Sludge	1	grab
Water	1	grab

Site 3: The 216th Vehicle Washrack, located behind the
the 216th EIS Gas Station, Bldg 3.

<u>PARAMETER</u>	<u>DAYS</u>	<u>TYPE OF SAMPLE</u>
Oil/Grease	1	grab
Total Petroleum-Hydrocarbon	1	grab
Chemical Oxygen Demand	1	grab
Total Cyanide	1	grab
Phenols	1	grab
Hazardous Characterization:		
(Water)	1	grab
SW-846 8020 (Sludge)	1	grab

(Continued)

Site 4: Manhole located in the street in front of the 216th EIS Vehicle Maintenance shop, Bldg 3.

<u>PARAMETERS</u>	<u>DAYS</u>	<u>TYPE OF SAMPLE</u>
Oil/Grease	5	grab
Total Petroleum-Hydrocarbon	5	grab
Chemical Oxygen Demand	5	24-hour composite
Total Cyanide	5	24-hour composite
Metals	5	24-hour composite
EPA 601	5	grab
EPA 602	5	grab
Phenols	5	24-hour composite
Total Suspend Solids	5	grab
pH	5	direct read
Temperature	5	direct read

Site 5: Manhole located at the southeast corner of the Marine's Hangar, Bldg 1, in the gravel.

<u>PARAMETERS</u>	<u>DAY</u>	<u>TYPE OF SAMPLE</u>
Oil/Grease	5	grab
Total Petroleum-Hydrocarbon	5	grab
Chemical Oxygen-Demand	5	24-hour composite
Total Cyanide	5	24-hour composite
Total Suspend Solids	5	grab
Metals	5	24-hour composite
EPA 601	5	grab

(Continued)

EPA 602	5	grab
Phenols	5	24-hour composite
Temperature	5	direct read
pH	5	direct read

Site 6: An oil/water separator located in a dirt field west of the Marine's aircraft parking apron and west of the Vehicle Maintenance Shop, Bldg 16.

<u>PARAMETERS</u>	<u>DAYS</u>	<u>TYPE OF SAMPLE</u>
Oil/Grease	1	grab
Total Petroleum-Hydrocarbon	1	grab
Metals	1	grab
Chemical Oxygen Demand	1	grab
EPA 601	1	grab
EPA 602	1	grab
Hazardous Waste Characterization	1	grab

Site 7: Effluent of the oil/water separator which services the Marines Vehicle Maintenance Shop, Bldg 16.

<u>PARAMETERS</u>	<u>DAYS</u>	<u>TYPE OF SAMPLE</u>
Oil/Grease	1	grab
Total Petroleum-Hydrocarbon	1	grab
Phenols	1	grab
EPA 601	1	grab
EPA 602	1	grab

(Continued)

Cyanide	1	grab
Chemical Oxygen Demand	1	grab

Site 8: Effluent from the oil/water separator which services the 234th CCS Vehicle Maintenance Shop, Bldg 9.

<u>PARAMETERS</u>	<u>DAYS</u>	<u>TYPE OF SAMPLE</u>
Oil/Grease	1	grab
Petroleum-Hydrocarbon	1	grab
Chemical Oxygen-Demand	1	grab
Total Cyanide	1	grab
Phenols	1	grab
Total Solids	1	grab
Hazardous Waste Characterization	1	grab
SW-846 8010 & 8020	1	grab

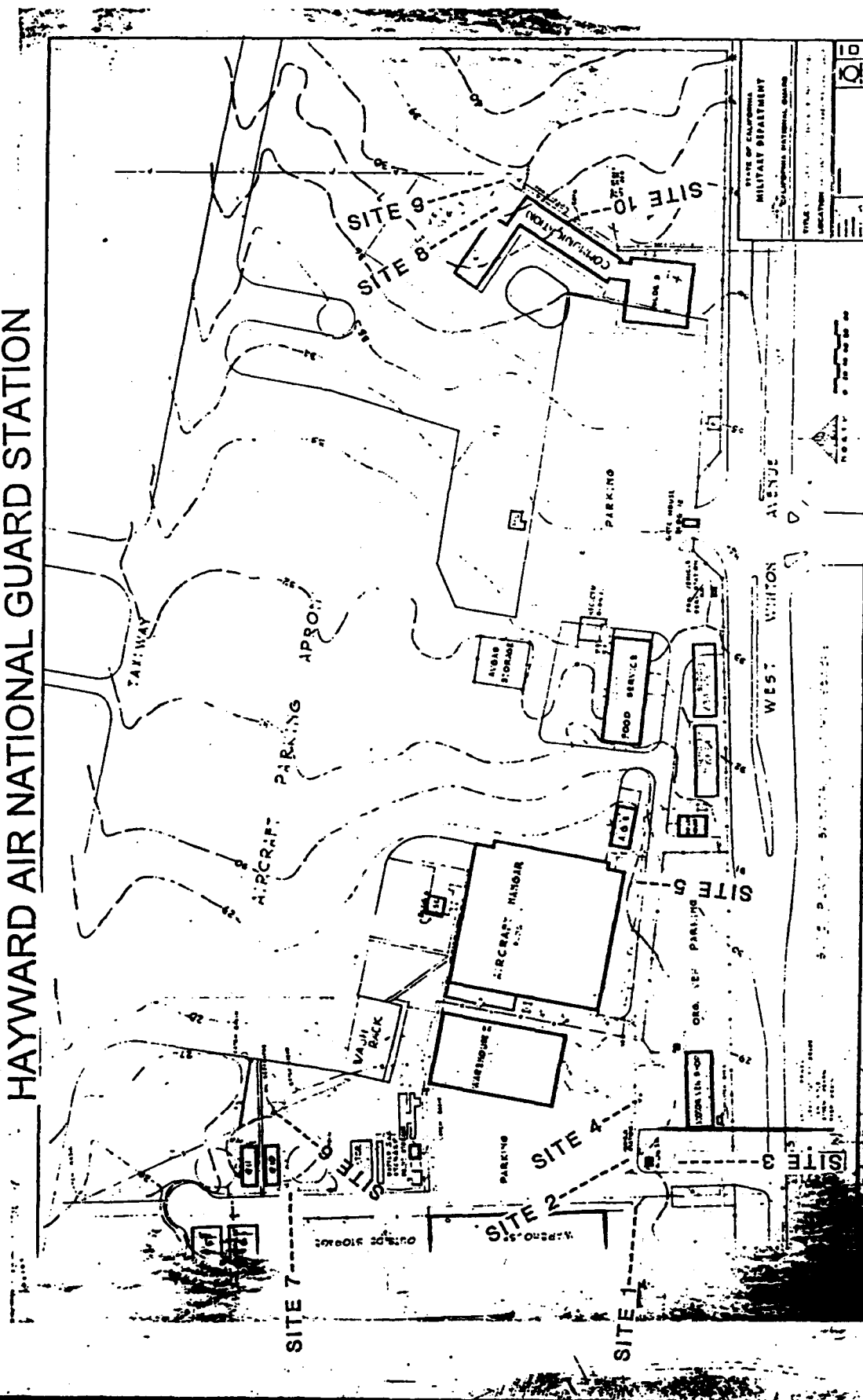
Sites 9 & 10: Attempts will be made to collect time proportional samples from these sites. Both sites are located on the east side of Bldg 9. Accessibility and flow sufficiency may be a problem.

<u>PARAMETER</u>	<u>DAYS</u>	<u>TYPE OF SAMPLE</u>
Oil/Grease	7	grab
Total Petroleum-Hydrocarbon	7	grab
Chemical Oxygen-Demand	7	24-hour composite

(Continued)

Metals	7	24-hour composite
Phenols	7	24-hour composite
Total Cyanide	7	24-hour composite
Biochemical Oxygen Demand	3	24-hour composite
EPA 601	7	grab
EPA 602	7	grab
pH	7	direct read
Temperature	7	direct read

HAYWARD AIR NATIONAL GUARD STATION



APPENDIX D

SAMPLE METHOD, PRESERVATION AND HOLDING TIME

D-1 WASTEWATER ANALYSES AND PRESERVATION METHODS

<u>Analysis</u>	<u>Preservation</u>	<u>EPA Method</u>	<u>Holding Time (days)</u>
Purgeable Aromatics (VOAs)	4°C	602	14
Purgeable Hydrocarbons (VOHs)	4°C	601	14
Total Metals			
Arsenic	HNO ₃	206.2	180
Barium	HNO ₃	200.7	180
Beryllium	HNO ₃	210.1	180
Cadmium	HNO ₃	213.1	180
Chromium	HNO ₃	218.1	180
Chromium (VI)	HNO ₃	218.1	180
Copper	HNO ₃	220.1	180
Iron	HNO ₃	236.1	180
Lead	HNO ₃	239.1	180
Mercury	HNO ₃	245.1	180
Nickel	HNO ₃	249.1	180
Silver	HNO ₃	272.1	180
Zinc	HNO ₃	289.1	180
Cyanide	NaOH	335.3	14
Phenols	H ₂ SO ₄ , 4°C	420.2	28
Oils & Greases	H ₂ SO ₄ , 4°C	413.2	28
Hydrocarbons, Total Petroleum	H ₂ SO ₄ , 4°C	418.1	28
Chemical Oxygen Demand, (COD)	H ₂ SO ₄ , 4°C	STD METH 508C	28
Biochemical Oxygen Demand (BOD)	4°C	STD Method 5210	24 hr
Hazardous Waste Characterization	No Preservation	1110, 1120, 7.3.3.2, 7.3.4.2	7
Purgeable Halocarbons	4°C	SW-846-8010	1
Purgeable Aromatic Hydrocarbons	4°C	SW-846 8020	14
Total Toxic Organics	4°C	624	14
Total Toxic Organics	4°C	625, 608	7

APPENDIX E
QUALITY ASSURANCE/QUALITY CONTROL

**TABLE E-1, Results of Spike Sample Analyses
HAYWARD ANG'S WASTEWATER CHARACTERIZATION SURVEY
29 MARCH - 9 APRIL 93**

Metals Analyses:	UNITS:	Advisory Range	Results	Internal Results	W/I Range	Date Prepared
Arsenic	µg/l	158 - 234	204.5	200	YES	4 April 93
Barium	µg/l	NST	< 100	NST		4 April 93
Cadmium	µg/l	161 - 218	179	190	YES	4 April 93
Chromium	µg/l	334 - 477	386	410	YES	4 April 93
Copper	µg/l	656 - 817	730	614	YES	4 April 93
Iron	µg/l	NST	834	NST		4 April 93
Lead	µg/l	38.3 - 58.3	50	47.9	YES	4 April 93
Mercury	µg/l	2.54 - 4.41	2.2	3.41	YES	4 April 93
Nickel	µg/l	383 - 485	380	430	YES	4 April 93
Silver	µg/l	7.5 - 12.2	8.5	10	YES	4 April 93
Zinc	µg/l	88.5 - 133	102	110	YES	4 April 93
Other Analyses:						
Phenol	µg/l	40 - 50	45	45	YES	4 April 93
Cyanide (Total)	mg/l	0.415 - .771	0.54	0.61	YES	4 April 93
Chemical Oxygen Demand	mg/l	90.1 - 108.5	103	104.5	YES	4 April 93
Oils and Grease	mg/l	37 - 61	39	37	YES	4 April 93
Total Petroleum Hydrocarbons	mg/l	37 - 61	39	37	YES	4 April 93
Metals Analyses:						
Arsenic	µg/l	158 - 234	188.5	200	YES	6 April 93
Barium	µg/l	NST	< 100	NST		6 April 93
Cadmium	µg/l	161 - 218	169	190	YES	6 April 93
Chromium	µg/l	334 - 477	376	410	YES	6 April 93
Copper	µg/l	656 - 817	607	614	YES	6 April 93
Iron	µg/l	NST	826	NST		6 April 93
Lead	µg/l	38.3 - 58.3	42.5	47.9	YES	6 April 93
Mercury	µg/l	2.54 - 4.41	1.4	3.41	YES	6 April 93
Nickel	µg/l	383 - 485	366	430	YES	6 April 93
Silver	µg/l	7.5 - 12.2	< 0.5	10	NO	6 April 93
Zinc	µg/l	88.5 - 133	108	110	YES	6 April 93
Other Analyses						
Phenol	µg/l	40 - 50	45	45	YES	6 April 93
Chemical Oxygen Demand	mg/l	90.1 - 108.5	106	104.5	YES	6 April 93
Oils and Grease	mg/l	35 - 55	42	33	NO	6 April 93
Total Petroleum Hydrocarbons	mg/l	35 - 55	42	33	NO	6 April 93

Note: NST, No Sample Taken

TABLE E-2, Results of Duplicate Sample Analyses (Page 1 of 2)
HAYWARD ANG'S WASTEWATER CHARACTERIZATION SURVEY
29 MARCH - 9 APRIL 93

Metals Analyses:	Units	Site 1 6 Apr	Site 1 6 Apr		Pair Difference	Laboratory
Arsenic	µg/l	9	8		1	Armstrong
Barium	µg/l	<100	<100		0	Armstrong
Cadmium	µg/l	167.9	3.8		164.1	Armstrong
Chromium	µg/l	<50	<50		0	Armstrong
Copper	µg/l	48.0	45.5		2.5	Armstrong
Iron	µg/l	788	571.5		216.5	Armstrong
Lead	µg/l	14	7		7	Armstrong
Mercury	µg/l	<1.0	<1.0		<1.0	Armstrong
Nickel	µg/l	<50	64		-14	Armstrong
Silver	µg/l	<5.0	<5.0		0	Armstrong
Zinc	µg/l	301	198.5		102	Armstrong
Volatile Organic Hydrocarbon Analysis (EPA Method 601):						
Bromodichloromethane	µg/l	<0.4	<0.4		0	Armstrong
Bromoform	µg/l	<0.7	<0.7		0	Armstrong
Carbon Tetrachloride	µg/l	<0.5	<0.5		0	Armstrong
Chlorobenzene	µg/l	<0.3	<0.3		0	Armstrong
Chloroethane	µg/l	<0.9	<0.9		0	Armstrong
Chloroform	µg/l	6.0	<0.3		5.7	Armstrong
Chloromethane	µg/l	<0.8	<0.8		0	Armstrong
Chlorodibromomethane	µg/l	<0.5	<0.5		0	Armstrong
1,2-Dichlorobenzene	µg/l	<0.5	<0.5		0	Armstrong
1,3-Dichlorobenzene	µg/l	<0.5	<0.5		0	Armstrong
1,4-Dichlorobenzene	µg/l	10.8	<0.5		10.3	Armstrong
Dichlorodifluoromethane	µg/l	<0.5	<0.5		0	Armstrong
1,1-Dichloroethane	µg/l	<0.4	<0.4		0	Armstrong
1,2-Dichloroethane	µg/l	<0.3	<0.3		0	Armstrong
1,1-Dichloroethene	µg/l	<0.3	<0.3		0	Armstrong
Trans-1,2-Dichloroethene	µg/l	<0.5	<0.5		0	Armstrong
1,2-Dichloropropane	µg/l	<0.3	<0.3		0	Armstrong
Cis-1,3-Dichloropropene	µg/l	<0.5	<0.5		0	Armstrong
Trans-1,3-Dichloropropene	µg/l	<0.5	<0.5		0	Armstrong
Methylene Chloride	µg/l	0.8	<0.4		0.4	Armstrong
1,1,2,2-Tetrachloroethane	µg/l	<0.2	<0.2		0	Armstrong
Tetrachloroethylene	µg/l	<0.6	<0.6		0	Armstrong
1,1,1-Trichloroethane	µg/l	<0.5	<0.5		0	Armstrong
1,1,2-Trichloroethane	µg/l	<0.2	<0.2		0	Armstrong
Trichloroethylene	µg/l	<0.5	<0.5		0	Armstrong
Trichlorofluoromethane	µg/l	<0.4	<0.4		0	Armstrong
Vinyl Chloride	µg/l	<0.2	<0.2		0	Armstrong
2-Chloroethylvinyl Ether	µg/l	<0.2	<0.2		0	Armstrong
Bromomethane	µg/l	<0.9	<0.9		0	Armstrong
Volatile Organic Aromatic Analysis (EPA Method 602):						
1,3-Dichlorobenzene	µg/l	<0.5	<0.5		0	Armstrong
1,4-Dichlorobenzene	µg/l	10.4	<0.5		9.9	Armstrong
Ethyl Benzene	µg/l	<0.6	<0.6		0	Armstrong
Chlorobenzene	µg/l	<0.3	<0.3		0	Armstrong
Toluene	µg/l	<0.3	<0.3		0	Armstrong
Benzene	µg/l	<0.3	<0.3		0	Armstrong
1,2-Dichlorobenzene	µg/l	10.6	<0.5		10.1	Armstrong

NOTE: Shaded areas indicate results outside range.

**TABLE E-2, Results of Duplicate Sample Analyses (Page 2 of 2)
HAYWARD ANGS WASTEWATER CHARACTERIZATION SURVEY
29 MARCH - 9 APRIL 93**

Other Analyses:	Units	Site 1 6 Apr	Site 1 6 Apr		Pair Difference	Laboratory
Phenol	µg/l	85	72		13	Armstrong
Cyanide (Total)	mg/l	0.006	0.008		-0.002	Armstrong
Chemical Oxygen Demand	mg/l	385	456		-71	Armstrong
Oils and Grease	mg/l	32	96		-64	Armstrong
Total Petroleum Hydrocarbons	mg/l	18.4	40		-21.6	Armstrong
Residue (Total)	mg/l	28.4	28.4		0	Armstrong

NOTE: Shaded areas indicate results outside range.

**TABLE E-3, Results of Equipment and Reagent Blank Sample Analyses
HAYWARD ANG'S WASTEWATER CHARACTERIZATION SURVEY
29 March - 9 April 93**

		Equipment Blank Site 1	Equipment Blank Site 5	Reagent Blank Sample
	UNITS:	4 April	7 April	4 April
Metals Analyses:				
Arsenic	ug/l	NOTE: NST	<10.0	<10.0
Barium	ug/l	<100	<100	<100
Cadmium	ug/l	7.0	<5.0	<5.0
Chromium	ug/l	<50.0	<50.0	<50.0
Copper	ug/l	<50.0	<50.0	<50.0
Iron	ug/l	101	<100	<100
Lead	ug/l	<20.0	<20.0	<20.0
Mercury	ug/l	<1.0	<1.0	<1.0
Nickel	ug/l	<50.0	<50.0	<50.0
Silver	ug/l	<5.0	<5.0	<5.0
Zinc	ug/l	58.5	72	<50
Other Analyses:				
Phenol	ug/l	<10	<10	<10
Cyanide (Total)	mg/l	<.005	<.005	<.005
Chemical Oxygen Demand	mg/l	<10	12	<10
Total Petroleum Hydrocarbons	mg/l	<1.0	<1.0	<1.0
Oil & Grease	mg/l	3.2	<1.0	<1.0
Total Residue	mg/l	6.0	14.0	NST
Volatile Organic Hydrocarbon Analysis (EPA Method 601):				
Bromodichloromethane	ug/l	<0.4	<0.4	NST
Bromoform	ug/l	<0.7	<0.7	NST
Carbon Tetrachloride	ug/l	<2.0	<0.5	NST
Chlorobenzene	ug/l	<0.3	<0.3	NST
Chloroethane	ug/l	<0.9	<0.9	NST
Chloroform	ug/l	3.7	<0.3	NST
Chloromethane	ug/l	<0.8	<0.8	NST
Chlorodibromomethane	ug/l	<0.5	<0.5	NST
1,2-Dichlorobenzene	ug/l	<0.5	<0.5	NST
1,3-Dichlorobenzene	ug/l	<0.5	<0.5	NST
1,4-Dichlorobenzene	ug/l	<0.5	<0.5	NST
Dichlorodifluoromethane	ug/l	<0.5	<0.5	NST
1,1-Dichloroethane	ug/l	<0.4	<0.4	NST
1,2-Dichloroethane	ug/l	<0.3	<0.3	NST
1,1-Dichloroethene	ug/l	<0.3	<0.3	NST
Trans-1,2-Dichloroethene	ug/l	<0.5	<0.5	NST
1,2-Dichloropropane	ug/l	<0.3	<0.3	NST
Cis-1,3-Dichloropropene	ug/l	<0.5	<0.5	NST
Trans-1,3-Dichloropropene	ug/l	<0.5	<0.5	NST
Methylene Chloride	ug/l	1.6	<0.4	NST
1,1,2,2-Tetrachloroethane	ug/l	<0.2	<0.2	NST
Tetrachloroethylene	ug/l	<0.6	<0.6	NST
1,1,1-Trichloroethane	ug/l	<0.5	<0.5	NST
1,1,2-Trichloroethane	ug/l	<0.2	<0.2	NST
Trichloroethylene	ug/l	<0.5	<0.5	NST
Trichlorofluoromethane	ug/l	<0.4	<0.4	NST
Vinyl Chloride	ug/l	<0.2	<0.2	NST
2-Chloroethylvinyl Ether	ug/l	<0.2	<0.2	NST
Bromomethane	ug/l	<0.9	<0.9	NST
Volatile Organic Aromatic Analysis (EPA Method 602):				
1,3-Dichlorobenzene	ug/l	<0.5	<0.5	NST
1,4-Dichlorobenzene	ug/l	<0.5	<0.5	NST
Ethyl Benzene	ug/l	<0.6	<0.6	NST
Chlorobenzene	ug/l	<0.3	<0.3	NST
Toluene	ug/l	<0.3	<0.3	NST
Benzene	ug/l	<0.3	<0.3	NST
1,2-Dichlorobenzene	ug/l	<0.5	<0.5	NST
o-Xylenes	ug/l	0.4	<0.4	NST

Note: NST indicates No Sample Taken

APPENDIX F
HAZARDOUS MATERIAL DATA FOR SITE 10

Date: 91.12.18								
ID: 045								
Blog: 9								
Material Nomenclature (Manufacturer & Major Ingredients)		National Stock No. or NIOSH No.	Spec. (MIL-STD)	MSDS ?	Quantity Used?	Disposal Method	IEX (3,9)	Potential haz. Inh Abs Ing Con
1. EVERSEAL MANUFACTURING CO.,INC ALKYD, CAMOUFLAGE, EARTH YELLOW - RESIN - IRON OXIDE - TITANIUM DIOXIDE - LEAD CHROMATE - MAGNESIUM SILICATE - SILICA DIATOMACEOUS		8010-00-111-7968 10002500E ND7380000 XR2275000 CF7525000 CM4360000 RL8600000	E-51796A	BOTH	1.0 GAL/yr	IN PROCESS	9	Y Y N Y Y Y N Y Y Y N Y Y Y N Y Y Y N Y Y Y N Y
2. CHEMRAV COATINGS ALKYD, CAMOUFLAGE, FIELD DRAB - STANDARD SOLVENT (PETRO SOLVENT) - VOC.ORGANIC COMP 3.8LBS/GAL		8010-00-111-7947 W08925000 000000000	E-51796A	BOTH	1.0 GAL/yr	IN PROCESS	8	Y N N N Y N N N
3. E.I.DUPONT DE NEMOURS AND COMP ANTI-SEIZING TAPE - POLYTETRAFLUOROETHYLENE		8030-00-869-3535 TR7740000	T-27730	BOTH	3.0 ROL/yr	IN PROCESS	N	N N N N
4. TEXACO CHEMICAL CO ANTIFREEZE/COOLANT JC-06 - ETHYLENE GLYCOL - ADDITIVE PACKAGE		6650-00-181-7940 W42975000 1003136AP	A481538	BOTH	1.0 GAL/yr	IN PROCESS	N	N N N Y N N N Y
5. BLAST OFF		6650-0L-146-3461		NONE	1.0 QT /yr	IN PROCESS		
6. G.E. CO. PHIPPS PRODUCTS CORP BRAKE, FLUID AUTOMOTIVE - UNIDENTIFIED COMPONENTS		9150-01-102-9455 1001272UC	B-46176	BOTH	0.5 GAL/yr	IN PROCESS	8	N Y N Y
7. SAN/BAR CORP BREAK-FREE DIV CLEANER, LUBRICANT AND PRESERV - SYNTHETIC OIL - N-BHTYL ACETATE - 1,1,2-TRIFLUOROETHANE - METHYL CHLOROFORM - ISOPROPYL ALCOHOL - TAR ACIDS, CRESOLIC,PHENYL, PH		9150-01-054-6453 1000306SD AF7350000 KJ4000000 KJ2975000 NT8050000 1003172TP	L-82460	BOTH	1.0 PT /yr	IN PROCESS	8	Y Y N Y Y Y N Y Y Y N Y Y Y N Y Y Y N Y Y Y N Y
8. THUNDERBIRD SALES CO CLEANING COMPOUND, ENGINE COOL - OXALIC ACID		6350-00-965-2082 R02450000	OC00432	BOTH	1.0 QT /yr	IN PROCESS	8	N Y N Y
9. GENERAL BATTERY CORP. ELECTROLYTE - SULFURIC ACID		6810-00-249-9354 WS5600000	QSS01	BOTH	1.0 GAL/yr	IN PROCESS	8	N Y N Y
10. ENTERPROSE CHEMICAL COATING CO ENAMEL BLACK FLAT - RULE 66 MINERAL SPIRITS - DIACETONE ALCOHOL		8010-00-111-8005 1000921MS SA9100000	E-51796A	BOTH	1.0 GAL/yr	IN PROCESS	9	Y N N N Y N N N

AF Form 2761 (Computer Generated)

		HAZARDOUS MATERIALS DATA				Date: 91.12.18	
		Workplace ID: 0461-CDAG-171A		Base: W-S MOFFETT FLD			
Organization: 234TH TSS		Workplace: POWER PRODUCTION		Room/Area:		Eldg: 9	
Material Nomenclature (Manufacturer & Major Ingredients)	National Stock No. or NIOSH No.	Spec. (MIL/FE)	MSDS ?	Quantity Used?	Disposal Method	IEC (8,9)	Potential Haz. Inh Abs Inq Con
- LEAD DRIER	1006318LD						Y N N N
11. GREASE, AUTO	9150-00-005-4860		NONE	1.0 PT /yr	IN PROCESS		
12. GREASE, WHEEL BEARING	9150-P3-163-		NONE	1.0 GAL/yr	IN PROCESS	N	
13. EXXON CHEMICALS ISOPROPYL ALCOHOL, ANHYDROUS - ISOPROPYL ALCOHOL	6505-00-299-8095 NTB050000	N/R	80TH	1.0 PT /yr	IN PROCESS	N	N N N Y
14. CARDINAL INDUSTRIAL FINISHES LACQUER FLAT BLACK - VM&P NAPHTHA - TOLUENE; METHYL BENZENE - ISOBUTYL ACETATE - MEK - BUTYL CELLOSOLVE - ISOPROPYL ALCOHOL	8010-01-331-6107 64742-898 108-88-3 110-19-0 78-93-3 111-76-2 67-63-6	TT-E-527	80TH	1.0 PT /yr	IN PROCESS	8	Y N N Y Y N N Y Y N N Y Y N N Y Y N N Y Y N N Y
CARDINAL INDUSTRIAL FINISHES LACQUER GLOSS BROWN - VM&P NAPHTHA - TOLUENE; METHYL BENZENE - ISOBUTYL ACETATE - MEK - BUTYL CELLOSOLVE - ISOPROPYL ALCOHOL	8010-01-332-3740 64742-898 108-88-3 110-19-0 78-93-3 111-76-2 67-63-0	TT-E-527	80TH	1.0 PT /yr	IN PROCESS	8	Y N N Y Y N N Y Y N N Y Y N N Y Y N N Y Y N N Y
16. CARDINAL INDUSTRIAL FINISHES LACQUER GLOSS, RED - VM&P NAPHTHA - TOLUENE; METHYL BENZENE - ISOBUTYL ACETATE - MEK - BUTYL CELLOSOLVE - ISOPROPYL ALCOHOL	8010-01-331-6110 64742-898 108-88-3 110-19-0 78-93-3 111-76-2 67-63-0	AA-6651	80TH	1.0 PT /yr	IN PROCESS	8	Y N N Y Y N N Y Y N N Y Y N N Y Y N N Y Y N N Y
17. CHEMRAV COATING CORP LACQUER SPRAYING ACID RESISTANT - N-BUTYL ACETATE - TOLUENE - METHYL ETHYL KETONE - ALIPHATIC NAPHTHA, VM&P - VOC. 5.5 LB/GAL OR 659 G/L	8010-00-166-1700 AF7350000 X35250000 EL6475000 100147601	AA-1452	80TH	1.0 PT /yr	IN PROCESS	3	Y N N N Y N N N Y N N N Y N N N Y N N N
EXXON COMPANY, USA LUBRICATING OIL ENGINE - PETROLEUM LUBRICATING BASE OIL - DETERGENT INHIBITOR PACKAGE	9150-N-185-6729 1000655PB 100147601	1-2104	80TH	5.0 GAL /yr	IN PROCESS	6	N Y N Y N Y N Y

F Form 2761 (Computer Generated)

		HAZARDOUS MATERIALS DATA				Date: 91.12.16		
		Workplace ID: 0461-CDAG-171A		Base: NAS MOFFETT FLD				
Initiation: 234TH-CISSA		Workplace: POWER PRODUCTION		Room/Area:		Block: 9		
Material Nomenclature (Manufacturer & Major Ingredients)		National Stock No. or NIOSH No.	Spec. (MIL/FEQ)	MSDS ?	Quantity/ Used?	Disposal Method	IEX (8,9)	Potential Haz. Inh Abs Ing Con
19. OIL DELO 400 CO					0.1 GAL	IN PROCESS		
20. PERMATEX COMPANY, INC SEALING COMPOUND - ISOPROPYL ALCOHOL		8030-00-210-6773 NTB050000	3-4516	EDTA	1.0 GA /yr	IN PROCESS	N	N Y N N
21. EM SCIENCE SODIUM BICARBONATE BAKING SODA - SODIUM BICARBONATE		6810-00-247-1132 V20950000	3-1-57	EDTA	0.210 BAG /yr	IN PROCESS	N	N N N N
22. DRY CLEANING SOLVENT STANDARD SOLVENT - ALIPHATIC PETROLEUM LIQ		6850-00-610-1135 1000015AF	3-1-57	EDTA	1.0 GA /yr	IN PROCESS	8	N Y N Y
23. CHEVRON THINNER - ALIPHATIC HYDROCARBON		6810-00-247-1132 1000015AF	3-1-57	EDTA	1.0 GA /yr	IN PROCESS	8	Y N N N

AF Form 2761 (Computer Generated)

		HAZARDOUS MATERIALS DATA				Date: 91.11.27	
		Workplace ID: 0230-CCR/-176A		Base: NAS HOFFETT FLD			
Organization: 34TH CTSS		Workplace: VEHICLE MAINT		Room/Area:		Bldg: 9	
Material Nomenclature (Manufacturer & Major Ingredients)	National Stock No. or NIOSH No.	Spec. (MIL/FED)	MSDS ?	Quantity Used?	Disposal Method	IEX (8,9)	Potential Haz. Inh Abs Inq Con
11. DYNATRON BONDO - TITANIUM DIOXIDE - STYRENE MONOMER - ANILINE	8010-00-926-2133 100046STD 1000704SM 8W6650300	TT-F-322	BOTH	2.0 QRT/yr	IN PROCESS	N	Y Y N Y Y Y N Y Y Y N Y
12. GENERAL ELECTRIC COMPANY BRAKE FLUID SILICONE - UNIDENTIFIED	9150-01-102-9455 1001272UC	B-46176	BOTH	5.0 GAL/yr	IN PROCESS	8	N Y N Y
13. *DOM CHEM.CO. BRAKE FLUID: AUTOMOTIVE, #455 - TRIETHYLENE GLYCOL ETHYL ETHER - TRIETHYLENE GLYCOL N-BUTYL ETH - TRIETHYLENE GLYCOL METHYL ETHE	9150-00-231-9071 KK8950000 KJ9450000 KL6390000	WV-2-680	BOTH	1.0 GAL/yr	IN PROCESS	8	N Y N Y N Y N Y N Y N Y
14. ROYAL LUBRICANT BRAKE FREE - METHYLENE CHLORIDE - 1,1,2-TRICHLORO-1,2,2-TRIFLUOR	9150-01-054-6453 KJ2975000 KJ4000000	L-2-60	BOTH	12.0 PIN/yr	IN PROCESS		Y Y Y Y Y Y Y Y
15. STABOND CORPORATION C.V. BOOT GEN PURPOSE ADHESIVE - NEK - PHENOLIC RESIN - PHENOL	8040-00-298-1946 EL6475000 1001141PR SJJ325000	MMMA1617	BOTH	2.0 PIN/yr	IN PROCESS	8	N N N N N N N N N N N N
16. CALO	6850-L0-114-6346		NONE	4.0 DRU/yr	IN PROCESS		
17. CITRO-KLEEN	6850-P - - NIC		NONE	6.0 GAL/yr	IN PROCESS		
18. CHEMICAL COMMODITIES AGENCY CLEANER, WINDSHIELD - #1 PROPRIETARY	6850-00-926-2275 N/A	O-C-1901	BOTH	5.0 GAL/yr	IN PROCESS	8	N N N N
19. EXXON CHEMICALS CLEANER: ISOPROPYL ALCOHOL - ISOPROPYL ALCOHOL	6505-00-299-8075 NT8050000		BOTH	5.0 GAL/yr	IN PROCESS	8	N N Y Y
20. AMER ALCOHOL & CHEMICAL CO DENATURED ALCOHOL - ETHYL ALCOHOL - METHYL ALCOHOL - WATER	6810-00-543-7415 K36300000 PC1400000 ZC0110000	O-E760	BOTH	5.0 GAL/yr	IN PROCESS	8	N N Y Y N N Y Y N N Y Y
21. DIESEL FUEL SUP PWER SER	6840-PD-FSF-DAFV		NONE	1.0 DRU/yr	IN PROCESS		
22. *AMERICAN BATTERY ACID CO.							

AF Form 2761 (Computer Generated)

		HAZARDOUS MATERIALS DATA				Date: 91.11.27	
		Workplace ID: 0233-COV-176A		Base: NAS MOFFETT FLD			
Organization: 234TH CISS		Workplace: VEHICLE PAINT		Room/Area:		Bldg: 9	
Material Nomenclature (Manufacturer & Major Ingredients)	National Stock No. or NIOSH No.	Spec. (MIL/FED)	MSDS ?	Quantity Used?	Disposal Method	IEX (8,9)	Potential Haz. Inh Abs Ing Con
ELECTROLYTE:BATTERY,875510 - SULFURIC ACID @37% - WATER @63%	6810-00-249-9354 WS5600000 ZC0110000	G-S-801	BOTH	75.0 GAL/yr	IN PROCESS	9	Y Y Y Y N N N N
23. CARDINAL INDUSTRIAL FINISHES ENAMEL, AEROSOL - XYLENE;DIMETHYL BENZENE; METHYL - MEK - DIPROPYLENE GLYCOL MONETHYLETH - PROPANE BLEND	8010-00-331-777 1330-20-7 78-93-3 N/A 74-98-6		MSDS	0.0 CN /yr	IN PROCESS	8	Y Y N Y Y Y N Y Y Y N Y Y Y N Y
24. ENAMEL, GALLON	- - -			0.0 /yr	IN PROCESS		
25. THUNDERBIRD SALES COMPANY ENG COOLANT, CLEANING COMP - OXALIC ACID	6850-00-965-2082 R02450000	G-C-00432	BOTH	12.0 CAN/yr	IN PROCESS	8	N Y N Y
26. TRUFLEX RUBBER PRODUCTS CO FLUID TIRE PATCH - TRICHLORYLENE - NATURAL RUBBER & EXCELOATORS	2640-00-242-2467 KX4550000 1004112NR	NA	BOTH	0.5 CAN/yr	IN PROCESS		N N N N N N N N
27. THORO PRODUCTS CO GLASS CLEANER - ISOPROPANOL, 2-PROPANOL - AMMONIA, AMMONIUM HYDROXIDE ANH - WATER	6850-00-184-9423 NT8050000 B00875000 ZV0110000	A-A-40A	BOTH	2.0 GAL/yr	IN PROCESS	8	N N N N N N N N N N N N
28. BATTENFELD GREASE & OIL CORP GREASE GAA - CALCIUM 12-HYDROXYSTEARATE - MINERAL OIL - CALCIUM SULFONATE - SULFURIZED ISOBUTYLENE	9150-00-191-0905 1002142CS PY8036000 1001332CS 1002822SI	12-00-04	BOTH	0.0 CN /yr	IN PROCESS	8	N N N N N N N N N N N N N N N N
29. SULFLO INC GREASE MCLY - LITHIUM 12 HYDROXYSTERIC - MINERAL OIL - POLYETHYLENE - POLYETHYLENE DISULFIDE - ZINC DITHIOCARBAMATE - SULFURIZED ISOBUTYLENE	9150-01-015-1542 1000448LS PY8036500 T03025000 QA4697000 100029-00 1001821	N/A	BOTH	1.0 TUB/yr	IN PROCESS	8	N Y N N N Y N N N Y N N N Y N N N Y N N N Y N N
30. BATTEN FELD GREASE & OIL CORP GREASE, AUTO - CALCIUM #12 HYDROXYSTEARATE - MINERAL OIL - SULFURIZED ISOBUTYLENE - CALCIUM SULFINATE	9150-00-925-1017 1002142CS PY8034000 1002822SI 1001332CS	12-00-04	BOTH	1.0 DRU/yr	IN PROCESS	8	N Y N N N Y N N N Y N N N Y N N

AF Form 2761 (Computer Generated)

		HAZARDOUS MATERIALS DATA				Date: 91.11.27		
		Workplace ID: 0233-COMV-176A		Base: NAS MOFFETT FLD				
Organization: 234TH CISS		Workplace: VEHICLE MAINT		Room/Area:		Bldg: 9		
Material Nomenclature (Manufacturer & Major Ingredients)		National Stock No. or NIOSH No.	Spec. (MIL/FED)	hSDS ?	Quantity Used?	Disposal Method	IEX (8,9)	Potential Haz. Inh Abs Ing Con
31. MILS AMERICA INC. HYDRAULIC FLUID FRH - SYNTHETIC HYDROCARBONS		9150-01-119-6149 10026165E	M-461708	30TH	0.5 GRL/yr	IN PROCESS	8	Y Y Y Y
32. CARDINAL CHEMICAL CORP. LACQUER, AEROSOL - VMMP NAPHTHA - TOLUENE; METHYL BENZENE - ISOBUTYL ACETATE - MEK - BUTYL CELLOSOLVE, ETHYLENE GLY - ISOPROPAL ALCOHOL		8010-00-331-??? 64742898 108-63-3 116-15-0 76-92-0 111-75-2 67-63-0		30TH	0.0 /yr	IN PROCESS	8	Y Y N Y Y Y N Y Y Y N Y Y Y N Y Y Y N Y Y Y N Y
33. LACQUER, GALLON		- - -			0.0 /yr	IN PROCESS		
34. H.B. FULLER CO LIQUID CEMENT - ACETONE - TOLUENE - HEXANE - HEPTANE - VOC. ORGANIC CPD 650 VOC/LITE		8040-00-058-2399 AL3150000 XES000000 MAY000000 M17700000 959999990	MW-A-130	10TH	1.0 CT /yr	IN PROCESS	8	N N N N N N N N N N N N N N N N N N N N
35. NATIONAL STARCH & CHEMICAL CO LOCITIE/PERMA-LOK/SEALING COMP - TETRAETHYLENEGLYCOL DITHACRYL - HYDROXYETHYL METHACRYLATE - CUMENE HYDROPEROXIDE - SACCHARINE - VOC. ORGANIC CPD 0.09 LB/GAL		8030-00-148-7833 100451070 1001353PM M12450000 DE4200000 959999990	S-46162A	30TH	2.0 BGT/yr	IN PROCESS	8	N Y N N N Y N N N Y N N N Y N N N Y N N
36. DAVIS-HOWLAND OIL CO LUBE OIL GEAR 140 - COMPLEX MIXTURE OF PETROLEUM		9150-01-119-6149 10026165E			5.0 GAL/yr	IN PROCESS	8	N Y N N
37. BATTENFELD-AMERICAN, INC LUBE OIL GEAR 8-90 L/S - OIL, MIST, MINERAL - ADDITIVES		9150-00-001-9355 PY8030000 1003000AS	L-2105	30TH	5.0 GAL/yr	IN PROCESS	8	N Y N N N Y N N
38. AMALIE REFINING COMPANY LUBE OIL GEAR 80-90 REG - INGREDIENT #1 - INGREDIENT #2		9150-01-035-5210 N/A N/A	L-2105	30TH	5.0 GAL/yr	IN PROCESS	8	N Y N N N Y N N
. SHELL CHEM. CO MEK - 2-BUTANONE		6610-00-281-2765 EL6475000	TT-R-261	30TH	1.0 GAL/yr	IN PROCESS	8	Y Y N Y
40.								

AF Form 2761 (Computer Generated)

		Date: 91.11.27					
Workplace ID: VEHICLE PAINT		Base: NAS MOFFETT FLD					
Organization: 234TH CISS	Workplace: VEHICLE PAINT	Room/Area:			Bldg: 9		
Material Nomenclature (Manufacturer & Major Ingredients)	National Stock No. or NIOSH No.	Spec. (MIL/FED)	PSDS ?	Quantity Used?	Disposal Method	IEX (8,9)	Potential Haz. Inh Abs Inq Con
NON SKID	5811-00-892-6555		NONE	0.5 CAN/yr	IN PROCESS		
41. OCTAGON PROCESS OIL COMP M63/LUB OIL COMPRESSO - NAPHTHENIC MINERAL OIL	9150-00-682-6771 10025250L	L-260878	BOTH	1.0 GAL/yr	IN PROCESS	8	N N N N
42. CHEVERON USA INC OIL COMP MC-2A - HIGHLY REFINED BASE OIL - ADDITIVES, DEFOAMER, ANTIOXIDANT	9150-00-235-1061 PY6038500 1001934AM	L-17331	BOTH	1.0 GAL/yr	IN PROCESS	8	N Y N Y N Y N Y
43. OIL DELO 400 30			NONE	3.0 DRU/yr	IN PROCESS		
44. EXXON CO USA OIL HDO 10 - PETROLEUM LUBRICATING BASE OIL - DETERGENT INHIBITOR PACKAGE	9150-00-191-2772 1000655PB 1001476DI	L-2104	BOTH	1.0 DRU/yr	IN PROCESS	8	N Y N Y N Y N Y
45. EXXON COMP OIL HDO 30 - PETROLEUM LUBRICATING BASE OIL - DETERGENT INHIBITOR PACKAGE	9150-00-185-6729 1000655PB 1001476DI	L-2104	BOTH	5.0 GAL/yr	IN PROCESS	8	N Y N Y N Y N Y
46. PERMATEX COMPANY INC SEALING COMPOUND, GSK - #1 PRIORITY	8030-00-220-6973	S-45186	BOTH	2.0 CAN/yr	IN PROCESS	N	N Y N N
47. W.M. BARR & COMPANY SILICONE SPRAY - METHYL CHLOROFORM - 1,1,2-TRICHLORYL-1,2,2-TRIFLUO - SILICONE - PROPANE - ISOBUTANE	9150-00-823-7860 KJ2975000 KJ4000000 1002193SI TX2275000 TZ4300000	N/R	BOTH	12.0 CAN/yr	IN PROCESS		N N N Y N N N Y N N N Y N N N Y N N N Y
48. *MSCI LTD. SOLVENT: DRY CLEAN, - ALIPHATIC PETRO NAPHTHA @100%	6850-00-637-6135 1000015AH	P-D-660	BOTH	300.0 GAL/yr	IN PROCESS	?	N Y N Y
49. PPG INDUSTRIES INC SPOT PUTTY - BUTYL ALCOHOL - ETHYLNOL - TOLUENE - PIGMENTS	8030-00-848-0266 ED1400000 K06300000 055250000 1000046PI	DFL-1	BOTH	0.5 TUB/yr	IN PROCESS	8	Y Y N Y Y Y N Y Y Y N Y Y Y N Y
50. 3-M COMPANY THINNER, LACQUER/266C - ISOBUTYL ACETATE - N-BUTYL ALCOHOL	8010-00-160-5787 1A4025000 EE1400000		BOTH	3.0 GAL/yr	IN PROCESS	8	Y Y N Y Y Y N Y

AF Form 2761 (Computer Generated)

		HAZARDOUS MATERIALS DATA				Date: 91.11.27	
		Workplace ID: 0073-COM-1764		Base: NAS MOFFETT FLD			
Organization: 234TH CISS		Workplace: VEHICLE MAINT		Room/Area:		Bldg: 9	
Material Nomenclature (Manufacturer & Major Ingredients)	National Stock No. or NICS# No.	Spec. (MIL/FED)	MSDS ?	Quantity Used?	Disposal Method	IEX (8,9)	Potential Haz. Inh Abs Ing Con
- HEXONE	SA9275000						Y Y N Y
- ISOBUTYL ALCOHOL	NF9625000						Y Y N Y
- N-BUTYL ACETATE	AF7350000						Y Y N Y
51. CHEVRON CHEM CO. THINNER; MINERAL SPIRITS - ALIPHATIC HYDROCARBON	8010-00-242-2069 1000031AP	TT-T-291F	BOTH	6.0 GAL/yr	IN PROCESS	8	Y Y Y N
52. CELANESE CHEMICAL COMPANY TOLUENE-METHYL (GUN CLEANER) - MEK	6810-00-281-2765 EL6475000	ASTMD7408	EOTH	2.0 GAL/yr	IN PROCESS	8	N Y N Y
53. EXXON COMPANY USA TRANSMISSION FLUID TYPE "A" - PETROLEUM HYDROCARBONS - ADDITIVES	9150-00-698-2382 1002975CH 1000144AD	N/R	BOTH	1.0 GRT/yr	IN PROCESS	8	N N N N N N N N
54. CHEVRON USA TRANSMISSION FLUID TYPE "F" - REFINED BASE OILS - ADDITIVES-ZINC, DI ALKYL DITHIOP	9150-01-092-9755 1003389HR 1003390AI	N/A	BOTH	70.0 GRT/yr	IN PROCESS	8	N N N N N N N N
55. WHEEL BEARING GREASE	9150-P3-163-		NONE	0.5 DRU/yr	IN PROCESS	8	

AF Form 2761 (Computer Generated)

HAZARDOUS MATERIALS DATA

Date: 91.11.27

Workplace ID: 0233-COX-195A

Base: NAS MOFFETT FLD

Organization: 234TH CISS

Workplace: GROUND RADIO

Room/Area:

Bldg: 9

Material Nomenclature (Manufacturer & Major Ingredients)	National Stock No. or NIOSH No.	Spec. (MIL/FED)	MSDS ?	Quantity Used?	Disposal Method	IEX (8,9)	Potential Haz. Inh Abs Ing Con
*B.F. GOODRICH G.P.CO (LOCKTITE)							
ADHESIVE SEALANT: PVC, TWA-541-B	B040-00-573-1502	A-22010	BOTH	1.0 OZ/yr	IN PROCESS	H	
- TETRAHYDROFURAN @90%	LU5950000						N Y N Y
- MODIFIED VINYL @10%	1002319VF						N Y N Y
ADHESIVE, PVC	E040-00-573-1572		NONE	1.0 OZ /yr	IN PROCESS		
RESEARCH PRODUCTS CORP. ADHESIVE: AIR COND. FILTER #411	4130-00-860-0042	ML	BOTH	1.1 OZ/yr	AF DRMO	H	
- UNIDENTIFIED COMPONENTS	1001272UC						N N N N
*CHEMTRONICS INC. (BULK CHEM)							
CLEAN & LUB: ELEC CONTCT, AERO	6850-00-570-9360	D-833600	BOTH	24.0 OZ/yr	IN PROCESS	H	
- 1,1,2-TRICHLORO, TRIFLUOROETHANE	KJ4000000						N N N Y
- DICHLORODIFLUOROMETHANE @38%	PAB200000						N N N Y
- POLY (DIMETHYL) SILOXANE @2%	TQ2960000						N N N Y
FLER-STEPHENSON CHEMICAL CO. CLEANER: FLUX REMOVER, AEROSOL	6850-00-419-1111	B-1111	BOTH	4.0 OZ/yr	IN PROCESS	B	
- TRICHLOROTRIFLUOROETHANE @40%	AJ4000000						Y N N Y
- ETHYLENE CHLORIDE @40%	PAB050000						Y N N Y
- DICHLORODIFLUOROMETHANE @20%	PAB200000						Y N N Y
*HYDE INDUSTRIES CLEANER: RUBBER REJUVENATOR	7510-00-286-6992	ML	BOTH	3.0 OZ/yr	IN PROCESS	?	
- ETHYLENE DICHLORIDE @100%	KI0525000						Y Y Y Y
*STEVENS IND. (TECHFORM LABS) CONFORMAL COATING: KIT, AERO, A/B	B030-00-965-7745	ML	BOTH	0.1 LBS/yr	AF DRMO	B	
- EPOXY RESIN	1000131ER						N Y N Y
*BULK CHEMICAL DIST. (OPL MFG.) CORROSION PREVENT CMFND: AERO	B030-00-938-1947	D-81309D	BOTH	32.0 OZ/yr	IN PROCESS	H	
- ALIPHATIC HYDROCARBONS @12.5%	1001501AH						Y N N N
- OXYGENATED HYDROCARBONS @12.5%	10005190H						Y N N N
- SOLVENT-FREDN 113 @75%	CI4750000						Y N N N
LIGHTHOUSE FOR THE BLIND DETERGENT: GEN. PURP. SPRAY-ON	7930-00-926-5280	P-D-1747C	BOTH	72.0 OZ/yr	IN PROCESS	H	
- GLYCOL ETHER EB @5%	ID8580000						N N N Y
- ETHYLENEDIAMINETETRAACETATE @<5%	AF1225000						N N N Y
- SODIUM CARBONATE @<5%	VZ4050000						N N N Y
- POLYALKOXYLATED LINEAR ALCOHOL	1003660PL						N N N Y
*DIAMOND SHANROCK CHEMICAL CO. ELECTROLYTE: KIT, CAUSTIC POTASH	6140-00-981-5864	B-82117	BOTH	12.0 OZ/yr	AF DRMO	9	
- POTASSIUM HYDROXIDE 45%	TT2100000						Y Y N Y
- WATER @55%	ZC0110000						Y Y N Y
*L.B. ALLEN CO. INC.							

HAZARDOUS MATERIALS DATA

Date: 91.11.27

Workplace ID: 0230-COXA-195A

Base: NAS MOFFETT FLD

Organization: 234TH CTSS

Workplace: GROUND RADIO

Room/Area:

Bldg: 9

Material Nomenclature (Manufacturer & Major Ingredients)	National Stock No. or NIOSH No.	Spec. (MIL/FED)	MSDS ?	Quantity Used?	Disposal Method	IEX (8,9)	Potential Haz. Inh Abs Ing Con
FLUX:PASTE,ELECTRONICS	3439-00-256-4571	*****	NONE	1.5 OZ/yr	IN PROCESS	?	
12. COLUMBIA CHASE CORP. INSULATION:AERO,HUMISEAL 1B15	5970-00-990-4924	N/A	BOTH	1.2 OZ/yr	AF DRMO	8	
- TOLUENE @4%	XS5250000						Y N N Y
- METHYLENE CHLORIDE @54%	PA8050000						Y N N Y
- XYLENE @4%	ZE2100000						Y N N Y
- PROPANE @15%	TX2275000						Y N N Y
- ISOBUTANE @15%	TZ4300000						Y N N Y
13. W.M.BARR & COMPANY LUBE COMPOUND:SILICONE,AERO	9150-00-823-7860	C-83360	BOTH	16.0 OZ/yr	IN PROCESS	H	
- 1,1,1-TRICHLOROETHANE @<50%	KJ2975000						Y Y N Y
- TRICHLOROTRIFLUOROETHANE @<50%	KJ1900000						Y Y N Y
- SILICONE	1002193SI						Y Y N Y
- PROPANE @10%	TX2275000						Y Y N Y
- ISOBUTANE	TZ4300000						Y Y N Y
14. CARDINAL INDUSTRIAL FINISHES PAINT: ENAMEL, AEROSOL	6010-00-331-2222		MSDS	16.0 OZ/yr	AF DRMO	8	
- XYLENE	1330-20-7						Y Y N Y
- MEK	XS5250000						Y Y N Y
- PROPANE BLEND	74-99-6						Y Y N Y
- DIPROPYLENE GLYCOL MONOTHYLETH	NA						Y Y N Y
15. CARDINAL INDUSTRIAL FINISHES PAINT:LACQUER,AEROSOL	6010-00-331-2222	NA	MSDS	16.0 OZ/yr	AF DRMO	8	
- VM&P NAPHTHA	64724898						Y Y N Y
- TOLUENE METHYL BENZENE	108-88-3						Y Y N Y
- ISOBUTYL ACETATE	110-19-0						Y Y N Y
- MEK	78-93-3						Y Y N Y
- BUTYL CELLOSOLVE	111-76-2						Y Y N Y
- ISOPROPYL ALCOHOL	67-63-0						Y Y N Y
16. CHEMSCOPE CORP. PENETRATING FLUID:AEROSOL	6950-00-973-4091	G-P-1731	BOTH	13.0 OZ/yr	IN PROCESS	H	
- 2-BUTOXYETHANOL @9%	KJ8575000						Y N N N
- PROPANE/ISOBUTANE @10%	10002571P						Y N N N
17. AMERICAN WRITING INK CO. PENETRATING OIL:AEROSOL,	9150-00-524-7518	WW-F-216	BOTH	12.0 OZ/yr	AF DRMO	H	
- SYNTHETIC OIL	1000306SD						Y N N Y
- CARBON DIOXIDE	FF6400000						Y N N Y
18. 3M CORP. (POLYMER) RTV ADHESIVE SEALANT:RTV-5	3439-00-256-4571	NA	BOTH	3.0 OZ/yr	IN PROCESS	H	
- POLYSILOXANE @70%	TR1400000						N N N Y
- SILICON DIOXIDE @25%	WV2275000						N N N Y
- TITANIUM DIOXIDE @5%	XR2275000						N N N Y
19. FEDERATED-FRY METALS							

		HAZARDOUS MATERIALS DATA				Date: 91.11.27	
		Workplace ID: 0233-COXX-195A		Base: NAS MOFFETT FLD			
Location: 234TH CISS		Workplace: GROUND RADIO		Room/Area:		Bldg: 9	
Material Nomenclature (Manufacturer & Major Ingredients)	National Stock No. or NIOSH No.	Spec. (MIL/FED)	MSDS ?	Quantity Used?	Disposal Method	IEX (8,9)	Potential Haz. Inh Abs Ing Con
SOLDER:ROSIN CORE,ELECTRONICS - TIN @61.5% - LEAD @27.5% - ANTIMONY @0.5% - BISMUTH @0.25%	3439-00-269-9610 XP7320000 OF7525000 CC4025000 EB2600000	QQ-S-571	EDTH	6.0 OZ/vr	AF DRND	H	Y N N N Y N N N Y N N N Y N N N
20. FEDERATED-FRY METALS INC. SOLDER:ROSIN CORE,ELECTRONICS	3439-00-453-5469	NYF	NONE	5.0 OZ/vr	AF DRND	?	
21. *WHITEWORTH INC.(HALSEY DRUG) SOLVENT,CLEANER:ISOPROPYL ALCH - ISOPROPYL ALCH@100%	6505-00-205-6513 NT8050000	N/L	EDTH	1.0 OZ/vr	IN PROCESS	H	N Y N N
22. *EASTMAN KODAK (FHIPPS PRODS) SOLVENT:ISOPROPYL ALCH,TECHNIC - ISOPROPANOL,ISOPROPYL ALCH@99%	6505-00-953-8551 NT8050000	N/L	EDTH	1.0 OZ/vr	IN PROCESS	H	N N N N

AF Form 2761 (Computer Generated)

APPENDIX G
SAMPLING RESULTS



Figure G-1. MSgt Wilson showing Site 1

TABLE G-1. Organic Results for Site 1, (Page 1 of 2)
Manhole Located West of the 218th Gas Station, Bldg 20
HAYWARD ANG STATION WASTEWATER CHARACTERIZATION SURVEY
1- 7 APRIL 1993

Analyte	Units	1 Apr	2 Apr	3 Apr	4 Apr	5 Apr	6 Apr	7 Apr
Oil and Grease	mg/L	8.6	11.2	7.2	7.7	28	96	38.4
Total Petroleum Hydrocarbons	mg/L	1.8	<1.0	<1.0	<1.0	7.2	40	9.6
Chemical Oxygen Demand	mg/L	220	247	630	340	92	456	151
Biochemical Oxygen Demand	mg/L	nst	nst	nst	140	89	74	ns
Phenols	µg/l	39	72	64	124	90	72	30
Total Suspended Solids	mg/L	394	nst	764	670	296	1,039	492
Total Cyanide	mg/L	<.005	<.005	0.007	.008	<.005	.008	<.005
pH & Temperature for Site 1								
pH		7.6	8.0	8.0	7.0	7.0	7.0	7.6
Temperature	C	19.0	19.0	18.0	18.0	19.0	16.0	20.0
Volatile Organics Hydrocarbons (EPA Method 601)								
Bromodichloromethane	µg/l	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Bromoform	µg/l	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
Carbon Tetrachloride	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chloroethane	µg/l	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9
Chloroform	µg/l	6.5	<0.3	16.7	33.3	11.1	6.0	25.0
Chloromethane	µg/l	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Chlorodibromomethane	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	µg/l	4.7	81.8	5.1	12.0	<0.5	10.8	14.4
Dichlorodifluoromethane	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	µg/l	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,2-Dichloroethane	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethene	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Trans-1,2-Dichloroethene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Cis-1,3-Dichloropropene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trans-1,3-Dichloropropene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methylene Chloride	µg/l	<0.4	<0.4	<0.4	<0.4	0.5	0.8	1.1
1,1,2,2-Tetrachloroethane	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Tetrachloroethylene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	µg/l	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Vinyl Chloride	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Chloroethylvinyle Ether	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromomethane	µg/l	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9
Results of Organic Aromatics (EPA Method 602)								
1,3-Dichlorobenzene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	µg/l	4.7	81.8	5.1	12.0	<0.5	<0.5	<0.5
Ethyl Benzene	µg/l	<0.6	2.2	<0.6	1.0	<0.6	<0.6	<0.6
Chlorobenzene	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Toluene	µg/l	<0.3	0.4	<0.3	<0.3	1.5	<0.3	<0.3
Benzene	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
1,2-Dichlorobenzene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
p-Xylene	µg/l	3.2	11.1	1.4	6.0	<0.5	<0.5	<0.5
o-Xylene	µg/l	3.1	6.7	2.2	4.1	0.5	<0.3	<0.3
m-Xylene	µg/l	IC	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Results of Metals Analyses (EPA 200.7)								
Arsenic	µg/l	7.0	8.5	7.5	10	5.5	9.0	6.0
Cadmium	µg/l	1.6	1.3	2.1	1.8	0.4	167.9	1.9
Copper	µg/l	22.0	38.0	39	66.0	24.5	48.0	97.5
Lead	µg/l	18.5	20.2	18.5	14.0	2.4	14.0	22.5
Mercury	µg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel	µg/l	<50	<50	<50	<50	<50	<50	<50
Silver	µg/l	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Chromium	µg/l	<50	<50	<50	<50	<50	<50	<50
Zinc	µg/l	612.	765.	552.	214.	600.	301.	174.0

NOTE: IC, Interfering Compounds
NS, No Sample Taken

TABLE G-1. Results of Total Toxic Organics (TTO) Analyses for Site 1, (Page 2 of 2)
 Manhole Located West of the 216th Gas Station, Bldg 20
 HAYWARD ANG STATION WASTEWATER CHARACTERIZATION SURVEY
 6 April 1993
 Semivolatile Organic Compounds (EPA 625)

Analyte	Units	Results	Analyte	Units	Results
2-Chlorophenol	µg/l	<5.0	Pyrene	µg/l	<5.0
2,4-Dichlorophenol	µg/l	<5.0	Dibenzo (a,h) anthracene	µg/l	<5.0
2,4-Dimethylphenol	µg/l	<5.0	Dibenzofuran	µg/l	<5.0
4,6-Dinitro-o-cresol	µg/l	<20.0	Di-n-Butyl Phthalate	µg/l	<20.0
2-Nitrophenol	µg/l	<5.0	1,2-Dichlorobenzene	µg/l	<20.0
4-Nitrophenol	µg/l	<20.0	1,3-Dichlorobenzene	µg/l	<20.0
Pentachlorophenol	µg/l	<20.0	1,4-Dichlorobenzene	µg/l	<20.0
Phenol	µg/l	21	3,3 Dichlorobenzidine	µg/l	<20.0
2,4,6-Trichlorophenol	µg/l	<5.0	Diethyl phthalate	µg/l	<20.0
Acenaphthene	µg/l	<5.0	Dimethyl phthalate	µg/l	<20.0
Acenaphthylene	µg/l	<5.0	2,4-Dinitro-toluene	µg/l	<20.0
p-Chloro-m-cresol	µg/l	<5.0	2,6-Dinitro-toluene	µg/l	<20.0
Anthracene	µg/l	<5.0	Di-n-Octyl Phthalate	µg/l	<20.0
Benzidine	µg/l	<30	Fluoranthene	µg/l	<5.0
Benzo(a)anthracene	µg/l	<5.0	Fluorene	µg/l	<5.0
Benzo(b)fluoranthene	µg/l	<5.0	Hexachlorobutadiene	µg/l	<5.0
Benzo(k)fluoranthene	µg/l	<5.0	Hexachlorocyclopentadiene	µg/l	<5.0
Benzo(ghi)perylene	µg/l	<5.0	2-Chloronaphthalene	µg/l	<5.0
Benzo(a)pyrene	µg/l	<5.0	Acenaphthene	µg/l	<5.0
Butyl benzyl Phthalate	µg/l	<5.0	Phenanthrene	µg/l	<5.0
bis (2-chloroethoxy)metha	µg/l	<5.0	Anthracene	µg/l	<5.0
bis(2-chloroethyl)Ether	µg/l	<5.0	Indeno (1,2,3,-c,d) pyrene	µg/l	<5.0
bis(2-chloroisopropyl)et	µg/l	<5.0	p-Chloro-m-cresol	µg/l	<5.0
bis(2-ethylhexyl) phthalate	µg/l	<10.0	4,6-Dinitro-o-cresol	µg/l	<5.0
4-Bromophenyl Phenyl Ether	µg/l	<5.0	n-Nitrosodiphenylamine	µg/l	<5.0
2-Chloronaphthalene	µg/l	<5.0	Naphthalene	µg/l	<5.0
4-Chlorophenyl Phenyl Ether	µg/l	<5.0	Isophorone	µg/l	<5.0
Chrysene	µg/l	<5.0	Hexachlorobenzene	µg/l	<5.0
Nitrobenzene	µg/l	<5.0	1-2-4-Trichlorobenzene	µg/l	<5.0
PESTICIDE & PCB'S (EPA 608)					
Aldrin	µg/l	<0.05	Endrin	µg/l	<0.05
alpha-BHC	µg/l	<0.05	Endrin Aldehyde	µg/l	<0.05
beta-BHC	µg/l	<0.05	Heptachlor	µg/l	<0.05
delta-BHC	µg/l	<0.05	Heptachlor Epoxide	µg/l	<0.05
Lindane	µg/l	<0.05	Toxaphene	µg/l	<5.0
Chlordane	µg/l	<0.3	Methoxychlor	µg/l	<0.3
4,4 - DDD	µg/l	<0.05	Aroclor 1016	µg/l	<3.0
4,4 - DDE	µg/l	<0.05	Aroclor 1221	µg/l	<3.0
p,p - DDT	µg/l	<0.05	Aroclor 1232	µg/l	<3.0
Dieldrin	µg/l	0.07	Aroclor 1242	µg/l	<3.0
Endosulfan I	µg/l	<0.05	Aroclor 1248	µg/l	<3.0
Endosulfan II	µg/l	<0.05	Aroclor 1254	µg/l	<3.0
Endosulfan Sulfate	µg/l	<0.05	Aroclor 1260	µg/l	<3.0

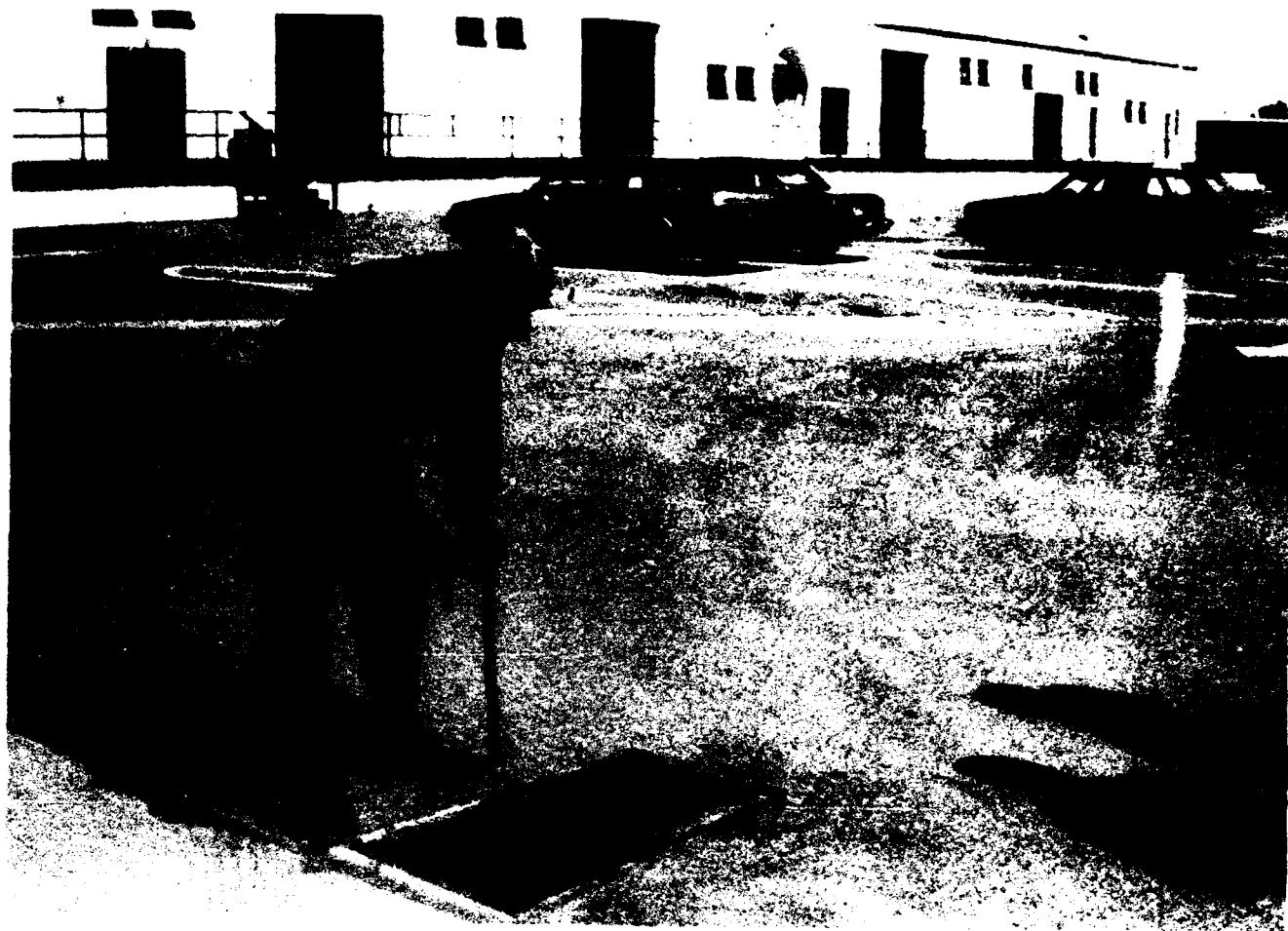


Figure G-2. MSgt Wilson showing Site 2

TABLE G-2. Results for Site 2, (Page 1 of 2)
2' X 4' Concrete Cavity Located at the 216th Gas Station
HAYWARD ANG STATION WASTEWATER CHARACTERIZATION SURVEY
4 APRIL 93

Analyte	Units	Results	Analyte	Units	Results
Oil and Grease	mg/L	18,400.0	EPA Series Method 200.7		
Total Petroleum Hydrocarbons	mg/L	16,000	Arsenic	µg/l	28.5
Chemical Oxygen Demand	mg/L	860.0	Cadmium	µg/l	179.9
pH & Temperature			Copper	µg/l	82.5
pH		8.0	Lead	µg/l	256.5
Temperature	Celsius	21.0	Mercury	µg/l	<1.0
			Nickel	µg/l	210.0
			Silver	µg/l	<5.0
			Total Chromium	µg/l	17.5
			Zinc	µg/l	512.0
			Iron	µg/l	16,083.0
Volatile Organic Hydrocarbons (EPA Method 601)					
Bromodichloromethane	µg/l	<0.4	1,2-Dichloroethane	µg/l	<0.3
Bromoform	µg/l	<0.7	1,1-Dichloroethene	µg/l	<0.3
Carbon Tetrachloride	µg/l	<2.0	Trans-1,2-Dichloroethene	µg/l	<0.5
Chlorobenzene	µg/l	<0.3	1,2-Dichloropropane	µg/l	<0.3
Chloroethane	µg/l	<0.9	Cis-1,3-Dichloropropene	µg/l	<0.5
Chloroform	µg/l	<0.3	Trans-1,3-Dichloropropene	µg/l	<0.5
Chloromethane	µg/l	<0.8	Methylene Chloride	µg/l	<0.4
Chlorodibromomethane	µg/l	<0.5	1,1,2,2-Tetrachloroethane	µg/l	<0.2
1,2-Dichlorobenzene	µg/l	<0.5	Tetrachloroethylene	µg/l	<0.5
1,3-Dichlorobenzene	µg/l	<0.5	Trichlorofluoromethane	µg/l	<0.4
1,4-Dichlorobenzene	µg/l	<0.5	Vinyl Chloride	µg/l	<0.2
Dichlorodifluoromethane	µg/l	<0.5	2-Chloroethylvinyle Ether	µg/l	<0.2
1,1-Dichloroethane	µg/l	<0.4	Bromomethane	µg/l	<0.9
Volatile Organic Aromatics (EPA Method 602)					
1,3-Dichlorobenzene	µg/l	<0.5	Benzene	µg/l	<0.3
1,4-Dichlorobenzene	µg/l	<0.5	1,2-Dichlorobenzene	µg/l	<0.5
Ethyl Benzene	µg/l	<0.6	p-Xylene	µg/l	<0.5
Chlorobenzene	µg/l	<0.3	o-Xylene	µg/l	0.3
Toluene	µg/l	<0.3	m-Xylene	µg/l	<0.5

NOTE 602 Results: Due to interfering compounds lab
could not accurately identify peaks, other fuels
hydrocarbons are present

TABLE G-2. Results Of Hazardous Characteristic Analyses for Site 2, (Page 2 Of 2)
A 2' X 4' Concrete Cavity Located at the 216th Gas Station
HAYWARD ANG STATION WASTEWATER CHARACTERIZATION SURVEY
4 APRIL 93

Analyte	Units	Results	Method
Arsenic	mg/L	<0.1	EPA 1311/6010
Barium	mg/L	2.7	EPA 1311/6010
Cadmium	mg/L	<0.05	EPA 1311/6010
Chromium	mg/L	<0.1	EPA 1311/6010
Lead	mg/L	0.4	EPA 1311/6010
Mercury	mg/L	<0.02	EPA 1311/7470
Selenium	mg/L	<0.1	EPA 1311/6010
Silver	mg/L	<0.02	EPA 1311/6010
Flash Point (closed cup)	degree F	>200	EPA 1010
Corrosivity	mg/L	SINC	EPA 1311/6010
Hydrogen ion (pH)	mg/L	6.8	EPA 9040
Cyanide (total)	mg/L	<50.0	SW 7.3.3.2
Sulfide	mg/L	<100	SW 7.3.4.1
Major Components		99% water	
Aromatic Volatile Organic (SW-846 8020 Sludge)			
Ethyl Benzene	mg/kg	0.6	SW-846 8020
Toluene	mg/kg	1.6	SW-846 8020
Benzene	mg/kg	<0.3	SW-846 8020
p-Xylene	mg/kg	2.4	SW-846 8020
o-Xylene	mg/kg	1.4	SW-846 8020
m-Xylene	mg/kg	note	SW-846 8020

NOTE : Due to interfering compounds lab
could not accurately identify peaks, other fuels



Figure G-3. MSgt Wilson showing Site 3

**TABLE G-3, Results Of Hazardous Characteristic Analyses for Site 3,
The 216th Vehicle Washrack, Bldg 9
HAYWARD ANG STATION WASTEWATER CHARACTERIZATION SURVEY
7 APRIL 93**

Analyte	Units	Results	Method
Arsenic	mg/L	<0.5	EPA 1311/6010
Barium	mg/L	<10.0	EPA 1311/6010
Cadmium	mg/L	<0.1	EPA 1311/6010
Chromium	mg/L	<0.5	EPA 1311/6010
Lead	mg/L	<0.5	EPA 1311/6010
Mercury	mg/L	<0.02	EPA 1311/7074
Selenium	mg/L	<0.1	EPA 1311/6010
Silver	mg/L	<0.5	EPA 1311/6010
Flash Point (closed cup)	degree F	>200	EPA 1010
Corrosivity	mg/L	SINC	EPA 1311/6010
Hydrogen ion (pH)	mg/L	7.4	EPA 9040
Cyanide (total)	ppm	<25.0	SW 7.3.3.2
Sulfide	ppm	<50.0	SW 7.3.4.2
Major Components		99% water	
pH & Temperature			
pH		7.5	S. M. 4500-H
Temperature	Celsius	20.0	170.1
Aromatic Volatile Organic SW-846 8020 (Sludge)			
1,2-Dichlorobenzene	mg/kg	<1.0	SW-846 8020
1,3-Dichlorobenzene	mg/kg	<1.0	SW-846 8020
1,4-Dichlorobenzene	mg/kg	<1.0	SW-846 8020
Benzene	mg/kg	<1.0	SW-846 8020
Ethyl Benzene	mg/kg	<1.0	SW-846 8020
Toluene	mg/kg	<1.0	SW-846 8020
Xylenes	mg/kg	<1.0	SW-846 8020
Chlorobenzene	mg/kg	<1.0	SW-846 8020

SINC: Sample is not corrosive



Figure G-4. MSgt Wilson showing Site 4

**TABLE G-4, Results for Site 4,
Manhole Located In Front of the 216th Vehicle Maintenance Shop, Bldg 8
HAYWARD ANG STATION WASTEWATER CHARACTERIZATION SURVEY
1 - 7 APRIL 1993**

Analyte	Units	1 Apr	2 Apr	3 Apr	4 Apr	5 Apr	6 Apr	7 Apr
Oil and Grease	mg/L	30.4	10.2	20.0	2.4	78.4	38.8	105.6
Total Petroleum Hydrocarbons	mg/L	<1.0	1.8	9.6	<1.0	7.2	14.0	4.8
Chemical Oxygen Demand	mg/L	490.0	170.0	708.0	456.0	376.0	185.0	203.0
Biochemical Oxygen Demand	mg/L	nst	nst	nst	nst	nst	nst	nst
Phenols	µg/l	50.0	66.0	153.0	64.0	99.0	23.0	90.0
Total Suspended Solids	mg/L	660.0	ns	490.0	826.0	660.0	527.0	309.0
Total Cyanide	mg/L	.006	.007	.006	.006	<.005	<.005	.005
pH & Temperature for Site 4								
pH		7.4	8.0	8.0	7.7	6.5	7.0	7.6
Temperature	C	18.0	18.0	18.0	17.5	16.0	18.0	17.5
Volatile Organics Hydrocarbons (EPA Method 601)								
Bromodichloromethane	µg/l	2.3	<0.4	<0.4	<0.4	<0.4	0.7	0.4
Bromoform	µg/l	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
Carbon Tetrachloride	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chloroethane	µg/l	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9
Chloroform	µg/l	67.7	15.6	20.6	31.3	15.1	5.5	3.1
Chloromethane	µg/l	<0.8	<0.8	<0.8	<0.8	2.3	<0.8	<0.8
Chlorodibromomethane	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	µg/l	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5
1,3-Dichlorobenzene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	µg/l	2.2	14.8	3.2	1.7	1.6	<0.5	3.7
Dichlorodifluoromethane	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	µg/l	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,2-Dichloroethane	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethene	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Trans-1,2-Dichloroethene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Cis-1,3-Dichloropropene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trans-1,3-Dichloropropene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methylene Chloride	µg/l	<0.4	<0.4	<0.4	<0.4	0.5	0.8	1.1
1,1,2,2-Tetrachloroethane	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Tetrachloroethylene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	µg/l	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Vinyl Chloride	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Chloroethylvinyle Ether	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromomethane	µg/l	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9
Volatile Organic Aromatics (EPA Method 602)								
1,3-Dichlorobenzene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	µg/l	<0.5	14.8	3.2	1.7	1.6	<0.5	3.7
Ethyl Benzene	µg/l	<0.6	2.7	0.7	0.7	<0.6	<0.6	<0.6
Chlorobenzene	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Toluene	µg/l	<0.3	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Benzene	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
1,2-Dichlorobenzene	µg/l	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5
p-Xylene	µg/l	<0.5	13.9	3.6	3.6	1.1	<0.5	<0.5
o-Xylene	µg/l	0.4	11.6	2.2	2.4	1.1	0.4	<0.3
m-Xylene	µg/l	<0.5	IC	IC	IC	IC	<0.5	<0.5
EPA Series Method 200.7								
Arsenic	µg/l	7.0	13.0	8.5	10.5	5.5	4.9	11.0
Cadmium	µg/l	2.4	4.3	2.9	2.1	0.6	0.8	2.3
Copper	µg/l	22.0	50.0	33.5	62.0	22.0	48.0	28.0
Lead	µg/l	18.5	28.5	26.5	25.0	2.9	6.5	12.5
Mercury	µg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel	µg/l	<50.0	<50.0	372.0	<50.0	<50.0	<50.0	<50.0
Silver	µg/l	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Chromium	µg/l	294.5	<50.0	350.0	<50.0	<50.0	273.0	<50.0
Zinc	µg/l	111.0	954.5	161.0	404.5	850.0	131.0	166.5
Iron	µg/l	1,229.5	787.0	1,542.0	968.0	2,760.0	1,073.0	749.0

NOTE: IC, INTERFERING COMPOUNDS
NST, NO SAMPLE TAKEN



Figure G-5. MSgt Wilson showing Site 5

**TABLE G-5, Results for Site 5,
Manhole Located in Gravel on the South Side of Building 1,
HAYWARD ANG STATION WASTEWATER CHARACTERIZATION SURVEY
2 - 6 APRIL 1993**

Analyte	Units	2 Apr	3 Apr	4Apr	5 Apr	6 Apr
Oil and Grease	mg/L	56.8	272.0	114.4	48.0	91.2
Total Petroleum Hydrocarbons	mg/L	<1.0	<1.0	42.4	4.8	1.4
Chemical Oxygen Demand	mg/L	420.0	440.0	360.0	200.0	210
Biochemical Oxygen Demand	mg/L	NS	NS	230	280.0	190
Phenols	µg/l	64.0	66.0	88.0	46.0	87.0
Total Suspended Solids	mg/L	485.0	669.0	1080.0	661.0	649.0
Total Cyanide	mg/L	<.005	.006	.006	.006	.005
pH & Temperature						
pH		7.8	6.0	6.5	8.0	7.9
Temperature	C	18.0	20.0	14.0	18.0	17.0
Halogenated Volatile Organic Hydrocarbons EPA Method 601						
Bromodichloromethane	µg/l	<0.4	<0.4	<0.4	<0.4	<0.4
Bromoform	µg/l	<0.7	<0.7	<0.7	<0.7	<0.7
Carbon Tetrachloride	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3
Chloroethane	µg/l	<0.9	<0.9	<0.9	<0.9	<0.9
Chloroform	µg/l	23.0	5.1	26.8	<0.3	12.2
Chloromethane	µg/l	<0.8	<0.8	<0.8	<0.8	<0.8
Chlorodibromomethane	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	µg/l	3.9	0.7	1.0	3.2	1.9
Dichlorodifluoromethane	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	µg/l	<0.4	<0.4	<0.4	<0.4	<0.4
1,2-Dichloroethane	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethene	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3
Trans-1,2-Dichloroethene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3
Cis-1,3-Dichloropropene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
Trans-1,3-Dichloropropene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
Methylene Chloride	µg/l	<0.4	<0.4	0.4	0.4	<0.4
1,1,2,2-Tetrachloroethane	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2
Tetrachloroethylene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	µg/l	<0.4	<0.4	<0.4	<0.4	<0.4
Vinyl Chloride	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2
2-Chloroethylvinyle Ether	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2
Bromomethane	µg/l	<0.9	<0.9	<0.9	<0.9	<0.9
Volatile Organic Aromatics EPA Method 602						
1,3-Dichlorobenzene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	µg/l	3.9	0.7	1.0	3.2	1.9
Ethyl Benzene	µg/l	<0.6	<0.6	<0.6	<0.6	<0.6
Chlorobenzene	µg/l	<0.3	<0.3	<0.3	1.2	<0.3
Toluene	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3
Benzene	µg/l	<0.3	<0.3	<0.3	<0.3	<0.3
1,2-Dichlorobenzene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
p-Xylene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
o-Xylene	µg/l	<0.3	<0.3	<0.3	<0.3	0.7
m-Xylene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
EPA Series Method 200.7						
Arsenic	µg/l	10.5	12.5	6.0	2.7	6.5
Cadmium	µg/l	4.6	1.8	1.9	0.4	2.0
Copper	µg/l	39.0	66.0	97.5	28.0	<20.0
Lead	µg/l	12.0	14.0	22.5	2.3	4.0
Mercury	µg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel	µg/l	<50.0	<50.0	<50.0	<50.0	<50.0
Silver	µg/l	<5.0	<5.0	<5.0	<5.0	<5.0
Total Chromium	µg/l	<50.0	<50.0	<50.0	<50.0	<50.0
Zinc	µg/l	497.0	219.0	174.0	92.5	710.0



Figure G-6. MSgt Wilson showing Site 6

TABLE G-6, Results for Site 6, (Page 1 of 2)
Oil/Water Separator West of the Marine's Aircraft Parking Area
HAYWARD ANG STATION WASTEWATER CHARACTERIZATION SURVEY
6 April 93

Analyte	Units	Results	Analyte	Units	Results
Oil and Grease	mg/L	59.2	EPA Series Method 200.7		
Total Petroleum Hydrocarbons	mg/L	40.0	Arsenic	µg/l	287.0
Chemical Oxygen Demand	mg/L	110.0	Barium	µg/l	568.0
Cyanide (total)	mg/L	.005	Cadmium	µg/l	96.4
Phenols	ug/L	23.0	Chromium	µg/l	215.0
pH & Temperature			Copper	µg/l	246.5
pH		7.0	Iron	µg/l	55,752.0
Temperature	Celsius	20	Lead	µg/l	1089.5
			Mercury	µg/l	1.1
			Nickel	µg/l	106.5
			Silver	µg/l	<5.0
			Zinc	µg/l	1,303.0
Volatile Organic Hydrocarbons EPA Method 801					
Bromodichloromethane	µg/l	<0.4	1,2-Dichloroethane	µg/l	<0.3
Bromoform	µg/l	<0.7	1,1-Dichloroethane	µg/l	<0.3
Carbon Tetrachloride	µg/l	<2.0	Trans-1,2-Dichloroethene	µg/l	<0.5
Chlorobenzene	µg/l	<0.3	1,2-Dichloropropane	µg/l	<0.3
Chloroethane	µg/l	<0.9	Cis-1,3-Dichloropropene	µg/l	<0.5
Chloroform	µg/l	7.3	Trans-1,3-Dichloropropene	µg/l	<0.5
Chloromethane	µg/l	<0.8	Methylene Chloride	µg/l	0.5
Chlorodibromomethane	µg/l	<0.5	1,1,2,2-Tetrachloroethane	µg/l	<0.2
1,2-Dichlorobenzene	µg/l	<0.5	Tetrachloroethylene	µg/l	<0.5
1,3-Dichlorobenzene	µg/l	<0.5	Trichlorofluoromethane	µg/l	<0.4
1,4-Dichlorobenzene	µg/l	<0.5	Vinyl Chloride	µg/l	<0.2
Dichlorodifluoromethane	µg/l	<0.5	2-Chloroethylvinyle Ether	µg/l	<0.2
1,1-Dichloroethane	µg/l	<0.4	Bromoethane	µg/l	<0.9
Volatile Organic Aromatic Hydrocarbons EPA Method 802					
1,3-Dichlorobenzene	µg/l	<0.5	Benzene	µg/l	<0.3
1,4-Dichlorobenzene	µg/l	<0.5	1,2-Dichlorobenzene	µg/l	<0.5
Ethyl Benzene	µg/l	<0.6	p-Xylene	µg/l	<0.5
Chlorobenzene	µg/l	<0.3	o-Xylene	µg/l	<0.3
Toluene	µg/l	<0.3	m-Xylene	µg/l	<0.5

TABLE G-6, Results for Site 6, (Page 2 Of 2)
Oil/Water Separator West of the Marine's Aircraft Parking Area
HAYWARD ANG STATION WASTEWATER CHARACTERIZATION SURVEY
6 April 93

Analyte	Units	Results	Method
Arsenic	mg/L	<0.5	EPA 1311/6010
Barium	mg/L	<10.0	EPA 1311/6010
Cadmium	mg/L	<0.1	EPA 1311/6010
Chromium	mg/L	<0.5	EPA 1311/6010
Mercury	mg/L	<0.02	EPA 1311/6010
Selenium	mg/L	<0.1	EPA 1311/6010
Silver	mg/L	<0.5	EPA 1311/6010
Flash Point (closed cup)	degree F	>200	EPA 1010
Corrosivity	mg/L	SINC	EPA 1311/6010
Hydrogen ion (pH)	mg/L	7.2	EPA 9040
Cyanide (total)	ppm	<25.0	SW 7.3.3.2
Sulfide	ppm	<50.0	SW 7.3.4.2
Major Components		96% water/4% solids	



Figure G-7. Oil/Water Separator at Site 7

**TABLE G-7, Results for Site 7,
Marines Vehicle Maintenance Shop Oil/Water Separator Effluent, Bldg 16
HAYWARD ANG STATION WASTEWATER CHARACTERIZATION SURVEY
6 April 93**

Analyte	Units	Results	Analyte	Units	Results
Oil and Grease	mg/L	18.0	EPA Series Method 200.7		
Total Petroleum Hydrocarbons	mg/L	14.0	Arsenic	µg/l	4.5
Chemical Oxygen Demand	mg/L	85.0	Cadmium	µg/l	0.5
Cyanide (total)	mg/L	<.005	Copper	µg/l	542.0
Phenols	ug/L	<10.0	Lead	µg/l	3.5
pH & Temperature			Mercury	µg/l	1.0
pH		6.5	Nickel	µg/l	351.0
Temperature	Celsius	18.5	Silver	µg/l	<5.0
			Total Chromium	µg/l	332.0
			Zinc	µg/l	87.0
Volatile Organic Hydrocarbons EPA Method 601					
Bromodichloromethane	µg/l	<0.4	1,2-Dichloroethane	µg/l	<0.3
Bromoform	µg/l	<0.7	1,1-Dichloroethene	µg/l	<0.3
Carbon Tetrachloride	µg/l	<2.0	Trans-1,2-Dichloroethene	µg/l	<0.5
Chlorobenzene	µg/l	<0.3	1,2-Dichloropropane	µg/l	<0.3
Chloroethane	µg/l	<0.9	Cis-1,3-Dichloropropene	µg/l	<0.5
Chloroform	µg/l	<0.3	Trans-1,3-Dichloropropene	µg/l	<0.5
Chloromethane	µg/l	<0.8	Methylene Chloride	µg/l	0.5
Chlorodibromomethane	µg/l	<0.5	1,1,2,2-Tetrachloroethane	µg/l	<0.2
1,2-Dichlorobenzene	µg/l	<0.5	Tetrachloroethylene	µg/l	<0.5
1,3-Dichlorobenzene	µg/l	<0.5	Trichlorofluoromethane	µg/l	<0.4
1,4-Dichlorobenzene	µg/l	<0.5	Vinyl Chloride	µg/l	<0.2
Dichlorodifluoromethane	µg/l	<0.5	2-Chloroethylvinyle Ether	µg/l	<0.2
1,1-Dichloroethane	µg/l	<0.4	Bromomethane	µg/l	<0.9
Purgeable Aromatic Hydrocarbons EPA 602					
1,3-Dichlorobenzene	µg/l	<0.5	Benzene	µg/l	<0.3
1,4-Dichlorobenzene	µg/l	<0.5	1,2-Dichlorobenzene	µg/l	<0.5
Ethyl Benzene	µg/l	<0.6	p-Xylene	µg/l	<0.5
Chlorobenzene	µg/l	<0.3	o-Xylene	µg/l	<0.3
Toluene	µg/l	2.9	m-Xylene	µg/l	<0.5



Figure G-8. MSgt Wilson showing Site 8

**TABLE G-8, Results for Site 8,
The 234th CCS Vehicle Maintenance Shop Oil/Water Separator Effluent, Bldg 9
HAYWARD ANG STATION WASTEWATER CHARACTERIZATION SURVEY
4 Apr il 93**

Analyte	Units	Results	Analyte	Units	Results
Oil and Grease	mg/L	1120.0	EPA Series Method 200.7		
Total Petroleum Hydrocarbons	mg/L	1120.0	Arsenic	µg/l	53.5
Chemical Oxygen Demand	mg/L	1750.0	Cadmium	µg/l	496.4
Cyanide (total)	mg/L	< .005	Copper	µg/l	1686.0
Phenols	ug/L	23.0	Lead	µg/l	1652.5
pH & Temperature			Mercury	µg/l	1.0
pH		7.5	Nickel	µg/l	68.5
Temperature	Celsius	18.0	Silver	µg/l	<5.0
Volatile Organic Hydrocarbons EPA Method 801			Total Chromium	µg/l	90.0
Bromodichloromethane	µg/l	<0.4	Zinc	µg/l	4979.0
Bromoform	µg/l	<0.7	EPA Method 8010		
Carbon Tetrachloride	µg/l	<2.0	Bromodichloromethane	mg/kg	<1.0
Chlorobenzene	µg/l	<0.3	Bromoform	mg/kg	<1.0
Chloroethane	µg/l	<0.9	Carbon Tetrachloride	mg/kg	<1.0
Chloroform	µg/l	<0.3	Chlorobenzene	mg/kg	<1.0
Chloromethane	µg/l	0.62	Chloroethane	mg/kg	<1.0
Chlorodibromomethane	µg/l	<0.5	Chloroform	mg/kg	<1.0
1,2-Dichlorobenzene	µg/l	<0.5	Chloromethane	mg/kg	<1.0
1,3-Dichlorobenzene	µg/l	<0.5	Chlorodibromomethane	mg/kg	<1.0
1,4-Dichlorobenzene	µg/l	<0.5	1,2-Dichlorobenzene	mg/kg	<1.0
Dichlorodifluoromethane	µg/l	<0.5	1,3-Dichlorobenzene	mg/kg	<1.0
1,1-Dichloroethane	µg/l	<0.4	1,4-Dichlorobenzene	mg/kg	<1.0
1,2-Dichloroethane	µg/l	<0.3	Dichlorodifluoromethane	mg/kg	<1.0
1,1-Dichloroethene	µg/l	<0.3	1,1-Dichloroethane	mg/kg	<1.0
Trans-1,2-Dichloroethene	µg/l	<0.5	1,2-Dichloroethane	mg/kg	<1.0
1,2-Dichloropropane	µg/l	<0.3	1,1-Dichloroethene	mg/kg	<1.0
Cis-1,3-Dichloropropene	µg/l	<0.5	Trans-1,2-Dichloroethene	mg/kg	<1.0
Trans-1,3-Dichloropropene	µg/l	<0.5	1,2-Dichloropropane	mg/kg	<1.0
Methylene Chloride	µg/l	1.5	Cis-1,3-Dichloropropene	mg/kg	<1.0
1,1,2,2-Tetrachloroethane	µg/l	<0.2	Trans-1,3-Dichloropropene	mg/kg	<1.0
Tetrachloroethylene	µg/l	<0.5	Methylene Chloride	mg/kg	<1.0
Trichlorofluoromethane	µg/l	<0.4	1,1,2,2-Tetrachloroethane	mg/kg	<1.0
Vinyl Chloride	µg/l	<0.2	Tetrachloroethylene	mg/kg	<1.0
2-Chloroethylvinyle Ether	µg/l	<0.2	Trichlorofluoromethane	mg/kg	<1.0
Bromomethane	µg/l	<0.9	Vinyl Chloride	mg/kg	<1.0
Purgeable Aromatic Hydrocarbons (EPA 802)					
1,3-Dichlorobenzene	µg/l	<0.5	Benzene	µg/l	0.6
1,4-Dichlorobenzene	µg/l	<0.5	1,2-Dichlorobenzene	µg/l	<0.5
Ethyl Benzene	µg/l	<0.6	p-Xylene	µg/l	<0.5
Chlorobenzene	µg/l	<0.3	o-Xylene	µg/l	<0.3
Toluene	µg/l	<0.3	m-Xylene	µg/l	<0.5

NOTE: Shaded areas indicates those results influenced by improper sampling technique

**TABLE G-9, Results of Background Drinking Water Analyses
HAYWARD ANG'S WASTEWATER CHARACTERIZATION SURVEY
29 MARCH - 9 APRIL 93**

Metals Analyses:			Volatile Organic Hydrocarbon Analysis (EPA Method 601):		
	Units:	Conc.		Units:	Conc.
Arsenic	ug/l	4.2	Bromodichloromethane	ug/l	1.0
Barium	ug/l	< 100	Bromoform	ug/l	< 0.7
Cadmium	ug/l	0	Carbon Tetrachloride	ug/l	< 0.5
Chromium	ug/l	< 50.0	Chlorobenzene	ug/l	< 0.3
Copper	ug/l	< 20.0	Chloroethane	ug/l	< 0.9
Iron	ug/l	527.5	Chloroform	ug/l	71.6
Lead	ug/l	< 20.0	Chloromethane	ug/l	< 0.8
Mercury	ug/l	< 1.0	Chlorodibromomethane	ug/l	< 0.5
Nickel	ug/l	299.5	1,2-Dichlorobenzene	ug/l	< 0.5
Silver	ug/l	< 5.0	1,3-Dichlorobenzene	ug/l	< 0.5
Zinc	ug/l	< 50.0	1,4-Dichlorobenzene	ug/l	10.8
			Dichlorodifluoromethane	ug/l	< 0.5
Other Analyses:			1,1-Dichloroethane	ug/l	< 0.4
Phenol	ug/l	< 10	1,2-Dichloroethane	ug/l	< 0.3
Cyanide (Total)	mg/l	< .005	1,1-Dichloroethene	ug/l	< 0.3
Chemical Oxygen Demand	mg/l	< 10	Trans-1,2-Dichloroethene	ug/l	< 0.5
Total Petroleum Hydrocarbons	mg/l	< 1.0	1,2-Dichloropropane	ug/l	< 0.3
Oil & Grease	mg/l	0.7	Cis-1,3-Dichloropropene	ug/l	< 0.5
Total Residue	mg/l	53.0	Trans-1,3-Dichloropropene	ug/l	< 0.5
Volatile Organic Aromatic Analysis (EPA Method 602):			Methylene Chloride	ug/l	< 0.8
			1,1,2,2-Tetrachloroethane	ug/l	< 0.2
			Tetrachloroethylene	ug/l	< 0.6
1,3-Dichlorobenzene	ug/l	< 0.5	1,1,1-Trichloroethane	ug/l	< 0.5
1,4-Dichlorobenzene	ug/l	< 0.5	1,1,2-Trichloroethane	ug/l	< 0.2
Ethyl Benzene	ug/l	< 0.6	Trichloroethylene	ug/l	< 0.5
Chlorobenzene	ug/l	< 0.3	Trichlorofluoromethane	ug/l	< 0.4
Toluene	ug/l	0.5	Vinyl Chloride	ug/l	< 0.2
Benzene	ug/l	< 0.3	2-Chloroethylvinyl Ether	ug/l	< 0.2
1,2-Dichlorobenzene	ug/l	< 0.5	Bromomethane	ug/l	< 0.9