California Regional Water Quality Control Board
North Coast Region

MONITORING AND REPORTING PROGRAM NO. R1-2000-92
(Revised May 7, 2002)

FOR

CITY OF FERNDALE
WASTEWATER TREATMENT FACILITY

Humboldt County

WASTEWATER MONITORING

Composite samples may be taken by an automatic sampling device approved by the Executive Officer or by grab samples. In compositing grab samples, the sampling interval shall not exceed one hour. The following shall constitute the wastewater monitoring program.

Influent Monitoring

Constituent	Unit	Type of Sample	Frequency
BOD (20°C, 5-day)	mg/l	8-hour composite	monthly
Suspended Solids	mg/l	8-hour composite	monthly

Effluent Monitoring

Constituent	Unit	Type of Sample	Frequency
BOD (20°C, 5-day)	mg/l	8-hour composite	monthly
Suspended Solids	mg/l	8-hour composite	monthly
Settleable Solids	ml/l	8-hour composite	weekly
Coliform Organisms (Total)	MPN/100ml	grab	weekly
Chlorine Residual	mg/l	grab	daily
pH	----	grab	weekly
Daily Flow	gpd	----	continuous

RECEIVING WATER MONITORING

Samples shall be collected in Francis Creek and Salt River in an ambient background location upstream of the discharge and Salt River downstream in the vicinity of the discharge. Samples shall be collected monthly and shall be analyzed for pH and dissolved oxygen.

Flow monitoring of Salt River shall be done daily when discharging to Francis Creek. The sampling location in Salt River shall be downstream of the confluence with Francis Creek and upstream from any tributaries to Salt River.

WATER RECLAMATION MONITORING

During the water reclamation season, daily inspections shall be conducted, unannounced, where water is being reclaimed. Observations shall be made and recorded regarding compliance with section **D. WATER RECLAMATION REQUIREMENTS** of Order No. R1-2000-92. The presence or absence of wet cows (lactating cows) on either wet or dry pastures that receive reclaimed water shall be recorded. Daily observations and discharge volume shall be submitted with monthly monitoring reports.

ACUTE TOXICITY MONITORING

The presence of acute toxicity in the effluent shall be determined by conducting 96-hour static or static renewal tests using rainbow trout *Oncorhynchus mykiss* as the test species in accordance with wastewater testing method specified in EPA 600/4-90/027F, 4th edition or subsequent editions. An 8-hour composite sample of effluent shall be collected four times each year, at equal time intervals, during the winter discharge period and when discharge to the Eel River is occurring.

CHRONIC TOXICITY MONITORING

1. Chronic Toxicity Monitoring Requirements

   a. Sampling. The permittee shall collect 8-hour composite or 24-hour composite samples of effluent for critical life stage toxicity testing as indicated below. For toxicity tests requiring renewals, 8-hour or 24-hour composite samples collected on consecutive days are required.

   b. Test Species: Chronic toxicity shall be monitored by using critical life stage test(s) and the most sensitive test specie(s) identified by screening phase testing in General Provision F.25 (d) of this Order. Test specie(s) shall be approved by the Executive Officer. Two test species may be required if test data indicate that there is alternating sensitivity between the two species.

   c. Frequency:

      (1) Routine Monitoring: Twice per year
      (2) Accelerated Monitoring: Quarterly, or as otherwise specified by the Executive Officer.

   d. Conditions for Accelerated Monitoring: The permittee shall conduct accelerated monitoring when either of the following conditions are exceeded:

      (1) Three-sample median value of 1 TUc, or
      (2) Single-sample maximum value of 2 TUc.

e. Methodology: Sample collection, handling and preservation shall be in accordance with EPA protocols. The test methodology used shall be in accordance with the references cited in this Permit, or as approved by the Executive Officer. A concurrent reference toxicant test shall be performed for each test.

f. Dilution Series: The permittee shall conduct tests at 100%, 85%, 70%, 50%, and 25%. The "%" represents percent effluent as discharged. Dilution and control waters shall be obtained from an area unaffected by the discharge in the receiving waters. Standard dilution water may be used if the above sources exhibit toxicity or if approved by the Executive Officer.

2. Chronic Toxicity Reporting Requirements

a. Routine Reporting: Toxicity test results for the current reporting period shall include, at a minimum, for each test:

1. sample date(s)
2. test initiation date
3. test species
4. end point values for each dilution (e.g. number of young, growth rate, percent survival)
5. NOEC value(s) in percent effluent
6. IC_{15}, IC_{25}, IC_{40}, and IC_{50} values (or EC_{15}, EC_{25} ... etc.) in percent effluent
7. TUc values (100/NOEC, $100/IC_{25}$, and $100/EC_{25}$)
8. Mean percent mortality (±s.d.) after 96 hours in 100% effluent (if applicable)
9. NOEC and LOEC values for reference toxicant test(s)
10. IC_{50} or EC_{50} value(s) for reference toxicant test(s)
11. Available water quality measurements for each test (ex. pH, D.O., temperature, conductivity, hardness, salinity, ammonia)

b. Compliance Summary: The results of the chronic toxicity testing shall be provided in the most recent self-monitoring report and shall include a summary table of chronic toxicity data from at least eleven of the most recent samples. The information in the table shall include the items listed above under 2.a., item numbers 1, 3, 5, 6(IC_{25} or EC_{25}), 7, and 8.

After at least four test rounds, the permittee may request the Executive Officer to decrease the required frequency of testing, and/or to reduce the number of compliance species to one. Such a request may be made only if toxicity exceeding the TUc values specified in the effluent limitations was never observed using that test specie.

DETERMINATION OF PRIORITY POLLUTANTS REQUIRING WATER QUALITY-BASED EFFLUENT LIMITATIONS

The Regional Water Board shall conduct the analysis according to the California Toxics Rule (CTR) for each priority pollutant to determine if a water quality-based effluent limitation is required in the permittee's permit. It is the permittee's responsibility to provide all information requested by the Regional Water Board for use in the analysis. The Regional Water Board shall use all available, valid, relevant, representative information to determine whether a discharge may: (1) cause, (2) have a reasonable potential to cause, or (3) contribute to an excursion above any applicable priority pollutant criterion or objective.

Effluent Characterization Monitoring

Effluent monitoring for priority toxic pollutants listed in Table 1 below shall be done in accordance with General Provision F.29 of this Order.

Ambient Background Concentrations Monitoring

The effluent receiving water shall be analyzed for priority toxic pollutants listed in Table 1 and shall be done in accordance with General Provision F.27 of this Order. Hardness and pH of the receiving water shall be analyzed and reported at the same time a priority pollutant is analyzed.

Options for analytical methods are:

(1) Those methods listed in Table 1 and described in tables 1A, 1B, 1C, 1D, and 1E of 40 CFR 136.3 (revised as of May 14, 1999); or alternate test procedures for individual discharges that have been approved by the U.S. EPA Regional Administrator pursuant to 40 CFR 136.4 (a) through (c), inclusive, and 40 CFR 136.5 (a) through (d), inclusive (revised as of May 14, 1999); or

(2) Where no methods are specified for a pollutant in the tables described in (1) above, methods approved by the State Water Board or Regional Water Board.

Laboratories analyzing monitoring samples shall be certified by the Department of Health Services, in accordance with the provisions of Water Code Section 13176, and must include quality assurance/quality control data with their reports.

Permittees shall instruct laboratories to establish calibration standards so that the Minimum Level (ML) value (or its equivalent if there is different treatment of samples relative to calibration standards) is the lowest calibration standard. At no time shall the permittee use analytical data derived from *extrapolation* beyond the lowest point of the calibration curve.

Reporting Protocols

The permittee shall report the results of analytical determination for the presence of chemical constituents in a sample using the following protocols:

1. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured concentration in the sample).

2. Sample results less than the reported ML, but greater than or equal to the laboratory's Minimum Detection Level (MDL), shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample also shall be reported. For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (+/- a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

3. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

Table 1. – Priority Toxic Pollutants

CTR #	CAS #	Constituent (a)	Minimum Level (µg/l) (b)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
1.	7440360	Antimony					10	5	50	0.5	5	0.5		1000
2.	7440382	Arsenic				20		2	10	2	2	1		1000
3.	7440417	Beryllium					20	0.5	2	0.5	1			1000
4.	7440439	Cadmium				10	0.5	10	0.25	0.5				1000
5a.	16065831	Chromium (III)												
5b.	18540299	Chromium (VI)				10	5							1000
6.	7440508	Copper					25	5	10	0.5	2			1000
7.	7439921	Lead					20	5	5	0.5	2			10,000
8.	7439976	Mercury								0.5			0.2	
9.	7440020	Nickel					50	5	20	1	5			1000
10.	7782492	Selenium						5	10	2	5	1		1000
11.	7440224	Silver					10	1	10	0.25	2			1000
12.	7440280	Thallium					10	2	10	1	5			1000
13.	7440666	Zinc					20		20	1	10			
14.	57125	Cyanide				5								
15.	1332214	Asbestos												
16.	1746016	2, 3, 7, 8-TCDD (Dioxin) (c)												
17.	107028	Acrolein	2.0	5										
18.	107131	Acrylonitrile	2.0	2										
19.	71432	Benzene	0.5	2										
20.	75252	Bromoform	0.5	2										
21.	56235	Carbon Tetrachloride	0.5	2										
22.	108907	Chlorobenzene	0.5	2										
23.	124481	Chlorodibromomethane	0.5	2										

CTR #	CAS #	Constituent (a)	Minimum Level (µg/l) (b)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
24.	75003	Chloroethane	0.5	2										
25.	110758	2-Chloroethylvinyl Ether	1	1										
26.	67663	Chloroform	0.5	2										
27.	75274	Dichlorobromomethane	0.5	2										
28.	75343	1,1-Dichloroethane	0.5	1										
29.	107062	1,2-Dichloroethane	0.5	2										
30.	75354	1, 1-Dichloroethylene	0.5	2										
31.	78875	1, 2-Dichloropropane	0.5	1										
32.	542756	1, 3 – Dichloropropylene	0.5	2										
33.	100414	Ethylbenzene	0.5	2										
34.	74839	Methyl Bromide	1.0	2										
35.	74873	Methyl Chloride	0.5	2										
36.	75092	Methylene Chloride	0.5	2										
37.	79345	1,1,2,2-Tetrachloroethane	0.5	1										
38.	127184	Tetrachloroethylene	0.5	2										
39.	108883	Toluene	0.5	2										
40.	156605	1,2-Trans-Dichloroethylene	0.5	1										
41.	71556	1,1,1-Trichloroethane	0.5	2										
42.	79005	1,1,2-Trichloroethane	0.5	2										
43.	79016	Trichloroethylene	0.5	2										
44.	75014	Vinyl Chloride	0.5	2										
45.	95578	2-Chlorophenol	2	5										
46.	120832	2,4-Dichlorophenol	1	5										
47.	105679	2,4-Dimethylphenol	1	2										
48.	534521	2-Methyl-4,6-Dinitrophenol	10	5										
49.	51285	2,4-Dinitrophenol	5	5										
50.	88755	2-Nitrophenol		10										
51.	100027	4-Nitrophenol	5	10										
52.	59507	3-Methyl-4-Chlorophenol	5	1										
53.	87265	Pentachlorophenol	1	5										
54.	108952	Phenol	1	1		50								
55.	88062	2,4,6- Trichlorophenol	10	10										
56.	83329	Acenaphthene	1	1	0.5									
57.	208968	Acenaphthylene		10	0.2									
58.	120127	Anthracene		10	2									
59.	92875	Benzidine		5										
60.	56553	Benzo(a)Anthracene	10	5										
61.	50328	Benzo(a)Pyrene		10	2									
62.	205992	Benzo(b)Fluoranthene		10	10									
63.	191242	Benzo(ghi)Perylene		5	0.1									
64.	207089	Benzo(k)Fluoranthene		10	2									
65.	111911	Bis(2-Chloroethoxy) Methane		5										
66.	111444	Bis(2-Chloroethyl) Ether	10	1										
67.	39638329	Bis(2-Chloroisopropyl) Ether	10	2										
68.	117817	Bis(2-Ethylhexyl)	10	5										

CTR #	CAS #	Constituent (a)	Minimum Level (µg/l) (b)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
		Phthalate												
69.	101553	4-Bromophenyl Phenyl Ether	10	5										
70.	85687	Butylbenzyl Phthalate	10	10										
71.	91587	2-Chloronaphthalene		10										
72.	7005723	4-Chlorophenyl Phenyl Ether		5										
73.	218019	Chrysene		10	5									
74.	53703	Dibenzo(a,h) Anthracene		10	0.1									
75.	95501	1, 2 Dichlorobenzene	0.5	2										
76.	541731	1, 3 Dichlorobenzene	0.5	2										
77.	106467	1, 4 Dichlorobenzene	0.5	2										
78.	91941	3,3'-Dichlorobenzidine		5										
79.	84662	Diethyl Phthalate	10	2										
80.	131113	Dimethyl Phthalate	10	2										
81.	84742	Di-n-Butyl Phthalate		10										
82.	121142	2,4-Dinitrotoluene	10	5										
83.	606202	2,6-Dinitrotoluene		5										
84.	117840	Di-n-Octyl Phthalate		10										
85.	122667	1,2-Diphenylhydrazine		1										
86.	206440	Fluoranthene	10	1	0.05									
87.	86737	Fluorene		10	0.1									
88.	118741	Hexachlorobenzene	5	1										
89.	87683	Hexachlorobutadiene	5	1										
90.	77474	Hexachlorocyclopentadiene	5	5										
91.	67721	Hexachloroethane	5	1										
92.	193395	Indeno(1,2,3-cd)Pyrene		10	0.05									
93.	78591	Isophorone	10	1										
94.	91203	Naphthalene	10	1	0.2									
95.	98953	Nitrobenzene	10	1										
96.	62759	N-Nitrosodimethylamine	10	5										
97.	621647	N-Nitrosodi-n-Propylamine	10	5										
98.	86306	N-Nitrosodiphenylamine	10	1										
99.	85018	Phenanthrene		5	0.05									
100.	129000	Pyrene		10	0.05									
101.	120821	1,2,4-Trichlorobenzene	1	5										
102.	309002	Aldrin	0.005											
103.	319846	alph-BHC	0.01											
104.	319857	beta-BHC	0.005											
105.	58899	gamma-BHC	0.02											
106.	319868	Delta-BHC	0.005											
107.	57749	Chlordane	0.1											
108.	50293	4,4'-DDT	0.01											
109.	72559	4,4'-DDE	0.05											
110.	72548	4,4'-DDD	0.05											
111.	60571	Dieldrin	0.01											
112.	959988	alpha-Endosulfan	0.02											
113.	33213659	beta-Endosulfan	0.01											

CTR #	CAS #	Constituent (a)	Minimum Level (µg/l) (b)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
114.	1031078	Endosulfan Sulfate	0.05											
115.	72208	Endrin	0.01											
116.	7421934	Endrin Aldehyde	0.01											
117.	76448	Heptachlor	0.01											
118.	1024573	Heptachlor Epoxide	0.01											
119-125		Polychlorinated biphenyls (PCBs) (d)	0.5											
126.	8001352	Toxaphene	0.5											

Notes:

a.) Factors may be applied to the ML depending on the specific sample preparation steps employed. Permittees shall instruct laboratories to establish calibration standards so that the ML value is the lowest calibration. At no time shall the permittee use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

b.) Laboratory techniques are defined as follows: GC = Gas Chromatography; GCMS = Gas Chromatography/Mass Spectrometry; LC = High Pressure Liquid Chromatography; Color = Colorimetric; FAA = Flame Atomic Absorption; GFAA = Graphite Furnace Atomic Absorption; Hydride = Gaseous Hydride Atomic Absorption; CVAA = Cold Vapor Atomic Absorption; ICP = Inductively Coupled Plasma; ICPMS = Inductively Coupled Plasma/Mass Spectrometry; SPGFAA = Stabilized Platform Graphite Furnace Atomic Absorption (i.e. EPA 200.9); DCP = Direct Current Plasma.

c.) Use EPA approved method 1613 for dioxins and furans.

d.) PCBs are a class of chemicals which include aroclors 1242, 1254, 1221, 1232, 1248, 1260, and 1016, CAS numbers 53469219, 11097691, 11104282, 11141165, 12672296, 11096825, and 12674112, respectively.

DIOXIN STUDY OF THE EFFLUENT

The permittee shall monitor its effluent for the presence of the seventeen 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) congeners listed below, once during the dry weather and once during the wet weather each year for a period of three consecutive years. This shall be done in accordance with Provision 29 of this Order. The congeners and Toxic Equivalent Factors (TEF) can be found in Table 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California. A copy of this table is shown below.

Table 2. – Toxic Equivalency Factors (TEFs) for 2,3,7,8-TCDD Equivalents

Congener	TEF
2,3,7,8-TetraCDD	1
1,2,3,7,8-PentaCDD	1.0
1,2,3,4,7,8-HexaCDD	0.1
1,2,3,6,7,8-HexaCDD	0.1
1,2,3,7,8,9-HexaCDD	0.1
1,2,3,4,6,7,8-HeptaCDD	0.01
OctaCDD	0.0001
2,3,7,8-TetraCDF	0.1
1,2,3,7,8-PentaCDF	0.05
2,3,4,7,8-PentaCDF	0.5

1,2,3,4,7,8-HexaCDF	0.1
1,2,3,6,7,8-HexaCDF	0.1
1,2,3,7,8,9-HexaCDF	0.1
2,3,4,6,7,8-HexaCDF	0.1
1,2,3,4,6,7,8-HeptaCDF	0.01
1,2,3,4,7,8,9-HeptaCDF	0.01
OctaCDF	0.0001

The permittee shall report for each congener the analytical results of the effluent monitoring, including the quantifiable limit[1] and the Method Detection Limit[2], and the measured or estimated concentration. In addition, the permittee shall multiply each measured or estimated congener concentration by its respective Toxic Equivalent Factor[3] value and report the sum of these values.

REPORTING

Monitoring reports shall be submitted to the Regional Water Board monthly. If holiday work schedules prevent sample collection on the date specified by this monitoring program, a substitute sample shall be collected and an explanation of the circumstances shall be included with the self-monitoring report. Monitoring reports are due in the Regional Water Board office by the 15th day of the following month.

Ordered by _____
Susan A. Warner
Executive Officer

May 7, 2002

(2Final-ferndalemon)

[1] Use EPA approved method 1613 for dioxins and furans.
[2] As determined by the procedure found in 40 CFR 136 (revised as of May 14, 1999)
[3] Table 4. Toxic Equivalency Factors (TEFs) for 2, 3, 7, 8- TCDD Equivalents, pg 27, Policy for Implementation of Toxics, Standard for Inland Surface Waters, Enclosed Bays and Estuaries of California, Adopted March 2, 2000.