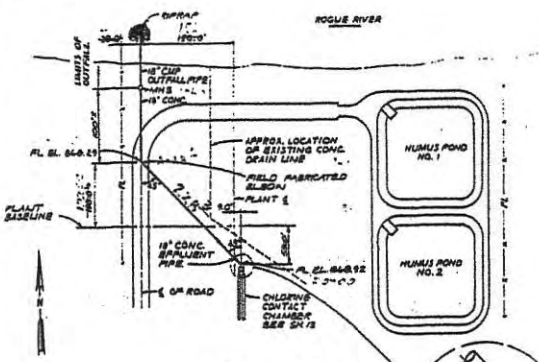
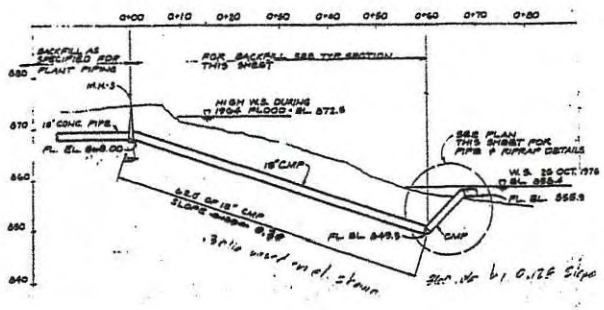
APPENDIX F

OUTFALL MIXING ANALYSIS, DRAWING, AND DATA

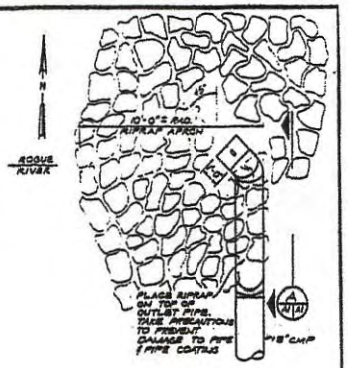
K. WIEBER



OUTFALL LAYOUT
N.T.S.

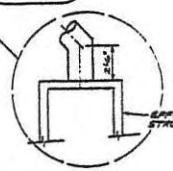


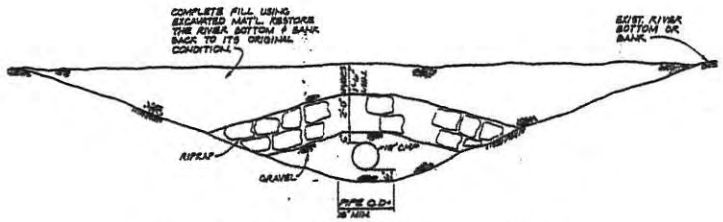
OUTFALL PROFILE
N.T.S.



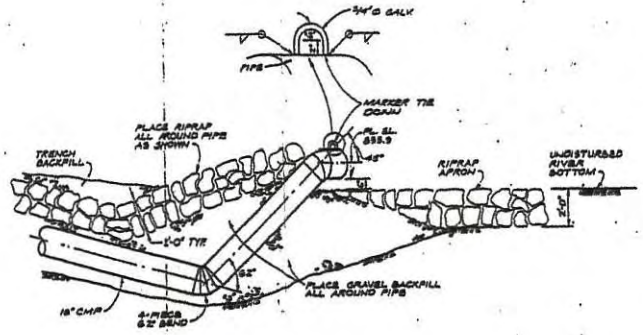
PLAN
N.T.S.

NOTES:
1. CHANGE OUTFALL PIPE ON SHEET 1 TO THE LOCATION SHOWN ON THIS SHEET.
2. PROFILE MEASUREMENTS ARE APPROXIMATE. ADJUSTMENTS MAY BE REQUIRED DURING CONSTRUCTION.





TYPICAL SECTION (RIVERSIDE OF MANHOLE)
N.T.S.



SECTION A/A
N.T.S.

THIS PRINT IS REDUCED TO ONE-HALF OF THE ORIGINAL SCALE
IN THE SCALE BLOCK.

CH2M HILL

DES. GDP
DR. EMO/RR
CHK. RWL
APPD. GDP

NO.	DATE	REVISION	BY	APPD

REDWOOD SANITARY SEWER SERVICE DISTRICT
JOSEPHINE COUNTY, OREGON

SCHEDULE T
SEWAGE TREATMENT PLANT
OUTFALL

SHEET 1A OF 26
DATE MAY 1974
DWG. NO. C8406-4

```
Dec  3, 1993,  11:40:57  ERL-N PROGRAM PLUMES, Jun 11, 1993   Case:   1 of   2
Title   ^ZMRedwood WWTP - Acute Mixing - PDDW                        non-linear
 tot flow   # ports port flow   spacing  effl sal effl temp   far inc   far dis
  0.02410         1   0.02410    0.9601       0.0      21.0        10       400
 port dep  port dia plume dia total vel horiz vel vertl vel asp coeff print frq
    3.048    0.4572    0.4456    0.1545    0.1545     0.000      0.10        10
port elev ver angle cont coef  effl den poll conc     decay  Froude # Roberts F
   0.3962       0.0      0.95  -1.94464       100         0     22.45      9616
hor angle red space p amb den p current   far dif   far vel K:vel/cur Stratif #
      90    0.9601  -1.93381    0.3810    0.0003    0.3810    0.4056    0.1462
   depth   current   density  salinity      temp  amb conc  N (freq) red grav.
       0    0.3810  -1.94464         0      21.0       100  0.005907 0.0001064
   6.096    0.3810  -1.92299         0      20.9       100 buoy flux puff-ther
                                                            2.563E-06     2.422
                                                           jet-plume jet-cross
                                                               9.416    0.1602
                                                           plu-cross jet-strat
                                                          0.00004634     3.214
                                                           plu-strat
                                                               1.878
                                                            hor dis>=

CORMIX1 flow category algorithm is turned off.
 0.3962 m, 1.300 ft, 15.60 in.                                    to  m range
Help: F1.  Quit: <esc>.  Configuration:ATNOO.  FILE: PLMSTUFF.VAR;
UM INITIAL DILUTION CALCULATION (non-linear mode)
 plume dep plume dia poll conc  dilution   CL conc   hor dis
         m         m                                       m
     3.048    0.4456     100.0     1.000     100.0     0.000
     3.048    0.4422     100.0     1.072     100.0   0.05399
     3.048    0.4395     100.0     1.149     100.0    0.1199
     3.048    0.4393     100.0     1.231     100.0    0.1953
     3.048    0.4410     100.0     1.320     100.0    0.2740
     3.048    0.4444     100.0     1.414     100.0    0.3547
     3.048    0.4492     100.0     1.516     100.0    0.4390
     3.048    0.4552     100.0     1.624     100.0    0.5282
     3.048    0.4623     100.0     1.741     100.0    0.6235
     3.048    0.4704     100.0     1.866     100.0    0.7262
     3.048    0.4794     100.0     2.000     100.0    0.8376
     3.047    0.4894     100.0     2.144     100.0    0.9591
     3.047    0.5002     100.0     2.297     100.0     1.092
     3.047    0.5119     100.0     2.462     100.0     1.239
     3.047    0.5243     100.0     2.639     100.0     1.400
     3.047    0.5375     100.0     2.828     100.0     1.578
     3.047    0.5516     100.0     3.031     100.0     1.774
     3.047    0.5664     100.0     3.249     100.0     1.992
     3.046    0.5819     100.0     3.482     100.0     2.234
     3.046    0.5983     100.0     3.732     100.0     2.502
     3.046    0.6155     100.0     4.000     100.0     2.800
     3.046    0.6335     100.0     4.287     100.0     3.130
     3.045    0.6523     100.0     4.595     100.0     3.497
     3.045    0.6719     100.0     4.924     100.0     3.905
     3.045    0.6924     100.0     5.278     100.0     4.358
     3.044    0.7138     100.0     5.657     100.0     4.862
     3.044    0.7360     100.0     6.063     100.0     5.422
     3.043    0.7592     100.0     6.498     100.0     6.044
     3.042    0.7833     100.0     6.964     100.0     6.736
     3.042    0.8059     100.0     7.413     100.0     7.425 -> bottom hit
     3.042    0.8084     100.0     7.464     100.0     7.505 -> bottom hit
     3.041    0.8345     100.0     8.000     100.0     8.360 -> bottom hit
     3.040    0.8616     100.0     8.574     100.0     9.311 -> bottom hit
     3.039    0.8898     100.0     9.189     100.0     10.37 -> bottom hit
     3.038    0.9190     100.0     9.849     100.0     11.54 -> bottom hit
     3.036    0.9493     100.0     10.56     100.0     12.84 -> bottom hit
     3.035    0.9650     100.0     10.93     100.0     13.56 -> bottom hit
-> surface reflection begins
     3.034    0.9824     100.0     11.31     100.0     14.39 -> bottom hit
     3.032     1.022     100.0     12.13     100.0     16.33 -> bottom hit
     3.029     1.066     100.0     13.00     100.0     18.67 -> bottom hit
     3.026     1.116     100.0     13.93     100.0     21.45 -> bottom hit
     3.022     1.171     100.0     14.93     100.0     24.71 -> bottom hit
     3.016     1.231     100.0     16.00     100.0     28.51 -> bottom hit
```

10 FT, S_a = 4.2

20 FT, S_a = 6.5

30 FT, S_a = 8.5

VERTICAL MIXING (WITHIN M.Z.)

```
Dec  3, 1993,  11:41:49  ERL-N PROGRAM PLUMES, Jun 11, 1993   Case:   2 of   2
Title   ^ZMRedwood WWTP - Acute Mixing - PDDW                        non-linear
 tot flow   # ports port flow   spacing  effl sal effl temp   far inc   far dis
  0.04819         1   0.04819    0.9601       0.0      21.0        10       400
 port dep  port dia plume dia total vel horiz vel vertl vel asp coeff print frq
    3.048    0.4572    0.4456    0.3090    0.3090     0.000      0.10        10
port elev ver angle cont coef  effl den poll conc     decay  Froude # Roberts F
   0.3962       0.0      0.95  -1.94464       100         0     44.88      4809
hor angle red space p amb den p current   far dif   far vel K:vel/cur Stratif #
      90    0.9601  -1.93381    0.3810    0.0003    0.3810    0.8110    0.1462
    depth   current   density  salinity      temp  amb conc  N (freq) red grav.
        0    0.3810  -1.94464         0      21.0       100  0.005907 0.0001064
    6.096    0.3810  -1.92299         0      20.9       100 buoy flux puff-ther
                                                            5.125E-06     4.842
                                                           jet-plume jet-cross
                                                               18.83    0.3203
                                                           plu-cross jet-strat
                                                          0.00009267     4.545
                                                           plu-strat
                                                               2.233
                                                            hor dis>=

CORMIX1 flow category algorithm is turned off.
 0.3962 m, 1.300 ft, 15.60 in.                                    to  m range
Help: F1.  Quit: <esc>.  Configuration:ATNOO.  FILE: PLMSTUFF.VAR;
UM INITIAL DILUTION CALCULATION (non-linear mode)
 plume dep plume dia poll conc  dilution   CL conc   hor dis
         m         m                                       m
     3.048    0.4456     100.0     1.000     100.0     0.000
     3.048    0.4581     100.0     1.072     100.0    0.2049
     3.048    0.4709     100.0     1.149     100.0    0.4085
     3.048    0.4843     100.0     1.231     100.0    0.6344
     3.048    0.4983     100.0     1.320     100.0    0.8851
     3.047    0.5130     100.0     1.414     100.0     1.164
     3.047    0.5283     100.0     1.516     100.0     1.473
     3.047    0.5444     100.0     1.624     100.0     1.817
     3.046    0.5611     100.0     1.741     100.0     2.199
     3.046    0.5785     100.0     1.866     100.0     2.624
     3.045    0.5966     100.0     2.000     100.0     3.096
     3.044    0.6155     100.0     2.144     100.0     3.621
     3.043    0.6351     100.0     2.297     100.0     4.205
     3.042    0.6556     100.0     2.462     100.0     4.853
     3.041    0.6768     100.0     2.639     100.0     5.574
     3.039    0.6988     100.0     2.828     100.0     6.376
     3.038    0.7217     100.0     3.031     100.0     7.266
     3.036    0.7455     100.0     3.249     100.0     8.256
     3.033    0.7702     100.0     3.482     100.0     9.356
     3.030    0.7958     100.0     3.732     100.0     10.58
     3.027    0.8224     100.0     4.000     100.0     11.94
     3.024    0.8416     100.0     4.199     100.0     12.98 -> bottom hit
     3.023    0.8500     100.0     4.287     100.0     13.44 -> bottom hit
     3.019    0.8786     100.0     4.595     100.0     15.12 -> bottom hit
     3.014    0.9083     100.0     4.924     100.0     16.98 -> bottom hit
     3.008    0.9390     100.0     5.278     100.0     19.05 -> bottom hit
     3.002    0.9645     100.0     5.579     100.0     20.88 -> bottom hit
 -> surface reflection begins
     3.001    0.9713     100.0     5.657     100.0     21.39 -> bottom hit
     2.992     1.010     100.0     6.063     100.0     24.30 -> bottom hit
     2.981     1.054     100.0     6.498     100.0     27.74 -> bottom hit
```

10 FT, S_a = 2.0

20 FT, S_a = 2.8

30 FT, S_a = 3.4

VERTICAL MIXING (WITHIN N.F.)

NEILSON RESEARCH CORPORATION

NRC Sample Number: 93-11018

December 20, 1993

Redwood Sanitary Sewer Association
4960 Leonard Rd.
Grants Pass OR 97527
(503)476-9472

Wastewater Study

Date Collected - 12/05/93

Date Received - 12/06/93

METALS ANALYSIS

Test	Test Method	Units	Test Results	Date of Analysis	Analyst
pH	EPA 150.1	pH Units	7.10	12/06/93	TMD
Specific Conductance	EPA 120.1	uMHO/CM	420	12/06/93	TMD
Arsenic, As	EPA 206.2	mg/L	ND@0.001	12/13/93	JN
Cadmium, Cd	EPA 213.2	mg/L	0.0002	12/13/93	JN
Chromium, Cr	EPA 218.1	mg/L	ND@0.05	12/14/93	JN
Copper, Cu	EPA 220.1	mg/L	0.024	12/14/93	JN
Cyanide	EPA 335.2	mg/L	ND@0.02	12/16/93	TMD
Iron, Fe	EPA 236.1	mg/L	0.024	12/18/93	JN/TD
Lead, Pb	EPA 239.2	mg/L	ND@0.001	12/07/93	JN/TD
Manganese, Mn	EPA 243.1	mg/L	0.012	12/14/93	JN
Nickel, Ni	EPA 249.1	mg/L	ND@0.04	12/14/93	JN
Selenium, Se	EPA 270.2	mg/L	ND@0.002	12/13/93	JN
Zinc, Zn	EPA 289.1	mg/L	0.085	12/13/93	JN
Mercury, Hg	EPA 245.1	mg/L	ND@0.0002	12/10/93	TMD
Silver, Ag	EPA 272.1	mg/L	ND@0.01	12/14/93	JN
Ammonia Nitrogen	EPA 350.2	mg/L	ND@1	12/06/93	TD
Total Phenols	EPA 420.1	mg/L	ND@0.05	12/17/93	TMD

ND = None Detected

Reviewed By

Approved By

Analytical Consulting Laboratory
245 S. GRAPE ST. Δ MEDFORD, OR 97501-3123 Δ (503) 770-5678 Δ FAX (503) 770-2901