NPDES compliance summary report, fiscal year 1996

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NPDES COMPLIANCE SUMMARY REPORT

Fiscal Year 1996

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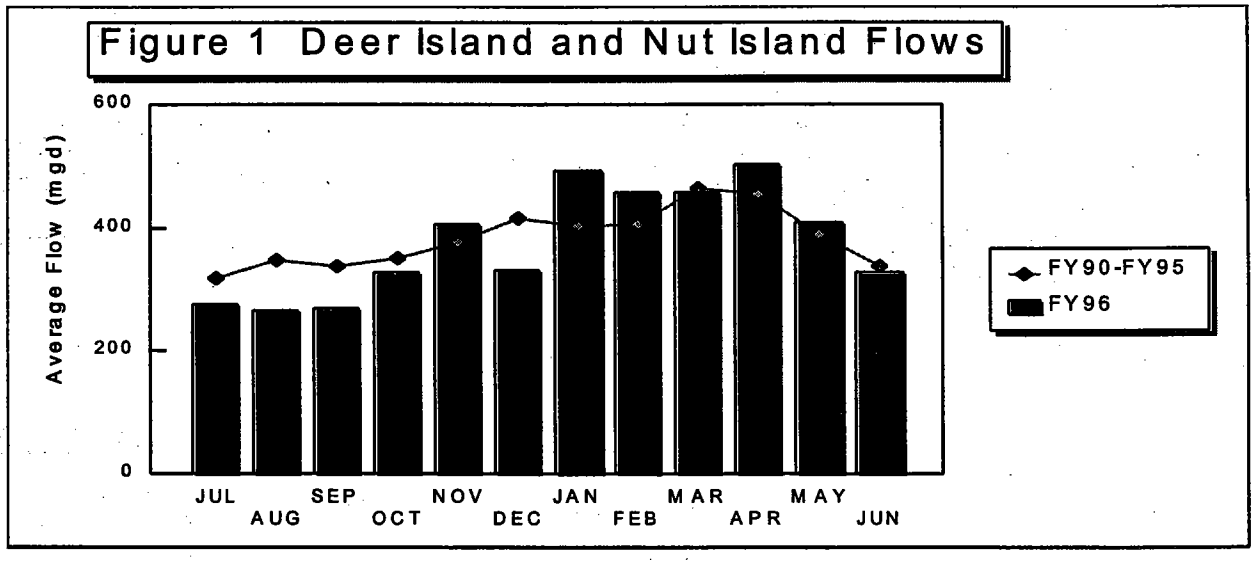
Executive Summary

This report presents and summarizes monitoring and compliance data collected and analyzed by the Massachusetts Water Resources Authority (MWRA) NPDES Compliance Unit from July 1995 to June 1996. The Fiscal Year Summary Report, while not a regulatory requirement, provides a useful documentation of influent and effluent quality trends over the course of a full year.

Treatment Plants

MWRA is required under its NPDES permit to monitor its two wastewater treatment plants, Deer Island and Nut Island, for a variety of parameters. Although the permit calls for secondary treatment and both of these plants provide only primary treatment, they are currently regulated under court-ordered interim limits. Secondary treatment will come on line at Deer Island in FY98, at which point, upon issuance by the Environmental Protection Agency and the Massachusetts Department of Environmental Protection, a new permit will come into effect.

Flows through the treatment plants followed the same seasonal pattern this year as can be seen in the average of the past several years' flows, but were slightly higher than average in the winter and spring and slightly lower than average in the summer and fall.

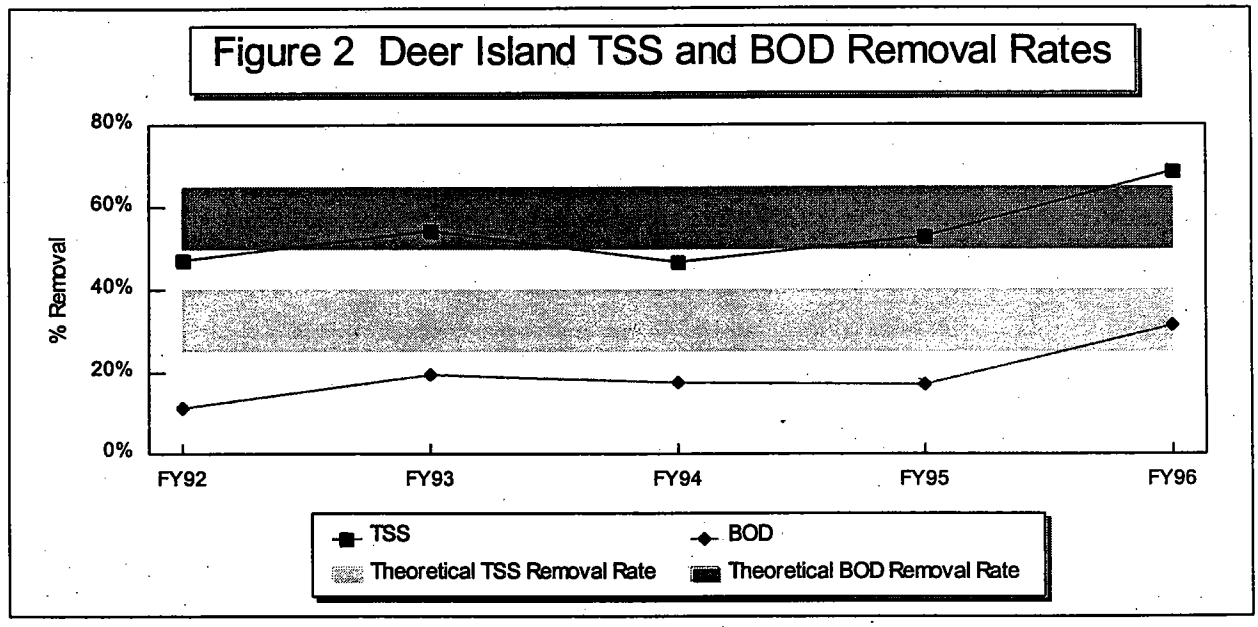


The influent entering both plants could be classified as weak to medium with regard to conventional parameters.[1]

Table 1 Classification of Deer Island and Nut Island Influent

Parameter	Deer Island	Nut Island	Weak	Medium	Strong
TSS	140	154	100	200	350
BOD	143	131	100	200	300
TKN	26.3	25.3	20	40	85
Ammonia	15	15.7	12	25	50

The effects of the new treatment started up at Deer Island in FY95 became apparent in FY96 . Since the new plant was brought on line, the removal rates for both TSS and BOD have improved significantly (Figure 2). Removal efficiencies in FY96 compared favorably to theoretical removal efficiencies for primary treatment, with TSS removal above the theoretical range and the BOD removal rate within the theoretical range.[2]



[1]Metcalf &Eddy, Inc. 1972. Wastewater Engineering: Collection, Treatment, Disposal. New York: McGraw-Hill Book Company. Page 231.

[2]Ibid. Page 446.

The impact of improved treatment can also be seen in the number of non-toxicity NPDES violations, which decreased by seven from FY95 to FY96 (Table 2). There were 19 toxicity violations this year, twelve of which involved the red algae test, which the EPA plans to stop using in future permits due to the extreme sensitivity of the species.

Table 2 NPDES Violations at Deer Island

	FY94	FY95	FY96
BOD	16	12	7
TSS	1	1	0
Settleable Solids	0	0	0
Fecal Coliform	0	0	0
Total Coliform	0	1	0
pH	1	1	0
PHCs	1	4	5
Toxicity	19	17	19
Non-Toxicity Violations	19	19	12
Total Violations	38	36	31

Some of the reduction in number of violations can be attributed to a change in testing methods for PHCs, but much of it has resulted from improved treatment.

Deer Island also saw improvements in priority pollutant loadings. Decreases in metals loadings, found in both influent and effluent, may be partly due to corrosion control activities. Some of the reduction in the effluent may also be caused by better capture of metals by the new plant. The only priority pollutants for which concentrations were high enough to exceed water quality standards, given the expected dilution of the effluent, were copper, cyanide, and heptachlor.

The Nut Island treatment plant is expected to be decommissioned by the beginning of FY99, when work is finished on the Nut Island Headworks and the Inter-Island Tunnel. At that time, all South System flows will be sent to Deer Island for treatment and the Nut Island plant will be shut down.

Removal efficiencies at Nut Island were within the expected theoretical range for conventional parameters in FY96. Historical performance at Nut Island is not discussed in detail here because the plant will no longer be used after FY98.

Increases in metals and nutrients were found in Nut Island effluent. Part of the reason for these increases may be the increasing use of the sludge pelletizing plant at Fore River, which

discharges to Nut Island. As at Deer Island, copper, cyanide, and heptachlor were found in high enough concentrations to be of concern.

In FY96, Nut Island had 31 NPDES violations, which are summarized in Table 3. Twelve of the 21 toxicity violations at Nut Island were caused by the suspect red algae test.

Table 3 NPDES Violations at Nut Island

	FY94	FY95	FY96
BOD	8	9	2
TSS	1	3	2
Settleable Solids	0	0	0
Fecal Coliform	0	0	0
Total Coliform	0	0	1
pH	7	9	2
PHCs	0	4	3
Toxicity	20	19	21
Non-Toxicity Violation	16	25	10
Total Violations	36	44	31

Combined Sewer Overflow Facilities

MWRA has three Combined Sewer Overflow (CSO) Facilities, Cottage Farm, Prison Point, and Somerville Marginal, which are required to be monitored under the NPDES permit. In addition, MWRA performs monitoring at three other CSO facilities, Constitution Beach, Fox Point, and Commercial Point, which are currently included in the Boston Water Sewer Commission NPDES permit.

The number of activations and the volume treated at the CSO facilities increased slightly from FY95 to FY96, due to several factors. The main reason for the increase was probably the fact that there was more rainfall in FY96 than in FY95. The correlation between rainfall and CSO activation can be seen in Figures 3 and 4.

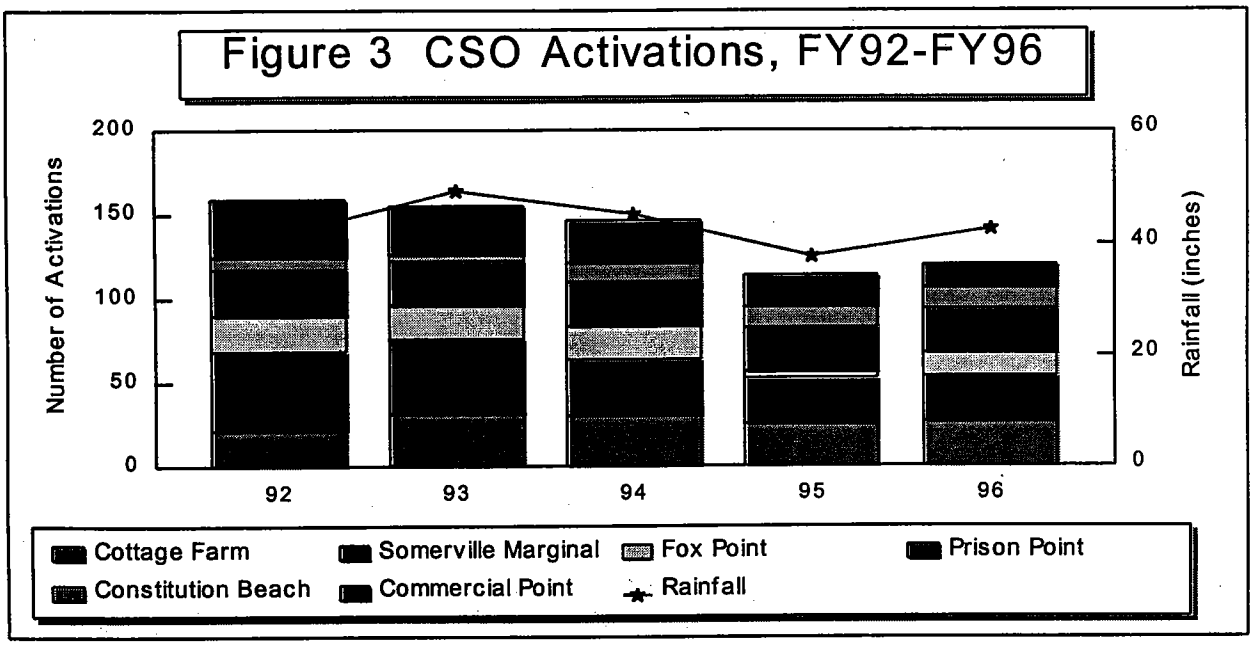


Figure 3 CSO Activations, FY92-FY96
Number of Activations
200
150
100
50
0
60
40
20
0
Rainfall (inches)
92
93
94
95
96
Cottage Farm
Somerville Marginal
Fox Point
Prison Point
Constitution Beach
Commercial Point
Rainfall

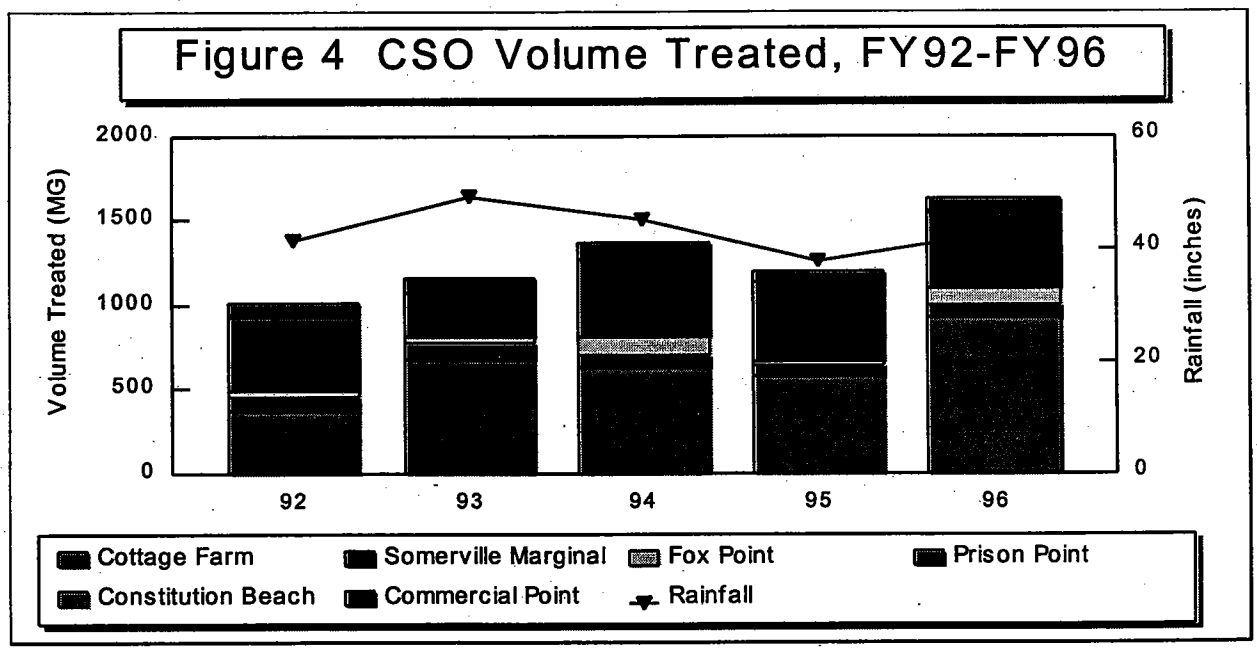


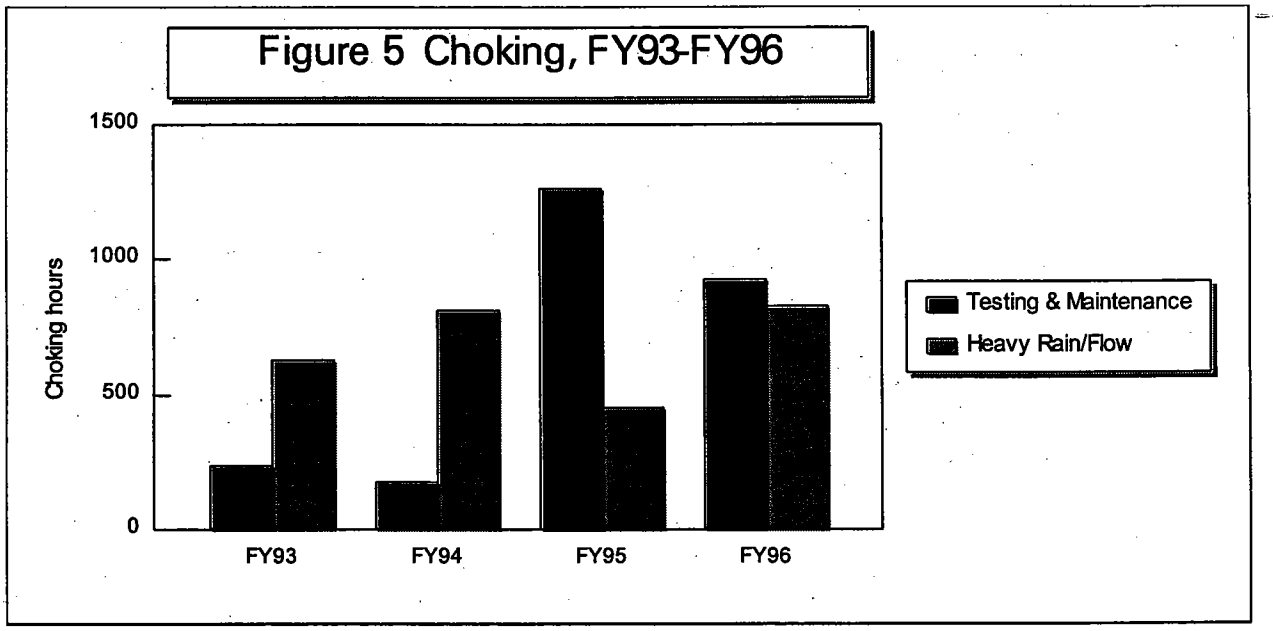
Figure 4 CSO Volume Treated, FY92-FY96
Volume Treated (MG)
2000
1500
1000
500
0
60
40
20
0
Rainfall (inches)
92
93
94
95
96
Cottage Farm
Somerville Marginal
Fox Point
Prison Point
Constitution Beach
Commercial Point
Rainfall

System Capacity

Some of the monitoring performed by the MWRA relates to the capacity of the transport and treatment system. One of the system capacity parameters in the North System is choking, which occurs at the remote headworks. Choking is a slowing or stopping of the flow to Deer Island either when heavy flow becomes too much for the capacity of the treatment plant or when maintenance is performed on the plant. The hours of choking at the headworks increased slightly from FY95 to FY96.

The majority of choking in FY96, as in FY95, was for maintenance purposes and for system testing of the new facilities as they came on line. Levels of maintenance choking, which were particularly high during these two years because of construction and testing of the new primary treatment plant, were highest in FY95 when the new plant first came on line. Maintenance and testing-related choking is performed at off-peak times and thus does not cause any overflow at the CSOs upstream.

Rain-related choking increased significantly from FY95 to FY96, possibly as a result of increased rainfall.



Another system capacity issue that the MWRA monitors is the occurrence of Sewer System Overflows, or SSOs. These overflows occur in areas where the collection system becomes overloaded by heavy flows. In FY95 the Transport Department started to locate and monitor these SSOs in the North and South Systems. SSO data for FY96 are summarized in Table 4.

Table 4 Sanitary Sewer Overflows, FY96

Location	Number of Overflows
North System	
Section C Medford	4
Section 107 Medford	3
Section 91B Medford (Siphon)	2
South System	
Section 126 Weymouth Smelt Brook	4
Section 126 Weymouth (Manhole)	2
Section 128 Braintree (Siphon)	1
Norwood Overlook Dr.	3
Total	**19**

Future Outlook

The improvements at the Deer Island treatment plant are just beginning to become evident. Effluent quality can be expected to improve even more over the next few years as the effects of the new primary plant become even more apparent. Further improvements will occur with the introduction of secondary treatment, the rerouting of Nut Island flows to Deer Island, and the completion of the new outfall tunnel. The new treatment facility, together with new programs such as best management practices and pollution prevention plans, will continue to improve the water quality in Boston Harbor in the coming years.

I. Introduction

This report presents and summarizes the National Pollutant Discharge Elimination System (NPDES) monitoring and compliance data compiled and analyzed by the Massachusetts Water Resources Authority (MWRA) NPDES Unit during the period of July 1995 to June 1996. The MWRA monitors two wastewater treatment plants and six Combined Sewer Overflow (CSO) facilities.

The monitoring results for the new Deer Island Treatment Plant are presented and discussed in Chapter II and the results for the Nut Island plant appear in Chapter III. Chapter IV describes the results for the six Combined Sewer Overflow Facilities. Chapter V discusses sewer system capacity. Appendices A-H provide detailed monthly data, while Appendices I-M provide background information.

II Deer Island Treatment Plant

This chapter presents and discusses monitoring results for the Deer Island Treatment Plant for Fiscal Year 1996. The characteristics examined include flow, conventional parameters, nutrients, priority pollutants (metals, cyanide, pesticides/PCBs, and organic compounds), whole effluent toxicity, and bioaccumulation.

II.A. Monitoring Results

II.A.1. Influent Characteristics

II.A.1.a. Flow

The average flow to the Deer Island plant in FY96 was 250 mgd. Monthly flow data are plotted in Figure II.A.1. It can be seen in this graph that the amount of flow to the plant is influenced by precipitation. Large amounts of precipitation in January and April caused the peak flows in those months to be particularly high, while the lowest flows were observed in August, the driest month of the year.

Figure II.A.1 Deer Island Flows Compared to Precipitation, FY96

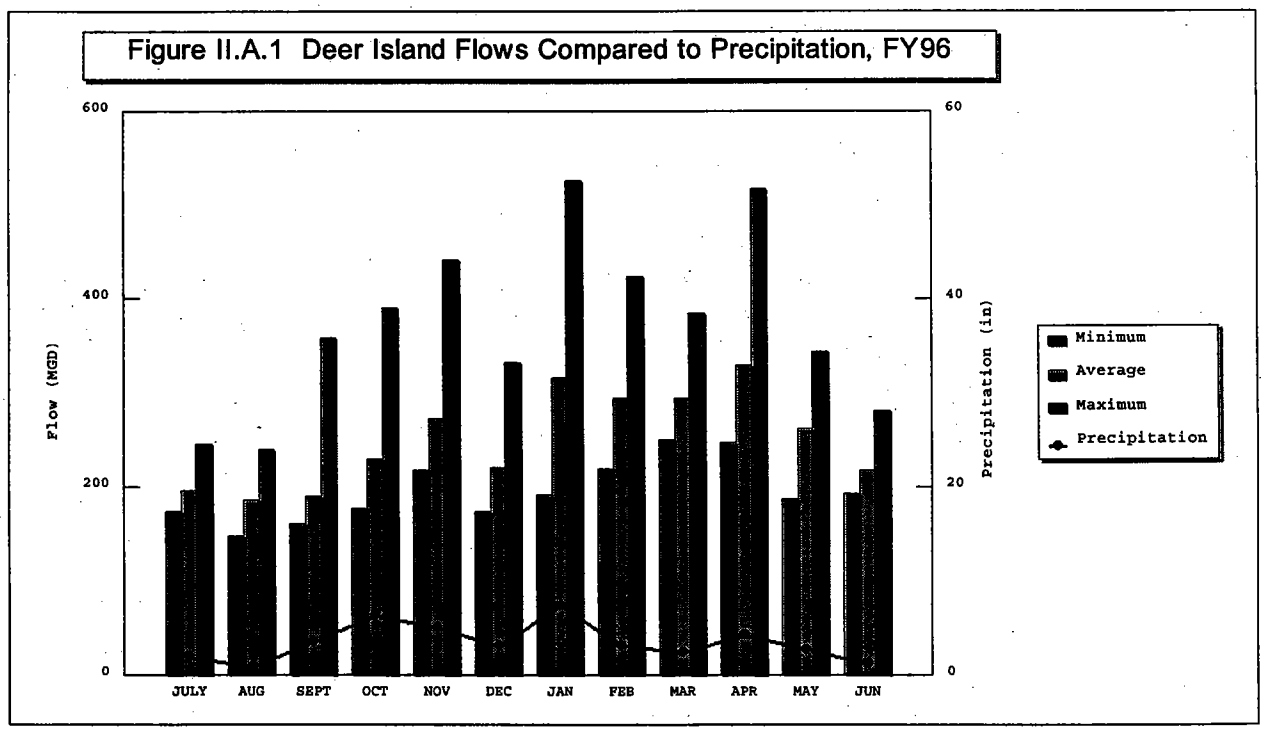
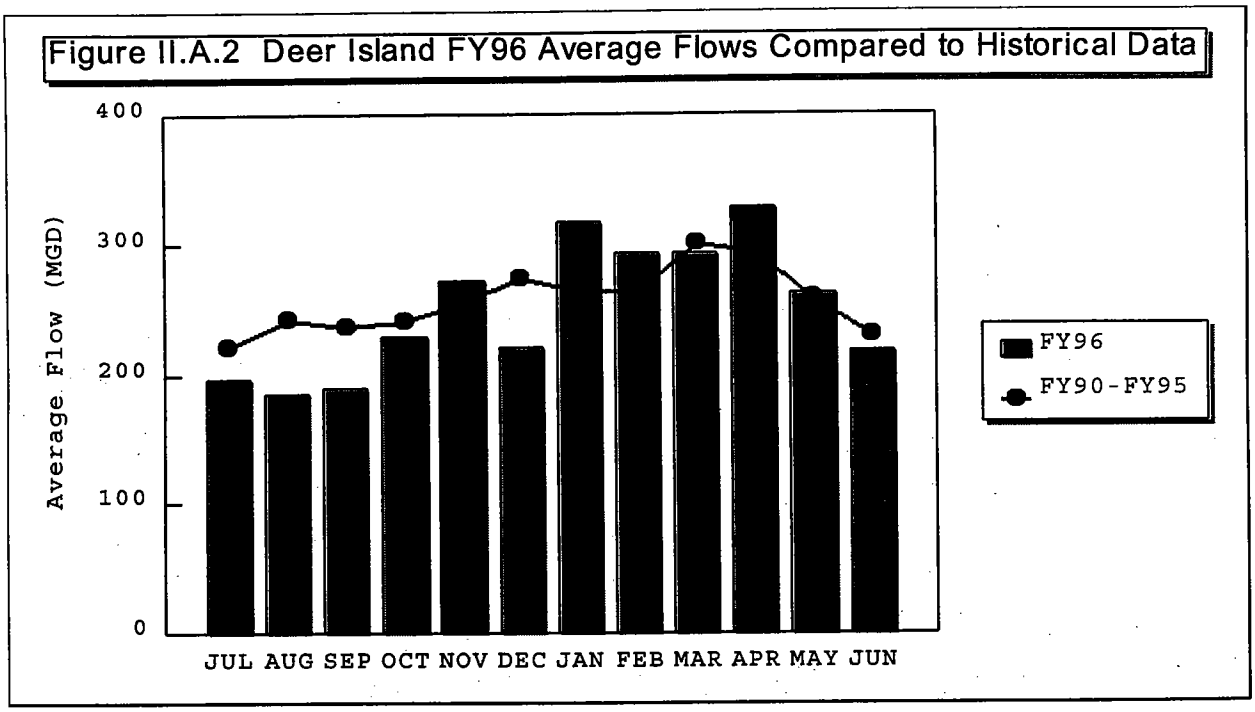


Figure II.A.2 compares FY96 flows to the average from previous years for each month. The flows in FY96 followed the same seasonal pattern as had been seen in earlier years, but there was slightly more flow than average in some of the winter and spring months and less than average in the summer and early fall.



Yearly total flows have also generally followed yearly total rainfall, as can be seen in Figure II.A.3. The increase in total flow to Deer Island from FY95 to FY96 can clearly be attributed to the higher level of total rainfall in FY96.

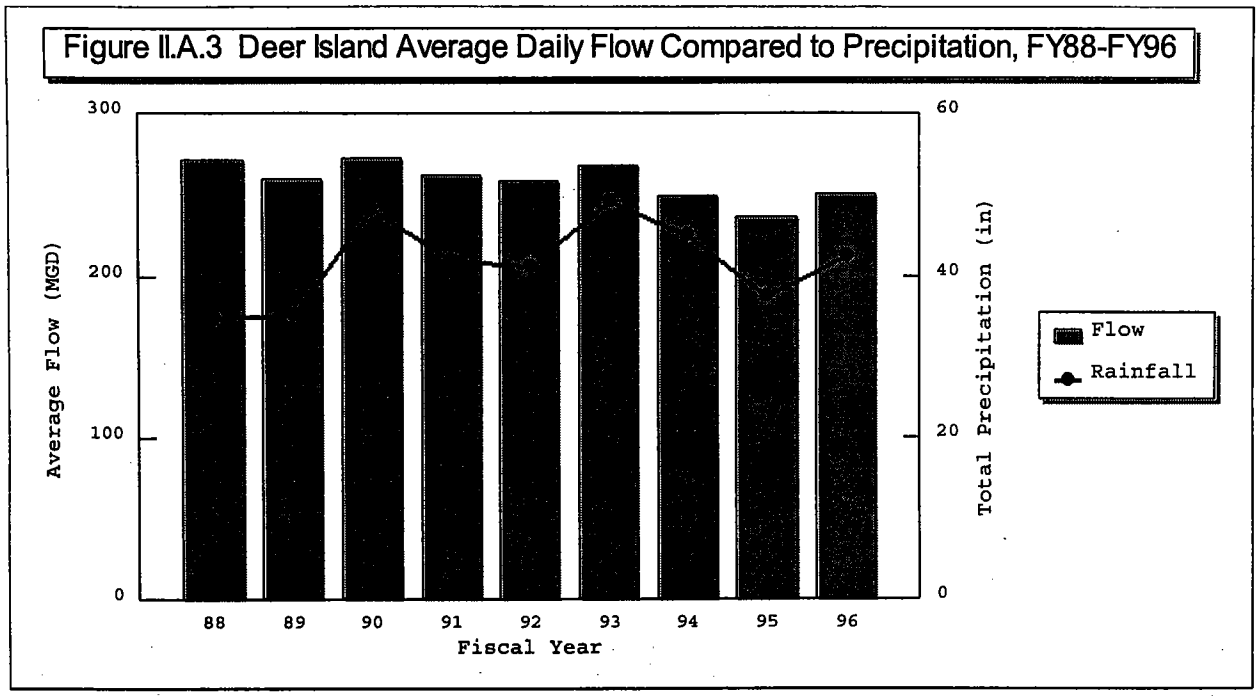
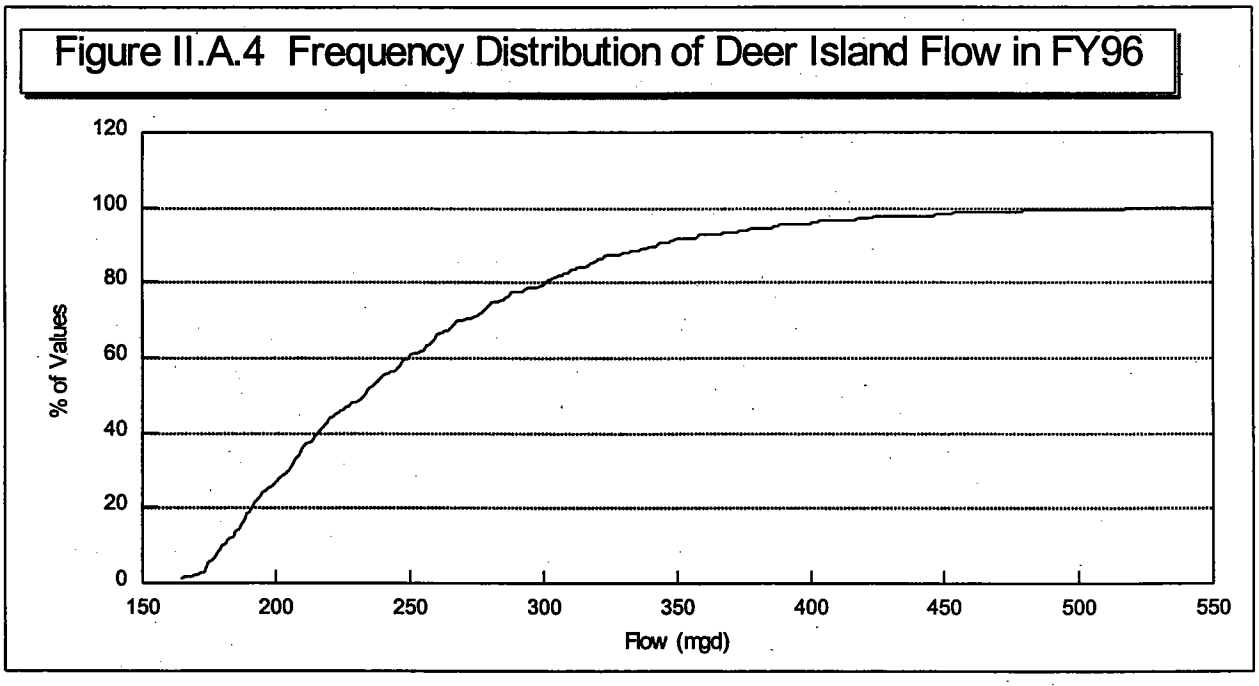


Figure II.A.4 provides a frequency distribution of Deer Island flows in FY96. Flow through the plant was less than 387 mgd 95% of the time.



II.A.1.b. Conventional Parameters and Nutrients

As in previous years, the FY96 Deer Island influent can be classified as weak/moderate[1] (Table II.A.1). A summary of conventional and nutrient concentrations and loadings in Deer Island influent from FY93-FY96 is provided in Table II.A.2.

Table II.A.1 Classification of Deer Island Influent

Parameter	Value	Weak	Medium	Strong
TSS	140	100	200	350
BOD	143	100	200	300
TKN	26	20	40	85
Ammonia	15	12	25	50

There has been little change in influent characteristics over the past few years. The increase in settleable solids over the past few years may have been caused by an increase in the number of heavy storm events. The apparent changes in nutrient concentrations may be caused by a change in sampling location which took place in FY95. It is also questionable how representative the samples and analytical processes were prior to FY95.

[1]Metcalf &Eddy, Inc. 1972. Wastewater Engineering: Collection, Treatment, Disposal. New York: McGraw-Hill Book Company. Page 231.

Table II.A.2 Deer Island Influent Characterization, FY93-FY96

PARAMETER	FY96	FY95	FY94	FY93
Flow (mgd)				
Minimum	147	167	171	174
Average	250	236	249	266
Maximum	526	565	528	628
Total Suspended Solids				
Min Conc (mg/L)	56	102	93	121
Ave Conc (mg/L)	140	138	137	153
Max Conc (mg/L)	432	160	175	193
Average Loading (tons/d)	146	136	142	170
Biochemical Oxygen Demand				
Min Conc (mg/L)	61	99	99	123
Ave Conc (mg/L)	143	140	149	159
Max Conc (mg/L)	246	173	175	190
Average Loading (tons/d)	149	138	155	176
Settleable Solids				
Min Conc (ml/L)	0.1	3.5	1.9	1.4
Ave Conc (ml/L)	7.0	5.6	3.9	3.7
Max Conc (ml/L)	18.0	7.3	5.6	5.0
Average Loading (tons/d)	7.3	5.5	4.0	4.1
Oil and Grease				
Min Conc (mg/L)	10	17	14	20
Ave Conc (mg/L)	34	31	36	43
Max Conc (mg/L)	67	37	64	84
Average Loading (tons/d)	35	31	37	48

Table II.A.2 Deer Island Influent Characterization, FY93-FY96, cont.

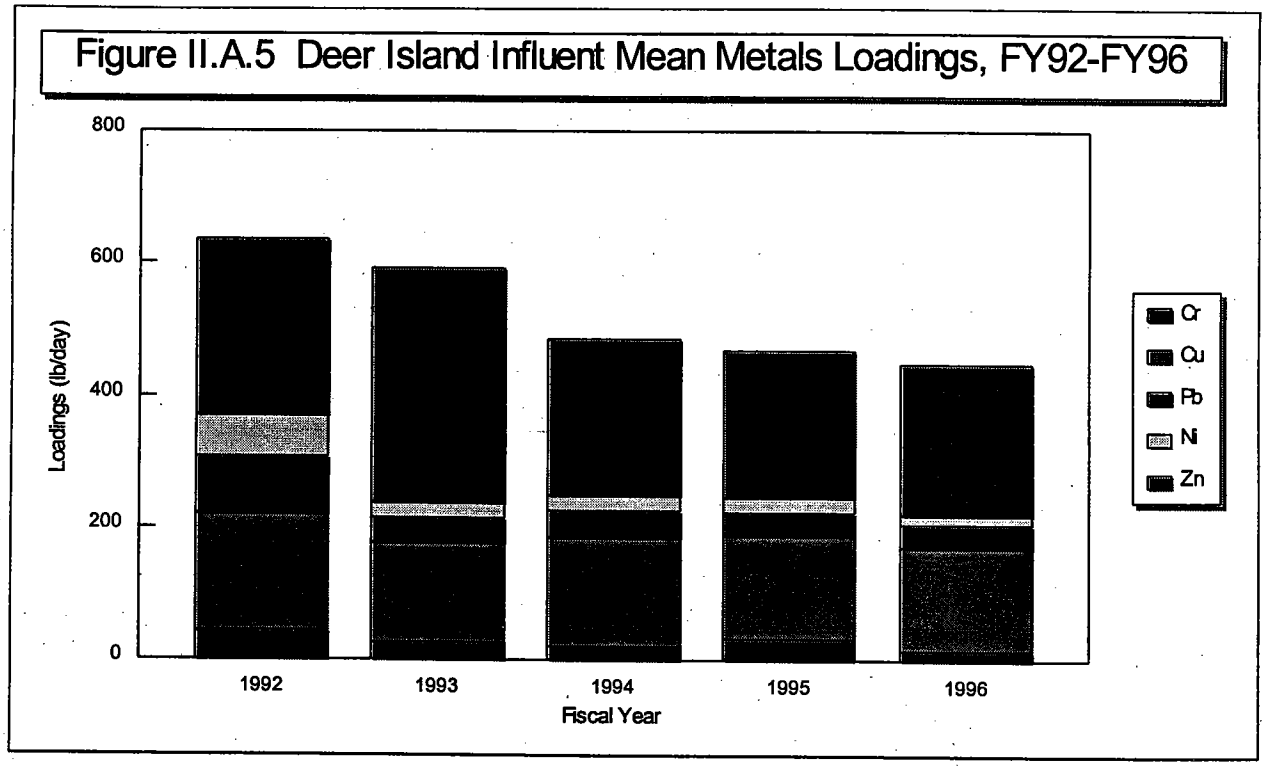
PARAMETER	FY96	FY95	FY94	FY93
Total Kjeldahl Nitrogen				
Min Conc (mg/L)	11.6	14.0	11.2	13.9
Ave Conc (mg/L)	26.3	21.9	21.9	26.9
Max Conc (mg/L)	56.3	29.1	29.3	44.7
Average Loading (tons/d)	27.4	21.5	22.7	29.8
Ammonia-Nitrogen				
Min Conc (mg/L)	6.8	7.3	5.6	6.8
Ave Conc (mg/L)	15.0	13.7	12.3	13.4
Max Conc (mg/L)	24.0	18.0	17.9	17.9
Average Loading (tons/d)	15.6	13.5	12.8	14.9
Nitrates				
Min Conc (mg/L)	0.01	0.02	0.10	0.13
Ave Conc (mg/L)	0.14	0.15	0.80	0.70
Max Conc (mg/L)	1.42	0.59	2.70	2.15
Average Loading (tons/d)	0.15	0.15	0.83	0.78
Nitrites				
Min Conc (mg/L)	0.01	0.02	0.00	0.02
Ave Conc (mg/L)	0.07	0.06	0.10	0.06
Max Conc (mg/L)	1.66	0.19	0.20	0.13
Average Loading (tons/d)	0.07	0.06	0.10	0.07
Orthophosphorus				
Min Conc (mg/L)	0.29	1.00	0.40	2.04
Ave Conc (mg/L)	1.53	2.20	2.30	2.04
Max Conc (mg/L)	3.19	5.66	5.10	2.04
Average Loading (tons/d)	1.60	2.17	2.39	2.26
Total phosphorus				
Min Conc (mg/L)	1.54	2.11	0.60	2.63
Ave Conc (mg/L)	3.42	3.63	4.00	6.04
Max Conc (mg/L)	4.85	4.79	8.30	9.07
Average Loading (tons/d)	3.57	3.57	4.15	6.70

II.A.1.c. Priority Pollutants

The results of a complete priority pollutant scan of Deer Island influent can be found in Table A-2 (concentrations) and Table A-3 (loadings) of Appendix A.

For levels below detection limits, one tenth of the quantitation limit was substituted. A discussion of detection and quantitation limits can be found in Appendix K.

FY96 influent loadings for several key metals are compared to historical values in Figure II.A.5. Metals loadings have decreased over the past several years. Causes for the decrease include toxics control measures and corrosion control efforts involving both water supply and wastewater transport.



II.A.2. Effluent Characteristics

II.A.2.a. Conventional Parameters

As can be seen in Table II.A.3, the TSS and BOD removal efficiencies for the new treatment plant compare favorably to theoretical removal efficiencies for primary sedimentation.[2] Table II.A.4 summarizes conventional parameters and nutrients in Deer Island effluent over the past four years. Several parameters showed much lower concentrations in FY96 than in FY95, due to the improved removal efficiency of the new primary treatment plant.

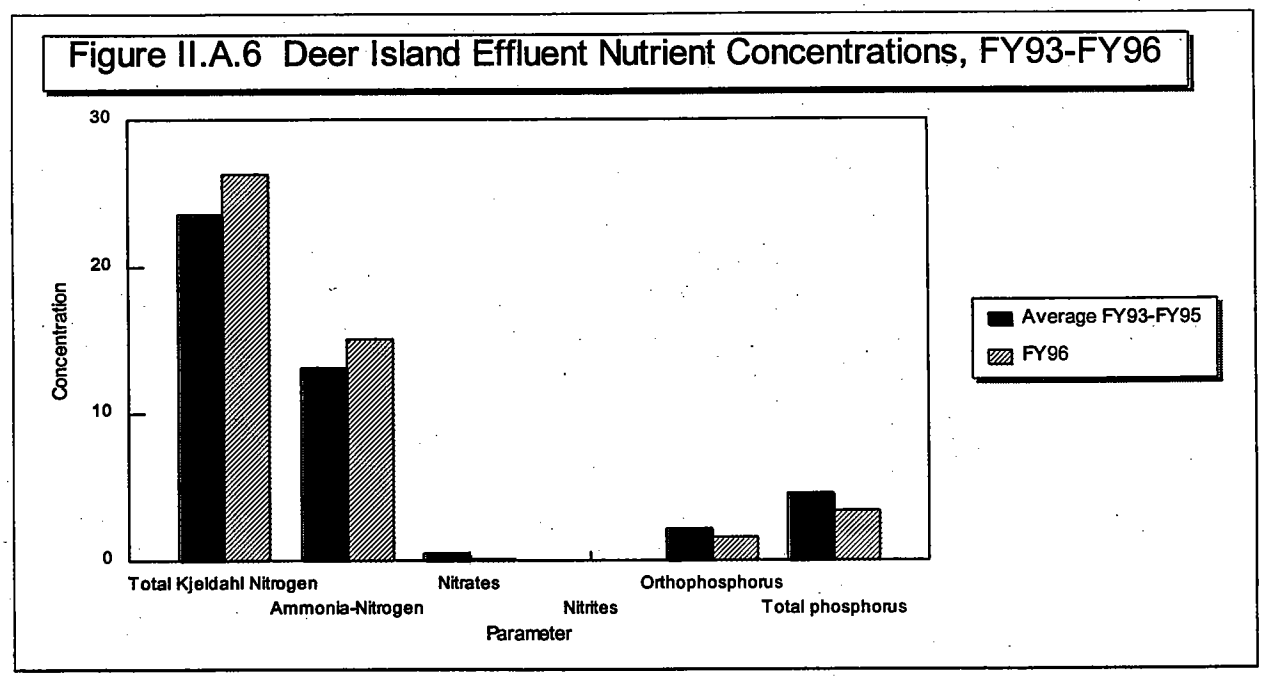
Table II.A.3 Deer Island Removal Efficiency, FY96

	Removal Efficiency	
Parameter	Deer Island	Theoretical
TSS	69%	50-65%
BOD	31%	25-40%

II.A.2.b. Nutrients

Figure II.A.7 summarizes nutrient concentrations in Deer Island effluent from FY90 to FY96. As this figure shows, nutrient concentrations in FY96 were comparable to the averages of past years' concentrations. The introduction of the new treatment plant did not affect nutrient concentrations because primary treatment does not remove nutrients.

Figure II.A.6 Deer Island Effluent Nutrient Concentrations, FY93-FY96



[2]Ibid. Page 446.

Table II.A.4 Deer Island Effluent Characterization, FY93-FY96

PARAMETER	FY96	FY95	FY94	FY93
Flow (MGD)				
Minimum	147	167	171	174
Average	250	236	249	266
Maximum	526	565	528	628
Total Suspended Solids				
Min Conc (mg/L)	17	52	65	58
Ave Conc (mg/L)	44	65	73	70
Max Conc (mg/L)	136	90	86	77
Average Loading (tons/d)	459	640	758	776
Biochemical Oxygen Demand				
Min Conc (mg/L)	42	85	87	89
Ave Conc (mg/L)	98	116	123	128
Max Conc (mg/L)	147	138	142	152
Average Loading (tons/d)	102	114	128	142
Settleable Solids				
Min Conc (ml/L)	0.1	0.1	0.1	0.1
Ave Conc (ml/L)	0.2	0.4	0.5	0.3
Max Conc (ml/L)	2.0	0.7	0.9	0.5
Average Loading (tons/d)	0.2	0.4	0.5	0.3
Oil and Grease				
Min Conc (mg/L)	7	17	12	15
Ave Conc (mg/L)	24	25	25	27
Max Conc (mg/L)	42	30	36	37
Average Loading (tons/d)	25	25	26	30

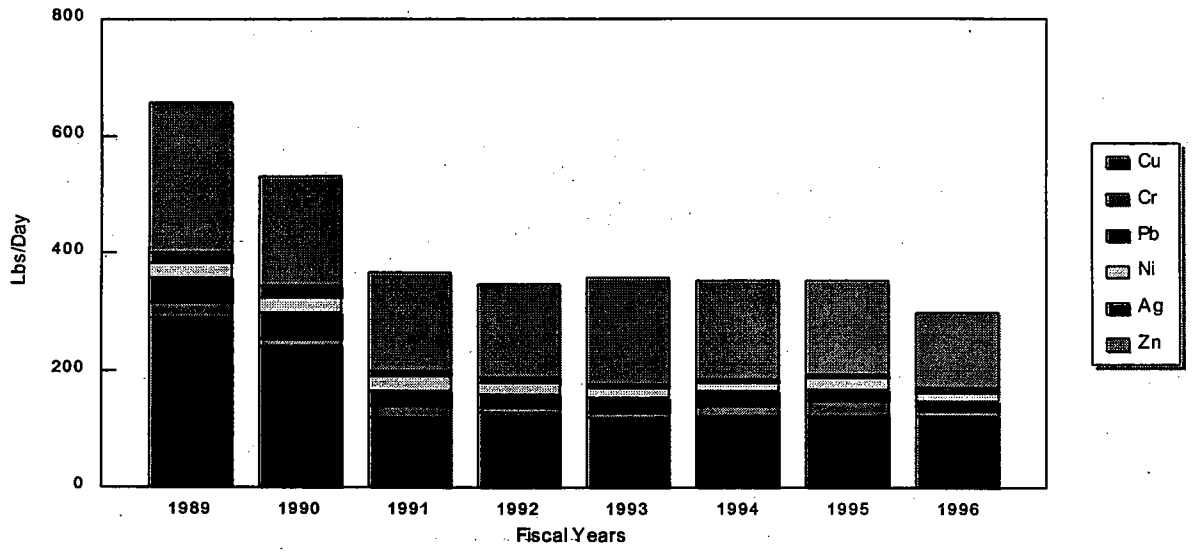
Table II.A.4 Deer Island Effluent Characterization, FY93-FY96 cont.

PARAMETER	FY96	FY95	FY94	FY93
Total Kjeldahl Nitrogen				
Min Conc (mg/L)	10.6	13.7	12.8	14.9
Ave Conc (mg/L)	22.5	23.0	21.7	22.2
Max Conc (mg/L)	32.5	28.6	32.8	26.2
Average Loading (tons/d)	23.4	22.6	22.5	24.6
Ammonia-Nitrogen				
Min Conc (mg/L)	5.55	7.28	6.08	7.59
Ave Conc (mg/L)	14.48	14.43	12.58	12.35
Max Conc (mg/L)	21.90	19.60	18.51	15.70
Average Loading (tons/d)	15.10	14.20	13.06	13.70
Nitrates				
Min Conc (mg/L)	0.01	0.03	0.13	0.05
Ave Conc (mg/L)	0.30	0.08	1.04	0.66
Max Conc (mg/L)	1.95	0.28	5.98	1.63
Average Loading (tons/d)	0.31	0.08	1.02	0.69
Nitrites				
Min Conc (mg/L)	0.01	0.02	0.01	0.02
Ave Conc (mg/L)	0.63	0.08	0.10	0.16
Max Conc (mg/L)	1.90	0.22	0.26	0.48
Average Loading (tons/d)	0.66	0.08	0.10	0.17
Orthophosphorus				
Min Conc (mg/L)	0.37	0.90	0.48	0.98
Ave Conc (mg/L)	1.71	2.22	2.15	2.27
Max Conc (mg/L)	3.01	3.39	4.09	3.59
Average Loading (tons/d)	1.78	2.31	2.12	2.36
Total phosphorus				
Min Conc (mg/L)	1.43	2.11	1.19	2.03
Ave Conc (mg/L)	2.92	3.35	2.92	3.64
Max Conc (mg/L)	4.13	4.35	5.18	4.71
Average Loading (lbs/d)	6088	6985	5747	7559

II.A.2.c. Priority Pollutants

Priority pollutant concentrations in Deer Island effluent during FY96 are provided in Appendix A, Table A.4, while Table A.5 provides loadings. Metals loadings over the past eight years are summarized in Figure II.A.7. As can be expected with primary treatment, generally the same metals and other priority pollutants were detected in the effluent as were found in the influent. The gradual decrease in metals loadings over the past few years reflects the decrease in metals loadings in the influent during the same time period.

Figure II.A.7 Deer Island Effluent Mean Metals Loadings, FY89-FY96



II.A.2.d. Whole Effluent Toxicity

MWRA tests effluent toxicity every month at the Deer Island and Nut Island treatment plants. Effluent toxicity provides an overall view of the quality of the effluent. In 1989 the EPA found that the probable cause of most acute toxicity in Deer Island's wastestream was the presence of surfactants. Surfactants remain the primary source of toxicity in the wastestream.

Surfactants are most commonly used in household detergents to improve cleansing power. They are highly biodegradable and will be broken down quickly during secondary treatment. No acute toxicity could be attributed to metals or pesticides.

MWRA is required under its NPDES permit to use three tests for effluent toxicity. An acute static toxicity test is performed using mysid shrimp *(Mysidopsis bahia)*. A chronic survival and growth test uses the sheepshead minnow *(Cyprinodon variegatus)* and a chronic reproduction test uses red algae *(Champia parvula)*. The results of these tests can be found in Table II.A.5.

The results for the sheepshead minnow *(Cyprinodon)* test showed no violations in FY96. The mysid acute test was in compliance 42% of the time. Concentrations of surfactants in the effluent from the plant are consistent with concentrations which could cause mysid toxicity. The results of the red algae *(Champia)* test were in violation every month. Due to questions regarding the sensitivity and reliability of the red algae test, EPA Region I is withdrawing it as a test species in future permits.

Table II.A.5 Deer Island, Results of Toxicity Testing, FY96

	Mysid acute		Cyprinodon chronic Survival	Growth	Champia chronic
	LC50	NOEC	NOEC	NOEC	NOEC
Limits (%)	None	20	10	10	10.0
July	28.0	10	40	40	0.7
August	19.5	10	40	40	2.0
September	23.2	10	40	40	0.7
October	40.3	20	40	40	2.0
November	48.4	20	40	40	2.0
December	13.3	5	40	40	2.0
January	30.6	20	40	40	2.0
February	18.1	10	20	20	2.0
March	38.0	20	60	60	2.0
April	54.0	20	40	40	2.0
May	21.0	10	60	60	2.0
June	38.0	10	40	40	0.7
Average	31.0	13.8	41.7	41.7	1.7
Violations		7	0	0	12

II.A.2.e. Bioaccumulation

Bioaccumulation studies measure the potential for long-term build up of pollutants in aquatic species. In the summer of 1996 the MWRA conducted a mussel bioaccumulation study for Deer Island effluent designed to be comparable to studies conducted in 1987 and 1991 to 1995. The results of this study, which can be found in Table II.A.6, indicate substantially higher tissue concentrations of numerous contaminants than recently observed.

Mussels were collected in Gloucester for organics analyses and Barnstable for metals analyses and deployed at the Deer Island effluent discharge, at the proposed offshore discharge site in Massachusetts Bay (for pre-discharge baseline data), and at the New England Aquarium in Boston's Inner Harbor (dirty control). Mussels from two locations were used because historical data suggests that metals in Gloucester mussels and organics in Branstable mussels are higher than background levels should be for this type of testing. At the start of the study, tissue from the Gloucester mussels was analyzed for PAHs, PCBs, and organochlorine pesticides. Barnstable mussels were analyzed for mercury and lead. After 60 days, mussels deployed at Deer Island showed significant bioaccumulation of PAHs, PCBs, DDTs, dieldrin, alpha-chlordane, trans-nonachlor, and lead. The increase in contaminant levels observed at Deer Island in 1996 may reflect the higher lipid content of the mussels as compared to recent years. Organic contaminants are lipophilic, meaning they preferentially bioaccumulate in lipid rich tissue. A concentrated effort is currently underway in order to better understand the 1996 increases. Only low molecular weight PAHs, which make up 90% of the PAHs in the Deer Island discharge, have shown a steady decrease since 1987. As in earlier years, mussels deployed at the Aquarium in FY96 had body burdens of contaminants which were significantly greater than those at Deer Island.

Table II.A.6 Concentrations of Contaminants Bioaccumulating in Boston Harbor Mussels

	Pre-Deployment*	Clean Control*	Dirty Control*	Deer Island	Nut Island
Lead (ug/g)					
1987	2.8	3.1		6.7**	8.3**
1991	6.5	5	6.4	5.9	
1993	5.1	3.7**		5.9	
1994	8.6	4.8**	6.7	9.1	
1995	6.1	DL	8.5**	8	
1996	2.9	1.6	9.4**	6.3**	
Mercury (ug/g)					
1993	0.39	0.10**		0.18**	
1994	0.26	0.13	0.16	0.21	
1995	0.064	DL	0.068	0.056	
1996	0.13	0.15	0.13	0.15	
Total PCB's (ng/g)					
1987	317	227		630**	604**
1991	77	77	477**	199**	
1992	65	44**	652**	133**	
1993	AP	110	596**	321**	
1994	107	89	500**	161**	
1995	94	dl	441**	172**	
1996	160	102	538**	273**	
Total DDT's (ng/g)					
1987	52	30		63	51
1991	28	28	94**	48**	
1992	15	12	103**	25**	
1993	AP	30	130**	63**	
1994	27	19	86**	50**	
1995	29	DL	92**	45**	
1996	58	30	119**	85**	
Alpha - Chlordane (ng/g)					
1987	8.7	6.7		21.5**	19.5**
1991	2.4	2.5	19.0**	10.3**	
1992	1.9	1.7	19.0**	6.9**	
1993	2.9	3.8	10.5**	8.2**	
1994	3.5	3.6	12.8**	13.8**	
1995	2.6	DL	11.7**	7.5**	
1996	4.8	3	15.8**	20.0**	
Dieldrin (ng/g)					
1987	6.6	3.6		11.4	7.6
1991	<1.4	2.3	9.0**	2.9	
1992	<1.0	1.2	6.7**	2.7	
1993	<2.9	2.2	4.5**	34	
1994	<1.2	2	15.6**	10.4**	
1995	1.5	DL	6.9**	3.2**	
1996	0.5	1.7	9.3**	5.6**	

Table II.A.6 Concentrations of Contaminants Bioaccumulating in Boston Harbor Mussels, cont.

	Pre-Deployment*	Clean Control*	Dirty Control*	Deer Island	Nut Island
Lindane (ng/g)					
1987	1.8	0.8		5.5	0.8
1991	<1.5	<2.2	<3.2	<2.5	
1992	<1.0	<1.0	<1.9	<1.3	
1993	AP	<1.7	2.3	2.7	
1994	<.9	<0.6	<2.2	1.6	
1995	0.7	DL	1.3	1	
1996	0.3	0.6	0.3	0.3	
Trans-Nonachlor (ng/g)					
1987	7.7	6.2		18.0**	
1991	<1.4	<1.5	<2.5	8.9**	
1992	2.1	2.5	21.3**	8.3**	
1993	4.8	4.0	11.0**	10.7**	
1994	4.0	3.8	11.0**	11.2**	
1995	0.6	DL	9.0**	4.2**	
1996	5	4.0	13.8**	17.0**	
Total PAH's (ng/g)					
1987	581	465		2344**	683
1991	217	228	2570**	1207**	
1992	216	129**	3545**	1934**	
1993	188	166	1321**	665**	
1994	264	122	2255**	848**	
1995	214	DL	1444**	761**	
1996	402	142**	2500**	1230**	
LMW PAH's (ng/g)					
1987				1221	
1991	113	74	239**	516**	
1992	80	61	199**	427**	
1993	66	66	110	169**	
1994	106	61	79	217**	
1995	105	DL	206**	340**	
1996	195	70	268	431**	
HMW PAH's (ng/g)					
1987				1123	
1991	104	154	2330**	691**	
1992	136	69	3347**	1507**	
1993	122	101	1210**	496**	
1994	158	61	2174**	631**	
1995	109	DL	1238**	421**	
1996	207	70	2233**	799**	

Hexachlorobenzene, heptachlor, aldrin, heptachlor epoxide, and mirex not detected or detected near detection limit.

* Mussels collected from Barnstable in 1987 and Gloucester in 1991 to 1995. Clean Control in proposed offshore discharge in 1987, 1992, to 1995 and in Gloucester in 1991. Dirty control at New England Aquarium. In 1987 mussells deploy for 30 days; in 1992-1994 for 60 days and in 1995 for 50 days

** Statistically different ($p<.05$) from pre-deployment
DL - Deployment lost to entanglement with fishing gear
AP Analytical Problems - No Data

II.B. Discussion

II.B.1. Compliance with Regulatory Limits

The MWRA currently operates under a court order which provides interim discharge limits for the existing Deer and Nut Island treatment plants. Plant performance at Deer Island is compared to those interim limits in Table II.B.1 and Figures II.B.1 through II.B.6. There were 31 violations at Deer Island in FY96, of which seven were violations of the interim limits and 24 were violations of permit limits. The running average removal rate for BOD was lower than the interim limit seven times and there were five violations of the permit daily maximum for PHCs. The PHC violations all occurred in the beginning of the fiscal year, and were probably due to lab error. After a change in laboratory procedure in the beginning of 1996, these violations were no longer observed. The BOD removal rate violations, because they were based on a 12-month running average, reflected the lower removal rates of the old plant. The remaining 19 violations were toxicity-related.

Table II.B.1 Deer Island Effluent Quality Compared to Regulatory Limits

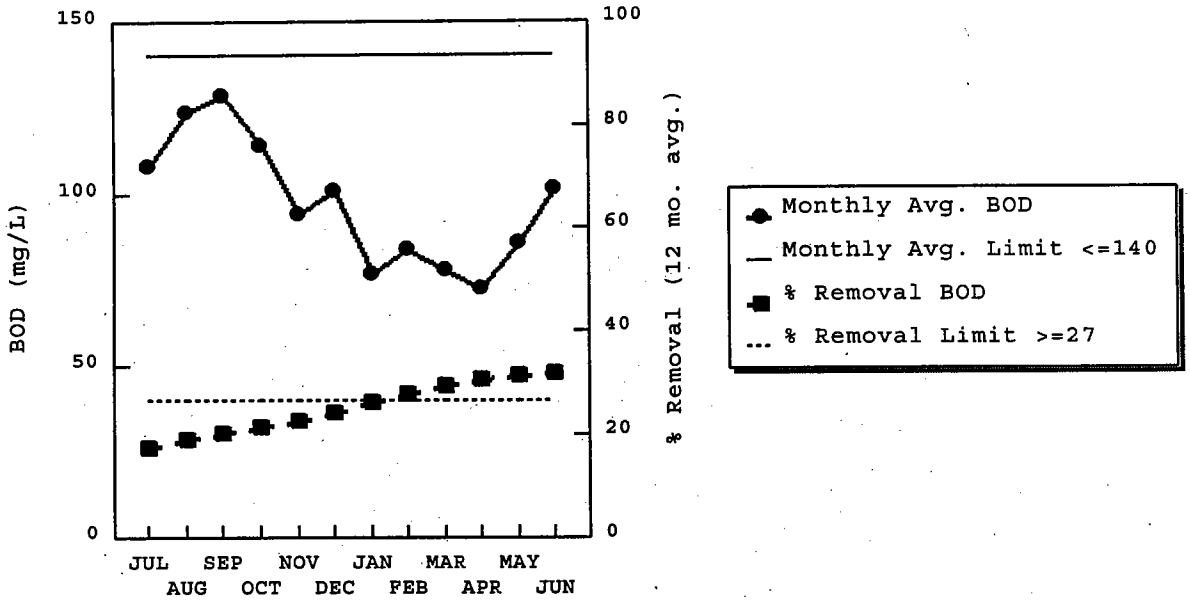
Parameter	Regulatory Limits*	Range of Values Exceeding Limits	No of Violations
Biochemical Oxygen Demand			
Mo Ave (mg/L)	140		0
Dly Max (mg/L)	200		0
12-mo running removal rate (%)	27	18 - 26	7
Total Suspended Solids			
Mo Ave (mg/L)	110		0
Dly Max (mg/L)	180		0
12-mo running removal rate (%)	38		0
Settleable Solids (ml/L)	2.8		0
Fecal Coliform (#/100 mL)	200		0
Total Coliform (#/100 mL)	1000		0
pH	6.5 - 8.5		0
PHCs Effluent Dly. Max (mg/L)	15	25 - 44	5
Toxicity	@		19
	Total Number of Violations		31

* Except for removal rates, the effluent quality must be equal or less than limits. Removal rates must be equal or greater than limits

@ See Table II.A.5

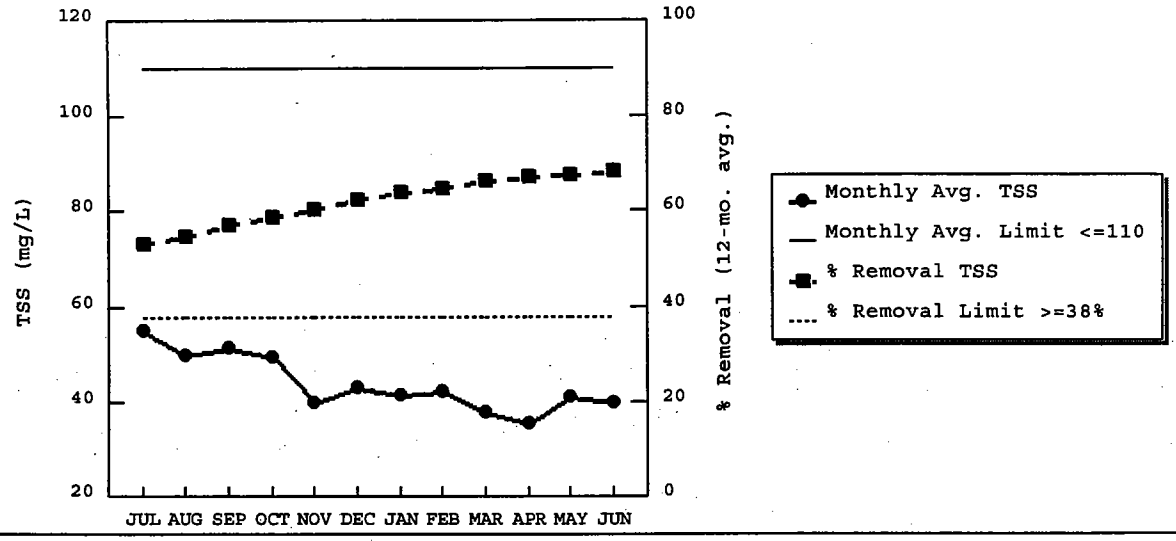
For biochemical oxygen demand (BOD), limits are placed on the monthly average concentration and on the removal rate. The removal rate, which is recorded as a 12-month running average, started out below the limit but gradually increased so that in the last few months of the fiscal year it was in compliance. This occurred because in the beginning of the year, the 12-month average still reflected the removal rates of the old primary treatment plant, which were considerably lower than those of the new plant.

Figure II.B.1 Deer Island Treatment Plant Effluent BOD Trend Analysis, FY96



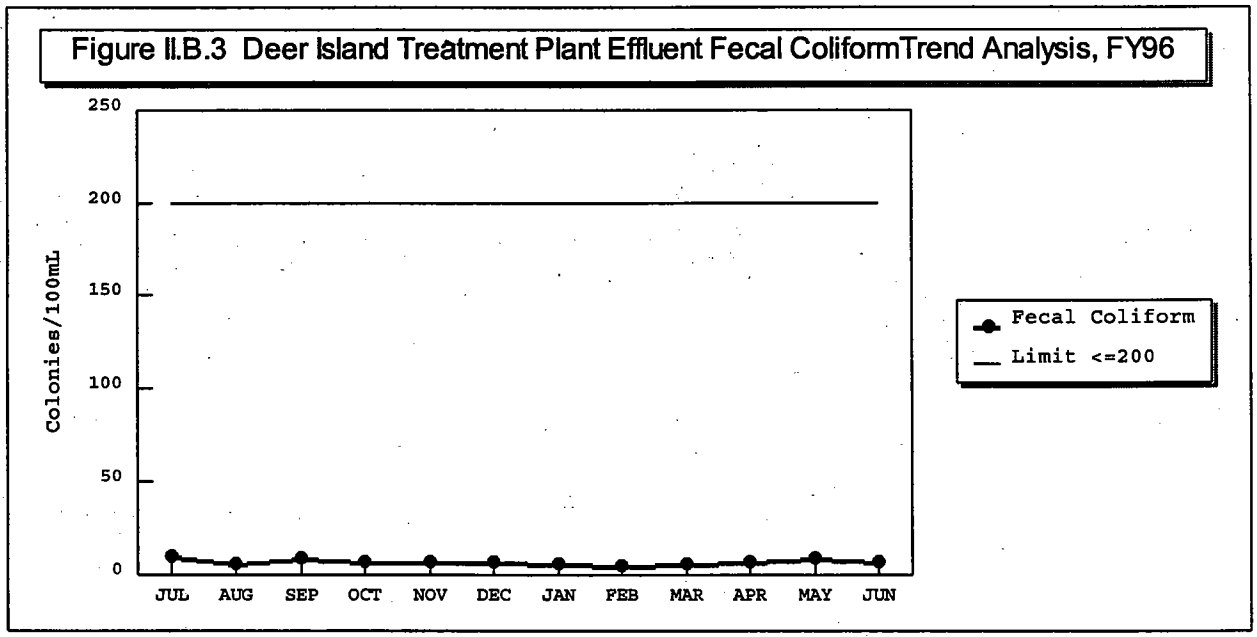
Total suspended solids, or TSS, are also limited for both average concentration and 12-month removal rate. The removal rate for TSS, like the rate for BOD, gradually increased as the new plant was on line longer.

Figure II.B.2 Deer Island Treatment Plant Effluent TSS Trend Analysis, FY96



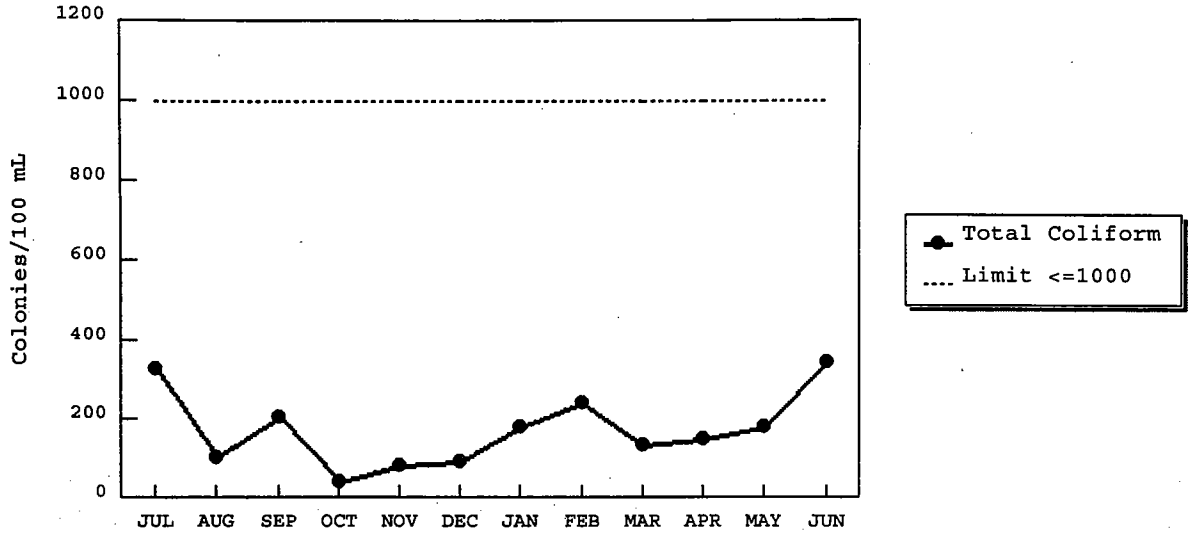
For fecal coliform, the monthly geometric mean of the count has a limit of 200 colonies/100 mL. The results for Deer Island were far below this limit.

Figure II.B.3 Deer Island Treatment Plant Effluent Fecal ColiformTrend Analysis, FY96



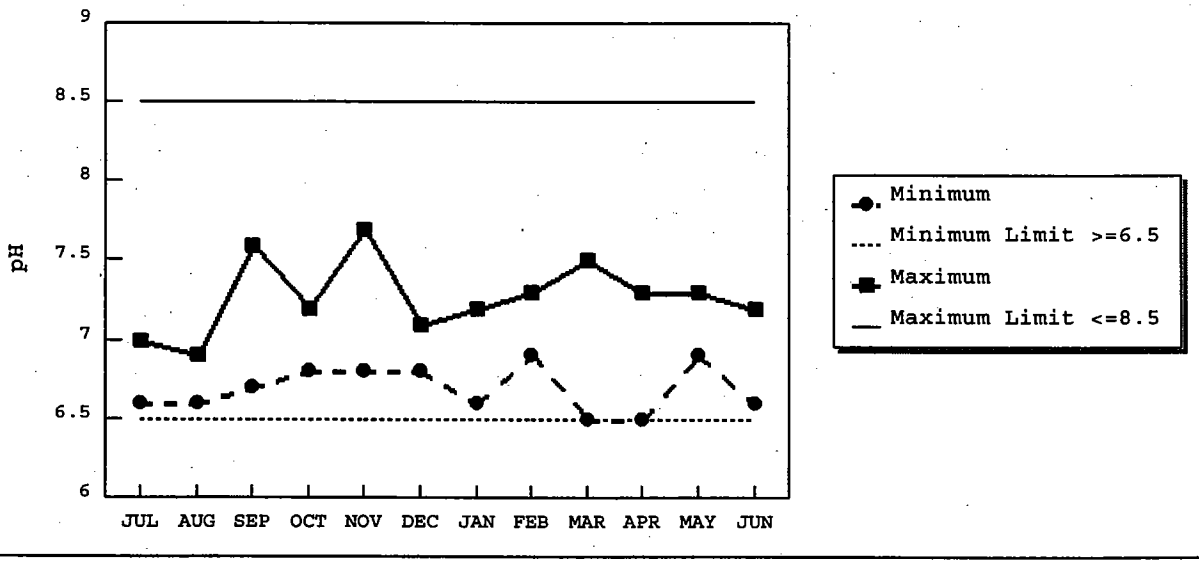
Likewise, total coliform counts were well below the limit of 1000 colonies/100 mL.

Figure II.B.4 Deer Island Treatment Plant Effluent Total Coliform Trend Analysis, FY96

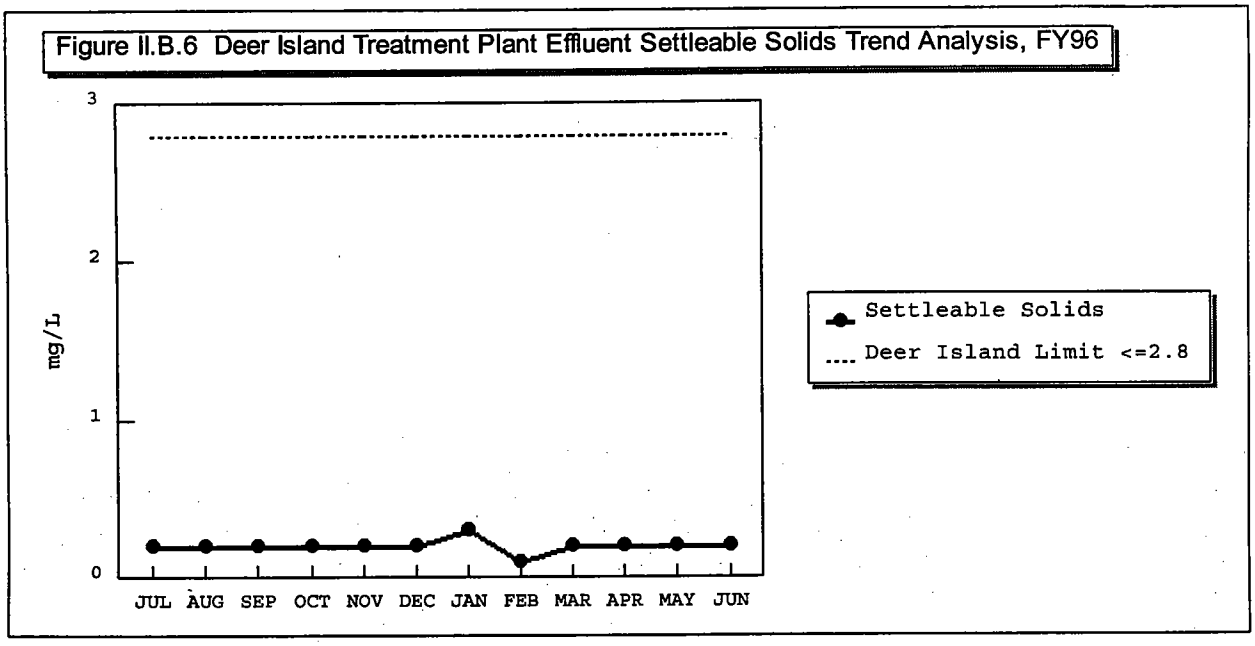


The limits for pH are based on the maximum and minimum values for each month, with pH expected to always fall between 6.5 and 8.5. Minimum pH measurements were at the limit of 6.5 in March and April but never fell below the limit.

Figure II.B.5 Deer Island Treatment Plant Effluent pH Trend Analysis, FY96



There is also a maximum limit for settleable solids. Concentrations in Deer Island effluent were well below this limit.



II.B.2. Effluent Quality Compared to Water Quality Standards

Table II.B.2 contains a comparison of priority pollutant concentrations in Deer Island effluent with water quality criteria. The majority of priority pollutant parameters were found to be below detection levels. Those that were detected had relatively low concentrations. Of the priority pollutant metals detected more than half the time, all except silver and mercury have decreased from FY96 levels. The average mercury concentration remained the same at Deer Island, while the average concentration of silver increased slightly.

Table II.B.2 Comparison of Deer Island Effluent with Water Quality Criteria, FY96

Parameter	Max. Conc. (ug/L)	Average (ug/L)	Times Detected	Acute Criteria (ug/L)	Max.Conc.: Acute Criteria	Chronic Criteria (ug/L)	Avg.Conc.: Chronic Criteria
Aldrin	0.07	0.01	2 of 34	1.30	<1	NA	NA
Arsenic	2.49	1.35	8 of 34	69.00	<1	36.00	<1
Copper	82.70	60.02	43 of 43	2.90	29	2.90	20
Cyanide	94.89	19.42	12 of 34	1.00	95	1.00	19
DDT	0.03	0.01	1 of 34	0.13	<1	1.00E-03	10
Dieldrin	0.03	0.01	2 of 34	0.71	<1	1.90E-03	5
Endosulfan II	0.12	0.02	1 of 34	0.03	4	8.70E-03	2
Heptachlor	0.31	0.04	4 of 34	0.05	6	3.60E-03	11
Heptachlor Epoxide	0.04	0.01	2 of 34	0.05	<1	3.60E-03	3
Lead	14.99	9.22	41 of 42	220.00	<1	8.50	1
g-BHC (Lindane)	0.06	0.01	5 of 34	0.16	<1	NA	NA
Mercury	0.27	0.12	25 of 36	2.10	<1	0.03	4
Nickel	14.50	6.65	11 of 34	75.00	<1	8.30	<1
Silver	9.68	2.99	24 of 34	2.30	4	NA	NA
Zinc	91.59	64.07	44 of 44	95.00	<1	86.00	<1

II.B.3. Pollutants of Concern

While the majority of priority pollutants measured had concentrations below detection levels, the following substances had concentrations high enough to violate water quality criteria.

Copper

Copper concentrations were high enough to cause concern. The dilution required to meet the acute criterion was 29, while the critical dilution needed to meet the chronic criterion was 20.

It is believed that most of the copper entering the sewer system comes from households where an acidic water supply leaches copper from copper pipes.

Cyanide

The critical dilutions to meet the acute and chronic criteria for cyanide were 95 and 19. The presence of cyanide is being investigated, because cyanide is rarely detected in the influent to the treatment plants, but is frequently detected in the effluent. It is suspected that these results are being caused by the dechlorination of effluent samples with ascorbic acid, which may result in positive interferences for cyanide.

Heptachlor

Heptachlor was also found in concentrations high enough to cause concern. The critical dilutions for heptachlor were 6 for the acute criterion and 11 for the chronic criterion.

III. Nut Island Treatment Plant

This chapter presents and discusses monitoring information for the Nut Island Treatment Plant. The characteristics examined include flow, conventional parameters, nutrients, priority pollutants (metals, cyanide, pesticides/PCBs, and organic compounds), and whole effluent toxicity.

III.A. Monitoring Results

III.A.1. Influent Characteristics

III.A.1.a. Flow

Monthly flows through Nut Island in FY96 are plotted in Figure III.A.1. As can be seen in this figure, there tended to be a correlation between flows and rainfall.

Figure III.A.1 Nut Island Flows Compared to Precipitation, FY96

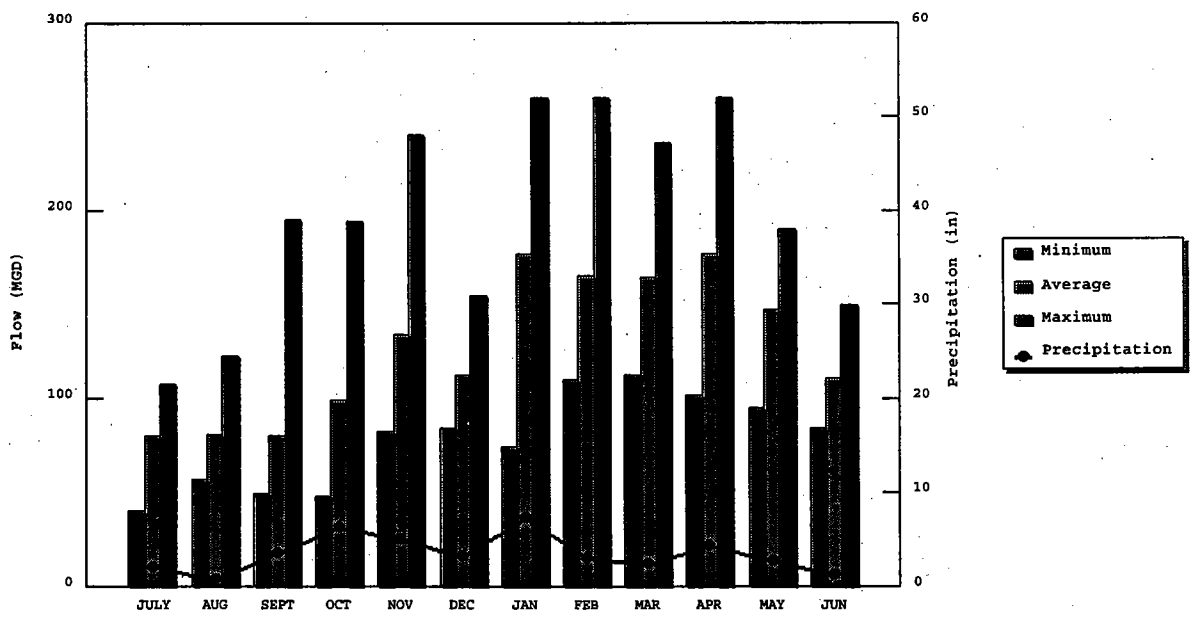
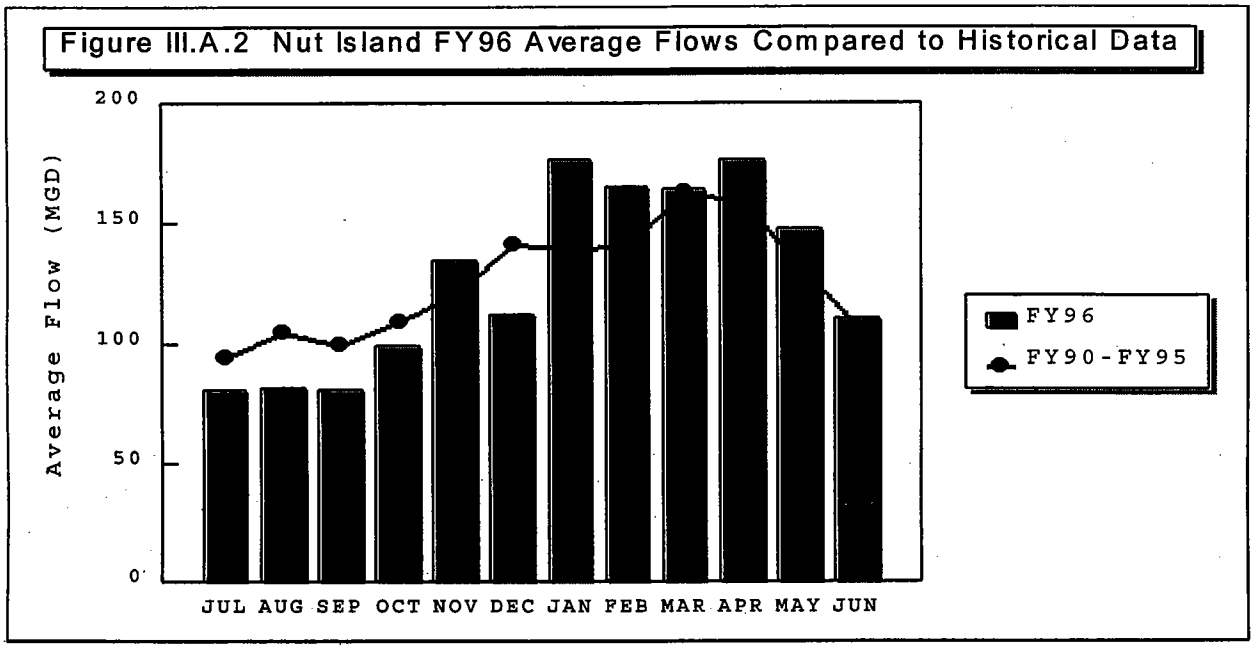
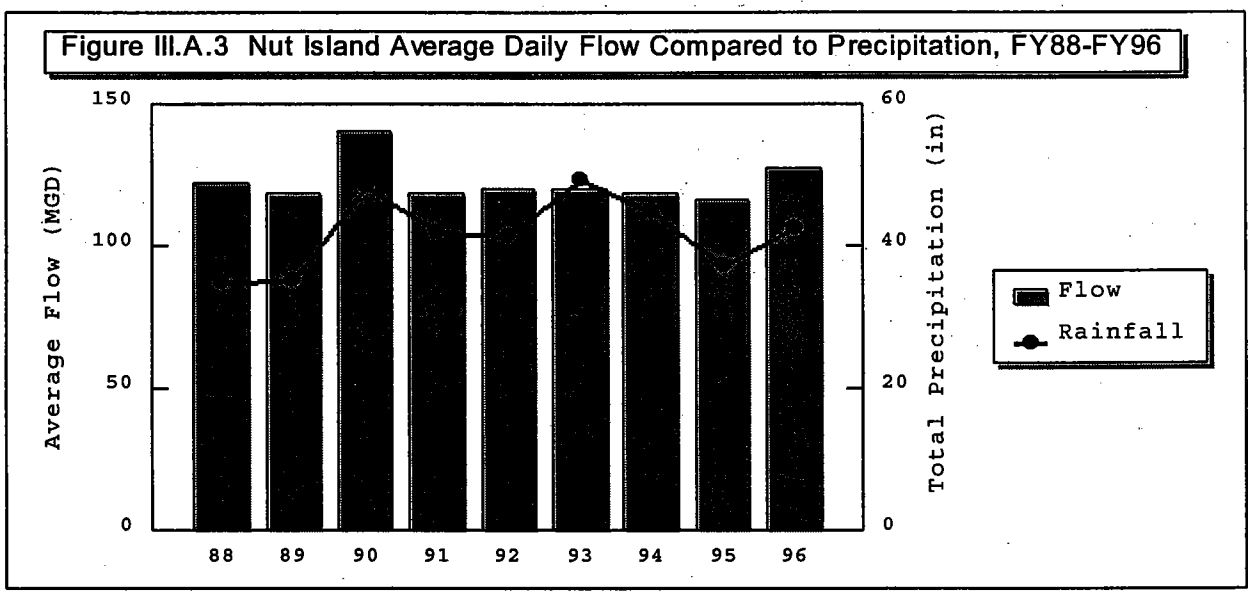


Figure III.A.2 compares monthly Nut Island flows in FY96 with historical averages. As was the case with Deer Island, flows followed the same seasonal pattern as previous years, but tended to be higher than average in the winter and lower than average during the summer.



Average flow and precipitation over the past nine years are plotted in Figure III.A.3. There has been little change in average daily flow over the past several years. The increase in flow from FY95 to FY96 can be attributed to the increase in rainfall.



III.A.1.b. Conventional Parameters and Nutrients

As can be seen in Table III.A.1, Nut Island influent can be classified as weak to medium. Conventional and nutrient concentrations and loadings in Nut Island influent from FY93-FY96 are summarized in Table III.A.2. There has been little change in influent characteristics over the past few years.

Table III.A.1 Classification of Nut Island Influent

Parameter	Value	Weak	Medium	Strong
TSS	154	100	200	350
BOD	131	100	200	300
TKN	25.3	20	40	85
Ammonia	15.7	12	25	50

III.A.1.c. Priority Pollutants

Priority pollutant detections in Nut Island influent are summarized in Tables B-2 and B-3 of Appendix B. As with the Deer Island results, for levels below detection limits one tenth of the quantitation limit was substituted. A discussion of detection and quantitation limits can be found in Appendix K.

Influent metals loadings over the past several years are compared in Figure III.A.4. Metals loadings have decreased since FY92. FY96 metals loadings were very close to the FY95 loadings.

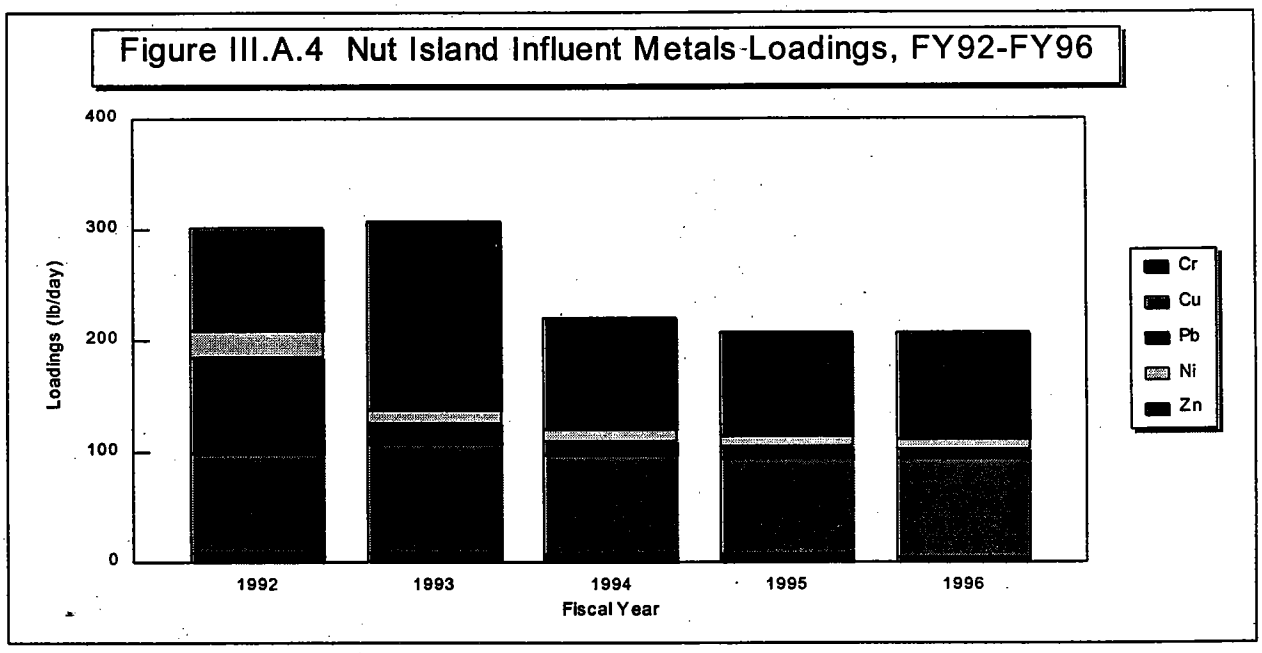


Table III.A.2 Nut Island Influent Characterization, FY93-FY96

PARAMETER	FY96	FY95	FY94	FY93
Flow (MGD)				
Minimum	40	70	47	50
Average	127	111	123	129
Maximum	260	211	315	262
Total Suspended Solids				
Minimum (mg/L)	18	111	122	112
Average (mg/L)	154	158	227	174
Maximum (mg/L)	496	209	354	206
Average Loading (tons/d)	82	73	116	94
Biochemical Oxygen Demand				
Minimum (mg/L)	22	100	97	122
Average (mg/L)	131	148	171	177
Maximum (mg/L)	256	212	247	251
Average Loading (tons/d)	69	69	88	95
Settleable Solids (ml/L)				
Minimum	2.0	3.8	2.7	5.1
Average	8.8	6.2	7.5	8.0
Maximum	40.0	11.1	19.8	10.5
Average Loading (tons/d)	5	3	4	4
Oil and Grease (mg/L)				
Minimum	23	15	6	11
Average	32	28	31	35
Maximum	40	38	115	59
Average Loading (tons/d)	17	13	16	19
Total Kjeldahl Nitrogen				
Min Conc (mg/L)	9.38	9.80	10.08	10.57
Ave Conc (mg/L)	25.27	24.45	22.84	19.40
Max Conc (mg/L)	44.80	33.80	34.79	25.20
Average Loading (tons/d)	13	11	12	10

Table III.A.2 Nut Island Influent Characterization, FY93-FY96 cont.

PARAMETER	FY96	FY95	FY94	FY93
Ammonia-Nitrogen				
Min Conc (mg/L)	4.28	5.32	2.24	5.01
Ave Conc (mg/L)	15.73	14.52	10.06	13.66
Max Conc (mg/L)	34.10	23.10	20.44	20.07
Average Loading (tons/d)	8.33	6.72	5.16	7.35
Nitrates				
Min Conc (mg/L)	< 0.01	0.03	0.00	0.00
Ave Conc (mg/L)	0.52	0.23	0.20	0.21
Max Conc (mg/L)	1.93	0.91	0.51	0.58
Average Loading (tons/d)	0.28	0.11	0.10	0.11
Nitrites				
Min Conc (mg/L)	< 0.01	0.03	0.00	*
Ave Conc (mg/L)	0.37	0.06	0.05	*
Max Conc (mg/L)	1.31	0.15	0.09	*
Average Loading (tons/d)	0.20	0.03	0.03	
Orthophosphorus				
Min Conc (mg/L)	0.29	0.85	0.10	*
Ave Conc (mg/L)	1.39	2.16	1.64	*
Max Conc (mg/L)	3.30	3.93	2.70	*
Average Loading (tons/d)	0.74	1.00	0.84	
Total phosphorus				
Min Conc (mg/L)	1.22	2.20	0.90	1.83
Ave Conc (mg/L)	3.59	4.60	2.97	3.22
Max Conc (mg/L)	6.85	13.57	4.60	3.99
Average Loading (tons/d)	1.90	2.13	1.52	1.73

* Not Analyzed

III.A.2. Effluent Characteristics

III.A.2.a. Conventional Parameters

Table III.A.3 compares Nut Island removal efficiencies for BOD and TSS to the theoretical removal efficiencies for primary treatment. The actual performance of the plant was comparable to these theoretical values. Table III.A.4 summarizes data on conventional parameters and nutrients in Nut Island effluent from FY93 to FY96. There were no significant changes in conventional parameters compared to past years.

Table III.A.3 Nut Island Removal Efficiency, FY96

	Removal Efficiency	
Parameter	Nut Island	Theoretical
TSS	56%	50-65%
BOD	36%	25-40%

III.A.2.b. Nutrients

Figure III.A.6 compares Nut Island effluent nutrient data to previous years. While most nutrients have shown little change in the past few years, ammonia and TKN have increased. One possible cause of these increases is the increasing use of the Fore River pelletizing plant, which discharges its wastewater to the Nut Island treatment facility.

Figure III.A.5 Nut Island Effluent Nutrient Concentrations, FY93-FY96

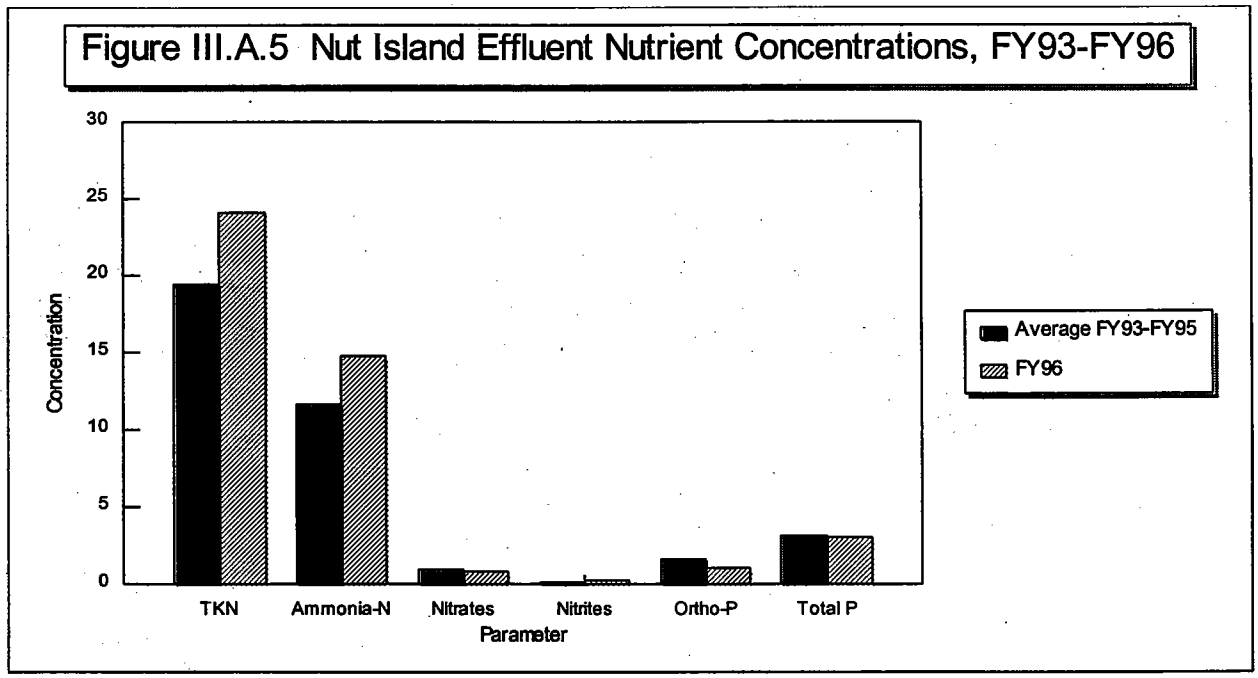


Table III.A.4 Nut Island Effluent Characterization, FY93-FY96

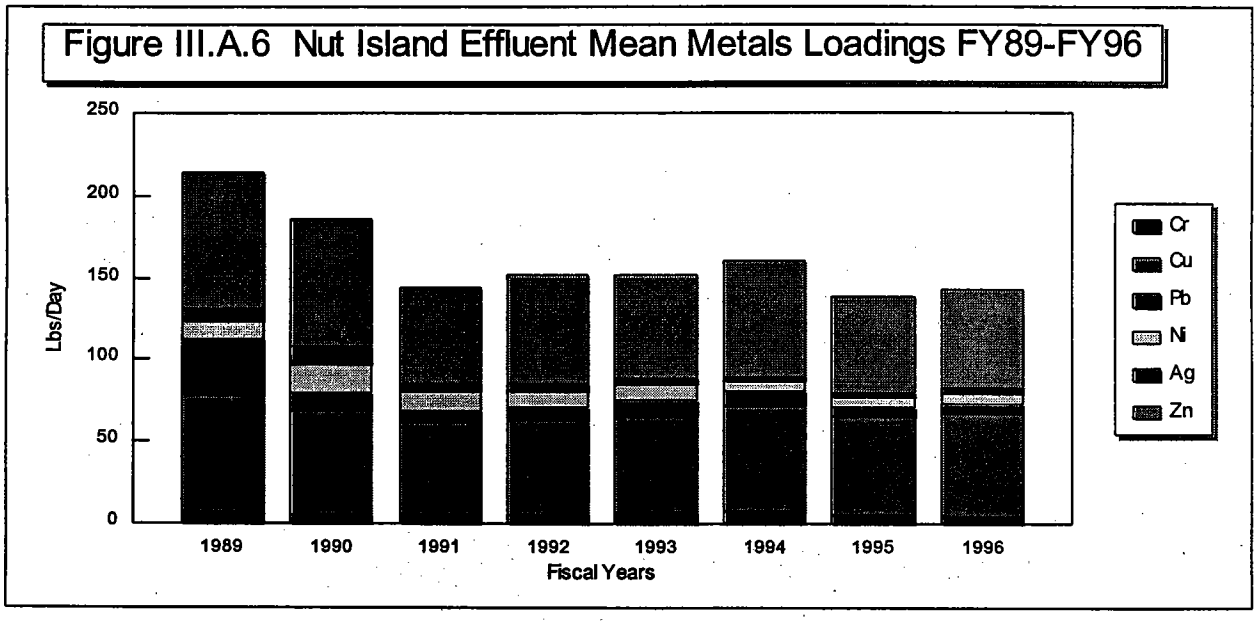
Parameter	FY96	FY95	FY94	FY93
Flow (MGD)				
Minimum	40	70	47	50
Average	127	111	123	129
Maximum	260	211	315	262
Total Suspended Solids				
Minimum (mg/L)	24	48	53	44
Average (mg/L)	68	75	78	66
Maximum (mg/L)	200	94	100	80
Average Loading (tons/d)	36	35	40	36
Biochemical Oxygen Demand				
Minimum (mg/L)	22	65	74	64
Average (mg/L)	84	108	108	103
Maximum (mg/L)	210	143	136	142
Average Loading (tons/d)	70	42	45	34
Settleable Solids (ml/L)				
Minimum	0.1	0.5	0.5	0.8
Average	1.0	6.2	0.9	1.1
Maximum	5.5	11.1	1.1	1.3
Average Loading (tons/d)	1	4	1	1
Oil and Grease (mg/L)				
Minimum	20.8	13.9	2.1	8.0
Average	26.8	24.0	16.4	22.7
Maximum	31.8	33.7	25.3	37.2
Average Loading (tons/d)	1	1	0	0
Total Kjeldahl Nitrogen				
Min Conc (mg/L)	10.10	11.20	11.90	7.14
Ave Conc (mg/L)	23.98	21.86	19.97	16.41
Max Conc (mg/L)	44.20	30.30	26.39	24.58
Average Loading (tons/d)	3	3	2	3

Table III.A.4 Nut Island Effluent Characterization, FY93-FY96, cont.

Parameter	FY96	FY95	FY94	FY93
Ammonia-Nitrogen				
Min Conc (mg/L)	3.96	6.09	2.80	2.45
Ave Conc (mg/L)	14.73	13.51	10.24	11.25
Max Conc (mg/L)	23.70	19.60	17.78	17.35
Average Loading (tons/d)	3	2	1	1
Nitrates				
Min Conc (mg/L)	< 0.01	0.03	0.09	0.03
Ave Conc (mg/L)	0.88	1.25	0.80	0.82
Max Conc (mg/L)	2.48	1.79	1.79	1.50
Average Loading (lbs/d)	932	1157	821	887
Nitrites				
Min Conc (mg/L)	< 0.01	0.07	0.01	0.06
Ave Conc (mg/L)	0.22	0.25	0.07	0.24
Max Conc (mg/L)	0.32	0.52	0.16	0.76
Average Loading (lbs/d)	233	231	72	258
Orthophosphorus				
Min Conc (mg/L)	0.32	0.85	0.49	0.24
Ave Conc (mg/L)	1.13	1.92	1.69	1.32
Max Conc (mg/L)	2.51	3.05	2.50	2.83
Average Loading (lbs/d)	1197	1777	1734	1424
Total phosphorus				
Min Conc (mg/L)	1.15	0.27	0.26	1.50
Ave Conc (mg/L)	3.05	3.38	2.57	3.50
Max Conc (mg/L)	4.64	4.75	3.85	9.13
Average Loading (lbs/d)	3230	3129	2636	3761

III.A.2.c. Priority Pollutants

Tables B.4 and B.5 in Appendix B summarize priority pollutant concentrations and loadings in Nut Island effluent for FY96 . This fiscal year's metals loadings are compared to historical loadings in Figure III.A.6. As in the Deer Island results, generally the same metals and other priority pollutants were detected in the effluent as were found in the influent. Influent metals loadings have remained fairly constant in recent years, with only a slight rise from FY95 to FY96.



III.A.2.d. Whole Effluent Toxicity

The same three toxicity tests were used for Nut Island as for Deer Island (see Section II.A.2.d). The results of these tests are presented in Table III.A.5.

The sheepshead minnow (*Cyprinodon*) test results were in compliance 100% of the time at Nut Island, while the mysid acute test was in compliance three months out of the year. Concentrations of surfactants in the effluent are consistent with concentrations which could cause mysid toxicity. The results of the red algae (*Champia*) test were never in compliance because of the sensitivity of the species.

Table III.A.5 Nut Island, Results of Toxicity Testing, FY96

	Mysid acute		Cyprinodon chronic Survival	Growth	Champia chronic
	LC50	NOEC	NOEC	NOEC	NOEC
Limits (%)	None	20	10	10	10.0
July	29.0	10	40	40	0.2
August	27.2	10	60	60	2.0
September	19.5	10	20	20	0.7
October	26.2	10	20	20	2.0
November	32.9	20	40	40	2.0
December	14.8	10	40	40	2.0
January	21.4	10	20	20	2.0
February	26.0	10	20	20	2.0
March	35.0	20	60	60	2.0
April	28.0	10	40	40	2.0
May	24.0	10	40	60	2.0
June	42.0	20	40	40	2.0
Average	27.2	12.5	36.7	38.3	1.7
Violations		9	0	0	12

III.B. Discussion

III.B.1. Compliance with Regulatory Limits

Nut Island, like Deer Island, is regulated by court-ordered interim limits. Plant performance at Nut Island is compared to regulatory limits in Table III.B.1 and Figures III.B.1 through III.B.6. Nut Island had, in addition to its 21 toxicity violations, 10 other violations. There were five violations of interim limits: two daily maximum BOD violations, two daily maximum TSS violations, and one violation of the maximum total coliform limit. There were also five violations of the permit: two pH violations and three violations of the daily maximum for PHCs. The PHC violations may have been related to the same testing procedure that caused an unexpected number of PHC violations at Deer Island.

Table III.B.1 Nut Island Effluent Quality Compared to Interim Limits

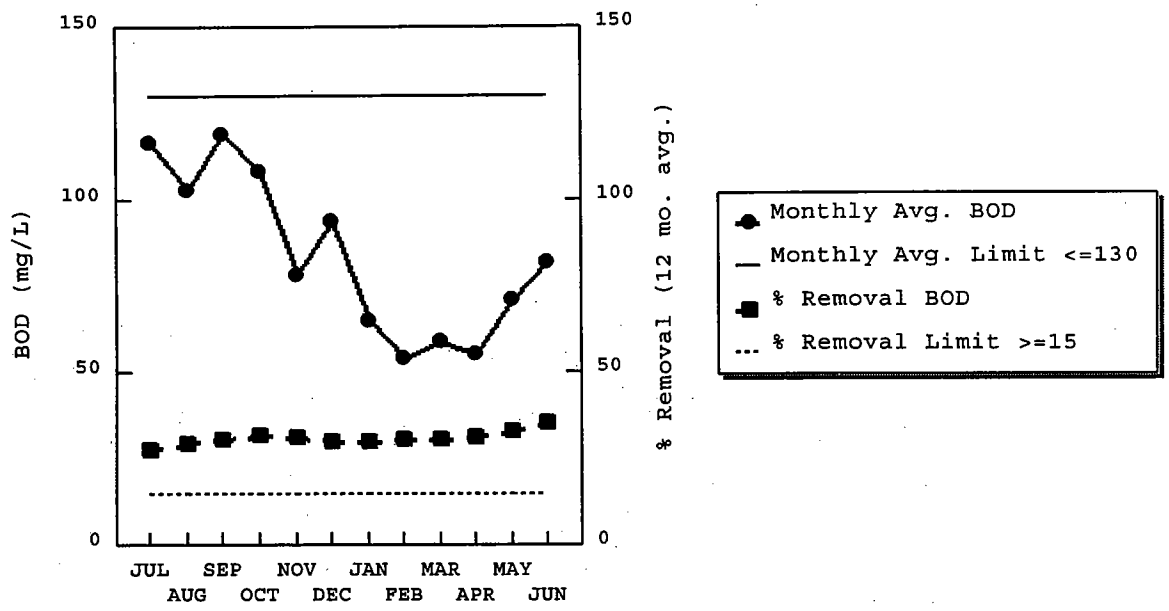
Parameter	Regulatory Limits*	Range of Values Exceeding Limits	No of Violations
Biochemical Oxygen Demand			
Mo Ave (mg/L)	130		0
Dly Max (mg/L)	185	198-210	2
12-mo running removal rate (%)	15		0
Total Suspended Solids			
Mo Ave (mg/L)	110		0
Dly Max (mg/L)	195	200	2
12-mo running removal rate (%)	43		0
Settleable Solids (ml/L)	1.8		0
Fecal Coliform (#/100 mL)	200		0
Total Coliform (#/100 mL)	1000	1129	1
pH	6.5 - 8.5	6.4	2
PHCs Effluent Dly. Max (mg/L)	15	16-21	3
Toxicity	@		21
		Total Number of Violations	31

* Except for removal rates, the effluent quality must be equal or less than limits. Removal rates must be equal or greater than limits

@ See Table II.A.5

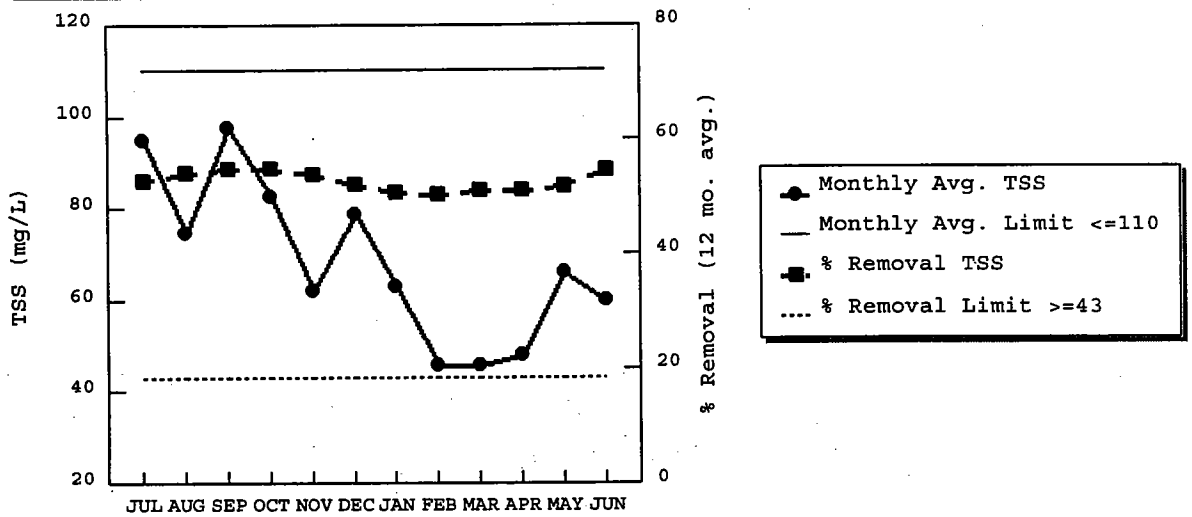
For biochemical oxygen demand (BOD), limits are placed on the monthly average concentration and on the removal rate. The removal rate limit is for a 12-month running average of removal rates, rather than for the individual month's removal rate. Although Nut Island had two daily BOD violations, there were no monthly violations.

Figure III.B.1 Nut Island Treatment Plant Effluent BOD Trend Analysis, FY96



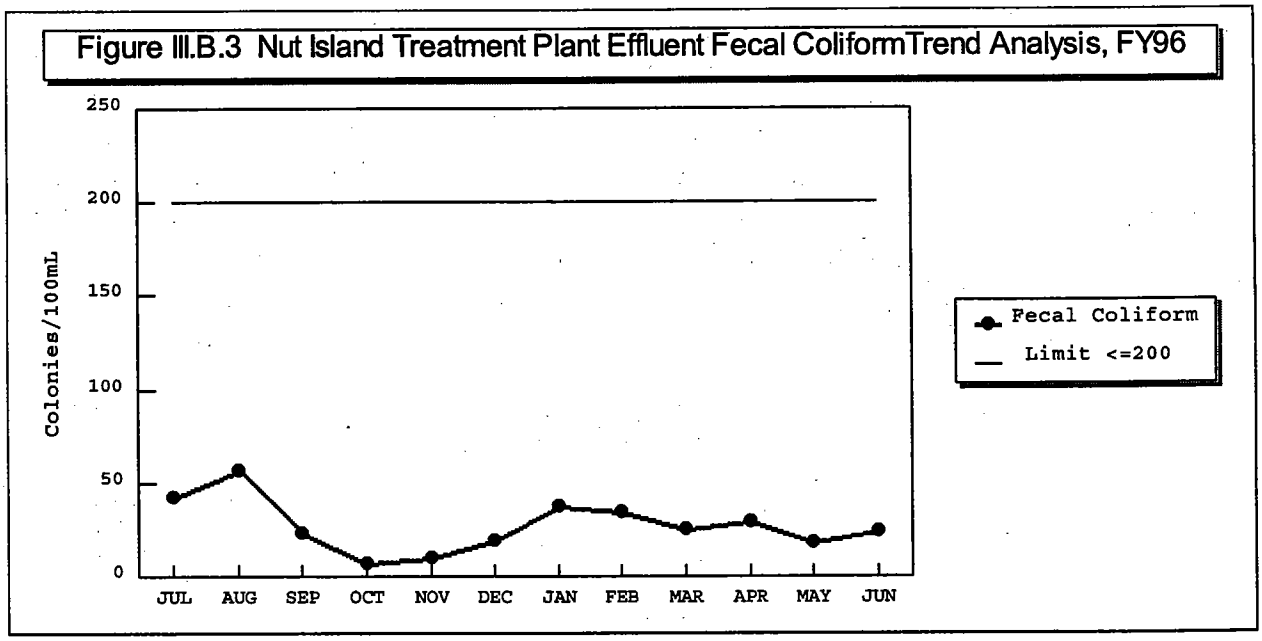
Total suspended solids, or TSS, are also limited for both average concentration and 12-month removal rate. There were no violations of monthly limits for TSS even though there were two violations of the daily maximum.

Figure III.B.2 Nut Island Treatment Plant Effluent TSS Trend Analysis, FY96

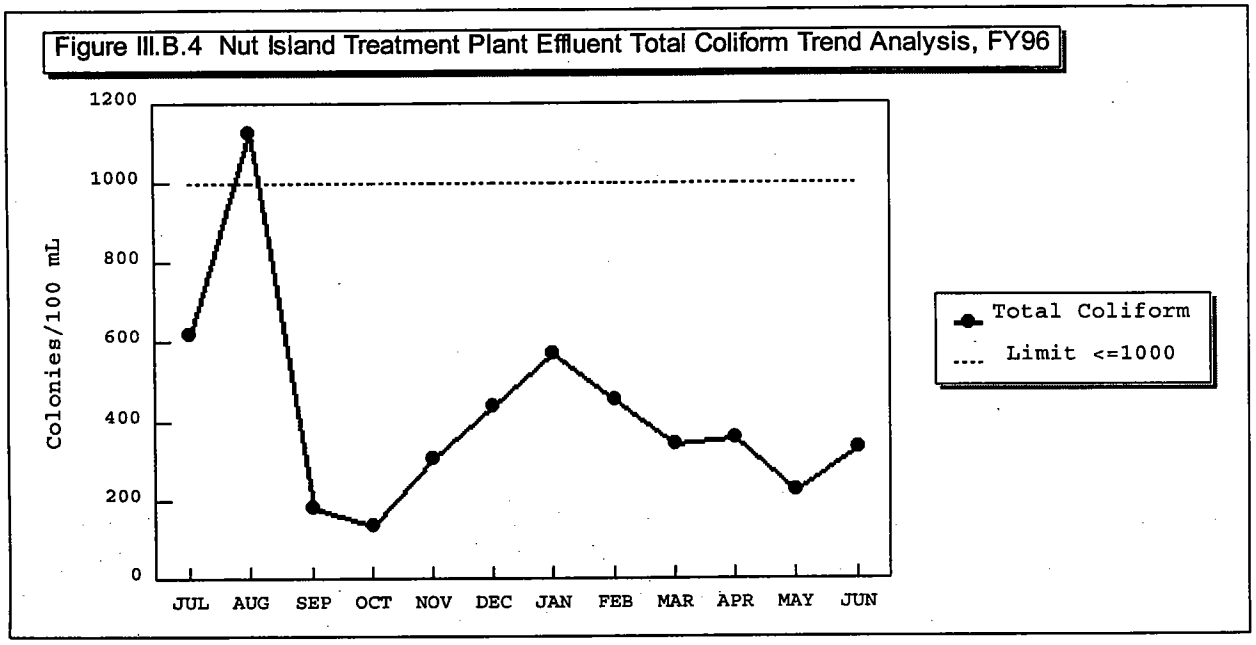


For fecal coliform, the monthly geometric mean of the count has a limit of 200 colonies/100 ml. The results for Nut Island, like the Deer Island results, were far below this limit.

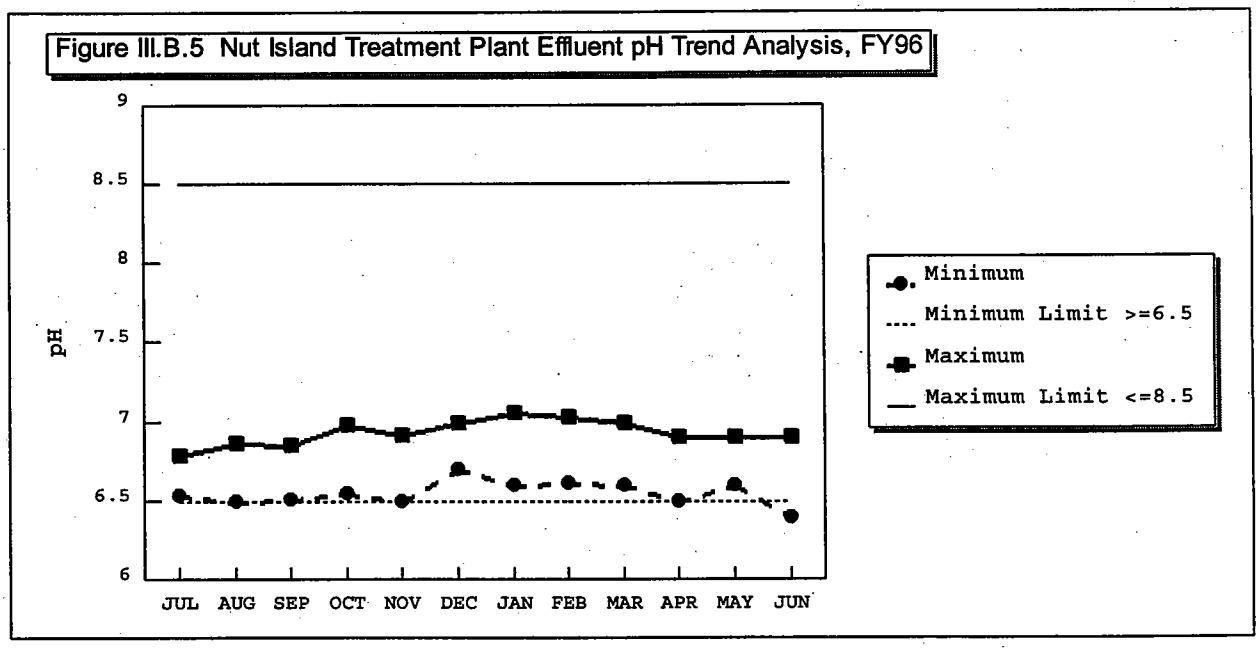
Figure III.B.3 Nut Island Treatment Plant Effluent Fecal ColiformTrend Analysis, FY96



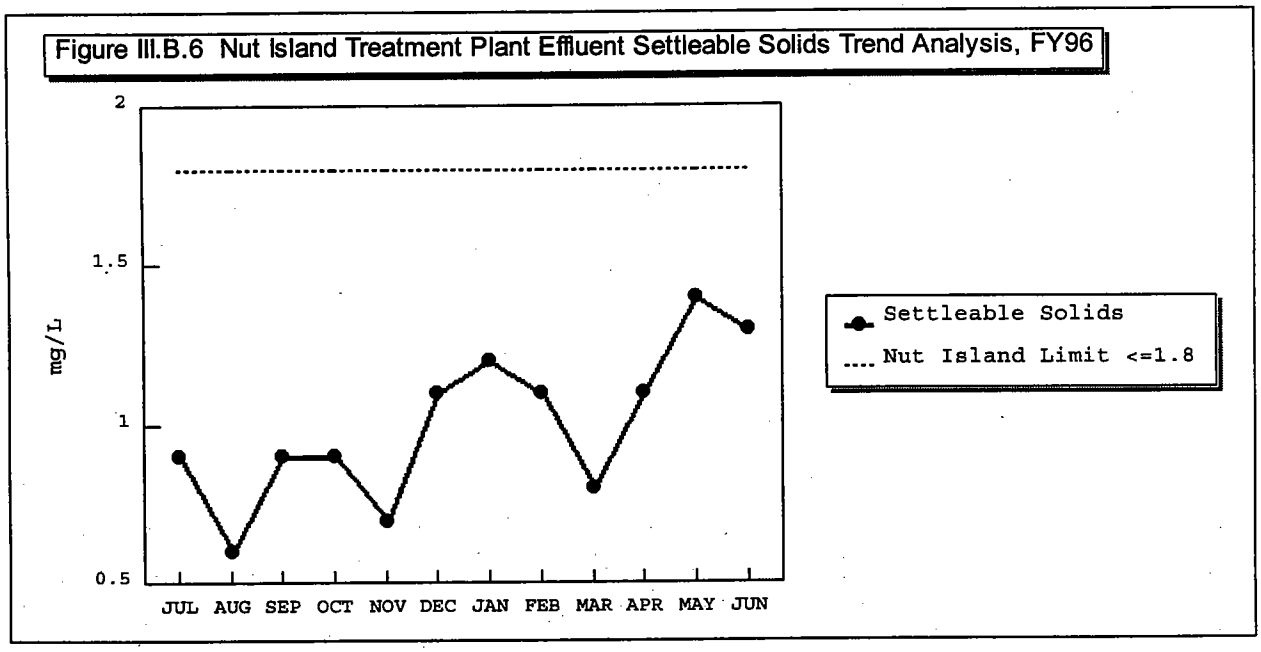
The monthly average total coliform limit was violated once, in August, as a result of problems with the chlorination system.



There are maximum and minimum limits of 8.5 and 6.5 for pH. Effluent pH fell below the minimum limit twice in FY96, probably because of acid rain.



There is also a maximum limit for settleable solids. Concentrations in Nut Island effluent were well below this limit.



III.B.2. Effluent Quality Compared to Water Quality Standards

Table III.B.2 presents a comparison of pollutant concentrations in Nut Island effluent to water quality standards for those pollutants. As at Deer Island, most priority pollutant parameters were found to be below detection levels and those that were detected had relatively low concentrations. Most of those that were detected more than half the time decreased from FY95 to FY96, while silver and mercury increased slightly.

Table III.B.2 Comparison of Nut Island Effluent with Water Quality Criteria, FY96

Parameter	Max. Conc. (ug/L)	Average (ug/L)	Times Detected	Acute Criterion (ug/L)	Max.Conc.: Acute Criterion	Chronic Criterion (ug/L)	Avg.Conc.: Chronic Criterion
Aldrin	0.12	0.01	2 of 36	1.3	<1	NA	NA
Arsenic	2.00	1.27	6 of 36	69.00	<1	36.00	<1
Copper	87.67	67.20	47 of 47	2.90	30	2.90	23
Cyanide	17.04	11.93	21 of 37	1.00	17	1.00	12
Heptachlor	0.18	0.05	5 of 36	0.05	4	3.60E-03	14
Lead	21.86	6.17	45 of 46	220.00	<1	8.50	<1
g-BHC (Lindane)	0.03	0.01	2 of 36	0.16	<1	NA	NA
Mercury	0.28	0.15	30 of 38	2.10	<1	0.03	6
Methoxychlor	0.07	0.06	2 of 36	NA	NA	0.03	2
Nickel	15.95	6.90	11 of 36	75.00	<1	8.30	<1
Silver	5.93	2.93	27 of 36	2.30	3	NA	NA
Zinc	101.23	64.38	48 of 48	95.00	1	86.00	<1

III.B.3. Pollutants of Concern

Just as at Deer Island, copper, cyanide, and heptachlor all were found in high enough concentrations to cause concern.

Copper

The dilution required to meet the acute criterion for copper was 30, while the critical dilution needed to meet the chronic criterion was 36. It is believed that most of the copper

entering the sewer system comes from households where an acidic water supply leaches copper from copper pipes.

Cyanide

Cyanide was also present in high enough concentrations to be a cause for concern, with the critical dilutions to meet the acute and chronic criteria at 17 and 12.

As discussed in Chapter 2, the presence of cyanide is under investigation because it generally appears in the effluent but not in the influent. It is suspected that dechlorinating effluent samples with ascorbic acid occasionally results in positive interferences for cyanide.

Heptachlor

The critical dilutions for heptachlor were 4 for the acute criterion and 14 for the chronic.

IV. Combined Sewer Overflow Facilities

MWRA monitors six Combined Sewer Overflow (CSO) facilities in the North System. The monitoring results vary significantly between facilities because of differences in the type and location of the facilities. A detailed description of the six CSO facilities can be found in Appendix J.

IV.A. Cottage Farm Combined Sewer Overflow Facility

IV.A.1. Activations

Activation data for the Cottage Farm CSO facility from FY92 to FY96 are summarized in Table IV.A.1 and Figures IV.A.1 and IV.A.2.

Table IV.A.1 Cottage Farm CSO Activations Summary

	FY96	FY95	FY94	FY93	FY92
Number of Activations	26	25	31	33	23
Total Volume Treated (mg)	918	574	621	677	361
Maximum Flow (mgd)	94	100	123	145	64
Minimum Flow (mgd)	1.88	0.09	0.08	0.69	0.01
Average Flow (mgd)	27.83	22.08	18.26	20.52	15.70
Total Rainfall (in/year)	42.55	37.47	45.00	48.82	41.18

Average flow is calculated by dividing the total volume treated by the number of days the facility activated in the fiscal year.

There was a large increase in the volume treated at this facility from FY95 to FY96, while the number of activations only increased by one. This change may be due to a number of factors, including rainfall intensity and reduced pumping capacity at Deer Island in FY96 due to repairs being performed on the pumps.

Figure IV.A.1 Cottage Farm CSO Activations, FY89-FY96

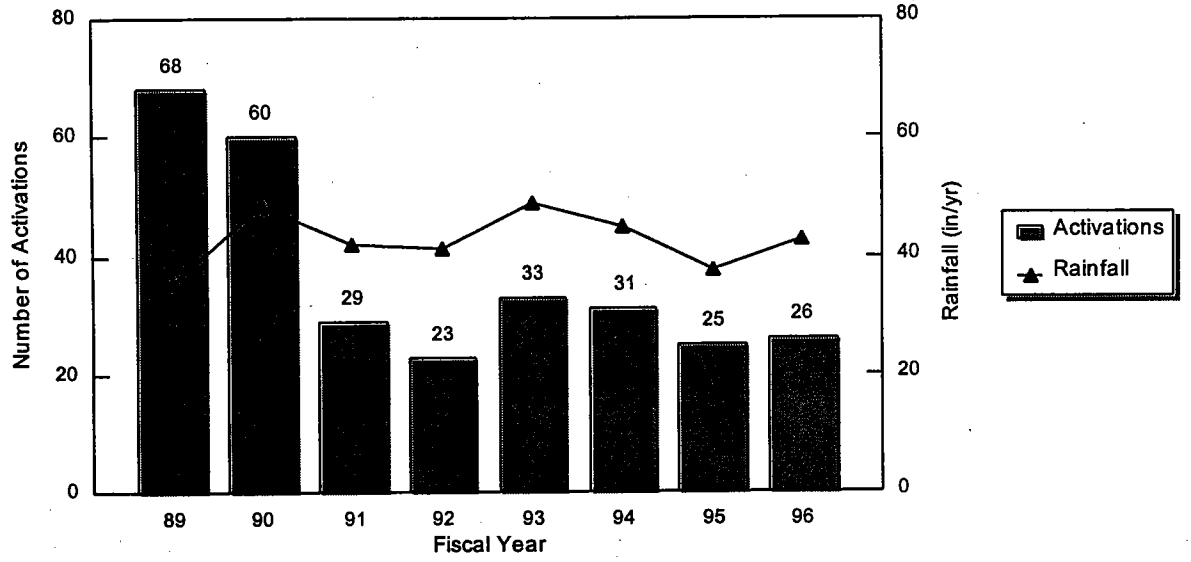
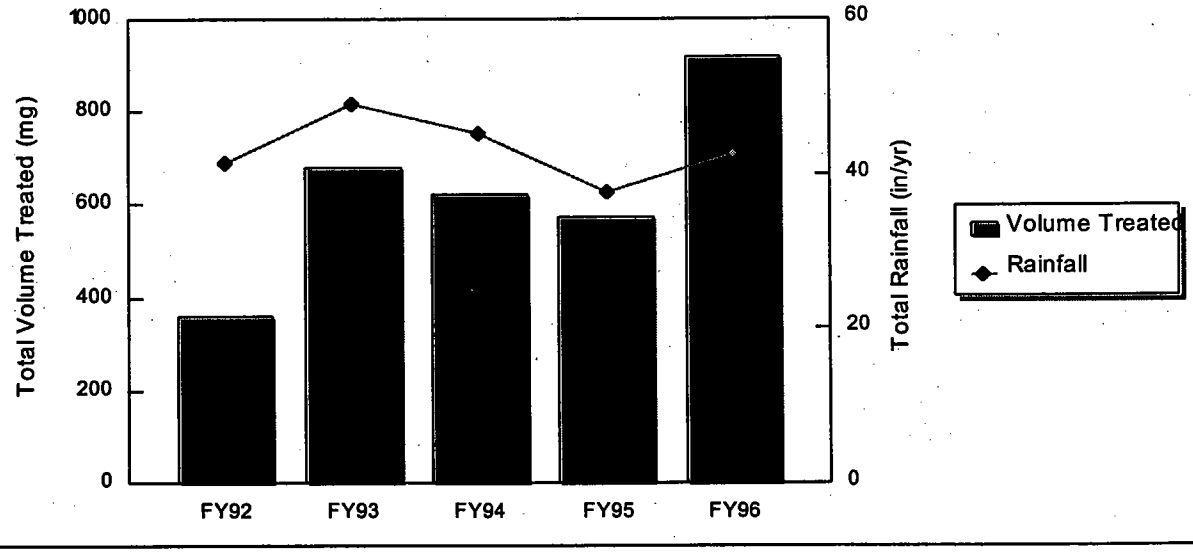


Figure IV.A.2 Cottage Farm Total Volume Treated Compared to Precipitation, FY92-FY96



IV.A.2. Conventional Parameters

Data on conventional parameters in Cottage Farm influent and effluent can be found in Appendix C, Tables C-1 and C-2, and are summarized in Table IV.A.2. Because this kind of treatment facility is not designed to remove such contaminants, and because of variability in the characteristics of combined sewage, there were times when the BOD and TSS loadings of the effluent measured higher than those of the influent.

Cottage Farm had two NPDES violations in FY96. Both occurred in May, when there was one activation with a fecal coliform count of 10,000/100 mL, violating both the monthly average maximum of 1000/100 mL and the requirement that no more than 10% of samples be above 2500/100 mL.

Table IV.A.2 Cottage Farm CSO Influent and Effluent Characteristics, FY96

Parameter	Influent			Effluent		
	Min	Ave	Max	Min	Ave	Max
TSS (mg/L)	26	136	400	21	73	286
BOD (mg/L)	11	76	> 141	< 17	53	153
Fecal Coliform (#/100 ml)				< 10	20	10000
pH (units)				6.61		8.40

IV.A.3. Priority Pollutants

All Cottage Farm activations were also tested for priority pollutants. The results of that testing are presented in Appendix C, Tables C-3 and C-4. Metals were the most common priority pollutants, with copper, lead, mercury, and zinc detected in all samples. Several other priority pollutants were detected in some but not all samples.

Table IV.A.3 summarizes average metals concentrations in Cottage Farm effluent in FY96.

Table IV.A.3 Cottage Farm Metals, FY96

	Average Concentration (ug/L)	Times Detected
Cadmium	1.00	1 of6
Copper	90.52	6 of6
Mercury	0.84	6 of6
Nickel	7.63	4 of6
Lead	80.47	6 of6
Zinc	159.30	6 of6

IV.B. Prison Point Combined Sewer Overflow Facility

IV.B.1. Activations

Activation data for the Prison Point CSO Facility from FY92-FY96 are summarized in Table IV.B.1 and Figures IV.B.1 and IV.B.2.

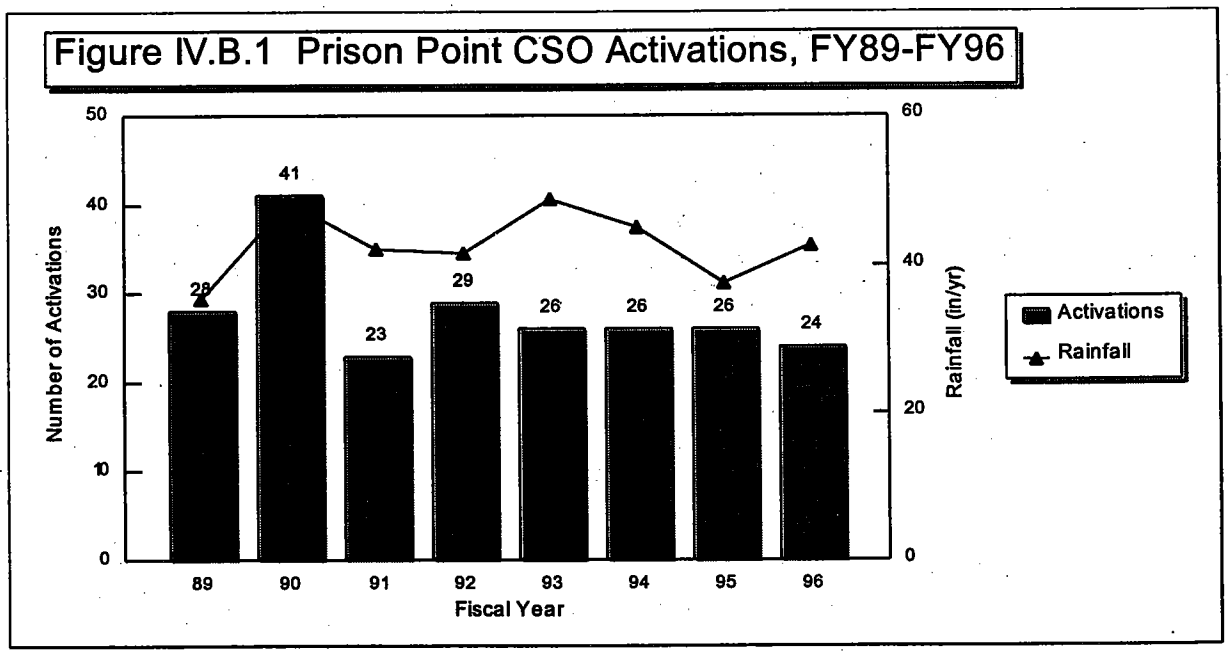
Table IV.B.1 Prison Point CSO Activations Summary

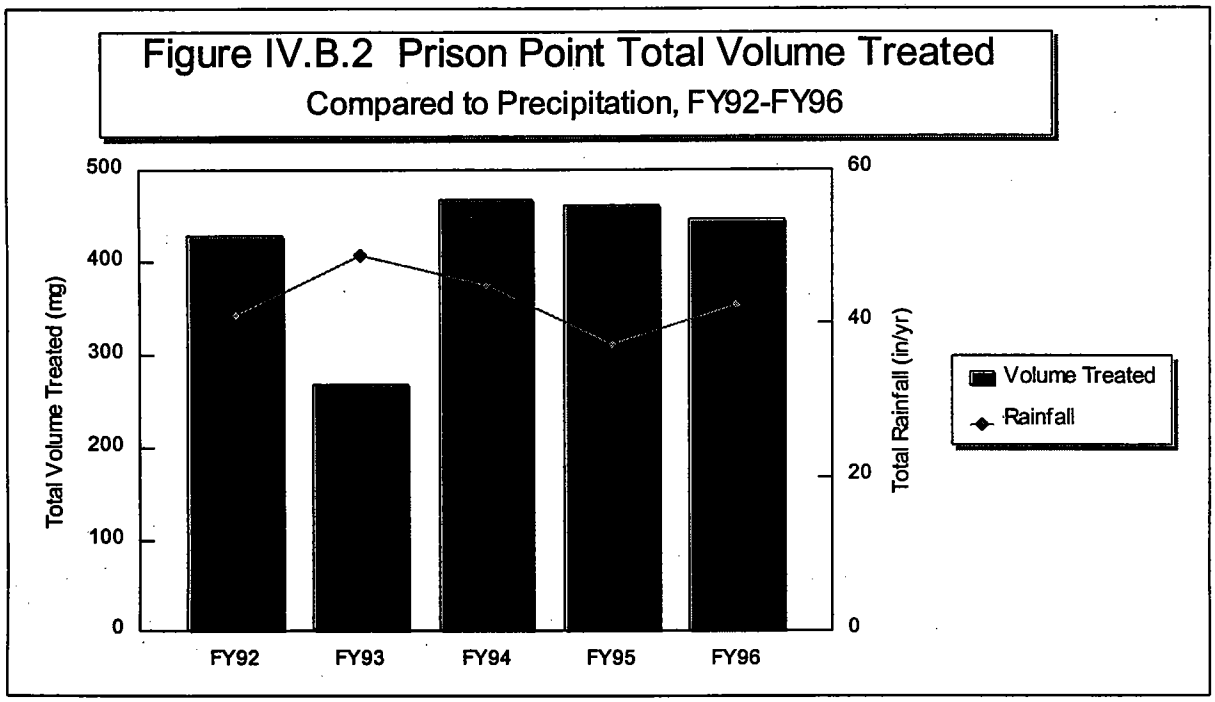
	FY96	FY95	FY94	FY93	FY92
Number of Activations	24	26	26	26	29
Total Volume Treated (mg)	445	460	449	269	429
Maximum Flow (mgd)	63	127	80	28	63
Minimum Flow (mgd)	1.24	1.63	3.01	1.63	1.00
Average Flow (mgd)	15.34	17.71	17.92	10.34	14.79
Total Rainfall (in/year)	42.55	37.47	45.00	48.82	41.18

Average flow is calculated by dividing the total volume treated by the number of days the facility activated in the fiscal year.

There has been little change in the number of activations or amount of flow at this facility in the past few years.

Figure IV.B.1 Prison Point CSO Activations, FY89-FY96





IV.B.2. Conventional Parameters

Conventional parameter data for Prison Point influent and effluent are provided in Appendix D, Tables D-1 and D-2. Like the one at Cottage Farm, this treatment facility is not designed to remove such contaminants, so the removal rates listed vary widely and are even sometimes negative.

Table IV.B.2 Prison Point CSO Influent and Effluent Characteristics, FY96

Parameter	Influent			Effluent		
	Min	Ave	Max	Min	Ave	Max
TSS	23	383	1850	17	117.7	236
BOD	15	76	235	< 10	45.39	110
Fecal Coliform (#/100 ml)				< 10	22.81	260
pH (units)				6.78		8.80

Prison Point had one NPDES violation in July, when pH was 8.8, exceeding the maximum limit of 8.5.

IV.B.3. Priority Pollutants

The results of priority pollutant testing for Prison Point can be found in Tables D-3 and D-4 of Appendix D. As at Cottage Farm, metals were the most common priority pollutants, with copper, mercury, lead, and zinc detected in all samples. Other priority pollutants were detected in some but not all samples.

Table IV.B.3 summarizes average metals concentrations in Prison Point effluent in FY96.

Table IV.B.3 Prison Point Metals, FY96

	Average Concentration (ug/L)	Times Detected
Cadmium	1.93	4 of 10
Copper	94.28	10 of 10
Mercury	0.39	10 of 10
Nickel	10.75	5 of 10
Lead	126.40	10 of 10
Zinc	266.30	10 of 10

IV.C. Somerville Marginal Combined Sewer Overflow Facility

IV.C.1. Activations

Table IV.C.1 and Figures IV.C.1 and IV.C.2 summarize activation information for the Somerville Marginal facility for FY92-FY96.

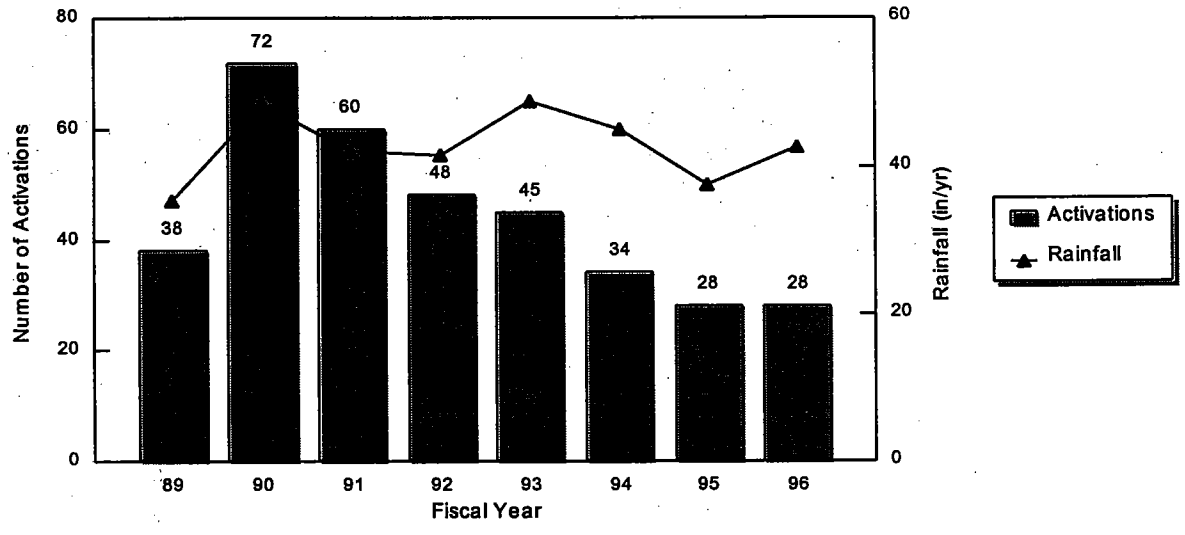
Table IV.C.1 Somerville Marginal CSO Activations Summary

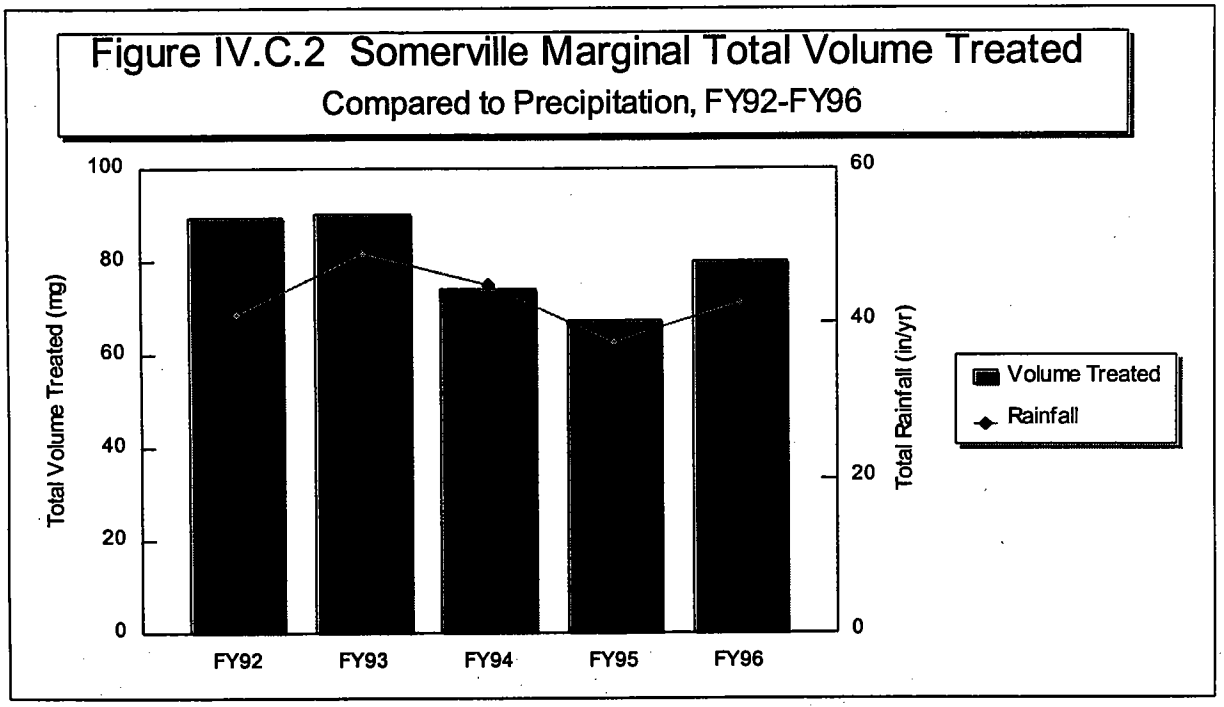
	FY96	FY95	FY94	FY93	FY92
Number of Activations	28	28	34	45	48
Total Volume Treated (mg)	80	67	74	90	89
Maximum Flow (mgd)	9	14	11	8	9
Minimum Flow (mgd)	0.25	0.16	0.01	0.10	0.00
Average Flow (mgd)	2.67	2.39	2.18	2.00	1.85
Total Rainfall (in/year)	42.55	37.40	45.00	48.82	41.18

Average flow is calculated by dividing the total volume treated by the number of days the facility activated in the fiscal year.

The volume treated at Somerville Marginal has increased over the past few years, while the number of activations has decreased. These changes are a result of increasing rainfall amount and intensity as well as changes in the operating procedures to allow for more in-line storage of flow before release.

Figure IV.C.1 Somerville Marginal CSO Activations, FY89-FY96





IV.C.2. Conventional Parameters

Somerville Marginal conventional parameter data are provided in Appendix E Tables E-1 and E-2 and summarized in Table IV.C.2. The Somerville Marginal treatment facility, like Cottage Farm and Prison Point, is not designed to remove such contaminants, so the removal rates listed vary widely and are even sometimes negative.

Table IV.C.2 Somerville Marginal CSO Influent and Effluent Characteristics, FY96

Parameter	Influent			Effluent		
	Min	Ave	Max	Min	Ave	Max
TSS	16	223	945	12	108	328
BOD	< 10	44	91	9	34	83
Fecal Coliform (#/100 ml)				< 10	18	14,000
pH (units)				6.50		8.40

There were two violations of the NPDES permit at Somerville Marginal in April. The average fecal coliform count during that month was 4673/100 mL, exceeding the limit of

1000/100 mL, and one of three measurements was 14,000/100 mL, violating the requirement that no more than 10% of samples have a fecal coliform count over 2500/100 mL.

IV.C.3. Priority Pollutants

The results of Somerville Marginal priority pollutant testing can be found in Appendix E, Tables E-3 and E-4. As at Prison Point, copper, mercury, lead, and zinc were detected in all samples, while several other priority pollutants were detected in some but not all samples.

Table IV.C.3 summarizes average metals concentrations in Somerville Marginal effluent in FY97.

Table IV.C.3 Somerville Marginal Metals, FY96

	Average Concentration (ug/L)	Times Detected
Cadmium	3.04	3 of 7
Copper	114.09	7 of 7
Mercury	0.26	7 of 7
Nickel	14.99	2 of 7
Lead	175.36	7 of 7
Zinc	435.57	7 of 7

IV.D. Constitution Beach Combined Sewer Overflow Facility

IV.D.1. Activations

Activation data for the Constitution Beach facility are summarized in Table IV.D.1 and Figures IV.D.1 and IV.D.2.

Table IV.D.1 Constitution Beach CSO Activations Summary

	FY96	FY95	FY94	FY93	FY92
Number of Activations	13	12	8	4	12
Total Volume Treated (mg)	7.94	6.80	0.69	1.57	11.00
Maximum Flow (mgd)	1.20	1.30	0.20	1.22	5.70
Minimum Flow (mgd)	0.21	0.20	0.01	0.10	0.23
Average Flow (mgd)	0.61	0.57	0.09	0.39	0.92
Total Rainfall (in/year)	42.55	37.47	45.00	48.82	41.18

Average flow is calculated by dividing the total volume treated by the number of days the facility activated in the fiscal year.

The amount of flow passing through the Constitution Beach facility has increased over the past few years, as has the number of activations. The particularly low numbers in FY93-FY94 resulted from meter malfunctions. The increases in flows and activations during the years since then have been caused by increasing rainfall intensity and by changes in in-line storage practices. Some flow data for Constitution Beach may be inaccurate because the flow meters are affected by tidal inflow.

Figure IV.D.1 Constitution Beach CSO Activations, FY90-FY96

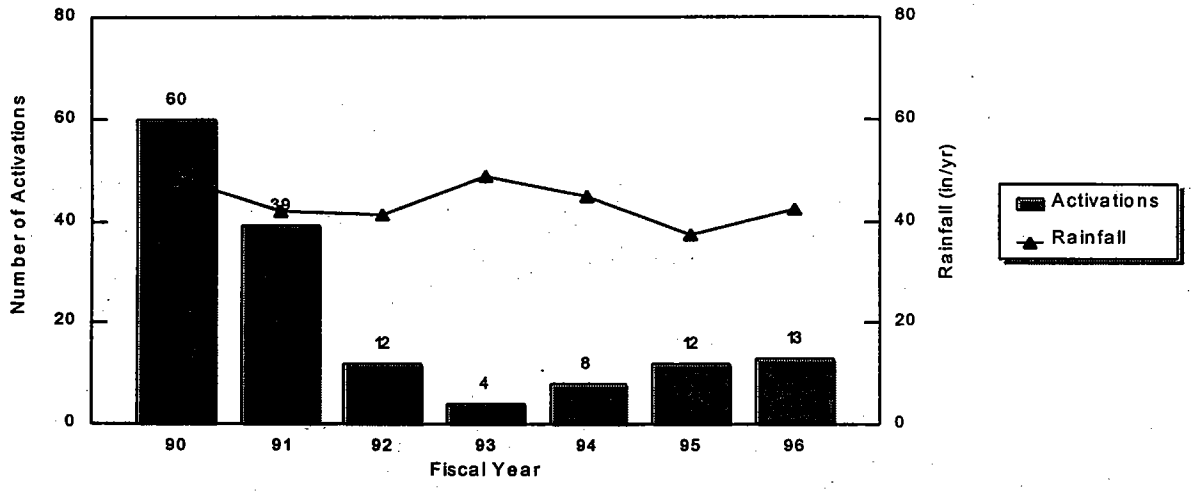
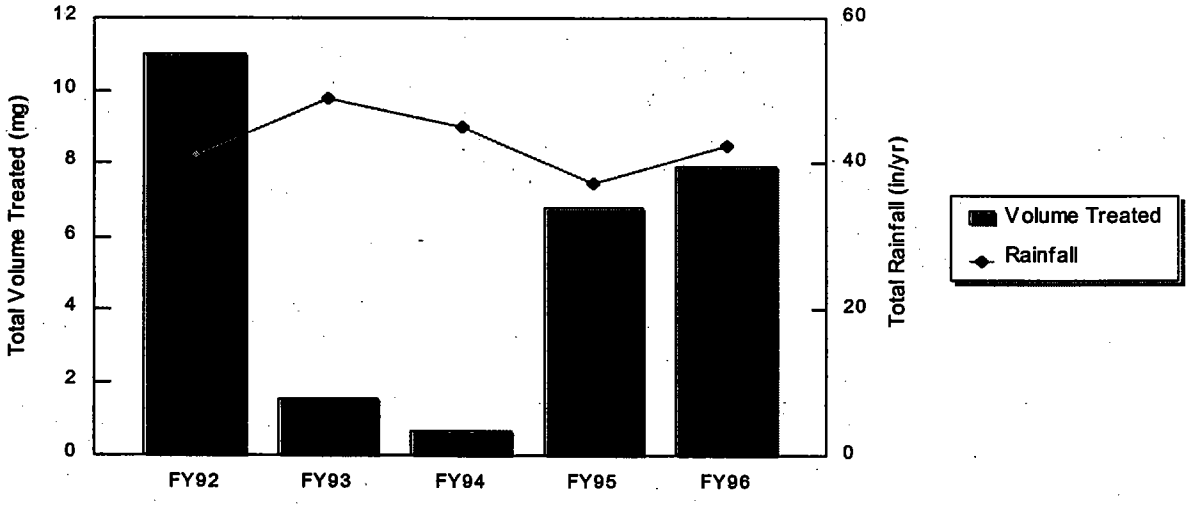


Figure IV.D.2 Constitution Beach Total Volume Treated Compared to Precipitation, FY92-FY96



IV.D.2. Conventional Parameters

Conventional parameter data for Constitution Beach are provided in Appendix F Tables F-1 and F-2 and summarized in Table IV.D.2. As with the other CSO facilities, concentrations fluctuated a good deal in both influent and effluent.

Table IV.D.2 Constitution Beach CSO Influent and Effluent Characteristics, FY96

Parameter	Influent			Effluent		
	Min	Ave	Max	Min	Ave	Max
TSS	15	107	673	10	71	302
BOD	< 7	35	156	< 10	21	53
Fecal Coliform (#/100 ml)				< 10	30	1100
pH (units)				7.10		8.37

IV.E. Fox Point Combined Sewer Overflow Facility

IV.E.1. Activations

Activation data for Fox Point are summarized in Table IV.E.1 and Figures IV.E.1 and IV.E.2.

Table IV.E.1 Fox Point CSO Activations Summary

	FY96	FY95	FY94	FY93	FY92
Number of Activations	14	4	20	21	22
Total Volume Treated (mg)	97	24	109	37	38
Maximum Flow (mgd)	17	10	12	8	5
Minimum Flow (mgd)	1.09	1.50	0.40	0.40	0.40
Average Flow (mgd)	6.90	6.00	5.19	1.76	1.73
Total Rainfall (in/year)	42.55	37.47	45.00	48.82	41.18

Average flow is calculated by dividing the total volume treated by the number of days the facility activated in the fiscal year.

The volume treated at Fox Point showed a significant increase from FY93 to FY94. The temporary drop in FY95 was due to repair work which required rerouting of flows. The number of activations has remained fairly steady except for the FY95 drop.

Figure IV.E.1 Fox Point CSO Activations, FY91-FY96

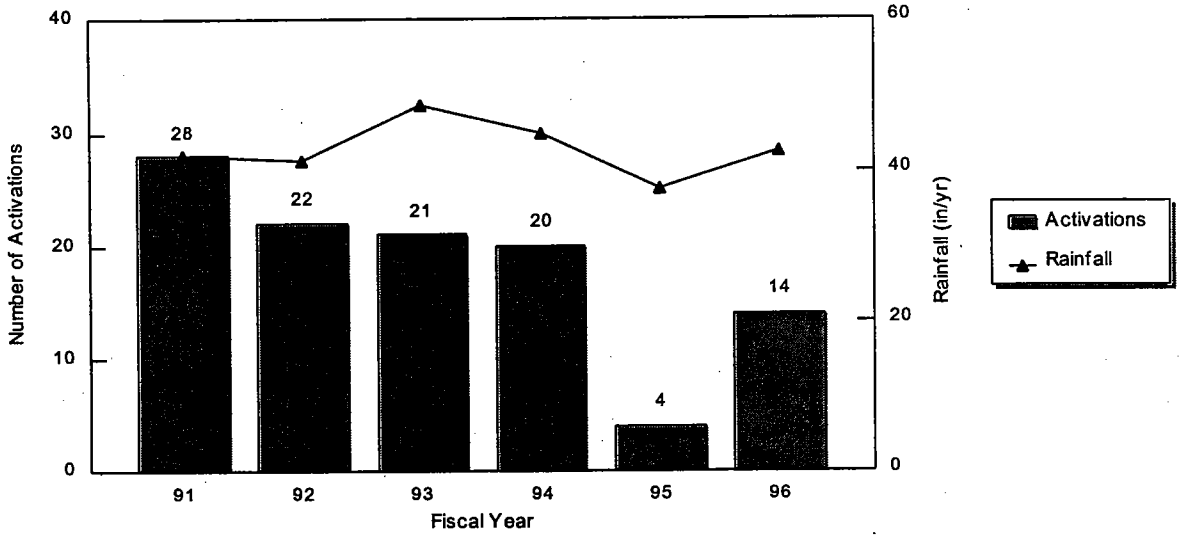
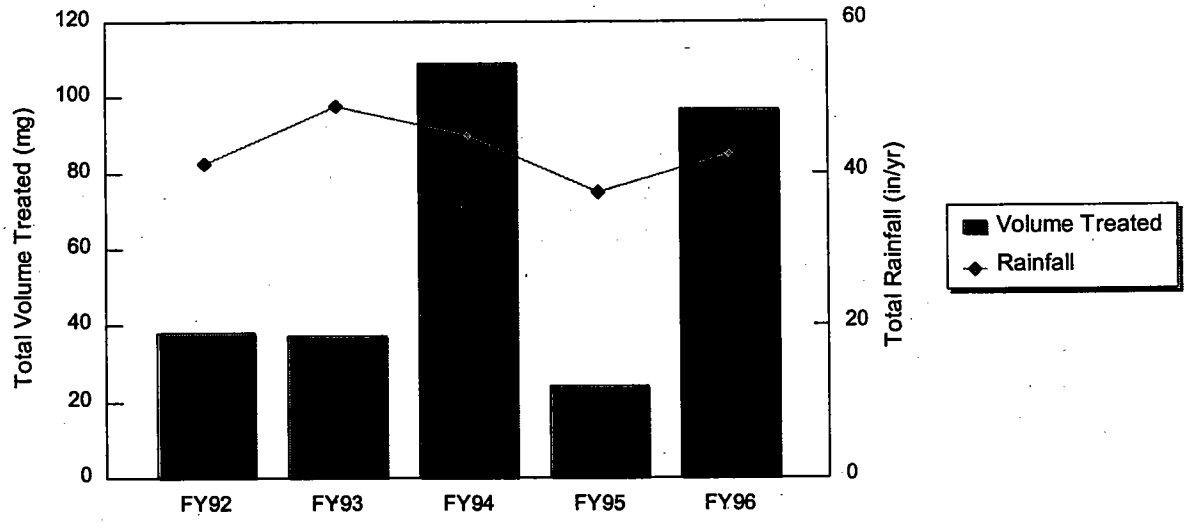


Figure IV.E.2 Fox Point Total Volume Treated Compared to Precipitation, FY92-FY96



IV.E.2. Conventional Parameters

Conventional parameter data for Fox Point are provided in Appendix G Tables G-1 and G-2 and summarized in Table IV.E.2. Again, a wide range of values was reported for both influent and effluent.

Table IV.E2 Fox Point CSO Influent and Effluent Characteristics, FY96

Parameter	Influent			Effluent		
	Min	Ave	Max	Min	Ave	Max
TSS	18	207	583	18	130	348
BOD	<21	91	400	<6	37	82
Fecal Coliform (#/100 ml)				<10	17	90
pH (units)				6.00		8.40

IV.F. Commercial Point Combined Sewer Overflow Facility

IV.F.1. Activations

Commercial Point activation data are summarized in Table IV.F.1 and Figures IV.F.1 and IV.F.2. While the number of activations at Commercial Point has decreased somewhat over the past five years, the total volume treated appears to have only fluctuated due to changes in yearly rainfall.

Table IV.F.1 Commercial Point CSO Activations Summary

	FY96	FY95	FY94	FY93	FY92
Number of Activations	13	19	25	28	33
Total Volume Treated (mg)	70	56	96	77	80
Maximum Flow (mgd)	18	17	17	10	11
Minimum Flow (mgd)	0.06	0.15	0.21	0.10	1.00
Average Flow (mgd)	4.68	2.94	3.85	2.76	2.42
Total Rainfall (in/year)	42.55	37.47	45.00	48.82	41.18

Average flow is calculated by dividing the total volume treated by the number of days the facility activated in the fiscal year.

Figure IV.F.1 Commercial Point CSO Activations, FY92-FY96

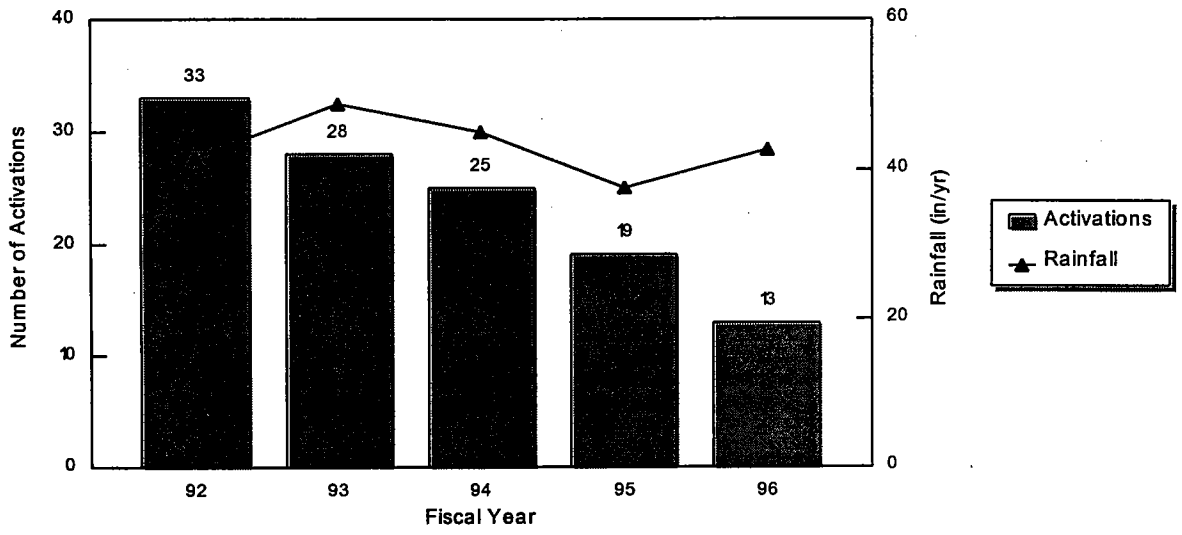
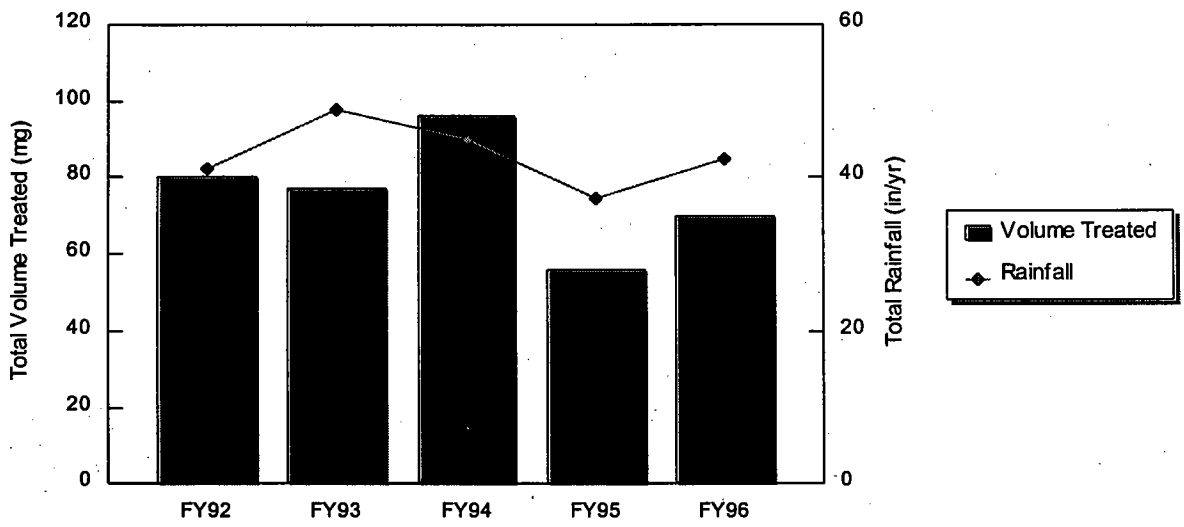


Figure IV.F.2 Commercial Point Total Volume Treated Compared to Precipitation, FY92-FY96



IV.F.2. Conventional Parameters

Commercial Point conventional parameter data are provided in Appendix H Tables H-1 and H-2 and summarized in Table IV.F.2. Again, a wide range of values was reported for both influent and effluent.

Table IV.F.2 Commercial Point CSO Influent and Effluent Characteristics, FY96

Parameter	Influent			Effluent		
	Min	Ave	Max	Min	Ave	Max
TSS	54	672	6510	18	187	1170
BOD	13	69	354	<8	41	225
Fecal Coliform (#/100 ml)				<10	36	27,000
pH (units)				6.27		9.10

V. Transport Systems

V.A. North System

V.A.1 Headworks Choking

The hours of choking at the remote headworks over the past five years are plotted in Figure V.A.1. There was a slight increase in the overall number of hours from FY95 to FY96. The majority of choking in FY95 and FY96 has been for testing and maintenance purposes. Testing and maintenance choking is generally done at night, during the hours of least flow, so there is no possibility of this kind of choking causing overflows at the CSO facilities.

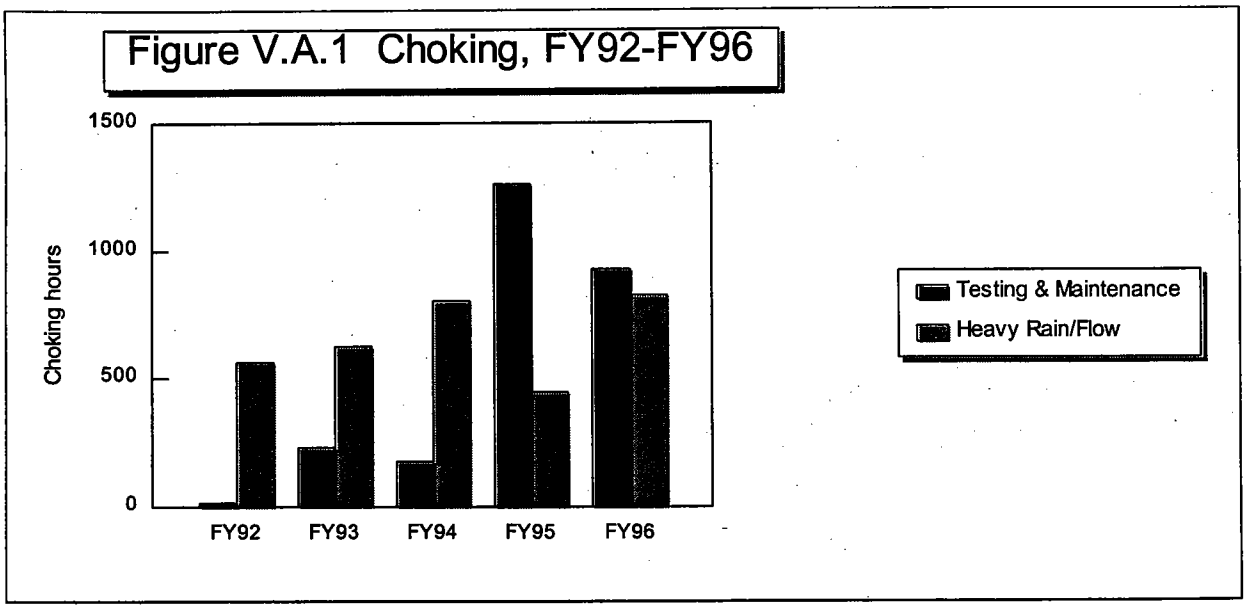
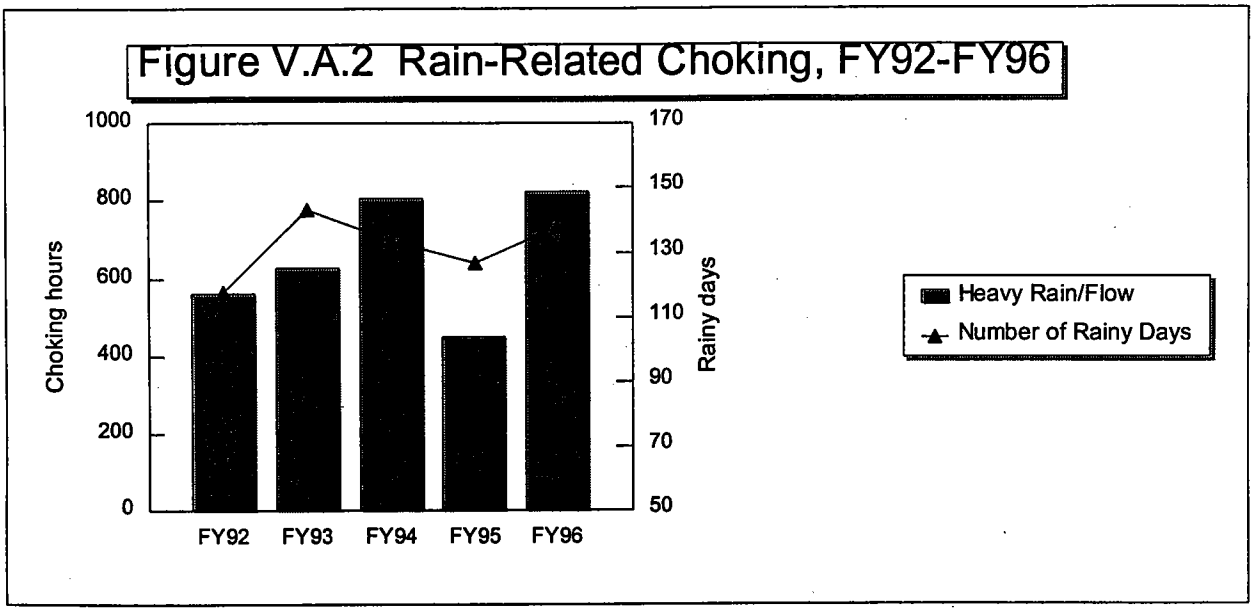
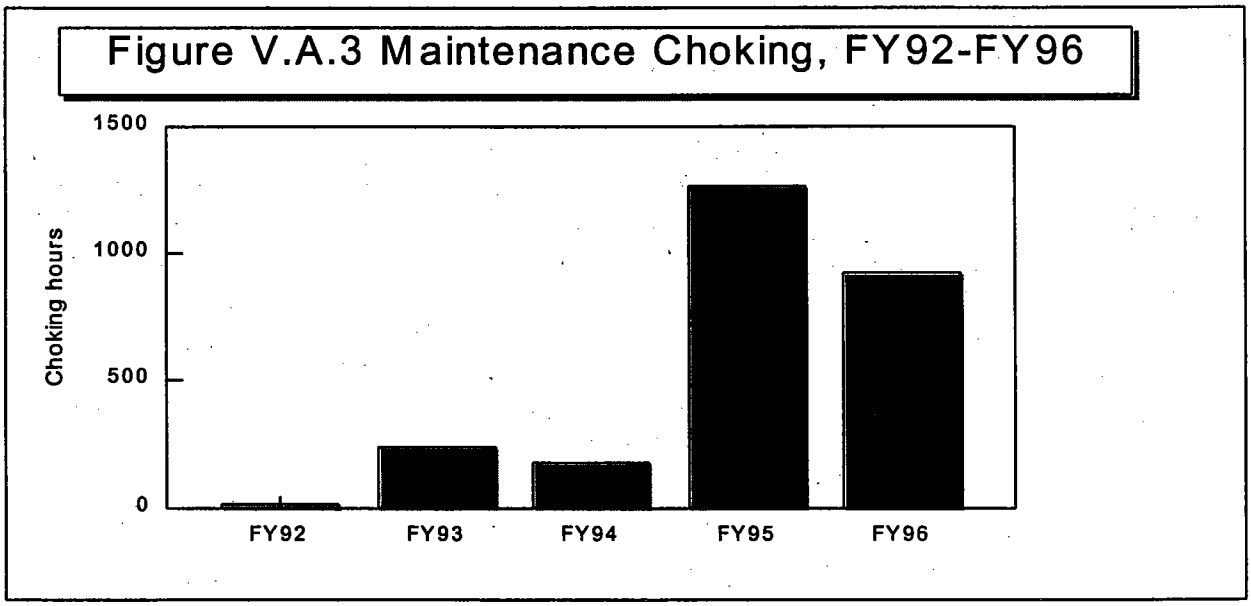


Figure V.A.2 shows the influence of the number of rainy days in a year on the hours of rain-related choking in that year. Both the number of rainy days and the hours of rain-related choking increased from FY95 to FY96.



Choking for maintenance purposes in plotted in Figure V.A.3. Maintenance choking peaked in FY95 due to the maintenance and testing involved in bringing the new primary treatment plant on line. The number of hours of maintenance-related choking continued to be high in FY96 because of maintenance and testing related to the startup of the new primary and secondary treatment plants. That number can be expected to decrease significantly once both primary and secondary treatment are fully operational.



V.A.2 Sanitary Sewer Overflows

Sanitary sewer overflows in the North System were observed visually in several locations. Table V.A.1 lists the number of recorded overflows at each location.

Table V.A.1 Sanitary Sewer Overflows, North System, FY96

Location	Number of Overflows
Section C Medford	4
Section 107 Medford	3
Section 91B Medford (Siphon)	2
Total	**9**

V.B. South System

V.B.1 Sanitary Sewer Overflows

Sanitary sewer overflows were also monitored visually in the South System. Table V.B.1 lists the observed overflows in this system.

Table V.B.1 Sanitary Sewer Overflows, South System, FY96

Location	Number of Overflows
Section 126 Weymouth Smelt Brook	4
Section 126 Weymouth (Manhole)	2
Section 128 Braintree (Siphon)	1
Norwood Overlook Dr.	3
Total	**10**

Appendix A

Table A-1 Deer Island Treatment Plant Operations Summary, Fiscal Year 1996

Table A-2 Deer Island Influent Characterization, Fiscal Year 1996

Table A-3 Deer Island Influent Loadings, Fiscal Year 1996

Table A-4 Deer Island Effluent Characterization, Fiscal Year 1996

Table A-5 Deer Island Effluent Loadings, Fiscal Year 1996

Appendix A Table A-1 Deer Island Treatment Plant Operations Summary, Fiscal Year 1996

	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Dec-96 MIN VALUE	Dec-96 AVE VALUE	Dec-96 MAX VALUE
INFLUENT															
FLOW (MGD)															
AVERAGE	196	185	190	229	271	220	316	293	293	328	261	217		250	
MINIMUM	173	147	161	176	218	174	191	220	249	247	187	192	147		
MAXIMUM	245	239	358	389	440	331	526	424	384	517	343	280			526
TEMP (DEG F)															
AVERAGE	70.3	72.1	69.3	68.1	63.7	60.2	56.5	55.5	54.6	57.1	62	66.9		63.0	
MINIMUM	61.6	70.7	68.7	60.8	55.8	56.8	51.8	51.4	50.9	53.7	56.7	64	50.9		70.7
MAXIMUM	73.4	73.6	73.2	70	68.2	62.8	61.5	58.3	57	61	67.1	70			
pH (units)															
MINIMUM	6.2	6.5	6.6	6.7	6.6	6.6	6.5	6.5	6.4	6.5	6.6	6.5	6.2		
MAXIMUM	7.1	7.7	6.9	7.1	7.0	6.9	7.0	6.9	7.1	7.0	6.9	7.1			7.7
CONVENTIONAL PARAMETERS (mg/L)															
SETTLEABLE SOLIDS (ml/L)															
AVERAGE	5.9	9.5	8.8	6.4	7.6	6.9	6.0	6.1	6.3	6.8	6.7	7.4		7.0	
MINIMUM	2.5	2.9	2.5	1.5	4.0	0.1	2.5	1.5	1.0	4.0	4.2	5.0	0.1		
MAXIMUM	9.0	16.0	17.0	11.0	18.0	12.0	11.0	15.6	15.0	11.0	9.6	16.0			18.0
VSS															
AVERAGE	128	142	145	119	113	118	107	101	102	107	118	138		120	
MINIMUM	76	66	70	62	82	62	54	70	64	72	82	100	54		
MAXIMUM	236	214	316	186	180	174	184	142	166	146	226	194			316
TSS															
AVERAGE	153	166	171	141	131	135	126	118	119	127	135	161		140	
MINIMUM	82	76	82	82	85	76	56	86	66	84	92	112	56		
MAXIMUM	313	246	432	250	200	208	250	196	186	178	244	276			432
BOD															
AVERAGE	147	181	187	151	137	150	123	121	119	118	130	152		143	
MINIMUM	105	105	130	80	81	97	61	86	86	84	101	113	61		
MAXIMUM	189	242	246	186	169	220	190	177	159	186	155	198			246
COD															
AVERAGE	381	439	411	363	321	385	305	285	261	281	313	385		344	
MINIMUM	293	268	119	207	214	287	168	222	45	184	248	258	45		
MAXIMUM	493	614	623	469	405	636	490	388	362	378	381	589			636
OIL & GREASE															
AVERAGE	32.4	35.7	33.1	37.8	36.6	50.6	33.5	29.6	24.4	26.6	27.6	34.9		33.57	
MINIMUM	29.3	26.4	27.1	30.2	30.2	42.0	16.8	25.1	14.0	9.6	13.5	23.1	9.60		
MAXIMUM	37.6	44.3	41.0	45.8	41.5	61.6	62.5	33.5	46.2	67.3	35.6	46.8			67.30

	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN VALUE	AVE VALUE	MAX VALUE
CONVENTIONAL PARAMETERS (cont)															
CHLORIDE															
AVERAGE	863	820	750	569	506	715	558	488	464	401	426	526		590	
MINIMUM	471	528	242	256	253	281	233	281	233	283	342	356	233		
MAXIMUM	1370	1480	1090	1106	819	1280	936	998	685	627	675	813			1480
T COLIFORM (col/100mL)															
GEO MEAN (E+06)	52.0	50.7	56.5	47.8	33.3	27.6	10.0	8.8	8.6	12.0	24.7	51.5		25.5	
MINIMUM (E+06)	29.2	22.2	24.0	14.0	6.0	13.0	2.0	3.1	4.6	5.6	20.0	37.5	2.0		
MAXIMUM (E+06)	99.0	83.0	94.0	96.0	65.0	53.0	37.3	17.1	18.2	17.8	40.0	65.0			99.0
F COLIFORM (col/100mL)															
GEO MEAN (E+06)	5.7	6.0	5.3	4.1	1.9	1.7	0.7	0.6	0.5	0.5	1.4	3.2		1.8	
MINIMUM (E+06)	3.2	2.0	0.9	0.9	0.1	0.4	0.1	0.2	0.1	0.1	1.0	1.9	0.1		
MAXIMUM (E+06)	13.3	17.6	12.2	9.4	6.0	3.6	2.0	1.3	1.0	1.6	3.0	4.3			17.6
NUTRIENTS (mg/L)															
TKN															
AVERAGE	24.90	29.50	30.95	30.95	24.26	37.63	27.96	19.80	19.60	15.91	24.54	29.40		26.28	
MINIMUM	24.90	24.40	28.30	29.70	14.14	27.20	17.10	17.60	14.30	11.60	18.95	25.20	11.60		
MAXIMUM	24.90	35.40	35.00	32.20	37.90	56.30	35.60	21.30	22.30	23.00	27.50	32.20			56.30
AMMONIA															
AVERAGE	18.14	19.03	20.90	19.50	13.06	16.28	11.99	11.62	9.57	10.58	12.90	16.35		14.99	
MINIMUM	16.00	15.90	18.70	17.60	7.19	15.00	6.82	9.05	7.43	7.44	10.45	14.80	6.82		
MAXIMUM	19.60	22.40	24.00	22.10	16.70	17.60	17.20	13.70	11.70	13.80	15.35	17.80			24.00
NITRATES															
AVERAGE	0.02	0.02	0.03	0.02	0.21	0.02	0.61	0.16	0.59	0.01	0.02	0.01		0.14	
MINIMUM	0.02	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.30	0.01	<0.01	0.01	0.01		
MAXIMUM	0.02	0.02	0.03	0.04	1.01	0.03	1.42	0.30	0.96	0.01	0.08	0.01			1.42
NITRITES															
AVERAGE	0.01	0.01	0.01	0.01	0.05	0.01	0.11	0.11	0.16	0.01	0.38	0.01		0.07	
MINIMUM	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.06	0.16	0.01	0.04	0.01	0.01		
MAXIMUM	0.01	0.01	0.01	0.01	0.22	0.01	0.21	0.16	0.17	0.01	1.66	0.01			1.66
ORTHOPHOSPHORUS															
AVERAGE	2.48	2.46	2.69	2.46	1.26	1.07	0.54	0.39	0.91	0.67	1.31	2.13		1.53	
MINIMUM	2.11	1.99	2.31	2.09	0.35	0.73	0.32	0.39	0.65	0.29	0.75	2.04	0.29		
MAXIMUM	2.84	2.79	3.19	2.80	2.10	1.98	0.75	0.39	1.12	1.27	1.54	2.22			3.19
TOTAL PHOSPHORUS															
AVERAGE	3.87	4.05	4.42	4.08	3.16	3.62	2.72	2.91	2.16	2.84	3.34	3.85		3.42	
MINIMUM	3.40	2.45	3.91	3.60	2.03	3.26	1.54	2.42	1.70	2.15	2.55	3.63	1.54		
MAXIMUM	4.29	4.85	4.69	4.64	4.09	4.02	3.93	3.18	2.62	3.48	3.99	4.21			4.85
TPH (GCFID)															
AVERAGE	ND	ND	ND	0.34	0.50	1.01	0.35	1.62	0.88	0.90	0.86	1.11		0.84	
MINIMUM	ND	ND	ND	0.19	0.18	0.63	0.09	0.28	0.12	0.31	0.55	0.93	0.09		
MAXIMUM	ND	ND	ND	0.63	0.78	1.40	0.70	3.70	2.30	2.60	1.20	1.30			3.70

	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN VALUE	AVE VALUE	MAX VALUE
EFFLUENT															
pH (units)															
MINIMUM	6.6	6.6	6.7	6.8	6.8	6.8	6.6	6.9	6.5	6.5	6.9	6.6	6.50		
MAXIMUM	7	6.9	7.6	7.2	7.7	7.1	7.2	7.3	7.5	7.3	7.3	7.2			7.70
CONVENTIONAL PARAMTERS (mg/L)															
SETTLEABLE SOLIDS (ml/L)															
AVERAGE	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.1	0.2	0.2	0.2	0.2		0.2	
MINIMUM	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
MAXIMUM	0.5	1.0	0.4	0.4	0.5	0.6	2.0	0.5	0.4	0.2	0.6	1.0			2.0
VSS															
AVERAGE	43.9	41.4	42.6	40.4	32.9	35.6	32.5	33.8	30.8	28.6	34.6	31.8		35.7	
MINIMUM	34	32	32	25	22	19	16	21	20	14	19	20	14.0		
MAXIMUM	106	62	96	68	68	48	51	58	46	42	62	52			106.0
TSS															
AVERAGE	55	50	52	50	40	43	42	43	38	36	41	40		44	
MINIMUM	40	30	36	32	22	21	20	25	24	17	20	24	17		
MAXIMUM	136	78	116	94	70	66	72	66	56	54	72	66			136
BOD															
AVERAGE	108	124	129	114	94	101	77	84	78	73	86	102		98	
MINIMUM	69	87	100	61	58	73	42	70	66	48	58	81	42		
MAXIMUM	147	141	145	143	119	128	120	105	89	99	117	140			147
COD															
AVERAGE	306	286	286	267	224	258	209	202	187	178	207	243		238	
MINIMUM	197	107	103	168	136	209	128	168	150	126	157	361	103		
MAXIMUM	985	338	413	328	271	299	294	256	208	239	292	131			985
OIL & GREASE															
AVERAGE	29.4	27.7	23.5	30.3	26.0	37.7	16.8	26.0	20.9	14.7	15.5	23.6		24.3	
MINIMUM	27.2	21.2	13.1	24.3	20.6	34.5	7.0	23.2	18.0	9.4	10.4	13.4	7.0		
MAXIMUM	30.9	35.0	30.1	37.4	31.2	41.6	25.6	29.0	24.8	22.0	25.4	36.7			41.6
CHLORIDE															
AVERAGE	964	973	982	698	602	814	689	588	589	527	521	629		714.55	
MINIMUM	540	729	568	436	293	414	358	444	326	355	412	428	293.00		
MAXIMUM	1460	1525	1310	1080	896	1470	1060	1080	875	732	609	873			1525.00
T COLIFORM (col/100mL)															
GEO MEAN	326	100	203	38	80	92	177	239	134	149	180	342		146	
MINIMUM	14	5	22	5	6	10	11	16	6	18	13	19	5		
MAXIMUM	23244	2700	23962	2399	62902	23209	8039	3748	659	1224	10365	8759			62902
F COLIFORM (col/100mL)															
GEO MEAN	10	6	9	7	7	7	6	5	5	7	9	6		7	
MINIMUM	5	4	5	5	4	5	5	5	5	5	5	5	4		
MAXIMUM	1182	29	468	422	278	585	102	7	11	35	311	14			1182

	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN VALUE	AVE VALUE	MAX VALUE
CONVENTIONAL PARAMETERS (cont)															
CHLORINE RESIDUAL															
AVERAGE	3.3	6.0	3.1	4.4	4.2	3.7	2.5	8.7	2.6	2.6	3.4	3.3		4.0	
MINIMUM	1.4	1.9	1.6	2.3	2.3	1.7	1.7	2.2	1.8	1.8	1.8	2.3	1.4		
MAXIMUM	9.0	28.9	5.3	7.2	7.5	7.4	4.3	168.9	3.7	3.9	5.0	5.0			168.9
NUTRIENTS (mg/L)															
TKN															
AVERAGE	32.50	23.80	28.70	25.60	20.10	23.65	18.98	17.27	17.25	16.65	20.58	24.53		22.47	
MINIMUM	32.50	23.80	28.70	25.60	13.00	22.40	10.60	15.70	14.80	13.00	16.80	17.10	10.60		
MAXIMUM	32.50	23.80	28.70	25.60	26.20	25.40	25.20	18.50	18.90	19.30	22.70	28.70			32.50
AMMONIA															
AVERAGE	17.40	18.20	21.90	18.75	13.06	15.75	11.73	10.28	9.69	9.31	12.18	15.45		14.48	
MINIMUM	17.40	18.20	21.90	17.70	5.90	14.70	5.92	9.56	7.07	5.55	10.30	13.60	5.55		
MAXIMUM	17.40	18.20	21.90	19.80	17.60	16.50	16.90	11.00	12.30	13.20	14.40	17.20			21.90
NITRATES															
AVERAGE	0.08	0.08	0.03	0.05	0.42	0.01	0.81	0.89	0.42	0.74	0.03	0.02		0.30	
MINIMUM	0.08	0.08	0.03	0.05	0.01	0.01	0.01	0.46	0.01	0.10	<0.01	0.01	<0.01		
MAXIMUM	0.08	0.08	0.03	0.05	1.95	0.02	1.81	1.32	1.04	1.80	0.12	0.04			1.95
NITRITES															
AVERAGE	0.45	1.14	0.69	0.02	0.22	0.22	0.66	0.41	0.47	0.58	1.66	1.03		0.63	
MINIMUM	0.45	1.14	0.69	0.02	0.01	0.03	0.37	0.50	0.53	0.08	1.44	0.47	0.01		
MAXIMUM	0.45	1.14	0.69	0.02	0.38	0.29	1.20	0.33	0.42	1.08	1.90	1.80			1.90
ORTHOPHOSPHORUS															
AVERAGE	2.53	2.63	3.01	2.54	1.38	1.13	0.64	0.45	1.24	1.10	1.55	2.30		1.71	
MINIMUM	2.53	2.63	3.01	2.54	0.39	0.76	0.37	0.45	1.03	0.65	1.16	2.25	0.37		
MAXIMUM	2.53	2.63	3.01	2.54	2.26	2.09	0.91	0.45	1.35	1.65	1.91	2.34			3.01
TOTAL PHOSPHORUS															
AVERAGE	3.14	3.85	4.13	3.46	2.54	3.08	2.30	2.27	2.17	2.08	2.79	3.28		2.92	
MINIMUM	3.14	3.85	4.13	3.46	1.50	2.88	1.58	2.03	1.85	1.43	2.21	2.88	1.43		
MAXIMUM	3.14	3.85	4.13	3.46	3.38	3.46	3.13	2.50	2.49	2.70	3.14	3.51			4.13
TPH (PHIR)															
AVERAGE	2.88	ND	3.24	11.38	2.21	1.48	7.93	2.02	1.48	0.25	0.49	2.08		3.22	
MINIMUM	1.70	ND	1.90	1.70	1.00	1.00	1.10	1.00	1.00	<1.00	<1.0	1.41	1.00		
MAXIMUM	4.80	ND	4.90	34.00	6.50	1.80	44.00	2.80	2.30	1.02	1.68	2.79			44.00
TPH (GCFID)															
AVERAGE	1.04	ND	0.35	0.34	0.50	1.01	0.35	1.62	0.88	0.90	0.86	1.19		0.82	
MINIMUM	0.18	ND	0.15	0.19	0.18	0.63	0.09	0.28	0.12	0.31	0.61	0.75	0.09		
MAXIMUM	1.90	ND	0.54	0.63	0.78	1.40	0.70	3.70	2.30	2.60	1.20	1.40			3.70
REMOVAL EFFICIENCIES (%)															
SS	96.6	97.9	97.7	96.9	97.4	97.1	95.0	98.4	96.8	97.1	97.0	97.3	95.00	97.09	98.36
VSS	65.8	70.9	70.7	66.1	70.9	69.9	69.6	66.4	69.7	73.2	70.8	76.9	65.81	70.07	76.92

	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN VALUE	AVE VALUE	MAX VALUE
REMOVAL EFFICIENCIES (CONT)															
TSS	63.9	69.9	69.9	64.8	69.4	67.9	67.0	63.9	68.1	71.9	69.4	75.3	63.87	68.45	75.26
BOD	26	31	31	24	31	32	37	31	34	38	34	33	24.04	32.03	38.43
COD	19.8	34.9	30.4	26.3	30.2	33.0	31.3	29.2	28.5	36.6	34.0	36.8	19.78	30.91	36.84
OIL & GREASE	9.3	22.4	29.0	19.8	29.0	25.5	49.9	12.2	14.3	44.7	43.8	32.4	9.26	27.69	49.85
TKN	NR	19.3	7.3	17.3	17.1	37.2	32.1	12.8	12.0	NR	16.1	16.6	0.00	18.78	37.15
TOTAL PHOSPHORUS	18.8	5.0	6.6	15.1	19.6	14.9	15.2	22.3	NR	26.9	16.5	14.8	0.00	15.97	26.94

NOTES:
1. Data reduced from Deer Island Treatment Plant Monthly Operation Logs. All chemical analyses were conducted by Deer Island Central Laboratory.
2. Concentration expressed in mg/L unless otherwise noted
3. ND No data
4. NR No removal observed

Appendix A Table A-2 Deer Island Influent Characterization, Fiscal Year 1996

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	SUMMARY AVG	SUMMARY MAX	TIMES DETECTED
Metals (ug/L)																
Antimony	< 5.00	< 5.00	< 5.00	< 80.00	< 80.00	< 80.00	< 80.00	< 25.00	< 25.00	< 27.06	< 25.00	< 25.00	< 5.00	21.26	< 80.00	0 of 33
Arsenic	< 2.00	**1.51**	**3.00**	**2.00**	**2.45**	< 2.20	< 2.20	< 2.20	**1.47**	< 2.20	**2.08**	**1.94**	< 2.00	1.63	3.00	12 of 33
Beryllium	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	**0.71**	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	0.52	0.71	1 of 33
Boron	**435**	**310**	**281**	**248**	< 300	< 300	**194**	**349**	< 300	< 300	< 300	**321**	< 300	221	435	12 of 33
Cadmium	< 1.00	< 1.00	< 1.00	< 5.00	< 5.00	< 5.00	< 5.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 1.00	1.48	< 5.00	0 of 33
Chromium	**10.00**	**17.66**	**7.53**	**6.89**	**4.84**	< 7.00	< 7.00	**4.31**	**4.76**	**13.17**	**4.55**	**9.63**	< 7.00	6.97	17.66	24 of 33
Hexavalent Chromium	< 5.00	< 5.00	< 5.00	< 5.00	< 11.00	< 11.00	< 11.00	< 11.00	< 11.00	< 11.00	< 11.00	< 11.00	< 5.00	4.97	< 11.00	0 of 30
Copper	**96**	**89**	**94**	**87**	**76**	**68**	**62**	**68**	**63**	**66**	**63**	**104**	62	75	104	34 of 34
Iron	ND	ND	ND	ND	**1714**	**1111**	**1298**	**1489**	**1349**	**1655**	**1518**	**1792**	1111	1506	1792	24 of 24
Lead	**14.04**	**17.00**	**16.79**	**12.29**	**24.65**	**7.62**	**14.80**	**13.35**	**13.51**	**14.85**	**16.30**	**14.64**	7.62	15.26	24.65	33 of 33
Mercury	**0.25**	**0.50**	**0.41**	**0.31**	**0.21**	**0.10**	**0.13**	**0.14**	**0.25**	**0.20**	**0.35**	**0.45**	0.10	0.25	0.50	33 of 35
Molybdenum	**26.46**	**21.49**	**21.05**	**22.47**	< 14.00	< 14.00	**15.37**	**8.41**	**5.89**	**6.87**	**9.71**	**25.71**	< 14.00	12.71	26.46	23 of 33
Nickel	**16.02**	< 12.00	< 12.00	< 20.00	< 20.00	< 20.00	< 20.00	**2.09**	**5.53**	**7.24**	**4.71**	**6.07**	< 12.00	7.50	16.02	13 of 33
Selenium	< 2.00	< 2.00	< 2.00	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.00	1.09	< 2.20	0 of 33
Silver	< 3.00	**3.00**	**6.95**	**6.34**	**4.20**	**4.39**	**3.29**	**4.29**	**3.16**	**2.72**	**3.05**	**7.31**	< 3.00	4.07	7.31	28 of 33
Thallium	< 2.00	< 2.00	< 2.00	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.00	1.09	< 2.20	0 of 33
Zinc	**120**	**103**	**105**	**129**	**173**	**73**	**103**	**79**	**90**	**100**	**84**	**116**	73	107	173	34 of 34
Cyanide and Total Phenols (ug/L)																
Cyanide	< 10.00	< 10.00	**7.37**	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	**7.09**	< 10.00	< 10.00	< 10.00	5.37	7.37	2 of 33
Total Phenols	ND	ND	ND	5.75	5.19	**8.64**	**44.28**	**31.23**	**37.71**	**40.96**	**17.63**	**28.24**	5.19	24.82	44.28	23 of 27
Oil and Grease, Petroleum Hydrocarbons, and Surfactants (mg/L)																
Oil and Grease	**31.51**	**32.91**	**54.16**	**28.74**	**18.75**	**29.46**	**28.63**	**18.72**	**16.54**	**15.92**	**22.60**	**28.07**	15.92	24.45	54.16	32 of 33
PHC-IR	**0.53**	**1.40**	**0.39**	**0.57**	**0.42**	**0.62**	**0.50**	**1.75**	**0.42**	**0.64**	**0.72**	**1.11**	0.39	0.73	1.75	33 of 33
TPH-FID	ND	ND	ND	**13.79**	**0.87**	**0.67**	**2.19**	**1.41**	**0.94**	**0.95**	**0.60**	**2.70**	0.60	2.43	13.79	19 of 27
Surfactants	**5.00**	**5.25**	**4.80**	**4.57**	**2.78**	**4.13**	**3.32**	**3.49**	**3.09**	**2.03**	**2.61**	**4.68**	2.03	3.39	5.25	31 of 31
Organochlorine Pesticides and PCBs (ug/L)																
4,4'-DDD	< 0.10	< 0.60	**0.05**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.05	1 of 33
4,4'-DDE	< 0.10	< 0.60	**0.03**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	**0.01**	< 0.10	< 0.10	< 0.10	0.01	0.03	2 of 33
4,4'-DDT	< 0.10	< 0.60	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	**0.02**	< 0.10	< 0.10	< 0.10	0.01	0.02	1 of 33
Aldrin	< 0.10	< 0.30	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	**0.01**	< 0.10	< 0.10	< 0.10	0.01	0.01	1 of 33
a-BHC	< 0.10	**0.05**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.05	1 of 33
a-Chlordane	ND	ND	ND	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	**0.04**	< 0.10	< 0.10	< 0.10	0.01	0.04	2 of 27
b-BHC	< 0.10	< 0.30	**0.03**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.03	1 of 33
Chlordane (Technical)	< 0.50	< 0.30	< 0.20	< 1.10	< 1.20	< 1.20	< 1.00	< 1.10	< 1.00	< 1.10	< 1.00	< 1.00	< 0.20	0.11	< 1.20	0 of 33
d-BHC	< 0.10	< 0.30	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.30	0 of 33

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	AVG	MAX	TIMES DETECTED
Organochlorine Pesticides and PCBs (ug/L)																
Dieldrin	< 0.10	**0.10**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.10	1 of 33
Endosulfan I	< 0.10	< 0.30	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.30	0 of 33
Endosulfan II	< 0.10	< 0.60	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.60	0 of 33
Endosulfan Sulfate	< 0.10	< 0.60	**0.04**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.04	1 of 33
Endrin	< 0.10	< 0.60	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.60	0 of 33
Endrin Aldehyde	< 0.10	< 0.60	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.60	0 of 33
Endrin Ketone	ND	ND	ND	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 27
g-BHC (Lindane)	**0.05**	**0.04**	**0.05**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.05	4 of 33
g-Chlordane	ND	ND	ND	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	**0.04**	< 0.10	< 0.10	< 0.10	0.01	0.04	2 of 27
Heptachlor	**0.13**	< 0.30	**0.02**	**0.13**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.02	0.13	3 of 33
Heptachlor Epoxide	< 0.10	< 0.30	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.30	0 of 33
Methoxychlor	**0.25**	< 3.00	< 0.50	< 0.60	< 0.60	< 0.60	< 0.50	< 0.50	**0.06**	**0.91**	< 0.50	< 0.50	0.05	0.18	0.91	3 of 33
Toxaphene	< 5.00	< 29.60	< 5.00	< 1.10	< 1.20	< 1.20	< 1.00	< 1.10	< 1.00	< 1.10	< 1.00	< 1.00	< 1.00	0.27	< 29.60	0 of 33
Aroclor 1016	< 1.00	< 6.10	< 1.00	< 1.10	< 1.20	< 1.20	< 1.00	< 1.10	< 1.00	< 1.10	< 1.00	< 1.00	< 1.00	0.13	< 6.10	0 of 33
Aroclor 1221	< 2.00	< 11.80	< 2.00	< 2.20	< 2.40	< 2.40	< 2.10	< 2.20	< 2.10	< 2.10	< 2.10	< 2.10	< 2.00	0.26	< 11.80	0 of 33
Aroclor 1232	< 1.00	< 6.10	< 1.00	< 1.10	< 1.20	< 1.20	< 1.00	< 1.10	< 1.00	< 1.10	< 1.00	< 1.00	< 1.00	0.13	< 6.10	0 of 33
Aroclor 1242	< 1.00	< 6.10	< 1.00	< 1.10	< 1.20	< 1.20	< 1.00	< 1.10	< 1.00	< 1.10	< 1.00	< 1.00	< 1.00	0.13	< 6.10	0 of 33
Aroclor 1248	< 1.00	< 6.10	< 1.00	< 1.10	< 1.20	< 1.20	< 1.00	< 1.10	< 1.00	< 1.10	< 1.00	< 1.00	< 1.00	0.13	< 6.10	0 of 33
Aroclor 1254	< 1.00	< 6.10	< 1.00	< 1.10	< 1.20	< 1.20	< 1.00	< 1.10	< 1.00	< 1.10	< 1.00	< 1.00	< 1.00	0.13	< 6.10	0 of 33
Aroclor 1260	< 1.00	< 6.10	< 1.00	< 1.10	< 1.20	< 1.20	< 1.00	< 1.10	< 1.00	< 1.10	< 1.00	< 1.00	< 1.00	0.13	< 6.10	0 of 33
Semivolatile Organics (ug/L)																
1,2-dichlorobenzene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
1,2-diphenylhydrazine	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	**1.70**	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.19	1.70	1 of 34
1,2,4-trichlorobenzene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
1,3-dichlorobenzene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 14.00	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.18	< 21.00	0 of 34
1,4-dichlorobenzene	< 21.00	< 20.00	< 10.00	< 11.30	**1.12**	< 10.00	< 11.40	< 14.00	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.19	< 21.00	1 of 34
2-chloronaphthalene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
2-chlorophenol	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 14.00	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.18	< 21.00	0 of 34
2-methylnaphthalene	< 21.00	< 20.00	< 10.00	< 11.30	**1.18**	< 10.00	**1.45**	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.19	1.45	3 of 34
2-methylphenol	< 21.00	< 20.00	< 10.00	**6.76**	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.55	6.76	1 of 34
2-nitroaniline	< 52.00	< 50.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.42	< 52.00	0 of 34
2-nitrophenol	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
2,2'-oxybis(1-chloropropane)	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
2,4-dichlorophenol	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
2,4-dimethylphenol	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
2,4-dinitrophenol	< 52.00	< 50.00	< 48.90	< 56.70	< 52.40	< 50.00	< 55.80	< 21.10	< 20.50	< 20.20	< 20.20	< 21.40	< 20.20	3.65	< 56.70	0 of 34
2,4-dinitrotoluene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
2,4,5-trichlorophenol	< 52.00	< 50.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.42	< 52.00	0 of 34
2,4,6-trichlorophenol	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	AVG	MAX	TIMES DETECTED
Semivolatile Organics (ug/L)																
2,6-dinitrotoluene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
3-nitroaniline	< 52.00	< 50.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.42	< 52.00	0 of 34
3,3'-dichlorobenzidine	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
4-bromophenyl phenyl ether	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
4-chloro-3-methylphenol	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
4-chloroaniline	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
4-chlorophenyl phenyl ether	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
4-methylphenol	**39.94**	**57.32**	**25.15**	**12.94**	**9.53**	**26.90**	**20.29**	**6.01**	**14.62**	**8.39**	**6.76**	**27.60**	6.01	17.39	57.32	29 of 34
4-nitroaniline	< 52.00	< 50.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.42	< 52.00	0 of 34
4-nitrophenol	< 52.00	< 50.00	< 48.90	< 56.70	< 52.40	< 50.00	< 55.80	< 21.10	< 20.50	< 20.20	< 20.20	< 21.40	< 20.20	3.65	< 56.70	0 of 34
4,6-dinitro-2-methylphenol	< 52.00	< 50.00	< 48.90	< 56.70	< 52.40	< 50.00	< 55.80	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.10	3.13	< 56.70	0 of 34
Acenaphthene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Acenaphthylene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Aniline	ND	ND	ND	ND	ND	ND	ND	< 21.10	< 20.50	< 20.20	< 20.20	< 21.40	< 20.20	2.06	< 21.40	0 of 16
Anthracene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Benzidine	< 52.00	< 50.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 108.80	<102.60	**8.47**	< 101.20	**16.35**	< 10.00	6.39	16.35	2 of 34
Benzoic Acid	**58**	**142**	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 21.10	**8.76**	< 20.20	**3.23**	**6.49**	< 10.00	11.58	142.32	6 of 34
Benzo(a)anthracene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Benzo(b)fluoranthene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Benzo(a)pyrene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Benzo(g,h,i)perylene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Benzo(k)fluoroanthene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Benzyl Alcohol	**23.97**	**32.68**	**15.68**	**3.49**	**4.04**	**9.01**	**15.55**	**2.72**	**12.23**	**4.18**	**11.05**	**16.11**	2.72	10.42	32.68	24 of 34
Bis(2-chloroethoxy)methane	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Bis(2-chloroethyl)ether	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.18	< 21.00	0 of 34
Bis(2-ethylhexyl)phthalate	**19.98**	**23.13**	**10.32**	**6.53**	**7.60**	**6.94**	**7.31**	**3.12**	**7.08**	**4.72**	**4.65**	**11.68**	3.12	7.97	23.13	29 of 34
Butylbenzylphthalate	**4.50**	**3.51**	**1.95**	**1.23**	**1.67**	**1.66**	**1.74**	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.10	1.55	4.50	15 of 34
Chrysene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Dibenzofuran	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Dibenzo(a,h)anthracene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Diethylphthalate	**10.50**	**9.02**	**9.47**	**5.83**	**4.93**	**6.01**	**7.00**	**2.47**	**4.49**	**2.25**	< 10.10	**6.64**	< 10.10	4.99	10.50	25 of 34
Dimethylphthalate	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Di-n-butylphthalate	**5.00**	**5.49**	**2.14**	**1.23**	**1.73**	**1.49**	**1.29**	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.10	1.62	5.49	16 of 34
Di-n-octylphthalate	< 21.00	< 20.00	1.24	< 11.30	**1.10**	**1.00**	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.10	1.16	1.24	4 of 34
Fluoranthene	< 21.00	< 20.00	< 10.00	< 11.30	**1.06**	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	1.06	1 of 34
Fluorene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Hexachlorobenzene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Hexachlorobutadiene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Hexachlorocyclopentadiene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Hexachloroethane	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	AVG	MAX	TIMES DETECTED
Semivolatile Organics (ug/L)																
Indeno(1,2,3-cd)pyrene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Isophorone	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Naphthalene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	**1.03**	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	1.03	2 of 34
Nitrobenzene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	2.10	0 of 34
N-Nitrosodimethylamine	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
N-Nitroso-di-n-propylamine	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
N-Nitrosodiphenylamine	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Pentachlorophenol	< 52.00	< 50.00	< 48.90	< 56.70	< 52.40	< 36.80	< 5.80	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.10	3.02	< 56.70	0 of 34
Phenanthrene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Phenol	**10.48**	**18.35**	**7.63**	< 11.30	**1.30**	**6.00**	**3.18**	< 14.00	< 10.30	< 10.10	< 10.10	**3.22**	< 10.10	3.33	18.35	8 of 34
Pyrene	< 21.00	< 20.00	< 10.00	< 11.30	< 10.60	< 10.00	< 11.40	< 10.90	< 10.30	< 10.10	< 10.10	< 10.70	< 10.00	1.14	< 21.00	0 of 34
Volatile Organics (ug/L)																
1,1-dichloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
1,1-dichloroethene	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
1,1,1-trichloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	**9.90**	< 5.00	**1.40**	< 5.00	< 5.00	< 5.00	< 5.00	1.67	9.90	4 of 33
1,1,2-trichloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
1,1,2,2-tetrachloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
1,2-dichlorobenzene	ND	ND	ND	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.69	< 19.00	0 of 27
1,2-dichloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
1,2-dichloropropane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
1,3-dichlorobenzene	ND	ND	ND	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.69	< 19.00	0 of 27
1,4-dichlorobenzene	ND	ND	ND	**1.91**	**2.06**	**1.40**	**1.15**	**1.04**	**1.49**	**0.91**	**1.22**	**1.65**	0.91	1.41	2.06	21 of 27
2-butanone	**3.13**	**2.44**	**3.39**	**17.65**	**4.82**	**2.43**	< 5.00	**2.71**	**2.80**	< 5.00	< 5.00	< 5.00	< 5.00	3.34	17.65	10 of 33
2-chloroethyl vinyl ether	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
2-hexanone	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
4-methyl-2-pentanone	< 5.00	< 5.00	**0.97**	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.68	0.97	1 of 33
Acetone	**65**	**110**	**129**	**105**	**90**	**121**	**116**	**102**	**138**	**115**	**106**	**125**	65	111	138	33 of 33
Acrolein	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
Acrylonitrile	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
Benzene	**0.95**	**1.20**	< 5.00	**0.70**	< 19.00	< 5.00	**0.87**	< 5.00	**1.32**	**0.82**	**1.00**	**0.78**	< 5.00	0.97	1.32	10 of 33
Bromodichloromethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
Bromoform	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
Bromomethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
Carbon Disulfide	**38.98**	**46.85**	**49.68**	**17.92**	< 19.00	**2.12**	**3.75**	**2.36**	**2.00**	**1.26**	**5.49**	**4.17**	< 19.00	9.47	49.68	21 of 33
Carbon Tetrachloride	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
Chlorobenzene	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
Chloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
Chloroform	**6.70**	**4.64**	**4.59**	**5.25**	**2.46**	**5.28**	**2.91**	**3.31**	**3.09**	**4.14**	**2.75**	**2.93**	2.46	3.76	6.70	31 of 33
Chloromethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	**1.38**	< 5.00	0.73	1.38	1 of 33

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	AVG	MAX	TIMES DETECTED
Volatile Organics (ug/L)																
Cis-1,2-dichloroethene	ND	ND	ND	**2.49**	**2.30**	**2.43**	**2.45**	**2.19**	**2.84**	**1.93**	**2.52**	**2.64**	1.93	2.40	2.84	25 of 27
Cis-1,3-dichloropropene	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
Dibromochloromethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
Ethylbenzene	**1.19**	**1.78**	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	**0.89**	**1.14**	< 5.00	< 5.00	< 5.00	0.88	1.78	5 of 33
Methylene chloride	**4.46**	**4.85**	**5.67**	**5.12**	< 19.00	**1.69**	**1.98**	**2.23**	**6.09**	**1.25**	**1.52**	**1.27**	< 19.00	2.86	6.09	25 of 33
m,p-xylene	ND	ND	ND	**1.94**	**2.10**	**1.64**	**1.64**	**1.83**	**2.95**	**1.92**	**2.00**	**1.94**	1.64	2.02	2.95	25 of 27
o-xylene	ND	ND	ND	**0.71**	< 19.00	< 5.00	< 5.00	< 5.00	**1.08**	< 5.00	**0.66**	< 5.00	< 5.00	0.80	1.08	4 of 27
Styrene	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	**1.02**	< 5.00	< 5.00	< 5.00	0.73	1.02	1 of 33
Tetrachloroethene	**1.65**	**21.47**	**1.35**	**2.52**	**2.85**	**3.63**	**8.36**	**4.72**	**3.73**	**2.49**	**3.75**	**12.23**	1.35	5.10	21.47	32 of 33
Toluene	**7.45**	**6.25**	**3.34**	**5.30**	**2.57**	**3.66**	**3.84**	**2.45**	**3.99**	**3.05**	**3.04**	**6.12**	2.45	3.94	7.45	29 of 33
trans-1,2-dichloroethene	**1.85**	**1.27**	**0.83**	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.78	1.85	4 of 33
trans-1,3-dichloropropene	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
Trichloroethene	**2.30**	**2.64**	**1.26**	**2.71**	**2.39**	**3.32**	**3.48**	**4.10**	**5.33**	**3.34**	**4.34**	**4.18**	1.26	3.46	5.33	30 of 33
Trichlorofluoromethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
Vinyl acetate	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33
Vinyl chloride	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.67	< 19.00	0 of 33

Notes:

ND- No Data

1. Full priority pollutant scan conducted (see Appendix J, Table J-3).
2. Monthly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the month.
3. Daily loadings were calculated by substituting half the method detection limit for those values that were reported below detection limits.
4. Yearly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the year.
5. Bold numbers were detected or values that were reported between the method detection limit and reporting limit, also known as "J" values.
6. Reporting limits for organic compounds assumed to be five times the method detection limit.

Appendix A Table A-3 Deer Island Influent Loadings, Fiscal Year 1996

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Metals															
Antimony	4.17	3.79	3.54	67.38	114.66	75.05	79.43	30.05	29.28	38.21	29.90	22.42	3.54	44.91	134.49
Arsenic	1.67	**2.29**	**4.25**	**3.37**	**7.03**	2.06	2.18	2.64	**3.44**	3.11	**4.98**	**3.48**	1.67	3.43	9.41
Beryllium	0.83	0.76	0.71	0.84	1.43	0.94	**1.40**	1.20	1.17	1.41	1.20	0.90	0.71	1.09	2.11
Boron	**725**	**470**	**398**	**418**	430	281	**385**	**838**	351	424	359	**575**	281	466	1816
Cadmium	0.83	0.76	0.71	4.21	7.17	4.69	4.96	2.40	2.34	2.82	2.39	1.79	0.71	3.12	8.41
Chromium	**16.67**	**26.76**	**10.66**	**11.61**	**13.88**	6.57	6.95	**10.36**	**11.15**	**37.19**	**10.88**	**17.28**	6.57	14.72	59.84
Hexavalent Chromium	4.17	3.79	3.73	4.40	15.34	10.29	13.01	11.41	13.84	17.03	11.90	9.85	3.73	10.78	20.50
Copper	**161**	**135**	**132**	**146**	**219**	**127**	**124**	**163**	**148**	**187**	**150**	**187**	124	158	277
Iron	ND	ND	ND	ND	**4912**	**2084**	**2578**	**3579**	**3159**	**4674**	**3632**	**3215**	2084	3479	6342
Lead	**23.41**	**25.76**	**23.77**	**20.70**	**70.66**	**14.29**	**29.38**	**32.10**	**31.64**	**41.95**	**38.99**	**26.26**	14.29	32.24	164.75
Mercury	**0.42**	**0.75**	**0.58**	**0.53**	**0.59**	**0.18**	**0.27**	**0.33**	**0.58**	**0.56**	**0.83**	**0.80**	0.18	0.53	1.47
Molybdenum	**44.13**	**32.56**	**29.81**	**37.85**	20.07	13.13	**30.52**	**20.23**	**13.80**	**19.42**	**23.24**	**46.12**	13.13	26.85	53.68
Nickel	**26.72**	9.09	8.49	16.85	28.67	18.76	19.86	**5.03**	**12.94**	**20.44**	**11.28**	**10.88**	5.03	15.84	38.40
Selenium	1.67	1.52	1.42	1.85	3.15	2.06	2.18	2.64	2.58	3.11	2.63	1.97	1.42	2.30	3.84
Silver	2.50	**4.55**	**9.84**	**10.69**	**12.04**	**8.23**	**6.53**	**10.31**	**7.39**	**7.69**	**7.30**	**13.11**	2.50	8.60	21.85
Thallium	1.67	1.52	1.42	1.85	3.15	2.06	2.18	2.64	2.58	3.11	2.63	1.97	1.42	2.30	3.84
Zinc	**200**	**156**	**148**	**218**	**497**	**137**	**205**	**191**	**211**	**281**	**200**	**207**	137	226	878
Cyanide and Total Phenols															
Cyanide	8.34	7.58	**10.43**	9.76	13.94	9.35	11.41	10.37	12.58	**21.94**	10.82	8.95	7.58	11.52	38.02
Total Phenols	ND	ND	ND	**9.68**	**14.87**	**16.21**	**87.94**	**75.06**	**88.32**	**116**	**42.19**	**50.66**	9.68	55.62	274.29
Oil and Grease, Petroleum Hydrocarbons, and Surfactants															
Oil and Grease	**52542**	**49873**	**76673**	**56112**	**52283**	**55114**	**65321**	**38830**	**41617**	**49284**	**48918**	**50262**	38830	52467	94608
PHC-IR	**887**	**2115**	**551**	**1108**	**1158**	**1164**	**1136**	**3637**	**1051**	**1982**	**1558**	**1991**	551	1559	7990
TPH-FID	ND	ND	ND	**26926**	**2433**	**1252**	**4999**	**2919**	**2360**	**2944**	**1305**	**4834**	1252	5552	48275
Surfactants	**8339**	**7954**	**7154**	**7836**	**7969**	**7745**	**5735**	**8389**	**7229**	**5782**	**6253**	**8399**	5735	7354	12223
Organochlorine Pesticides and PCBs															
4,4'-DDD	0.02	0.09	**0.07**	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.03	0.02	0.02	0.03	0.17
4,4'-DDE	0.02	0.09	**0.05**	0.02	0.03	0.02	0.02	0.03	0.02	**0.03**	0.03	0.02	0.02	0.03	0.17

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Organochlorine Pesticides and PCBs, cont.															
4,4'-DDT	0.02	0.09	0.01	0.02	0.03	0.02	0.02	0.03	0.02	**0.05**	0.03	0.02	0.01	0.03	0.17
Aldrin	0.01	0.04	0.01	0.01	0.02	0.01	0.01	0.01	0.01	**0.04**	0.01	0.01	0.01	0.02	0.08
a-BHC	0.01	**0.08**	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.08
a-Chlordane	ND	ND	ND	0.01	0.02	0.01	0.01	0.01	0.01	**0.11**	0.01	0.01	0.01	0.02	0.18
b-BHC	0.01	0.04	**0.05**	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.08
Chlordane (Technical)	0.08	0.45	0.03	0.19	0.35	0.22	0.21	0.26	0.24	0.30	0.25	0.19	0.03	0.23	0.82
d-BHC	0.01	0.04	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.08
Dieldrin	0.02	**0.15**	0.01	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.03	0.02	0.01	0.03	0.17
Endosulfan I	0.01	0.04	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.08
Endosulfan II	0.02	0.09	0.01	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.03	0.02	0.01	0.03	0.17
Endosulfan Sulfate	0.02	0.09	**0.06**	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.03	0.02	0.02	0.03	0.17
Endrin	0.02	0.09	0.01	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.03	0.02	0.01	0.03	0.17
Endrin Aldehyde	0.02	0.09	0.01	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.03	0.02	0.01	0.03	0.17
Endrin Ketone	ND	ND	ND	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.03	0.02	0.02	0.02	0.04
g-BHC (Lindane)	**0.08**	**0.06**	**0.07**	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.15
g-Chlordane	ND	ND	ND	0.01	0.02	0.01	0.01	0.01	0.01	**0.13**	0.01	0.01	0.01	0.02	0.19
Heptachlor	**0.21**	0.04	**0.03**	**0.22**	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.05	0.63
Heptachlor Epoxide	0.01	0.04	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.08
Methoxychlor	**0.41**	0.45	0.07	0.09	0.17	0.11	0.10	0.13	**0.15**	**2.57**	0.13	0.09	0.07	0.38	7.46
Toxaphene	0.83	4.49	0.71	0.19	0.35	0.22	0.21	0.26	0.24	0.30	0.25	0.19	0.19	0.57	8.20
Aroclor 1016	0.17	0.93	0.14	0.19	0.35	0.22	0.21	0.26	0.24	0.30	0.25	0.19	0.14	0.28	1.70
Aroclor 1221	0.33	1.78	0.28	0.38	0.70	0.44	0.42	0.52	0.48	0.60	0.50	0.37	0.28	0.55	3.25
Aroclor 1232	0.17	0.93	0.14	0.19	0.35	0.22	0.21	0.26	0.24	0.30	0.25	0.19	0.14	0.28	1.70
Aroclor 1242	0.17	0.93	0.14	0.19	0.35	0.22	0.21	0.26	0.24	0.30	0.25	0.19	0.14	0.28	1.70
Aroclor 1248	0.17	0.93	0.14	0.19	0.35	0.22	0.21	0.26	0.24	0.30	0.25	0.19	0.14	0.28	1.70
Aroclor 1254	0.17	0.93	0.14	0.19	0.35	0.22	0.21	0.26	0.24	0.30	0.25	0.19	0.14	0.28	1.70
Aroclor 1260	0.17	0.93	0.14	0.19	0.35	0.22	0.21	0.26	0.24	0.30	0.25	0.19	0.14	0.28	1.70
Semivolatile Organics															
1,2-dichlorobenzene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
1,2-diphenylhydrazine	3.50	3.03	1.42	1.91	3.04	1.88	**3.38**	2.62	2.40	2.85	2.42	1.92	1.42	2.52	5.27
1,2,4-trichlorobenzene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
1,3-dichlorobenzene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	3.37	2.40	2.85	2.42	1.92	1.42	2.49	4.55

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Semivolatile Organics, cont.															
1,4-dichlorobenzene	3.50	3.03	1.42	1.91	**3.22**	1.88	2.27	3.37	2.40	2.85	2.42	1.92	1.42	2.50	4.55
2-chloronaphthalene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
2-chlorophenol	3.50	3.03	1.42	1.91	3.04	1.88	2.27	3.37	2.40	2.85	2.42	1.92	1.42	2.49	4.55
2-methylnaphthalene	3.50	3.03	1.42	1.91	**3.37**	1.88	**2.88**	2.62	2.40	2.85	2.42	1.92	1.42	2.50	5.01
2-methylphenol	3.50	3.03	1.42	**11.39**	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	3.28	30.48
2-nitroaniline	8.67	7.58	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	3.01	8.74
2-nitrophenol	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
2,2'-oxybis(1-chloropropane	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
2,4-dichlorophenol	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
2,4-dimethylphenol	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
2,4-dinitrophenol	8.67	7.58	6.93	9.55	15.02	9.38	11.08	5.06	4.81	5.71	4.84	3.84	3.84	7.70	16.81
2,4-dinitrotoluene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
2,4,5-trichlorophenol	8.67	7.58	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	3.01	8.74
2,4,6-trichlorophenol	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
2,6-dinitrotoluene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
3-nitroaniline	8.67	7.58	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	3.01	8.74
3,3'-dichlorobenzidine	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
4-bromophenyl phenyl ether	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
4-chloro-3-methylphenol	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
4-chloroaniline	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
4-chlorophenyl phenyl ether	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
4-methylphenol	**66.60**	**86.86**	**35.61**	**21.80**	**27.33**	**50.46**	**40.29**	**14.44**	**34.23**	**23.70**	**16.17**	**49.50**	14.44	36.72	111.46
4-nitroaniline	8.67	7.58	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	3.01	8.74
4-nitrophenol	8.67	7.58	6.93	9.55	15.02	9.38	11.08	5.06	4.81	5.71	4.84	3.84	3.84	7.70	16.81
4,6-dinitro-2-methylphenol	8.67	7.58	6.93	9.55	15.02	9.38	11.08	2.62	2.40	2.85	2.42	1.92	1.92	6.61	16.81
Acenaphthene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Acenaphthylene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Aniline	ND	ND	ND	ND	ND	ND	ND	5.06	4.81	5.71	4.84	3.84	3.84	4.85	7.04
Anthracene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Benzidine	8.67	7.58	1.42	1.91	3.04	1.88	2.27	26.15	24.04	**23.93**	24.21	**29.34**	1.42	13.50	50.28
Benzoic Acid	**96.74**	**216**	1.42	1.91	3.04	1.88	2.27	5.06	**20.53**	5.71	**7.73**	**11.63**	1.42	24.45	417.97
Benzo(a)anthracene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Benzo(b)fluoranthene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Semivolatile Organics, cont.															
Benzo(a)pyrene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Benzo(g,h,i)perylene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Benzo(k)fluoroanthene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Benzyl Alcohol	**39.96**	**49.52**	**22.20**	**5.88**	**11.58**	**16.91**	**30.88**	**6.53**	**28.65**	**11.79**	**26.45**	**28.89**	5.88	22.00	63.47
Bis(2-chloroethoxy)methan	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Bis(2-chloroethyl)ether	3.50	3.03	1.42	1.91	3.04	1.88	2.27	3.37	2.40	2.85	2.42	1.92	1.42	2.49	4.55
Bis(2-ethylhexyl)phthalate	**33.32**	**35.05**	**14.60**	**11.00**	**21.80**	**13.03**	**14.51**	**7.51**	**16.59**	**13.32**	**11.12**	**20.96**	7.51	16.83	44.89
Butylbenzylphthalate	**7.50**	**5.32**	**2.76**	**2.08**	**4.80**	**3.11**	**3.46**	2.62	2.40	2.85	2.42	1.92	1.92	3.28	8.27
Chrysene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Dibenzofuran	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Dibenzo(a,h)anthracene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Diethylphthalate	**17.50**	**13.67**	**13.41**	**9.82**	**14.13**	**11.27**	**13.90**	**5.94**	**10.52**	**6.35**	2.42	**11.90**	2.42	10.54	18.19
Dimethylphthalate	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Di-n-butylphthalate	**8.34**	**8.32**	**3.03**	**2.08**	**4.97**	**2.79**	**2.57**	2.62	2.40	2.85	2.42	1.92	1.92	3.43	8.90
Di-n-octylphthalate	3.50	3.03	1.75	1.91	**3.15**	**1.88**	2.27	2.62	2.40	2.85	2.42	1.92	1.75	2.45	3.70
Fluoranthene	3.50	3.03	1.42	1.91	**3.04**	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Fluorene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Hexachlorobenzene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Hexachlorobutadiene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Hexachlorocyclopentadiene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Hexachloroethane	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Indeno(1,2,3-cd)pyrene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Isophorone	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Naphthalene	3.50	3.03	1.42	1.91	3.04	1.88	**2.04**	2.62	2.40	2.85	2.42	1.92	1.42	2.40	3.53
Nitrobenzene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
N-Nitrosodimethylamine	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
N-Nitroso-di-n-propylamine	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
N-Nitrosodiphenylamine	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Pentachlorophenol	8.67	7.58	6.93	9.55	15.02	6.91	11.08	2.62	2.40	2.85	2.42	1.92	1.92	6.38	16.81
Phenanthrene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53
Phenol	**17.48**	**27.80**	**10.80**	1.91	**3.72**	**11.25**	**6.31**	3.37	2.40	2.85	2.42	**5.78**	1.91	7.04	52.63
Pyrene	3.50	3.03	1.42	1.91	3.04	1.88	2.27	2.62	2.40	2.85	2.42	1.92	1.42	2.42	3.53

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Volatile Organics															
1,1-dichloroethane	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
1,1-dichloroethene	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
1,1,1-trichloroethane	0.83	0.76	0.71	0.98	5.30	0.94	**22.59**	1.04	**3.51**	1.55	1.08	0.90	0.71	3.58	64.87
1,1,2-trichloroethane	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
1,1,2,2-tetrachloroethane	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
1,2-dichlorobenzene	ND	ND	ND	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.90	1.58	13.03
1,2-dichloroethane	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
1,2-dichloropropane	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
1,3-dichlorobenzene	ND	ND	ND	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.90	1.58	13.03
1,4-dichlorobenzene	ND	ND	ND	**3.73**	**5.76**	**2.61**	**2.61**	**2.16**	**3.75**	**2.82**	**2.64**	**2.96**	2.16	3.23	13.03
2-butanone	**5.22**	**3.70**	**4.80**	**34.46**	**13.43**	**4.55**	1.14	**5.63**	**7.05**	1.55	1.08	0.90	0.90	7.18	63.02
2-chloroethyl vinyl ether	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
2-hexanone	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
4-methyl-2-pentanone	0.83	0.76	**1.38**	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.47	13.03
Acetone	**108**	**166**	**182**	**206**	**250**	**226**	**265**	**211**	**346**	**356**	**230**	**223**	108	238	433
Acrolein	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
Acrylonitrile	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
Benzene	**1.59**	**1.82**	0.71	**1.37**	5.30	0.94	**1.99**	1.04	**3.32**	**2.53**	**2.17**	**1.40**	0.71	2.07	13.03
Bromodichloromethane	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
Bromoform	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
Bromomethane	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
Carbon Disulfide	**64.99**	**70.99**	**70.34**	**34.99**	5.30	**3.97**	**8.56**	**4.89**	**5.04**	**3.89**	**11.87**	**7.46**	3.89	20.32	82.16
Carbon Tetrachloride	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
Chlorobenzene	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
Chloroethane	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
Chloroform	**11.16**	**7.03**	**6.50**	**10.25**	**6.87**	**9.88**	**6.63**	**6.86**	**7.76**	**12.81**	**5.95**	**5.25**	5.25	8.07	20.03
Chloromethane	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	**2.48**	0.71	1.57	13.03
Cis-1,2-dichloroethene	ND	ND	ND	**4.86**	**6.42**	**4.54**	**5.59**	**4.55**	**7.15**	**5.97**	**5.46**	**4.72**	4.54	5.47	13.03
Cis-1,3-dichloropropene	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
Dibromochloromethane	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
Ethylbenzene	**1.99**	**2.69**	0.71	0.98	5.30	0.94	1.14	1.04	**2.23**	**3.54**	1.08	0.90	0.71	1.89	13.03
Methylene chloride	**7.43**	**7.35**	**8.03**	**10.00**	5.30	**3.15**	**4.52**	**4.63**	**15.32**	**3.86**	**3.30**	**2.27**	2.27	6.14	32.73
m,p-xylene	ND	ND	ND	**3.79**	**5.85**	**3.07**	**3.75**	**3.81**	**7.41**	**5.95**	**4.34**	**3.47**	3.07	4.60	13.03

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Volatile Organics, cont.															
o-xylene	ND	ND	ND	**1.38**	5.30	0.94	1.14	1.04	**2.71**	1.55	**1.43**	0.90	0.90	1.82	13.03
Styrene	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	**3.16**	1.08	0.90	0.71	1.57	13.03
Tetrachloroethene	**2.74**	**32.53**	**1.92**	**4.91**	**7.94**	**6.80**	**19.08**	**9.80**	**9.39**	**7.69**	**8.13**	**21.91**	1.92	10.95	62.27
Toluene	**12.41**	**9.47**	**4.73**	**10.34**	**7.17**	**6.84**	**8.76**	**5.07**	**10.03**	**9.44**	**6.58**	**10.97**	4.73	8.45	14.54
trans-1,2-dichloroethene	**3.08**	**1.92**	**1.18**	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.90	1.66	13.03
trans-1,3-dichloropropene	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
Trichloroethene	**3.83**	**4.00**	**1.78**	**5.30**	**6.67**	**6.21**	**7.94**	**8.51**	**13.41**	**10.33**	**9.39**	**7.49**	1.78	7.42	13.72
Trichlorofluoromethane	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
Vinyl acetate	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03
Vinyl chloride	0.83	0.76	0.71	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.71	1.43	13.03

Notes:

ND- No Data

1. Monthly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the month.
2. Daily loadings were calculated by substituting half the detection limit for those values that were reported below detection limits.
3. Yearly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the year.
4. Yearly maximum loading is the maximum daily loading for the year.
5. Bold numbers were detected or values that were reported between the method detection limit and reporting limit, also known as "J" values.

Appendix A Table A-4 Deer Island Effluent Characterization, Fiscal Year 1996

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	SUMMARY AVG	SUMMARY MAX	TIMES DETECTED
Metals (ug/L)																
Antimony	< 5.00	< 5.00	< 5.00	< 80	< 80	< 80	< 80	< 25	< 25	< 27.1	< 25	< 25	< 5.00	20.49	< 80	0 of 34
Arsenic	< 2.00	**1.51**	**2.49**	**1.91**	**1.49**	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	**1.47**	< 2.00	1.35	2.49	8 of 34
Beryllium	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	**0.91**	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	0.53	0.91	2 of 34
Boron	**435**	**375**	**308**	**217**	< 300	< 300	**253**	< 300	< 300	< 300	< 300	**240**	< 300	205	435	12 of 34
Cadmium	< 1.00	< 1.00	< 1.00	< 5.00	< 5.00	< 5.00	< 5.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 1.00	1.44	< 5.00	0 of 34
Chromium	**7.01**	**6.33**	< 5.00	< 7.00	< 7.00	< 7.00	< 7.00	**2.61**	**3.60**	**3.89**	**2.85**	**3.99**	< 5.00	3.64	7.01	17 of 34
Hexavalent Chromium	< 5.00	< 5.00	< 5.00	< 5.00	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 5.00	4.97	< 11	0 of 30
Copper	**57.99**	**82.70**	**58.41**	**69.26**	**55.27**	**60.02**	**58.42**	**57.22**	**53.59**	**47.20**	**57.19**	**69.96**	47.20	60.02	82.70	43 of 43
Iron	**1024**	**976**	ND	**1074**	**1160**	**949**	**1082**	**1158**	**1077**	**1097**	**1068**	**1037**	949	1071	1160	35 of 35
Lead	**8.54**	**9.27**	**6.72**	**5.04**	**14.57**	**4.33**	**10.91**	**7.43**	**14.99**	**9.39**	**8.68**	**7.30**	4.33	9.22	14.99	41 of 42
Mercury	< 0.20	< 0.20	**0.13**	**0.12**	**0.11**	**0.06**	**0.07**	**0.11**	**0.18**	**0.08**	**0.27**	**0.07**	< 0.20	0.12	0.27	25 of 36
Molybdenum	**27.98**	**25.56**	**15.23**	**17.49**	< 14.00	< 14.00	**6.47**	**4.92**	< 7.00	**5.77**	**11.78**	**20.87**	< 7.00	11.79	27.98	21 of 37
Nickel	**14.51**	< 12.00	< 12.00	< 20.00	< 20.00	< 20.00	< 20.00	< 3.00	**4.16**	**4.49**	**3.46**	**4.89**	< 3.00	6.65	14.51	11 of 34
Selenium	**2.01**	< 2.00	< 2.00	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.00	1.13	2.01	1 of 34
Silver	< 3.00	< 3.00	**2.97**	**3.36**	**2.27**	**2.92**	**1.98**	**2.80**	**2.53**	**2.06**	**2.50**	**9.68**	< 3.00	2.99	9.68	24 of 34
Thallium	< 2.00	< 2.00	< 2.00	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.00	1.08	< 2.20	0 of 34
Zinc	**63.21**	**65.94**	**49.79**	**64.07**	**88.67**	**63.19**	**91.59**	**60.56**	**59.57**	**61.63**	**44.37**	**50.43**	44.37	64.07	91.59	44 of 44
Cyanide and Total Phenols (ug/L)																
Cyanide	**36.97**	**94.89**	**17.53**	**9.42**	**10.93**	< 10.00	< 10.00	< 10.00	< 10.00	**59.85**	**9.17**	< 10.00	< 10.00	19.42	94.89	12 of 34
Total Phenols	ND	ND	**36.00**	**4.20**	**5.37**	**10.26**	**89.77**	**15.08**	**24.62**	**19.50**	**21.34**	**30.38**	4.20	24.11	89.77	25 of 28
Oil and Grease, Petroleum Hydrocarbons, and Surfactants (mg/L)																
Oil and Grease	**27.00**	**32.09**	**52.63**	**28.22**	**13.09**	**20.72**	**29.30**	**23.73**	**19.84**	**14.48**	**18.07**	**33.21**	13.09	23.39	52.63	33 of 33
PHC-FID	**1.05**	**1.95**	**0.33**	**0.33**	**0.56**	**1.00**	**0.35**	**1.53**	**0.90**	**0.84**	**0.84**	**1.20**	0.23	2.88	1.95	38 of 55
PHC-IR	**3.06**	**11.26**	**3.15**	**12.24**	**1.83**	**1.22**	**8.81**	**2.09**	**1.20**	**0.23**	**0.44**	**2.08**	0.35	2.46	12.24	71 of 73
Surfactants	**4.30**	**4.72**	**5.32**	**4.13**	**2.88**	**4.14**	**3.54**	**3.74**	**3.35**	**2.44**	**2.95**	**4.65**	2.44	3.66	5.32	38 of 38
Organochlorine Pesticides and PCBs (ug/L)																
4,4'-DDD	< 0.10	< 0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.20	0 of 34
4,4'-DDE	< 0.10	< 0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.20	0 of 34

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	AVG	MAX	TIMES DETECTED
Organochlorine Pesticides and PCBs (ug/L), cont.																
4,4'-DDT	< 0.10	< 0.20	**0.03**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.03	1 of 34
Aldrin	**0.07**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.07	2 of 34
a-BHC	**0.05**	**0.18**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.18	2 of 34
a-Chlordane	ND	ND	ND	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	**0.02**	< 0.10	< 0.10	< 0.10	0.01	0.02	2 of 27
b-BHC	< 0.10	< 0.10	**0.02**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.02	2 of 34
Chlordane (Technical)	< 0.50	< 1.00	< 0.20	< 1.20	< 1.20	< 1.20	< 1.10	< 1.10	< 1.00	< 1.00	< 1.00	< 1.10	< 0.10	0.10	< 1.20	0 of 34
d-BHC	< 0.10	< 0.10	**0.48**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.04	0.48	3 of 34
Dieldrin	**0.03**	< 0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	**0.01**	< 0.10	< 0.10	< 0.10	0.01	0.03	2 of 34
Endosulfan I	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 34
Endosulfan II	< 0.10	**0.12**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.02	0.12	1 of 34
Endosulfan Sulfate	< 0.10	< 0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.20	0 of 34
Endrin	< 0.10	< 0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.20	0 of 34
Endrin Aldehyde	< 0.10	< 0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.20	0 of 34
Endrin Ketone	ND	ND	ND	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 27
g-BHC (Lindane)	**0.03**	< 0.10	**0.06**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.06	5 of 34
g-Chlordane	ND	ND	ND	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	**0.02**	< 0.10	< 0.10	< 0.10	0.01	0.02	1 of 27
Heptachlor	**0.06**	**0.18**	< 0.10	**0.31**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	<0.10	< 0.10	< 0.10	< 0.10	0.04	0.31	4 of 34
Heptachlor Epoxide	**0.04**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.04	2 of 34
Methoxychlor	< 0.50	< 1.00	< 0.50	< 0.60	< 0.60	< 0.60	< 0.50	< 0.50	**0.05**	**0.29**	< 0.50	< 0.50	< 0.50	0.08	0.29	2 of 34
Toxaphene	< 5.00	< 10.2	< 0.50	< 1.20	< 1.20	< 1.20	< 1.10	< 1.10	< 1.00	< 1.00	< 1.00	< 1.10	< 1.00	0.20	< 10.2	0 of 34
Aroclor 1016	< 1.00	< 2.10	< 1.00	< 1.20	< 1.20	< 1.20	< 1.10	< 1.10	< 1.00	< 1.00	< 1.00	< 1.10	< 1.00	0.11	< 2.10	0 of 34
Aroclor 1221	< 2.00	< 4.10	< 2.00	< 2.40	< 2.40	< 2.30	< 2.20	< 2.20	< 2.00	< 2.10	< 2.10	< 2.10	< 2.00	0.22	< 4.10	0 of 34
Aroclor 1232	< 1.00	< 2.10	< 1.00	< 1.20	< 1.20	< 1.20	< 1.10	< 1.10	< 1.00	< 1.00	< 1.00	< 1.10	< 1.00	0.11	< 2.10	0 of 34
Aroclor 1242	< 1.00	< 2.10	< 1.00	< 1.20	< 1.20	< 1.20	< 1.10	< 1.10	< 1.00	< 1.00	< 1.00	< 1.10	< 1.00	0.11	< 2.10	0 of 34
Aroclor 1248	< 1.00	< 2.10	< 1.00	< 1.20	< 1.20	< 1.20	< 1.10	< 1.10	< 1.00	< 1.00	< 1.00	< 1.10	< 1.00	0.11	< 2.10	0 of 34
Aroclor 1254	< 1.00	< 2.10	< 1.00	< 1.20	< 1.20	< 1.20	< 1.10	< 1.10	< 1.00	< 1.00	< 1.00	< 1.10	< 1.00	0.11	< 2.10	0 of 34
Aroclor 1260	< 1.00	< 2.10	< 1.00	< 1.20	< 1.20	< 1.20	< 1.10	< 1.10	< 1.00	< 1.00	< 1.00	< 1.10	< 1.00	0.11	< 2.10	0 of 34
Semivolatile Organics (ug/L)																
1,2-dichlorobenzene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
1,2-diphenylhydrazine	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
1,2,4-trichlorobenzene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
1,3-dichlorobenzene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	AVG	MAX	TIMES DETECTED
Semivolatile Organics (ug/L), cont.																
1,4-dichlorobenzene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
2-chloronaphthalene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
2-chlorophenol	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
2-methylnaphthalene	< 20.00	< 20.50	**1.07**	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	1.07	2 of 35
2-methylphenol	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
2-nitroaniline	< 50.00	< 51.00	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.39	< 51	0 of 35
2-nitrophenol	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
2,2'-oxybis(1-chloropropane	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
2,4-dichlorophenol	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
2,4-dimethylphenol	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
2,4-dinitrophenol	< 50.00	< 51.00	< 50.00	< 52.70	< 52.40	< 51.60	< 54.60	< 21.40	< 20.60	< 20.20	< 20.50	< 20.50	< 20.20	3.68	< 54.6	0 of 35
2,4-dinitrotoluene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
2,4,5-trichlorophenol	< 50.00	< 51.00	**1.51**	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.10	1.43	1.51	1 of 35
2,4,6-trichlorophenol	< 20.00	< 20.50	**2.48**	**1.20**	< 10.60	< 10.30	**1.07**	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.10	1.25	2.48	5 of 35
2,6-dinitrotoluene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
3-nitroaniline	< 50.00	< 51.00	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.39	< 51	0 of 35
3,3'-dichlorobenzidine	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
4-bromophenyl phenyl ether	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
4-chloro-3-methylphenol	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
4-chloroaniline	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
4-chlorophenyl phenyl ether	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
4-methylphenol	**55.51**	**59.53**	**58.89**	**33.11**	**3.99**	**37.33**	**29.18**	**9.26**	**16.74**	**10.78**	**12.65**	**35.68**	3.99	25.48	59.53	30 of 35
4-nitroaniline	< 50.00	< 51.00	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.39	< 51	0 of 35
4-nitrophenol	< 50.00	< 51.00	< 50.00	< 52.70	< 52.40	< 37.20	< 54.60	< 21.40	< 20.60	< 20.20	< 20.50	< 20.50	2.02	3.56	< 54.6	0 of 35
4,6-dinitro-2-methylphenol	< 50.00	< 51.00	< 50.00	< 52.70	< 52.40	< 51.60	< 54.60	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.10	3.17	< 54.6	0 of 35
Acenaphthene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
Acenaphthylene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
Aniline	ND	ND	ND	ND	ND	ND	ND	< 21.40	< 20.60	< 20.20	< 20.50	< 20.50	< 20.20	2.06	< 20.6	0 of 16
Anthracene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
Benzidine	< 50.00	< 51.00	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	105.00	102.80	101.20	102.40	102.70	< 10.00	5.88	105.00	0 of 35
Benzoic Acid	**356**	**227**	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 21.40	< 20.60	< 20.20	**19.02**	**64.74**	< 10.00	33.55	356	9 of 35
Benzo(a)anthracene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
Benzo(b)fluoranthene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	SUMMARY AVG	SUMMARY MAX	TIMES DETECTED
Semivolatile Organics (cont)																
Benzo(a)pyrene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
Benzo(g,h,i)perylene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
Benzo(k)fluoroanthene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
Benzyl Alcohol	**24.50**	**36.11**	**13.51**	**10.71**	**6.75**	**17.26**	**17.55**	**9.25**	**14.96**	**7.82**	**8.95**	**20.99**	6.75	13.74	36.11	29 of 35
Bis(2-chloroethoxy)methane	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
Bis(2-chloroethyl)ether	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
Bis(2-ethylhexyl)phthalate	**20.54**	**15.47**	**10.75**	**5.44**	**5.14**	**6.53**	**4.59**	**4.30**	**2.37**	< 10.10	< 10.20	**8.75**	< 10.10	5.84	20.54	24 of 35
Butylbenzylphthalate	**4.01**	**4.51**	**2.30**	**1.20**	**1.20**	**1.37**	**1.37**	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.10	1.50	4.51	15 of 35
Chrysene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
Dibenzofuran	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 24.80	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.24	< 24.8	0 of 35
Dibenzo(a,h)anthracene	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
Diethylphthalate	**8.51**	**13.58**	**10.26**	**6.23**	**3.97**	**6.82**	**6.17**	**4.40**	**4.68**	< 10.10	< 10.20	**7.75**	< 10.10	5.39	13.58	26 of 35
Dimethylphthalate	< 20.00	< 20.50	< 10.00	< 10.70	< 10.60	< 10.30	< 11.00	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.00	1.13	< 20.5	0 of 35
Di-n-butylphthalate	**5.00**	**3.58**	**2.15**	**1.20**	**1.50**	**1.70**	**1.37**	< 10.50	< 10.30	< 10.10	< 10.20	< 10.30	< 10.10	1.55	5.00	14 of 35
Di-n-octylphthalate	< 20.0	< 20.5	**1.66**	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.1	1.18	1.66	2 of 35
Fluoranthene	< 20.0	< 20.5	< 10.0	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.0	1.13	< 20.5	0 of 35
Fluorene	< 20.0	< 20.5	< 10.0	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.0	1.13	< 20.5	0 of 35
Hexachlorobenzene	< 20.0	< 20.5	< 10.0	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.0	1.13	< 20.5	0 of 35
Hexachlorobutadiene	< 20.0	< 20.5	< 10.0	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.0	1.13	< 20.5	0 of 35
Hexachlorocyclopentadiene	< 20.0	< 20.5	< 10.0	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.0	1.13	< 20.5	0 of 35
Hexachloroethane	< 20.0	< 20.5	< 10.0	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.0	1.13	< 20.5	0 of 35
Indeno(1,2,3-cd)pyrene	< 20.0	< 20.5	< 10.0	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.0	1.13	< 20.5	0 of 35
Isophorone	< 20.0	< 20.5	< 10.0	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.0	1.13	< 20.5	0 of 35
Naphthalene	< 20.0	< 20.5	**1.07**	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.1	1.13	1.07	2 of 35
Nitrobenzene	< 20.0	< 20.5	< 10.0	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.0	1.13	< 20.5	0 of 35
N-Nitrosodimethylamine	< 20.0	< 20.5	< 10.0	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.0	1.13	< 20.5	0 of 35
N-Nitroso-di-n-propylamine	< 20.0	< 20.5	< 10.0	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.0	1.13	< 20.5	0 of 35
N-Nitrosodiphenylamine	< 20.0	< 20.5	< 10.0	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.0	1.13	< 20.5	0 of 35
Pentachlorophenol	< 50.0	< 51.0	< 50.0	< 52.7	< 52.4	< 51.6	< 54.6	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.1	3.17	< 54.6	0 of 35
Phenanthrene	< 20.0	< 20.5	< 10.0	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.0	1.13	< 20.5	0 of 35
Phenol	**7.46**	**18.04**	< 10.0	< 10.7	**2.43**	**2.67**	**2.84**	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.0	2.47	18.04	7 of 35
Pyrene	< 20.0	< 20.5	< 10.0	< 10.7	< 10.6	< 10.3	< 11.0	< 10.5	< 10.3	< 10.1	< 10.2	< 10.3	< 10.0	1.13	< 20.5	0 of 35

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	AVG	MAX	TIMES DETECTED
Volatile Organics																
1,1-dichloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
1,1-dichloroethene	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
1,1,1-trichloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	**0.74**	< 5.00	**0.72**	< 5.00	< 5.00	< 5.00	< 5.00	0.70	0.74	2 of 34
1,1,2-trichloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
1,1,2,2-tetrachloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
1,2-dichlorobenzene	ND	ND	ND	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.69	< 19	0 of 27
1,2-dichloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
1,2-dichloropropane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
1,3-dichlorobenzene	ND	ND	ND	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.69	< 19	0 of 27
1,4-dichlorobenzene	ND	ND	ND	**1.83**	**2.06**	**0.98**	**1.14**	**1.38**	**1.34**	< 5.00	**1.34**	**1.50**	< 5.00	1.32	1.83	21 of 27
2-butanone	< 5.00	< 5.00	**3.38**	**10.78**	**4.42**	**2.27**	**3.33**	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	2.39	10.78	5 of 34
2-chloroethyl vinyl ether	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
2-hexanone	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
4-methyl-2-pentanone	**1.25**	< 5.00	< 5.00	**0.83**	< 19.00	**0.71**	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.74	1.25	4 of 34
Acetone	**93.87**	**78.20**	**96.36**	**140**	**83.28**	**134**	**177**	**166**	**167**	**112**	**98.56**	**171**	78	129	177	34 of 34
Acrolein	< 5.00	**1.47**	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	1.47	1 of 34
Acrylonitrile	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
Benzene	< 5.00	**1.35**	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	**0.73**	< 5.00	< 5.00	0.71	1.35	3 of 34
Bromodichloromethane	**1.20**	**33.37**	< 5.00	**0.65**	< 19.00	**1.67**	< 5.00	< 5.00	< 5.00	**1.75**	**1.00**	**1.43**	< 5.00	2.41	33.37	13 of 34
Bromoform	< 5.00	**10.04**	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	1.05	10.04	1 of 34
Bromomethane	**1.39**	**4.19**	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.85	4.19	3 of 34
Carbon Disulfide	**12.99**	**14.42**	**13.28**	**9.01**	< 19.00	**1.73**	**1.96**	< 5.00	**0.71**	< 5.00	**0.80**	**1.70**	< 5.00	3.84	14.42	17 of 34
Carbon Tetrachloride	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
Chlorobenzene	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
Chloroethane	< 5.00	**4.07**	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.81	4.07	1 of 34
Chloroform	**10.50**	**35.70**	**5.61**	**15.73**	**5.29**	**13.80**	**6.08**	**5.58**	**5.41**	**4.60**	**6.25**	**8.39**	4.60	8.61	35.70	33 of 34
Chloromethane	< 5.00	**13.95**	**0.64**	**0.97**	< 19.00	**0.73**	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	**1.80**	< 5.00	1.37	13.95	7 of 34
Cis-1,2-dichloroethene	ND	ND	ND	**1.49**	**2.18**	**1.37**	**1.75**	**1.76**	**1.86**	**1.54**	**1.64**	**1.85**	1.37	1.73	2.18	23 of 27
Cis-1,3-dichloropropene	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
Dibromochloromethane	< 5.00	**26.02**	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	1.71	26.02	2 of 34
Ethylbenzene	**1.10**	**1.27**	**0.86**	< 5.00	< 19.00	< 5.00	< 5.00	**0.83**	**0.84**	**0.74**	< 5.00	**0.85**	< 5.00	0.86	1.27	7 of 34
Methylene chloride	**8.69**	**5.61**	**9.53**	**8.20**	**2.10**	**3.59**	**4.93**	**4.85**	**5.03**	**2.01**	**2.02**	**2.67**	2.01	4.54	9.53	31 of 34
m,p-xylene	ND	ND	ND	**2.18**	**2.12**	**1.45**	**2.19**	**3.14**	**3.44**	**2.60**	**1.83**	**3.29**	1.45	2.48	3.44	23 of 27

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	AVG	MAX	TIMES DETECTED
Volatile Organics (cont)																
o-xylene	ND	ND	ND	**1.12**	< 19.00	< 5.00	**0.93**	**1.18**	**1.24**	**0.85**	< 5.00	**1.10**	< 5.00	1.06	1.24	10 of 27
Styrene	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	**0.77**	< 5.00	< 5.00	< 5.00	0.69	< 19	1 of 34
Tetrachloroethene	**1.20**	**11.24**	**1.15**	**3.27**	**2.13**	**2.11**	**9.77**	**3.56**	**3.02**	**2.59**	**2.08**	**4.50**	1.15	3.62	11.24	31 of 34
Toluene	**7.05**	**6.35**	**8.20**	**4.94**	**2.60**	**2.67**	**5.58**	**3.40**	**3.94**	**3.35**	**3.83**	**5.48**	2.60	4.48	8.20	29 of 34
trans-1,2-dichloroethene	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
trans-1,3-dichloropropene	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
Trichloroethene	**2.00**	**1.40**	**1.00**	**1.83**	**2.23**	**1.67**	**2.14**	**2.99**	**3.13**	**2.34**	**2.32**	**2.28**	1.00	2.19	3.13	30 of 34
Trichlorofluoromethane	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
Vinyl acetate	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34
Vinyl chloride	< 5.00	< 5.00	< 5.00	< 5.00	< 19.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.66	< 19	0 of 34

Notes:

ND- No Data

1. Full priority pollutant scan conducted (see Appendix J, Table J-3). Only constituents that were detected at least 5% of the time are included in this table.
2. Monthly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the month.
3. Daily loadings were calculated by substituting half the detection limit for those values that were reported below detection limits.
4. Yearly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the year.
5. Bold numbers were detected or values that were reported between the method detection limit and reporting limit, also known as "J" values.

Appendix A Table A-5 Deer Island Effluent Loadings, Fiscal Year 1996

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Metals															
Antimony	4.17	3.79	4.85	67.38	114.66	75.05	79.43	30.05	29.28	38.21	29.90	22.42	3.79	43.81	134.49
Arsenic	1.67	**2.29**	**4.82**	**3.23**	**4.27**	2.06	2.18	2.64	2.58	3.11	2.63	**2.63**	1.67	2.89	6.16
Beryllium	0.83	0.76	0.97	0.84	1.43	0.94	**1.80**	1.20	1.17	1.41	1.20	0.90	0.76	1.14	2.11
Boron	**726**	**568**	**597**	**366**	430	281	**502**	361	351	424	359	**431**	281	438	896
Cadmium	0.83	0.76	0.97	4.21	7.17	4.69	4.96	2.40	2.34	2.82	2.39	1.79	0.76	3.07	8.41
Chromium	**11.68**	**9.59**	4.85	5.90	10.03	6.57	6.95	**6.28**	**8.43**	**11.00**	**6.81**	**7.16**	4.85	7.78	15.48
Hexavalent Chromium	4.17	3.79	3.73	4.40	15.34	10.29	13.01	11.41	13.84	17.03	11.90	9.85	3.73	10.78	20.50
Copper	**94**	**129**	**113**	**117**	**158**	**113**	**116**	**138**	**126**	**133**	**137**	**125**	94	122	217
Iron	**1646**	**1547**	ND	**1809**	**3325**	**1780**	**2150**	**2783**	**2523**	**3098**	**2556**	**1860**	1547	2243	4136
Lead	**13.88**	**14.44**	**13.03**	**8.49**	**41.78**	**8.12**	**21.66**	**17.87**	**35.10**	**26.51**	**20.76**	**13.09**	8.12	18.77	80.69
Mercury	0.17	0.15	**0.24**	**0.21**	**0.31**	**0.10**	**0.13**	**0.26**	**0.41**	**0.23**	**0.64**	**0.13**	0.10	0.25	1.08
Molybdenum	**46.66**	**39.80**	**29.53**	**29.47**	20.07	13.13	**12.85**	**11.81**	8.20	**16.29**	**28.18**	**37.44**	8.20	24.68	74.76
Nickel	**24.20**	9.09	11.63	16.85	28.67	18.76	19.86	3.61	**9.75**	**12.68**	**8.28**	**8.77**	3.61	14.21	33.62
Selenium	**3.35**	1.52	1.94	1.85	3.15	2.06	2.18	2.64	2.58	3.11	2.63	1.97	1.52	2.41	5.04
Silver	2.50	2.27	**5.76**	**5.67**	**6.51**	**5.48**	**3.94**	**6.72**	**5.93**	**5.83**	**5.99**	**17.36**	2.27	6.39	43.88
Thallium	1.67	1.52	1.94	1.85	3.15	2.06	2.18	2.64	2.58	3.11	2.63	1.97	1.52	2.32	3.84
Zinc	**103**	**103**	**97**	**108**	**254**	**119**	**182**	**146**	**140**	**174**	**106**	**90**	90	130	424
Cyanide and Total Phenols															
Cyanide	**61.65**	**144**	**34.00**	**18.38**	**30.48**	9.35	11.41	10.37	12.58	**185**	**19.86**	8.95	8.95	42.14	356.79
Total Phenols	ND	ND	**107**	**7.08**	**15.38**	**19.24**	**178**	**36.25**	**57.66**	**55.06**	**51.04**	**54.49**	7.08	54.67	313.26
Oil and Grease, Petroleum Hydrocarbons, and Surfactants															
Oil and Grease	**45019**	**48620**	**74517**	**55091**	**36517**	**38760**	**66850**	**49229**	**49915**	**44838**	**39121**	**59476**	36517	50173	108803
PHC-IR	**4852**	**17282**	**5744**	**22363**	**4611**	**2252**	**22726**	**5114**	**3101**	**670**	**904**	**4018**	945	5341	70134
PHC-FID	**1746**	**2950**	**474**	**646**	**1558**	**1875**	**945**	**3739**	**2320**	**2460**	**1744**	**2324**	670	6742	120584
Surfactants	**7271**	**7333**	**7789**	**7086**	**8258**	**7758**	**6104**	**8996**	**7851**	**6955**	**7069**	**8337**	6104	7580	12274

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Organochlorine Pesticides and PCBs															
4,4'-DDD	0.02	0.03	0.02	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.05
4,4'-DDE	0.02	0.03	0.02	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.05
4,4'-DDT	0.02	0.03	**0.05**	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.03	0.10
Aldrin	**0.12**	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.16
a-BHC	**0.08**	**0.27**	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.53
a-Chlordane	ND	ND	ND	0.01	0.02	0.01	0.01	0.01	0.01	**0.06**	0.01	0.01	0.01	0.02	0.12
b-BHC	0.01	0.02	**0.04**	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.06
Chlordane (Technical)	0.08	0.15	0.04	0.20	0.34	0.22	0.22	0.26	0.24	0.29	0.25	0.19	0.04	0.21	0.39
d-BHC	0.01	0.02	**0.92**	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.09	1.51
Dieldrin	**0.05**	0.03	0.02	0.02	0.03	0.02	0.02	0.03	0.02	**0.04**	0.02	0.02	0.02	0.03	0.09
Endosulfan I	0.01	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
Endosulfan II	0.02	**0.18**	0.02	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.03	0.31
Endosulfan Sulfate	0.02	0.03	0.02	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.05
Endrin	0.02	0.03	0.02	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.05
Endrin Aldehyde	0.02	0.03	0.02	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.05
Endrin Ketone	ND	ND	ND	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.04
g-BHC (Lindane)	**0.06**	0.02	**0.11**	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.20
g-Chlordane	ND	ND	ND	0.01	0.02	0.01	0.01	0.01	0.01	**0.04**	0.01	0.01	0.01	0.02	0.11
Heptachlor	**0.11**	**0.27**	0.01	**0.52**	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.08	1.54
Heptachlor Epoxide	**0.07**	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.09
Methoxychlor	0.08	0.15	0.10	0.10	0.17	0.11	0.11	0.13	**0.13**	**0.81**	0.12	0.10	0.08	0.18	2.17
Toxaphene	0.83	1.55	0.97	0.20	0.34	0.22	0.22	0.26	0.24	0.29	0.25	0.19	0.19	0.42	2.32
Aroclor 1016	0.17	0.31	0.19	0.20	0.34	0.22	0.22	0.26	0.24	0.29	0.25	0.19	0.17	0.24	0.48
Aroclor 1221	0.33	0.63	0.39	0.40	0.68	0.44	0.43	0.53	0.47	0.59	0.50	0.38	0.33	0.48	0.94
Aroclor 1232	0.17	0.31	0.19	0.20	0.34	0.22	0.22	0.26	0.24	0.29	0.25	0.19	0.17	0.24	0.48
Aroclor 1242	0.17	0.31	0.19	0.20	0.34	0.22	0.22	0.26	0.24	0.29	0.25	0.19	0.17	0.24	0.48
Aroclor 1248	0.17	0.31	0.19	0.20	0.34	0.22	0.22	0.26	0.24	0.29	0.25	0.19	0.17	0.24	0.48
Aroclor 1254	0.17	0.31	0.19	0.20	0.34	0.22	0.22	0.26	0.24	0.29	0.25	0.19	0.17	0.24	0.48
Aroclor 1260	0.17	0.31	0.19	0.20	0.34	0.22	0.22	0.26	0.24	0.29	0.25	0.19	0.17	0.24	0.48

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Semivolatile Organics															
1,2-dichlorobenzene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
1,2-diphenylhydrazine	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
1,2,4-trichlorobenzene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
1,3-dichlorobenzene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
1,4-dichlorobenzene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
2-chloronaphthalene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
2-chlorophenol	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
2-methylnaphthalene	3.33	3.10	**2.08**	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.42	3.49
2-methylphenol	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
2-nitroaniline	8.34	7.72	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.97	8.40
2-nitrophenol	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
2;2'-oxybis(1-chloropropane	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
2,4-dichlorophenol	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
2,4-dimethylphenol	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
2,4-dinitrophenol	8.34	7.72	9.69	8.87	15.02	9.69	10.84	5.13	4.82	5.72	4.90	3.68	3.68	7.86	16.81
2,4-dinitrotoluene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
2,4,5-trichlorophenol	8.34	7.72	**2.93**	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	3.06	8.40
2,4,6-trichlorophenol	3.33	3.10	**4.82**	**2.01**	3.04	1.94	**2.13**	2.52	2.41	2.86	2.45	1.84	1.84	2.67	7.16
2,6-dinitrotoluene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
3-nitroaniline	8.34	7.72	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.97	8.40
3,3'-dichlorobenzidine	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
4-bromophenyl phenyl ether	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
4-chloro-3-methylphenol	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
4-chloroaniline	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
4-chlorophenyl phenyl ether	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
4-methylphenol	**92.56**	**90.21**	**114**	**55.77**	**11.43**	**70.04**	**57.94**	**22.26**	**39.22**	**30.44**	**30.27**	**63.99**	11.43	54.47	241.79
4-nitroaniline	8.34	7.72	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.97	8.40
4-nitrophenol	8.34	7.72	9.69	8.87	15.02	6.97	10.84	5.13	4.82	5.72	4.90	3.68	3.68	7.62	16.81
4,6-dinitro-2-methylphenol	8.34	7.72	9.69	8.87	15.02	9.69	10.84	2.52	2.41	2.86	2.45	1.84	1.84	6.79	16.81
Acenaphthene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Semivolatile Organics (cont)															
Acenaphthylene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Aniline	ND	ND	ND	ND	ND	ND	ND	5.13	4.82	5.72	4.90	3.68	3.68	4.85	6.97
Anthracene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Benzidine	8.34	7.72	1.94	1.80	3.04	1.94	2.18	25.24	24.09	28.58	24.50	18.41	1.80	12.57	34.87
Benzoic Acid	**594**	**343**	1.94	1.80	3.04	1.94	2.18	5.13	4.82	5.72	**45.50**	**116**	1.80	71.74	840.36
Benzo(a)anthracene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Benzo(b)fluoranthene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Benzo(a)pyrene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Benzo(g,h,i)perylene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Benzo(k)fluoroanthene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Benzyl Alcohol	**40.84**	**54.71**	**26.19**	**18.04**	**19.35**	**32.39**	**34.85**	**22.24**	**35.03**	**22.07**	**21.41**	**37.65**	18.04	29.38	70.14
Bis(2-chloroethoxy)methane	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Bis(2-chloroethyl)ether	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Bis(2-ethylhexyl)phthalate	**34.25**	**23.44**	**20.83**	**9.17**	**14.75**	**12.25**	**9.11**	**10.33**	**5.55**	2.86	2.45	**15.70**	2.45	12.48	43.70
Butylbenzylphthalate	**6.68**	**6.84**	**4.46**	**2.02**	**3.44**	**2.56**	**2.71**	2.52	2.41	2.86	2.45	1.84	1.84	3.20	8.66
Chrysene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Dibenzofuran	3.33	3.10	1.94	1.80	3.04	4.65	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.65	10.18
Dibenzo(a,h)anthracene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Diethylphthalate	**14.19**	**20.57**	**19.89**	**10.49**	**11.38**	**12.79**	**12.25**	**10.57**	**10.97**	2.86	2.45	**13.91**	2.45	11.53	32.84
Dimethylphthalate	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Di-n-butylphthalate	**8.34**	**5.43**	**4.17**	**2.01**	**4.29**	**3.18**	**2.71**	2.52	2.41	2.86	2.45	1.84	1.84	3.32	8.40
Di-n-octylphthalate	3.33	3.10	**3.21**	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.52	6.27
Fluoranthene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Fluorene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Hexachlorobenzene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Hexachlorobutadiene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Hexachlorocyclopentadiene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Hexachloroethane	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Indeno(1,2,3-cd)pyrene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Isophorone	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Semivolatile Organics (cont)															
Naphthalene	3.33	3.10	**2.08**	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.42	3.49
Nitrobenzene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
N-Nitrosodimethylamine	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
N-Nitroso-di-n-propylamine	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
N-Nitrosodiphenylamine	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Pentachlorophenol	8.34	7.72	9.69	8.87	15.02	9.69	10.84	2.52	2.41	2.86	2.45	1.84	1.84	6.79	16.81
Phenanthrene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Phenol	**12.43**	**27.34**	1.94	1.80	**6.95**	**5.01**	**5.64**	2.52	2.41	2.86	2.45	1.84	1.80	5.29	30.96
Pyrene	3.33	3.10	1.94	1.80	3.04	1.94	2.18	2.52	2.41	2.86	2.45	1.84	1.80	2.41	3.49
Volatile Organics															
1,1-dichloroethane	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
1,1-dichloroethene	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
1,1,1-trichloroethane	0.83	0.76	0.97	0.98	5.30	0.94	**1.68**	1.04	**1.82**	1.55	1.08	0.90	0.76	1.53	13.03
1,1,2-trichloroethane	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
1,1,2,2-tetrachloroethane	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
1,2-dichlorobenzene	ND	ND	ND	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.90	1.58	13.03
1,2-dichloroethane	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
1,2-dichloropropane	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
1,3-dichlorobenzene	ND	ND	ND	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.90	1.58	13.03
1,4-dichlorobenzene	ND	ND	ND	**3.58**	**5.74**	**1.83**	**2.59**	**2.87**	**3.38**	1.55	**2.90**	**2.68**	1.55	3.01	13.03
2-butanone	0.83	0.76	**6.56**	**21.05**	**12.32**	**4.25**	**7.60**	1.04	1.26	1.55	1.08	0.90	0.76	5.18	61.39
2-chloroethyl vinyl ether	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
2-hexanone	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
4-methyl-2-pentanone	**2.08**	0.76	0.97	**1.61**	5.30	**1.34**	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.60	13.03
Acetone	**157**	**118**	**187**	**274**	**232**	**252**	**405**	**345**	**421**	**346**	**213**	**307**	118	279	768
Acrolein	0.83	**2.23**	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.83	1.52	13.03
Acrylonitrile	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
Benzene	0.83	**2.05**	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	**1.58**	0.90	0.83	1.55	13.03
Bromodichloromethane	**2.00**	**50.56**	0.97	**1.26**	5.30	**3.13**	1.14	1.04	1.26	**5.40**	**2.16**	**2.57**	0.97	5.23	90.43
Bromoform	0.83	**15.21**	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.83	2.28	29.65

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Volatile Organics (cont)															
Bromomethane	**2.32**	**6.34**	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.90	1.85	13.03
Carbon Disulfide	**21.66**	**21.86**	**25.75**	**17.59**	5.30	**3.23**	**4.48**	1.04	**1.79**	1.55	**1.73**	**3.04**	1.04	8.34	40.38
Carbon Tetrachloride	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
Chlorobenzene	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
Chloroethane	0.83	**6.17**	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.83	1.75	13.03
Chloroform	**17.51**	**54.09**	**10.87**	**30.72**	**14.76**	**25.82**	**13.87**	**11.57**	**13.62**	**14.23**	**13.52**	**15.02**	10.87	18.68	74.13
Chloromethane	0.83	**21.14**	**1.24**	**1.90**	5.30	**1.36**	1.14	1.04	1.26	1.55	1.08	**3.22**	0.83	2.98	41.51
Cis-1,2-dichloroethene	ND	ND	ND	**2.92**	**6.07**	**2.56**	**4.00**	**3.65**	**4.68**	**4.78**	**3.56**	**3.31**	2.56	3.95	13.03
Cis-1,3-dichloropropene	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
Dibromochloromethane	0.83	**39.43**	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.83	3.70	75.61
Ethylbenzene	**1.83**	**1.92**	**1.67**	0.98	5.30	0.94	1.14	**1.72**	**2.11**	**2.29**	1.08	**1.52**	0.94	1.87	13.03
Methylene chloride	**14.49**	**8.50**	**18.48**	**16.02**	**5.87**	**6.72**	**11.26**	**10.05**	**12.64**	**6.24**	**4.38**	**4.78**	4.38	9.86	40.23
m,p-xylene	ND	ND	ND	**4.26**	**5.90**	**2.71**	**5.00**	**6.51**	**8.66**	**8.04**	**3.96**	**5.89**	2.71	5.66	13.70
o-xylene	ND	ND	ND	**2.19**	5.30	0.94	**2.13**	**2.45**	**3.11**	**2.62**	1.08	**1.96**	0.94	2.42	13.03
Styrene	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	**2.37**	1.08	0.90	0.76	1.50	13.03
Tetrachloroethene	**2.00**	**17.03**	**2.24**	**6.39**	**5.95**	**3.95**	**22.28**	**7.38**	**7.60**	**8.03**	**4.50**	**8.06**	2.00	7.86	50.46
Toluene	**11.76**	**9.63**	**15.90**	**9.65**	**7.25**	**4.99**	**12.72**	**7.06**	**9.92**	**10.39**	**8.30**	**9.81**	4.99	9.73	35.82
trans-1,2-dichloroethene	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
trans-1,3-dichloropropene	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
Trichloroethene	**3.33**	**2.12**	**1.93**	**3.57**	**6.21**	**3.12**	**4.89**	**6.21**	**7.88**	**7.23**	**5.02**	**4.09**	1.93	4.75	13.03
Trichlorofluoromethane	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
Vinyl acetate	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03
Vinyl chloride	0.83	0.76	0.97	0.98	5.30	0.94	1.14	1.04	1.26	1.55	1.08	0.90	0.76	1.43	13.03

Notes:

ND- No Data

1. Monthly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the month.
2. Daily loadings were calculated by substituting half the detection limit for those values that were reported below detection limits.
3. Yearly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the year.
4. Yearly maximum loading is the maximum daily loading for the year.
5. Bold numbers were detected or values that were reported between the method detection limit and reporting limit, also known as "J" values.

Appendix B

Table B-1 Nut Island Treatment Plant Operations Summary, Fiscal Year 1996

Table B-2 Nut Island Influent Characterization, Fiscal Year 1996

Table B-3 Nut Island Influent Loadings, Fiscal Year 1996

Table B-4 Nut Island Effluent Characterization, Fiscal Year 1996

Table B-5 Nut Island Effluent Loadings, Fiscal Year 1996

Appendix B Table B-1 Nut Island Treatment Plant Operations Summary, Fiscal Year 1996

	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN VALUE	AVE VALUE	MAX VALUE
INFLUENT															
FLOW (MGD)															
AVERAGE	80	81	80	99	134	112	176	165	164	176	147	110		127	
MINIMUM	40	57	49	48	82	84	74	110	112	101	95	84	40		
MAXIMUM	107	122	195	194	240	154	260	260	236	260	190	149			260.00
TEMP (DEG F)	63.5	63.3	ND	62.2	62.1	61	54.3	54.3	56	56	57	60	54	59.06	63.50
CONVENTIONAL PARAMETERS (mg/L)															
SETTLEABLE SOLIDS (ml/L)															
AVERAGE	14.3	9	9	8.4	5.6	8.2	5.6	5.9	5.6	7.3	12.2	14.5		8.80	
MINIMUM	5	6.5	7	5.5	3	5	2	3	3	3.5	4	6.5	2.00		
MAXIMUM	40	13	14	11	14	16	12	10	8	32	39	27			40.00
TSS															
AVERAGE	219	189	214	177	123	153	102	94	107	100	155	210		154	
MINIMUM	72	114	120	110	86	50	22	18	72	36	74	126	18		
MAXIMUM	496	270	356	304	184	236	218	192	180	184	268	440			496
BOD															
AVERAGE	173	170	198	158	109	132	82	87	94	84	128	156		131	
MINIMUM	142	98	164	113	57	101	22	47	54	45	58	117	22		
MAXIMUM	253	205	256	214	157	186	153	110	132	173	255	235			256
OIL & GREASE															
AVERAGE	36	29	35	40	33	39	27	23	33	25	29	36	23	32	40
CHLORIDE															
AVERAGE	720	656	686	517	415	494	400	418	406	410	405	515		504	
MINIMUM	347	216	233	124	210	294	152	248	260	253	280	305	124		
MAXIMUM	2020	1460	1320	976	946	1110	820	832	881	910	587	812			2020
T COLIFORM (col/100mL)															
GEO MEAN (E+06)	37.6	35.9	82.6	31.6	25.7	30.6	7.9	8.5	8.5	7.9	14.1	50.1		28.4	
MINIMUM (E+06)	18.0	1.0	6.0	6.0	19.0	16.0	0.4	3.0	4.0	2.0	1.0	26.0	0.4		
MAXIMUM (E+06)	92.0	89.0	530.0	90.0	42.0	80.0	55.0	23.0	21.0	28.0	71.0	74.0			530.0
F COLIFORM (col/100mL)															
GEO MEAN (E+06)	5.7	6.8	8.0	4.1	1.5	2.1	0.6	0.8	0.8	0.9	1.9	4.1		3.1	
MINIMUM (E+06)	1.1	0.8	2.0	0.8	0.2	1.0	0.0	0.1	0.4	0.4	0.9	1.6	0.0		
MAXIMUM (E+06)	8.9	18.0	26.0	19.0	4.2	6.0	8.0	2.0	1.6	1.6	5.1	10.9			26.0
NUTRIENTS															
TKN (mg/L)															
AVERAGE	44.80	30.80	37.90	24.60	12.10	19.70	23.80	20.70	21.00	9.38	32.40	26.00	9.38	25.27	44.80

	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN VALUE	AVE VALUE	MAX VALUE
NUTRIENTS (cont)															
AMMONIA															
AVERAGE	34.10	18.50	24.80	16.90	4.28	11.50	16.90	12.60	11.32	5.20	19.10	13.60	4.28	15.73	34.10
NITRATES															
AVERAGE	0.03	0.03	0.04	0.03	1.93	0.55	0.28	0.49	0.97	1.31	0.02	<.01	<.01	0.52	1.93
NITRITES															
AVERAGE	<.01	<.01	<.01	<.01	0.40	0.14	0.10	1.31	0.24	0.38	0.02	<.01	<.01	0.37	1.31
ORTHOPHOSPHORUS															
AVERAGE	3.30	2.46	1.51	1.94	0.29	0.46	0.37	0.91	0.66	0.71	2.67	1.39	0.29	1.39	3.30
TOTAL PHOSPHORUS															
AVERAGE	4.33	5.13	4.83	4.08	1.72	3.06	2.83	2.55	2.98	1.22	6.85	3.50	1.22	3.59	6.85
TPH (GCFID)															
AVERAGE	ND	ND	ND	12.04	0.43	3.25	0.90	1.75	1.40	2.83	1.57	1.19		2.82	
MINIMUM	ND	ND	ND	0.23	0.30	1.80	0.28	0.69	0.30	0.69	1.20	0.78	0.23		
MAXIMUM	ND	ND	ND	29.00	0.56	4.70	1.50	2.80	2.00	6.10	1.80	1.60			29.00
EFFLUENT															
pH (units)															
MINIMUM	6.54	6.5	6.5	6.6	6.5	6.7	6.6	6.6	6.6	6.5	6.6	6.4	6.40		
MAXIMUM	6.79	6.9	6.9	7.0	6.9	7.0	7.1	7.0	7.0	6.9	6.9	6.9			7.06
CONVENTIONAL PARAMETERS (mg/L)															
SETTLEABLE SOLIDS (ml/L)															
AVERAGE	0.9	0.6	0.9	0.9	0.7	1.1	1.2	1.1	0.8	1.1	1.4	1.3		1.00	
MINIMUM	0.2	0.1	0.5	0.4	0.3	0.2	0.3	0.5	0.2	0.3	0.4	0.5	0.10		
MAXIMUM	2	1.5	1.5	1.5	1.0	2.0	2.0	2.0	2.0	2.0	5.5	2.5			5.50
TSS															
AVERAGE	95	75	98	83	62	79	63	46	46	48	66	60		68	
MINIMUM	66	53	70	62	28	50	24	32	32	34	48	28	24		
MAXIMUM	200	94	200	138	84	164	142	85	76	68	84	82			200
BOD															
AVERAGE	117	103	119	108	78	94	65	54	59	55	71	82		84	
MINIMUM	81	66	91	76	42	56	22	33	41	35	52	58	22		
MAXIMUM	210	124	161	153	105	126	122	104	101	72	108	114			210
OIL & GREASE															
AVERAGE	31.5	27.40	30.48	29.70	22.20	29.03	25.00	29.00	22.75	21.60	20.83	31.75	20.83	26.77	31.75
T COLIFORM (col/100mL)															
GEO MEAN	622	1129	185	138	306	440	572	453	342	359	225	330		425	
MINIMUM	58	5	4	19	35	43	31	50	36	58	42	23	4		
MAXIMUM	7261	4034862	2747314	3578	110815	2948	8001	2863	2543	3617	1103	734805			4034862

	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN VALUE	AVE VALUE	MAX VALUE
CONVENTIONAL PARAMETERS (cont)															
F COLIFORM (col/100mL)															
GEO MEAN	43	57	23	7	10	19	38	34	25	29	18	24		27	
MINIMUM	6	3	4	4	4	5	4	5	5	6	6	5	3		
MAXIMUM	401	565624	198319	55	3175	111	637	1145	563	170	48	104538			565624
CHLORINE RESIDUAL															
AVERAGE	1.3	2.0	3.6	3.5	2.9	2.7	2.1	2.4	2.5	2.4	2.8	2.9		2.59	
MINIMUM	0.0	0.0	0.0	1.1	1.1	1.2	1.1	1.0	1.6	1.5	2.2	0.6	0.00		
MAXIMUM	9.7	5.0	6.6	9.7	5.1	3.7	3.2	3.4	3.6	3.0	3.6	4.6			9.70
NUTRIENTS															
TKN															
AVERAGE	44.20	28.00	32.40	22.60	10.10	24.10	22.90	26.30	19.10	10.55	24.80	22.70	10.10	23.98	44.20
AMMONIA															
AVERAGE	19.60	18.60	23.70	18.40	3.96	15.80	17.00	12.90	14.00	5.41	15.90	11.50	3.96	14.73	23.70
NITRATES															
AVERAGE	0.02	0.02	0.39	0.71	2.02	1.08	0.28	0.84	0.97	2.48	<.01	<.01	<.01	0.88	2.48
NITRITES															
AVERAGE	<.01	<.01	0.28	0.24	0.32	0.14	0.10	0.23	0.20	0.24	<.01	< 0.01	<.01	0.22	0.32
ORTHOPHOSPHORUS															
AVERAGE	1.02	2.51	1.46	1.76	0.41	0.75	0.40	0.95	1.37	0.32	1.35	1.31	0.32	1.13	2.51
TOTAL PHOSPHORUS															
AVERAGE	2.84	4.62	4.19	4.64	1.15	3.50	2.73	2.70	2.32	1.89	3.05	2.94	1.15	3.05	4.64
TPH (GCFID)															
AVERAGE	0.26	ND	0.38	0.61	0.54	1.41	0.47	1.27	0.88	0.92	0.92	1.19		0.80	1.41
MINIMUM	0.18	ND	0.15	0.41	0.24	0.71	0.22	0.27	0.22	0.44	0.45	0.56	0.15		
MAXIMUM	0.33	ND	0.61	0.73	1.10	2.70	1.00	3.80	2.20	1.80	1.60	2.00			3.80
TPH (PHIR)															
AVERAGE	3.65	9.16	7.08	2.95	1.98	1.81	3.01	2.30	1.75	1.14	1.41	2.57		3.23	
MINIMUM	2.00	1.40	2.70	2.30	1.00	1.00	1.10	1.20	1.30	1.00	<1.0	1.76	1.00		
MAXIMUM	5.10	21.00	17.00	4.00	6.00	2.70	5.50	3.70	2.10	1.98	2.12	3.84			21.00
REMOVAL EFFICIENCIES (%)															
SS	93.7	93.3	90.0	89.3	87.5	86.6	78.6	81.4	85.7	84.9	88.5	91.0	78.57	87.55	93.71
TSS	56.6	60.3	54.2	53.1	49.6	48.4	38.2	51.1	57.0	52.0	57.4	71.4	38.24	54.11	71.43
BOD	32	39	40	32	28	29	21	38	37	35	45	47	20.73	35.25	47.44
OIL & GREASE	12.3	4.9	13.1	26.1	33.5	25.8	5.7	0.0	30.5	12.9	28.8	12.9	0.0	17.21	33.53
TKN	1.3	9.1	14.5	8.1	16.5	0.0	3.8	0.0	9.0	0.0	23.5	12.7	0.0	8.21	23.46
TOTAL PHOSPHORU	34.4	9.9	13.3	0.0	33.1	0.0	3.5	0.0	22.1	0.0	55.5	16.0	0.0	15.66	55.47

NOTES: Data reduced from Nut Island Treatment Plant Monthly Operation Logs. Concentration expressed in mg/L inless otherwise noted
ND = No data

Appendix B Table B-2 Nut Island Influent Characterization, Fiscal Year 1996

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	SUMMARY AVG	SUMMARY MAX	TIMES DETECTED
Metals (ug/L)																
Antimony	**4.78**	< 5.00	< 5.00	< 80.0	< 80.0	< 80.0	< 80.0	< 25.00	< 25.00	< 25.00	**16.69**	< 25.00	< 5.00	20.83	16.69	2 of 29
Arsenic	< 2.00	< 2.00	**2.51**	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.00	1.15	2.51	2 of 29
Beryllium	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	0.50	< 1.00	0 of 29
Boron	**415**	**395**	**370**	**299**	< 300	< 300	< 300	**264**	< 300	< 300	< 300	**229**	< 300	209.40	415.20	11 of 29
Cadmium	< 1.00	< 1.00	< 1.00	< 5.00	< 5.00	< 5.00	< 5.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 1.00	1.42	< 5.00	0 of 29
Chromium	**23.00**	**10.91**	**12.52**	< 7.00	< 7.00	< 7.00	< 7.00	**4.12**	**4.71**	**4.17**	**2.76**	**4.20**	< 7.00	5.39	22.83	17 of 29
Hexavalent Chromium	< 5.00	< 5.00	< 5.00	< 5.00	< 11.00	< 11.00	< 11.00	< 11.00	< 11.00	< 11.00	< 11.00	< 11.00	< 5.00	4.89	< 11.00	0 of 27
Copper	**143**	**144**	**186**	**83.97**	**87.35**	**88.39**	**82.07**	**55.39**	**80.64**	**74.84**	**55.76**	**85.39**	55.39	86.58	185.91	30 of 30
Iron	ND	ND	ND	ND	**2445**	**1622**	**1710**	**1246**	**1726**	**1416**	**1106**	**1440**	1106.3	1558.1	2445.0	20 of 20
Lead	**7.48**	**5.49**	**16.66**	**12.07**	**4.77**	**9.04**	**8.72**	**5.60**	**10.56**	**7.83**	**4.66**	**5.55**	4.66	7.99	16.66	28 of 29
Mercury	**0.55**	**0.35**	**0.95**	**0.29**	**0.29**	**0.33**	**0.12**	**0.13**	**0.33**	**0.23**	**0.30**	**0.21**	0.12	0.30	0.95	28 of 31
Molybdenum	**12.97**	**10.51**	**12.07**	< 14.00	< 14.00	< 14.00	< 10.98	< 7.00	< 7.00	< 7.00	< 7.00	< 7.00	< 7.00	5.63	12.97	6 of 29
Nickel	**16.04**	**11.86**	< 12.00	**24.78**	< 20.00	< 20.00	< 20.00	**2.44**	**2.75**	**6.81**	**7.72**	**7.20**	< 12.0	8.96	16.04	13 of 29
Selenium	< 2.00	< 2.00	< 2.00	< 2.20	< 2.20	< 2.20	**1.99**	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.00	1.18	1.99	1 of 29
Silver	**5.15**	**3.70**	**8.52**	**4.43**	**4.24**	**3.78**	**3.73**	**10.82**	**2.97**	**2.60**	**2.24**	**4.50**	2.24	4.29	10.82	24 of 29
Thallium	< 2.00	< 2.00	< 2.00	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.00	1.09	< 2.20	0 of 29
Zinc	**147**	**144**	**191**	**84**	**109**	**93**	**125**	**51.97**	**90.49**	**78.86**	**44.05**	**76.54**	44.05	92.86	191.16	30 of 30
Cyanide and Phenols (ug/L)																
Cyanide	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	5.00	< 10.00	0 of 28
Phenols	ND	ND	ND	**9.45**	**11.51**	**19.23**	**67.45**	**36.64**	**41.82**	**31.37**	**26.56**	**50.11**	9.45	33.46	67.45	21 of 23
Oil and Grease, Petroleum Hydrocarbons, and Surfactants (mg/L)																
Oil and Grease	**32.93**	**57.14**	**89.68**	**70.50**	**22.49**	**27.35**	**30.17**	**18.23**	**31.15**	**40.57**	**29.41**	**25.67**	18.23	36.82	89.68	29 of 29
PHC-IR	0.54	2.38	0.29	12.16	0.42	3.26	0.84	1.71	1.44	2.70	1.56	1.19	0.29	2.43	12.16	29 of 29
TPH-FID	ND	ND	ND	ND	1.38	2.70	3.42	4.58	2.67	0.41	2.64	3.00	0.41	2.45	4.58	18 of 20
Surfactants	**5.91**	**6.50**	**6.30**	**5.73**	ND	**5.02**	**4.23**	**2.98**	**2.95**	**2.89**	**3.21**	**5.29**	2.89	4.06	6.50	24 of 24
Organochlorine Pesticides and PCBs (ug/L)																
4,4'-DDD	< 0.10	< 0.10	**0.13**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.02	0.13	2 of 28
4,4'-DDE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 28

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	SUMMARY AVG	SUMMARY MAX	TIMES DETECTED
Organochlorine Pesticides and PCBs cont.																
4,4'-DDT	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 28
Aldrin	< 0.10	< 0.10	< 0.10	**0.04**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.04	1 of 28
a-BHC	< 0.10	**0.16**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.16	2 of 28
a-Chlordane	ND	ND	ND	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	**0.01**	< 0.10	< 0.10	< 0.10	0.01	0.01	2 of 23
b-BHC	< 0.10	< 0.10	**0.02**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.02	1 of 28
Chlordane (Technical)	< 0.50	< 0.50	< 0.20	< 1.20	< 1.10	< 1.50	< 1.10	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 0.20	0.10	< 1.50	0 of 28
d-BHC	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 28
Dieldrin	< 0.10	**0.04**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	**0.01**	< 0.10	< 0.10	< 0.10	0.01	0.04	2 of 28
Endosulfan I	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 28
Endosulfan II	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 28
Endosulfan Sulfate	< 0.10	< 0.10	**0.03**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.03	1 of 28
Endrin	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 28
Endrin Aldehyde	< 0.10	**0.04**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.04	1 of 28
Endrin Ketone	ND	ND	ND	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 23
g-BHC (Lindane)	**0.03**	0.01	**0.04**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	**0.01**	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.04	4 of 28
g-Chlordane	ND	ND	ND	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	**0.01**	< 0.10	< 0.10	< 0.10	0.01	0.01	1 of 23
Heptachlor	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 28
Heptachlor Epoxide	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 28
Methoxychlor	< 0.50	< 0.50	< 0.50	< 0.60	< 0.60	< 0.70	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.05	< 0.70	0 of 28
Toxaphene	< 5.00	< 5.40	< 5.00	< 1.20	< 1.10	< 1.50	< 1.10	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	0.16	< 5.40	0 of 28
Aroclor 1016	< 1.00	< 1.10	< 1.00	< 1.20	< 1.10	< 1.50	< 1.10	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	0.11	< 1.50	0 of 28
Aroclor 1221	< 2.00	< 2.10	< 2.00	< 2.40	< 2.30	< 2.90	< 2.10	< 2.10	< 2.10	< 2.10	< 2.10	< 2.10	< 2.00	0.22	< 2.90	0 of 28
Aroclor 1232	< 1.00	< 1.10	< 1.00	< 1.20	< 1.10	< 1.50	< 1.10	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	0.11	< 1.50	0 of 28
Aroclor 1242	< 1.00	< 1.10	< 1.00	< 1.20	< 1.10	< 1.50	< 1.10	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	0.11	< 1.50	0 of 28
Aroclor 1248	< 1.00	< 1.10	< 1.00	< 1.20	< 1.10	< 1.50	< 1.10	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	0.11	< 1.50	0 of 28
Aroclor 1254	< 1.00	< 1.10	< 1.00	< 1.20	< 1.10	< 1.50	< 1.10	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	0.11	< 1.50	0 of 28
Aroclor 1260	< 1.00	< 1.10	< 1.00	< 1.20	< 1.10	< 1.50	< 1.10	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	0.11	< 1.50	0 of 28
Semivolatile Organics (ug/L)																
1,2-dichlorobenzene	< 20.00	< 20.00	< 10.00	< 10.70	**1.29**	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.36	1.29	1 of 28
1,2-diphenylhydrazine	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 20.00	0 of 28
1,2,4-trichlorobenzene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 20.00	0 of 28
1,3-dichlorobenzene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 20.00	0 of 28
1,4-dichlorobenzene	< 20.00	< 20.00	**1.51**	**1.27**	**1.70**	**1.33**	**1.28**	< 10.00	< 13.80	**3.93**	< 10.90	< 30.30	< 10.00	1.81	3.93	11 of 28

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	SUMMARY AVG	SUMMARY MAX	TIMES DETECTED
Semivolatile Organics cont.																
2-chloronaphthalene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 20.00	0 of 28
2-chlorophenol	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 20.00	0 of 28
2-methylnaphthalene	< 20.00	< 20.00	**3.19**	< 10.70	< 10.50	**2.30**	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.52	3.19	2 of 28
2-methylphenol	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	**1.87**	**1.00**	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.40	1.87	2 of 28
2-nitroaniline	< 50.00	< 50.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.55	< 50.00	0 of 28
2-nitrophenol	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 20.00	0 of 28
2,2'-oxybis(1-chloropropa	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 20.00	0 of 28
2,4-dichlorophenol	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 20.00	0 of 28
2,4-dimethylphenol	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	**1.10**	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	1.10	1 of 28
2,4-dinitrophenol	< 50.00	< 50.00	< 29.70	< 41.10	< 52.90	< 52.20	< 50.00	< 20.50	< 27.60	< 29.80	< 21.70	< 60.50	< 20.50	3.74	< 60.50	0 of 28
2,4-dinitrotoluene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 35.50	< 10.00	1.37	< 35.50	0 of 28
2,4,5-trichlorophenol	< 50.00	< 50.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.55	< 50.00	0 of 28
2,4,6-trichlorophenol	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 50.00	0 of 28
2,6-dinitrotoluene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 50.00	0 of 28
3-nitroaniline	< 50.00	< 50.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.55	< 50.00	0 of 28
3,3'-dichlorobenzidine	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 50.00	0 of 28
4-bromophenyl phenyl etl	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 50.00	0 of 28
4-chloro-3-methylphenol	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 50.00	0 of 28
4-chloroaniline	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 50.00	0 of 28
4-chlorophenyl phenyl etl	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 35.50	< 10.00	1.37	< 50.00	0 of 28
4-methylphenol	**81.00**	**82.26**	**20.32**	**48.44**	**2.54**	**29.31**	**34.53**	**5.85**	**14.34**	**6.61**	**7.25**	**27.85**	2.54	22.58	82.26	24 of 28
4-nitroaniline	< 50.00	< 50.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.55	< 50.00	0 of 28
4-nitrophenol	< 50.00	< 50.00	< 29.70	< 41.10	< 52.90	< 52.20	< 50.00	< 20.50	< 27.60	< 29.80	< 21.70	< 60.50	< 20.50	3.74	< 60.50	0 of 28
4,6-dinitro-2-methylphen	< 50.00	< 50.00	< 29.70	< 41.10	< 52.90	< 52.20	< 50.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	2.93	< 52.90	0 of 28
Acenaphthene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Acenaphthylene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Aniline	ND	ND	ND	ND	ND	ND	ND	< 20.50	< 27.60	< 29.80	< 21.70	< 60.50	< 20.50	2.93	< 60.50	0 of 13
Anthracene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Benzidine	< 50.00	< 50.00	< 10.00	< 10.70	< 10.50	**6.01**	< 10.00	< 100.00	< 138.10	< 148.80	< 108.70	< 302.60	< 10.00	9.14	6.01	1 of 28
Benzoic Acid	**41.00**	**87.12**	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 20.50	< 27.60	<29.80	**9.85**	**11.00**	< 10.00	8.36	87.12	7 of 28
Benzo(a)anthracene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Benzo(b)fluoranthene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Benzo(a)pyrene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Benzo(g,h,i)perylene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	AVG	MAX	TIMES DETECTED
Semivolatile Organics cont.																
Benzo(k)fluoroanthene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Benzyl Alcohol	**19.00**	**15.12**	**9.13**	**17.11**	**5.12**	< 10.40	**10.70**	**5.65**	**4.16**	**4.70**	**4.32**	**8.00**	< 10.40	7.33	19.00	19 of 28
Bis(2-chloroethoxy)methz	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Bis(2-chloroethyl)ether	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Bis(2-ethylhexyl)phthalat	**16.00**	**18.07**	**12.51**	**4.77**	**3.46**	**5.31**	**2.44**	< 10.00	**6.00**	**2.77**	**2.57**	**5.72**	< 10.00	5.03	18.07	19 of 28
Butylbenzylphthalate	**4.00**	2.00	**2.20**	**1.23**	**1.15**	**1.50**	**1.28**	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.52	4.00	10 of 28
Chrysene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Dibenzofuran	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Dibenzo(a,h)anthracene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Diethylphthalate	**11.00**	**10.00**	**12.00**	**8.13**	**4.51**	**7.01**	**6.70**	**3.23**	**4.51**	**2.96**	**2.58**	**5.31**	2.58	5.42	12.00	21 of 28
Dimethylphthalate	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Di-n-butylphthalate	**5.00**	**6.00**	**1.49**	**1.29**	**1.35**	**1.94**	**1.28**	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.75	6.00	12 of 28
Di-n-octylphthalate	< 20.00	< 20.00	**1.61**	< 10.70	< 10.50	< 10.40	**1.00**	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.36	1.00	3 of 28
Fluoranthene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Fluorene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 35.50	< 10.00	1.37	< 35.50	0 of 28
Hexachlorobenzene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Hexachlorobutadiene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Hexachlorocyclopentadiei	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Hexachloroethane	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Indeno(1,2,3-cd)pyrene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Isophorone	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Naphthalene	**2.00**	2.00	**1.71**	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.37	2.00	2 of 28
Nitrobenzene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
N-Nitrosodimethylamine	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
N-Nitroso-di-n-propylami	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	**1.16**	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.35	1.16	1 of 28
N-Nitrosodiphenylamine	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	< 30.30	0 of 28
Pentachlorophenol	< 50.00	< 50.00	< 29.70	< 53.80	< 52.90	< 52.20	< 50.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	3.04	< 53.80	0 of 28
Phenanthrene	< 20.00	< 20.00	**1.41**	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.36	1.41	1 of 28
Phenol	**46.00**	**41.51**	**6.59**	**8.60**	**1.25**	**14.83**	**19.76**	**3.40**	< 13.80	< 14.90	< 10.90	**5.67**	< 10.90	8.42	46.00	12 of 28
Pyrene	< 20.00	< 20.00	< 10.00	< 10.70	< 10.50	< 10.40	< 10.00	< 10.00	< 13.80	< 14.90	< 10.90	< 30.30	< 10.00	1.34	5.00	0 of 28

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	SUMMARY AVG	SUMMARY MAX	TIMES DETECTED
Volatile Organics (ug/L)																
1,1-dichloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
1,1-dichloroethene	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
1,1,1-trichloroethane	< 5.00	**0.79**	< 5.00	**3.23**	**1.81**	**1.79**	**1.57**	**1.29**	**0.71**	**1.14**	< 5.00	**0.76**	< 5.00	1.21	3.23	15 of 29
1,1,2-trichloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
1,1,2,2-tetrachloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
1,2-dichlorobenzene	ND	ND	ND	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 23
1,2-dichloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
1,2-dichloropropane	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
1,3-dichlorobenzene	ND	ND	ND	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 23
1,4-dichlorobenzene	ND	ND	ND	**2.42**	**1.08**	**1.43**	**1.20**	< 5.00	**1.27**	**2.02**	**4.55**	**1.84**	< 5.00	1.95	4.55	21 of 23
2-butanone	**5.49**	**78.51**	**92.79**	**156.01**	**110.34**	**235.24**	**413.97**	**224.54**	**199.09**	**63.24**	**2.59**	**12.38**	2.59	138.77	413.97	25 of 29
2-chloroethyl vinyl ether	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
2-hexanone	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
4-methyl-2-pentanone	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
Acetone	**54.90**	**70.79**	**154.92**	**174.82**	**104.05**	**155.89**	**108.83**	**193.11**	**131.48**	**144.77**	**98.92**	**574.18**	54.90	156.84	574.18	29 of 29
Acrolein	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
Acrylonitrile	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	0.50	0 of 29
Benzene	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
Bromodichloromethane	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
Bromoform	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
Bromomethane	**1.41**	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.54	1.41	1 of 29
Carbon Disulfide	**1.98**	**11.85**	**48.53**	**0.77**	< 5.00	< 5.00	< 5.00	**2.22**	< 5.00	< 5.00	**1.77**	< 5.00	< 5.00	3.45	48.53	8 of 29
Carbon Tetrachloride	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
Chlorobenzene	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
Chloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
Chloroform	**3.65**	**4.64**	**2.00**	**3.32**	**1.64**	**2.21**	**2.88**	**2.39**	**2.34**	**2.12**	**2.75**	**6.06**	1.64	2.82	6.06	29 of 29
Chloromethane	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
Cis-1,2-dichloroethene	ND	ND	ND	**1.18**	**0.81**	< 5.00	**0.66**	< 5.00	< 5.00	< 5.00	< 5.00	**0.77**	< 5.00	0.62	1.18	5 of 23
Cis-1,3-dichloropropene	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
Dibromochloromethane	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
Ethylbenzene	**1.71**	**0.84**	< 5.00	**0.72**	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.59	1.71	4 of 29
Methylene chloride	**1.59**	**2.33**	**1.85**	**3.33**	< 5.00	**0.94**	**1.43**	**1.37**	**1.47**	**0.74**	< 5.00	**1.83**	< 5.00	1.35	3.33	18 of 29
m,p-xylene	ND	ND	ND	**1.13**	< 5.00	< 5.00	**0.75**	**1.36**	**2.03**	**0.89**	**0.86**	**1.04**	< 5.00	1.06	2.03	13 of 23
o-xylene	ND	ND	ND	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 23

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	SUMMARY AVG	SUMMARY MAX	TIMES DETECTED
Volatile Organics cont.																
Styrene	**2.16**	< 5.00	< 5.00	**3.01**	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.78	3.01	4 of 29
Tetrachloroethene	**1.30**	**2.01**	< 5.00	**4.58**	**3.47**	**2.85**	**2.60**	**3.38**	**2.31**	**2.28**	**2.58**	**5.11**	< 5.00	2.78	5.11	27 of 29
Toluene	**6.10**	**5.76**	**3.50**	**6.31**	**2.43**	**5.94**	**5.26**	**3.56**	**4.73**	**2.47**	**2.81**	**3.80**	2.43	4.15	6.31	27 of 29
trans-1,2-dichloroethene	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
trans-1,3-dichloropropene	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
Trichloroethene	< 5.00	< 5.00	< 5.00	**1.50**	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	**1.16**	< 5.00	0.62	1.50	4 of 29
Trichlorofluoromethane	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29
Vinyl acetate	< 5.00	**1.83**	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.56	1.83	1 of 29
Vinyl chloride	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.50	< 5.00	0 of 29

Notes:

ND- No Data

1. Full priority pollutant scan conducted (see Appendix J, Table J-3). Only constituents that were detected at least 5% of the time are included in this table.
2. Monthly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the month.
3. Daily loadings were calculated by substituting half the detection limit for those values that were reported below detection limits.
4. Yearly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the year.
5. Bold numbers were detected or values that were reported between the method detection limit and reporting limit, also known as "J" values.

Appendix B Table B-3 Nut Island Influent Loadings, Fiscal Year 1996

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Metals															
Antimony	3.43	1.66	1.55	32.37	45.69	40.32	39.97	15.26	16.17	16.62	21.21	11.11	1.55	21.28	51.58
Arsenic	0.72	0.67	1.55	0.89	1.26	1.11	1.10	1.34	1.42	1.46	1.40	0.98	0.67	1.17	1.89
Beryllium	0.36	0.33	0.31	0.40	0.57	0.50	0.50	0.61	0.65	0.66	0.64	0.44	0.31	0.51	0.79
Boron	298	263	229	242	171	151	150	323	194	199	191	204	150	214	470
Cadmium	0.36	0.33	0.31	2.02	2.86	2.52	2.50	1.22	1.29	1.33	1.27	0.89	0.31	1.46	3.22
Chromium	16.38	7.26	7.75	2.83	4.00	3.53	3.50	5.03	6.10	5.54	3.51	3.73	2.83	5.51	25.48
Hexavalent Chromium	1.75	1.66	1.55	1.95	5.46	5.25	4.67	6.59	7.23	7.91	6.93	4.91	1.55	4.96	9.12
Copper	102.24	96.02	115.06	67.96	99.78	89.11	82.01	67.63	104.30	99.48	70.84	75.89	67.63	88.46	150.99
Iron	ND	ND	ND	ND	2793	1635	1709	1521	2233	1882	1405	1280	1280	1807	2872
Lead	5.37	3.65	10.31	9.77	5.45	9.11	8.72	6.84	13.66	10.40	5.92	4.93	3.65	8.16	23.59
Mercury	0.39	0.23	0.59	0.24	0.33	0.33	0.12	0.15	0.43	0.30	0.39	0.19	0.12	0.30	0.73
Molybdenum	9.31	7.00	7.47	5.67	8.00	7.06	5.49	4.27	4.53	4.65	4.45	3.11	3.11	5.75	10.62
Nickel	11.51	7.90	3.71	20.06	11.42	10.08	9.99	2.97	3.56	9.05	9.81	6.40	2.97	9.15	44.65
Selenium	0.72	0.67	0.62	0.89	1.26	1.11	1.99	1.34	1.42	1.46	1.40	0.98	0.62	1.20	3.63
Silver	3.70	2.46	5.28	3.59	4.85	3.81	3.73	13.21	3.85	3.45	2.84	4.00	2.46	4.38	23.37
Thallium	0.72	0.67	0.62	0.89	1.26	1.11	1.10	1.34	1.42	1.46	1.40	0.98	0.62	1.11	1.74
Zinc	105.51	95.87	118.31	68.27	124.36	93.67	124.87	63.45	117.04	104.83	55.96	68.02	55.96	94.87	163.58
Cyanide and Phenols															
Cyanide	3.50	3.33	3.09	3.90	4.96	4.78	4.72	5.99	6.57	7.19	6.30	4.47	3.09	5.09	8.30
Phenols	ND	ND	ND	7.65	13.15	19.39	67.41	44.73	54.08	41.71	33.74	44.53	7.65	37.28	84.85
Oil and Grease, Petroleum Hydrocarbons, and Surfactants															
Oil and Grease	23061	38053	55500	53720	22326	26116	28504	21826	40918	58363	37073	22926	21826	37081	58363
PHC-IR	376	1587	181	9269	412	3110	796	2048	1888	3889	1962	1065	181	2447	22611
TPH-FID	ND	ND	ND	ND	1368	2576	3232	5488	3506	591	3328	2683	591	2810	7762
Surfactants	4238	4329	3902	4753	ND	5065	3611	3640	3820	3838	4075	4704	3611	4124	5826
Organochlorine Pesticides and PCBs															
4,4'-DDD	0.01	0.01	0.08	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.11
4,4'-DDE	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
4,4'-DDT	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
Aldrin	0.00	0.00	0.00	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.09
a-BHC	0.00	0.11	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.13
a-Chlordane	ND	ND	ND	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01
b-BHC	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.02
Chlordane (Technical)	0.04	0.04	0.01	0.10	0.13	0.15	0.11	0.13	0.13	0.14	0.13	0.09	0.01	0.11	0.21
d-BHC	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01
Dieldrin	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.04
Endosulfan I	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01
Endosulfan II	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
Endosulfan Sulfate	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03
Endrin	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
Endrin Aldehyde	0.01	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.04
Endrin Ketone	ND	ND	ND	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
g-BHC (Lindane)	0.02	0.00	0.03	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.04

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Organochlorine Pesticides and PCBs, cont.															
g-Chlordane	ND	ND	ND	0.00	0.01	0.01	0.01	0.01	0.01	**0.01**	0.01	0.00	0.00	0.01	0.02
Heptachlor	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01
Heptachlor Epoxide	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01
Methoxychlor	0.04	0.04	0.03	0.05	0.06	0.07	0.05	0.06	0.07	0.07	0.07	0.05	0.03	0.06	0.10
Toxaphene	0.36	0.36	0.31	0.10	0.13	0.15	0.11	0.13	0.13	0.14	0.13	0.09	0.09	0.16	0.38
Aroclor 1016	0.07	0.07	0.06	0.10	0.13	0.15	0.11	0.13	0.13	0.14	0.13	0.09	0.06	0.11	0.21
Aroclor 1221	0.15	0.14	0.12	0.19	0.26	0.29	0.21	0.25	0.27	0.28	0.27	0.19	0.12	0.23	0.41
Aroclor 1232	0.07	0.07	0.06	0.10	0.13	0.15	0.11	0.13	0.13	0.14	0.13	0.09	0.06	0.11	0.21
Aroclor 1242	0.07	0.07	0.06	0.10	0.13	0.15	0.11	0.13	0.13	0.14	0.13	0.09	0.06	0.11	0.21
Aroclor 1248	0.07	0.07	0.06	0.10	0.13	0.15	0.11	0.13	0.13	0.14	0.13	0.09	0.06	0.11	0.21
Aroclor 1254	0.07	0.07	0.06	0.10	0.13	0.15	0.11	0.13	0.13	0.14	0.13	0.09	0.06	0.11	0.21
Aroclor 1260	0.07	0.07	0.06	0.10	0.13	0.15	0.11	0.13	0.13	0.14	0.13	0.09	0.06	0.11	0.21
Semivolatile Organics															
1,2-dichlorobenzene	1.45	1.33	0.62	0.86	**1.48**	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.40	4.45
1,2-diphenylhydrazine	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
1,2,4-trichlorobenzene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
1,3-dichlorobenzene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
1,4-dichlorobenzene	1.45	1.33	**0.93**	**1.03**	**1.94**	**1.35**	**1.28**	1.22	1.79	**5.23**	1.38	2.69	0.93	1.87	10.94
2-chloronaphthalene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
2-chlorophenol	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
2-methylnaphthalene	1.45	1.33	**1.97**	0.86	1.20	**2.32**	1.00	1.22	1.79	1.98	1.38	2.69	0.86	1.57	4.45
2-methylphenol	1.45	1.33	0.62	0.86	1.20	**1.89**	**1.00**	1.22	1.79	1.98	1.38	2.69	0.62	1.44	4.45
2-nitroaniline	3.64	3.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.60	4.45
2-nitrophenol	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
2,2'-oxybis(1-chloropropane	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
2,4-dichlorophenol	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
2,4-dimethylphenol	1.45	1.33	0.62	0.86	1.20	**1.11**	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.39	4.45
2,4-dinitrophenol	3.64	3.33	1.84	3.33	6.04	5.27	5.00	2.51	3.57	3.96	2.76	5.38	1.84	3.86	8.89
2,4-dinitrotoluene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	3.16	0.62	1.42	4.45
2,4,5-trichlorophenol	3.64	3.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.60	4.45
2,4,6-trichlorophenol	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
2,6-dinitrotoluene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
3-nitroaniline	3.64	3.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.60	4.45
3,3'-dichlorobenzidine	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
4-bromophenyl phenyl ether	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
4-chloro-3-methylphenol	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
4-chloroaniline	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
4-chlorophenyl phenyl ether	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	3.16	0.62	1.42	4.45
4-methylphenol	**58.89**	**54.78**	**12.57**	**39.21**	**2.90**	**29.55**	**34.51**	**7.14**	**18.54**	**8.79**	**9.21**	**24.75**	2.90	23.32	63.37
4-nitroaniline	3.64	3.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.60	4.45
4-nitrophenol	3.64	3.33	1.84	3.33	6.04	5.27	5.00	2.51	3.57	3.96	2.76	5.38	1.84	3.86	8.89
4,6-dinitro-2-methylphenol	3.64	3.33	1.84	3.33	6.04	5.27	5.00	1.22	1.79	1.98	1.38	2.69	1.22	3.03	6.45
Acenaphthene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Acenaphthylene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Aniline	ND	ND	ND	ND	ND	ND	ND	2.51	3.57	3.96	2.76	5.38	2.51	3.59	8.89
Anthracene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Benzidine	3.64	3.33	0.62	0.86	1.20	**6.06**	1.00	12.21	17.87	19.78	13.81	26.89	0.62	9.44	44.46
Benzoic Acid	**29.81**	**58.02**	0.62	0.86	1.20	1.05	1.00	2.51	3.57	3.96	**12.51**	**9.78**	0.62	8.64	110.59

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Semivolatile Organics, cont.															
Benzo(a)anthracene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Benzo(b)fluoranthene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Benzo(a)pyrene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Benzo(g,h,i)perylene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Benzo(k)fluoroanthene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Benzyl Alcohol	**13.81**	**10.07**	**5.65**	**13.84**	**5.85**	1.05	**10.69**	**6.90**	**5.39**	**6.25**	**5.49**	**7.11**	1.05	7.57	16.95
Bis(2-chloroethoxy)methane	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Bis(2-chloroethyl)ether	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Bis(2-ethylhexyl)phthalate	**11.63**	**12.03**	**7.74**	**3.86**	**3.95**	**5.36**	**2.44**	1.22	**7.75**	**3.68**	**3.26**	**5.08**	1.22	5.19	15.64
Butylbenzylphthalate	**2.91**	1.33	**1.36**	**0.99**	**1.32**	**1.52**	**1.28**	1.22	1.79	1.98	1.38	2.69	0.99	1.57	4.45
Chrysene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Dibenzofuran	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Dibenzo(a,h)anthracene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Diethylphthalate	**8.00**	**6.66**	**7.43**	**6.58**	**5.15**	**7.07**	**6.70**	**3.95**	**5.83**	**3.93**	**3.28**	**4.72**	3.28	5.60	8.00
Dimethylphthalate	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Di-n-butylphthalate	**3.64**	**4.00**	**0.92**	**1.05**	**1.55**	**1.96**	**1.28**	1.22	1.79	1.98	1.38	2.69	0.92	1.81	4.45
Di-n-octylphthalate	1.45	1.33	**1.00**	0.86	1.20	1.05	**1.00**	1.22	1.79	1.98	1.38	2.69	0.86	1.41	4.45
Fluoranthene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Fluorene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	3.16	0.62	1.42	4.45
Hexachlorobenzene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Hexachlorobutadiene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Hexachlorocyclopentadiene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Hexachloroethane	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Indeno(1,2,3-cd)pyrene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Isophorone	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Naphthalene	**1.45**	1.33	**1.06**	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.86	1.41	4.45
Nitrobenzene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
N-Nitrosodimethylamine	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
N-Nitroso-di-n-propylamine	1.45	1.33	0.62	0.86	1.20	**1.16**	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.39	4.45
N-Nitrosodiphenylamine	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Pentachlorophenol	3.64	3.33	1.84	4.35	6.04	5.27	5.00	1.22	1.79	1.98	1.38	2.69	1.22	3.14	6.45
Phenanthrene	1.45	1.33	**0.87**	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.86	1.40	4.45
Phenol	**33.44**	**27.64**	**4.08**	**6.96**	**1.43**	**14.95**	**19.74**	**4.15**	1.79	1.98	1.38	**5.04**	1.38	8.70	33.44
Pyrene	1.45	1.33	0.62	0.86	1.20	1.05	1.00	1.22	1.79	1.98	1.38	2.69	0.62	1.38	4.45
Volatile Organics															
1,1-dichloroethane	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
1,1-dichloroethene	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
1,1,1-trichloroethane	0.35	**0.53**	0.31	**2.46**	**1.79**	**1.71**	**1.49**	**1.54**	**0.93**	**1.64**	0.63	**0.68**	0.31	1.22	5.71
1,1,2-trichloroethane	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
1,1,2,2-tetrachloroethane	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
1,2-dichlorobenzene	ND	ND	ND	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.38	0.55	0.83
1,2-dichloroethane	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
1,2-dichloropropane	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
1,3-dichlorobenzene	ND	ND	ND	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.38	0.55	0.83
1,4-dichlorobenzene	ND	ND	ND	**1.84**	**1.07**	**1.37**	**1.13**	0.60	**1.67**	**2.90**	**5.74**	**1.64**	0.60	2.14	11.15
2-butanone	**3.85**	**52.29**	**57.43**	**118.87**	**109.53**	**224.67**	**391.15**	**268.88**	**261.54**	**90.97**	**3.27**	**11.06**	3.27	139.75	530.01
2-chloroethyl vinyl ether	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
2-hexanone	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Volatile Organics cont.															
4-methyl-2-pentanone	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
Acetone	**38.44**	**47.14**	**95.87**	**133.21**	**103.29**	**148.89**	**102.83**	**231.24**	**172.73**	**208.24**	**124.69**	**512.87**	38.44	157.95	941.29
Acrolein	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
Acrylonitrile	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
Benzene	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
Bromodichloromethane	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
Bromoform	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
Bromomethane	**0.99**	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.55	1.63
Carbon Disulfide	**1.39**	**7.89**	**30.03**	**0.58**	0.50	0.48	0.47	**2.66**	0.66	0.72	**2.24**	0.45	0.45	3.48	50.33
Carbon Tetrachloride	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
Chlorobenzene	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
Chloroethane	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
Chloroform	**2.56**	**3.09**	**1.24**	**2.53**	**1.63**	**2.11**	**2.72**	**2.86**	**3.07**	**3.05**	**3.47**	**5.41**	1.24	2.84	5.99
Chloromethane	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
Cis-1,2-dichloroethene	ND	ND	ND	**0.90**	**0.80**	0.48	**0.62**	0.60	0.66	0.72	0.63	**0.69**	0.48	0.68	1.31
Cis-1,3-dichloropropene	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
Dibromochloromethane	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
Ethylbenzene	**1.20**	**0.56**	0.31	**0.55**	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.59	1.70
Methylene chloride	**1.11**	**1.55**	**1.15**	**2.54**	0.50	**0.89**	**1.35**	**1.64**	**1.93**	**1.07**	0.63	**1.64**	0.50	1.36	5.09
m,p-xylene	ND	ND	ND	**0.86**	0.50	0.48	**0.71**	**1.63**	**2.66**	**1.28**	**1.08**	**0.93**	0.48	1.17	3.40
o-xylene	ND	ND	ND	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.38	0.55	0.83
Styrene	**1.51**	0.33	0.31	**2.30**	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.78	5.73
Tetrachloroethene	**0.91**	**1.34**	0.31	**3.49**	**3.45**	**2.72**	**2.46**	**4.05**	**3.04**	**3.29**	**3.25**	**4.56**	0.31	2.80	5.48
Toluene	**4.27**	**3.83**	**2.17**	**4.81**	**2.41**	**5.67**	**4.97**	**4.27**	**6.21**	**3.56**	**3.55**	**3.39**	2.17	4.18	7.70
trans-1,2-dichloroethene	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
trans-1,3-dichloropropene	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
Trichloroethene	0.35	0.33	0.31	**1.15**	0.50	0.48	0.47	0.60	0.66	0.72	0.63	**1.04**	0.31	0.62	1.92
Trichlorofluoromethane	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83
Vinyl acetate	0.35	**1.22**	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.56	2.11
Vinyl chloride	0.35	0.33	0.31	0.38	0.50	0.48	0.47	0.60	0.66	0.72	0.63	0.45	0.31	0.50	0.83

Notes:

ND- No Data

1. Monthly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the month.
2. Daily loadings were calculated by substituting half the detection limit for those values that were reported below detection limits.
3. Yearly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the year.
4. Yearly maximum loading is the maximum daily loading for the year.
4. Bold numbers were detected or values that were reported between the method detection limit and reporting limit, also known as "J" values.

Appendix B Table B-4 Nut Island Effluent Characterization, Fiscal Year 1996

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	SUMMARY AVG	SUMMARY MAX	TIMES DETECTED
Metals (ug/L)																
Antimony	< 5.00	< 5.00	< 5.00	< 80.00	< 80.00	< 80.00	< 80.00	< 25.00	< 25.00	< 25.00	< 25.00	< 25.00	< 5.00	20.12	< 80.00	0 of 36
Arsenic	1.92	< 2.00	2.00	< 2.20	1.83	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.00	1.27	2.00	6 of 36
Beryllium	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	0.50	< 1.00	0 of 36
Boron	456	366	340	289	< 300	< 300	196	< 300	< 300	< 300	< 300	< 300	< 300	202	456	13 of 36
Cadmium	< 1.00	< 1.00	< 1.00	< 5.00	< 5.00	< 5.00	< 5.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 1.00	1.42	< 5.00	0 of 36
Chromium	9.39	6.32	7.69	< 7.00	< 7.00	4.88	< 7.00	3.41	2.82	1.40	2.33	6.09	< 7.00	4.09	9.39	20 of 36
Hexavalent Chromium	< 5.00	< 5.00	< 5.00	< 5.00	< 11.00	< 11.00	< 11.00	< 11.00	< 11.00	< 11.00	< 11.00	< 11.00	< 5.00	4.93	< 11.00	0 of 32
Copper	87.66	82.32	87.67	83.28	61.20	65.63	75.72	47.75	53.86	47.88	45.74	72.73	45.74	67.20	87.67	47 of 47
Iron	3087	3026	3310	ND	1316	1219	1551	1103	1140	973	905	1318	905	1537	3310	34 of 34
Lead	5.61	5.62	6.62	21.86	6.61	4.84	7.12	3.61	5.18	4.25	3.28	6.01	3.28	6.17	21.86	45 of 46
Mercury	< 0.20	0.23	0.16	0.20	0.16	0.07	0.12	0.09	0.15	0.05	0.28	0.14	< 0.20	0.15	0.28	30 of 38
Molybdenum	8.84	8.88	5.60	< 14.00	< 14.00	< 14.00	< 10.98	< 7.00	< 7.00	< 7.00	< 7.00	5.26	< 7.00	5.63	8.88	8 of 41
Nickel	8.80	< 12.00	< 12.00	15.95	< 20.00	< 20.00	< 20.00	< 3.00	2.33	5.35	5.85	5.38	< 3.00	6.90	15.95	11 of 36
Selenium	< 13.68	< 2.00	< 2.00	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.00	1.41	< 13.68	0 of 36
Silver	1.96	3.47	5.93	5.47	2.88	3.35	3.60	1.97	2.05	1.67	1.48	4.13	1.48	2.93	5.93	27 of 36
Thallium	4.82	< 2.00	< 2.00	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.20	< 2.00	1.29	4.82	1 of 36
Zinc	79.23	72.72	78.01	71.24	71.30	67.01	101.23	44.31	50.48	45.08	30.27	71.91	30.27	64.38	101.23	48 of 48
Cyanide and Phenols (ug/L)																
Cyanide	< 7.52	16.02	13.51	6.71	17.04	11.42	12.41	9.21	11.02	13.72	16.97	< 10.00	< 7.52	11.93	17.04	21 of 37
Phenols	18.00	32.00	45.00	13.37	11.84	23.40	69.96	37.99	33.36	22.06	34.48	42.99	11.84	31.83	69.96	29 of 30
Oil and Grease, Petroleum Hydrocarbons, and Surfactants (mg/L)																
Oil and Grease	41.91	49.21	34.97	32.49	20.17	27.25	39.54	28.79	23.73	17.26	18.40	26.09	17.26	27.05	49.21	33 of 33
PHC-IR	2.48	7.82	4.94	1.89	1.62	1.42	0.40	1.26	0.86	0.89	0.97	1.18	0.40	1.77	7.82	77 of 77
TPH-FID	ND	ND	ND	ND	1.78	1.71	2.50	2.28	1.62	0.24	0.89	2.56	0.24	1.65	2.56	47 of 58
Surfactants	6.30	7.57	7.40	5.47	2.42	4.48	4.75	3.80	3.26	2.98	3.12	5.42	2.42	4.31	7.57	30 of 30
Organochlorine Pesticides and PCBs (ug/L)																
4,4'-DDD	< 0.10	< 0.10	0.05	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.05	2 of 36
4,4'-DDE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	< 0.10	< 0.10	0.01	0.01	1 of 36
4,4'-DDT	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.01	1 of 36
Aldrin	< 0.10	0.03	< 0.10	0.12	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.12	2 of 36
a-BHC	0.05	0.08	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.08	6 of 36
a-Chlordane	ND	ND	ND	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 27
b-BHC	< 0.10	< 0.10	0.07	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.07	1 of 36
Chlordane (Technical)	< 0.50	< 0.50	< 0.20	< 1.20	< 1.20	< 1.10	< 1.10	< 1.10	< 1.10	< 1.10	< 1.30	< 1.30	< 0.20	0.10	< 1.30	0 of 36
d-BHC	< 0.10	< 0.10	0.59	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.04	0.59	3 of 36
Dieldrin	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 36
Endosulfan I	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 36
Endosulfan II	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 36
Endosulfan Sulfate	< 0.10	< 0.10	0.05	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.05	2 of 36
Endrin	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 36
Endrin Aldehyde	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 36
Endrin Ketone	ND	ND	ND	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 27
g-BHC (Lindane)	0.01	0.01	0.03	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.03	2 of 36
g-Chlordane	ND	ND	ND	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	0.01	< 0.10	< 0.10	< 0.10	0.01	0.01	2 of 27

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	AVG	MAX	TIMES DETECTED
Organochlorine Pesticides and PCBs, cont																
Heptachlor	0.18	0.15	< 0.10	0.40	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.05	0.18	5 of 36
Heptachlor Epoxide	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.01	< 0.10	0 of 36
Methoxychlor	< 0.50	< 0.50	< 0.50	< 0.60	< 0.60	< 0.50	< 0.50	< 0.50	0.07	< 0.60	< 0.60	< 0.50	< 0.50	0.06	0.07	2 of 36
Toxaphene	< 5.40	< 5.20	< 5.00	< 1.20	< 1.20	< 1.10	< 1.10	< 1.00	< 1.00	< 1.10	< 1.30	< 1.00	< 1.00	0.18	< 5.40	0 of 36
Aroclor 1016	< 1.10	< 1.00	< 1.00	< 1.20	< 1.20	< 1.10	< 1.10	< 1.00	< 1.00	< 1.10	< 1.30	< 1.00	< 1.00	0.11	< 1.30	0 of 36
Aroclor 1221	< 2.20	< 2.10	< 2.00	< 2.40	< 2.50	< 2.10	< 2.10	< 2.10	< 2.10	< 2.20	< 2.50	< 2.10	< 2.00	0.22	< 2.50	0 of 36
Aroclor 1232	< 1.10	< 1.00	< 1.00	< 1.20	< 1.20	< 1.10	< 1.10	< 1.00	< 1.00	< 1.10	< 1.30	< 1.00	< 1.00	0.11	< 1.30	0 of 36
Aroclor 1242	< 1.10	< 1.00	< 1.00	< 1.20	< 1.20	< 1.10	< 1.10	< 1.00	< 1.00	< 1.10	< 1.30	< 1.00	< 1.00	0.11	< 1.30	0 of 36
Aroclor 1248	< 1.10	< 1.00	< 1.00	< 1.20	< 1.20	< 1.10	< 1.10	< 1.00	< 1.00	< 1.10	< 1.30	< 1.00	< 1.00	0.11	< 1.30	0 of 36
Aroclor 1254	< 1.10	< 1.00	< 1.00	< 1.20	< 1.20	< 1.10	< 1.10	< 1.00	< 1.00	< 1.10	< 1.30	< 1.00	< 1.00	0.11	< 1.30	0 of 36
Aroclor 1260	< 1.10	< 1.00	< 1.00	< 1.20	< 1.20	< 1.10	< 1.10	< 1.00	< 1.00	< 1.10	< 1.30	< 1.00	< 1.00	0.11	< 1.30	0 of 36
Semivolatile Organics (ug/L)																
1,2-dichlorobenzene	< 20.70	< 20.60	< 10.00	< 10.00	1.14	< 10.30	3.60	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.37	3.60	2 of 36
1,2-diphenylhydrazine	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	1.56	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.20	1.56	1 of 36
1,2,4-trichlorobenzene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
1,3-dichlorobenzene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
1,4-dichlorobenzene	< 20.70	< 20.60	1.09	< 10.00	1.08	1.03	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.16	1.09	3 of 36
2-chloronaphthalene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
2-chlorophenol	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
2-methylnapthalene	< 20.70	< 20.60	2.05	< 10.00	< 10.80	< 10.30	1.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.21	2.05	2 of 36
2-methylphenol	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	1.50	1.43	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.23	1.50	3 of 36
2-nitroaniline	< 51.30	< 51.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.49	< 51.60	0 of 36
2-nitrophenol	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
2,2'-oxybis(1-chloropropa	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
2,4-dichlorophenol	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
2,4-dimethylphenol	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
2,4-dinitrophenol	< 51.30	< 51.60	< 50.00	< 50.00	< 54.20	< 51.60	< 50.00	< 20.60	< 21.30	< 21.70	< 20.90	< 20.10	< 20.10	3.63	< 54.20	0 of 36
2,4-dinitrotoluene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
2,4,5-trichlorophenol	< 51.30	< 51.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.49	< 51.60	0 of 36
2,4,6-trichlorophenol	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
2,6-dinitrotoluene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
3-nitroaniline	< 51.30	< 51.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.49	< 51.60	0 of 36
3,3'-dichlorobenzidine	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
4-bromophenyl phenyl eth	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
4-chloro-3-methylphenol	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
4-chloroaniline	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
4-chlorophenyl phenyl eth	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
4-methylphenol	57.88	55.74	61.75	43.37	14.08	30.29	34.83	2.28	11.03	9.95	8.49	31.44	2.28	25.06	61.75	33 of 36
4-nitroaniline	< 51.30	< 51.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.49	< 51.60	0 of 36
4-nitrophenol	< 51.30	< 51.60	< 50.00	< 50.00	< 54.20	< 51.60	< 50.00	< 20.60	< 21.30	< 21.70	< 20.90	< 20.10	< 20.10	3.63	< 54.20	0 of 36
4,6-dinitro-2-methylphenc	< 51.30	< 51.60	< 50.00	< 50.00	< 54.20	< 51.60	< 50.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.10	3.11	< 54.20	0 of 36
Acenaphthene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Acenaphthylene	< 20.70	< 20.60	1.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	1.00	1 of 36
Aniline	ND	ND	ND	ND	ND	ND	ND	< 20.60	< 21.30	< 21.70	< 20.90	< 20.10	< 20.10	2.10	< 21.70	0 of 15
Anthracene	< 20.70	< 20.60	1.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	1.00	0 of 36
Benzidine	< 51.30	< 51.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	6.19	< 51.60	0 of 36
Benzoic Acid	254.45	280.62	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 20.60	19.16	< 21.70	7.37	42.94	< 10.00	36.08	280.62	13 of 36
Benzo(a)anthracene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Benzo(b)fluoranthene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	SUMMARY AVG	SUMMARY MAX	TIMES DETECTED
Semivolatile Organics, cont.																
Benzo(a)pyrene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Benzo(g,h,i)perylene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Benzo(k)fluoroanthene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Benzyl Alcohol	14.41	17.05	27.18	22.00	7.00	11.47	10.07	5.20	8.94	8.15	4.32	10.91	4.32	10.82	27.18	30 of 36
Bis(2-chloroethoxy)methe	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Bis(2-chloroethyl)ether	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Bis(2-ethylhexyl)phthalat	15.32	16.37	11.63	6.18	5.41	3.66	5.70	2.33	2.62	< 10.90	< 10.50	15.90	< 10.50	6.07	16.37	24 of 36
Butylbenzylphthalate	3.66	3.09	2.78	1.50	1.50	1.88	1.57	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.10	1.59	3.66	19 of 36
Chrysene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Dibenzofuran	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Dibenzo(a,h)anthracene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Diethylphthalate	10.57	11.65	13.19	8.97	4.87	7.13	8.13	2.49	4.38	2.39	< 10.50	7.06	< 10.50	5.93	13.19	28 of 36
Dimethylphthalate	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Di-n-butylphthalate	4.70	3.06	2.52	1.67	1.60	1.76	1.57	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.10	1.64	4.70	16 of 36
Di-n-octylphthalate	< 20.70	< 20.60	2.17	< 10.00	< 10.80	1.16	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.23	2.17	4 of 36
Fluoranthene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Fluorene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Hexachlorobenzene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Hexachlorobutadiene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Hexachlorocyclopentadier	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Hexachloroethane	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Indeno(1,2,3-cd)pyrene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Isophorone	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Naphthalene	< 20.70	< 20.60	1.40	< 10.00	1.08	< 10.30	1.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.18	1.40	3 of 36
Nitrobenzene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
N-Nitrosodimethylamine	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
N-Nitroso-di-n-propylami	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
N-Nitrosodiphenylamine	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Pentachlorophenol	< 51.30	< 51.60	< 50.00	<50.00	< 54.20	< 51.60	< 50.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.10	3.11	< 54.20	0 of 36
Phenanthrene	< 20.70	< 20.60	1.03	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	1.03	1 of 36
Phenol	31.52	23.91	< 10.00	< 10.00	2.83	14.86	< 10.00	2.31	4.30	< 10.90	< 10.50	7.21	< 10.00	6.25	31.52	15 of 36
Pyrene	< 20.70	< 20.60	< 10.00	< 10.00	< 10.80	< 10.30	< 10.00	< 10.30	< 10.70	< 10.90	< 10.50	< 10.10	< 10.00	1.15	< 20.70	0 of 36
Volatile Organics (ug/L)																
1,1-dichloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
1,1-dichloroethene	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	1.87	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.81	1.87	1 of 34
1,1,1-trichloroethane	< 5.00	< 5.00	< 5.00	< 5.00	3.82	1.34	1.32	0.95	0.73	1.48	< 5.00	< 5.00	< 5.00	1.17	3.82	13 of 34
1,1,2-trichloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
1,1,2,2-tetrachloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
1,2-dichlorobenzene	ND	ND	ND	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.74	< 24.60	0 of 26
1,2-dichloroethane	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
1,2-dichloropropane	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
1,3-dichlorobenzene	ND	ND	ND	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.74	< 24.60	0 of 26
1,4-dichlorobenzene	ND	ND	ND	1.55	< 24.60	0.91	0.81	0.71	0.77	0.90	1.15	1.31	< 24.60	1.14	1.55	15 of 26
2-butanone	6.81	92.61	164.33	97.76	168.47	182.26	389.11	246.05	228.62	63.45	6.32	12.84	6.32	145.46	389.11	31 of 34
2-chloroethyl vinyl ether	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
2-hexanone	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
4-methyl-2-pentanone	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
Acetone	55.28	130.20	115.24	39.07	108.15	140.26	99.53	135.39	134.58	105.18	93.62	303.53	39.07	125.86	303.53	34 of 34
Acrolein	< 5.00	1.08	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.73	1.08	1 of 34

	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SUMMARY MIN	SUMMARY AVG	SUMMARY MAX	TIMES DETECTED
Volatile Organics, cont.																
Acrylonitrile	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
Benzene	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
Bromodichloromethane	**1.15**	**1.57**	**1.67**	**2.57**	**3.70**	**2.29**	**3.30**	**1.18**	**2.76**	**2.65**	**1.67**	**2.37**	1.15	2.32	3.70	30 of 34
Bromoform	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
Bromomethane	**1.56**	< 5.00	**1.60**	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.81	1.60	2 of 34
Carbon Disulfide	**1.65**	**8.38**	**3.54**	**1.28**	< 24.60	**0.71**	< 5.00	**0.74**	< 5.00	< 5.00	**0.80**	< 5.00	< 5.00	1.48	8.38	13 of 34
Carbon Tetrachloride	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
Chlorobenzene	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
Chloroethane	< 5.00	< 5.00	**3.08**	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.85	3.08	2 of 34
Chloroform	**6.65**	**8.22**	**7.65**	**8.49**	**5.12**	**5.57**	**6.31**	**3.72**	**5.44**	**3.83**	**5.81**	**8.55**	3.72	5.86	8.49	33 of 34
Chloromethane	**1.92**	**1.02**	**5.41**	**1.56**	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	1.12	5.41	7 of 34
Cis-1,2-dichloroethene	ND	ND	ND	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.74	< 24.60	0 of 26
Cis-1,3-dichloropropene	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
Dibromochloromethane	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	**1.19**	< 5.00	< 5.00	**0.93**	< 5.00	< 5.00	< 5.00	0.81	1.19	2 of 34
Ethylbenzene	**1.26**	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.73	1.26	1 of 34
Methylene chloride	**1.69**	**1.83**	**2.35**	**1.24**	< 24.60	**2.02**	**1.52**	**1.96**	**1.74**	**0.80**	< 5.00	**1.81**	< 5.00	1.61	2.35	22 of 34
m,p-xylene	ND	ND	ND	< 5.00	< 24.60	< 5.00	**0.72**	**1.25**	**1.85**	**0.82**	**0.66**	**0.83**	< 5.00	1.13	1.85	10 of 26
o-xylene	ND	ND	ND	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.74	< 24.60	0 of 26
Styrene	**1.01**	< 5.00	< 5.00	**3.68**	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.86	3.68	2 of 34
Tetrachloroethene	**1.25**	**1.60**	**0.95**	**2.97**	**3.82**	**3.65**	**2.41**	**2.74**	**2.72**	**2.07**	**2.61**	**4.27**	0.95	2.70	3.82	32 of 34
Toluene	**5.75**	**5.72**	**4.86**	**5.00**	**4.22**	**3.73**	**4.68**	**7.40**	**5.69**	**2.70**	**2.65**	**3.48**	2.65	4.52	7.40	32 of 34
trans-1,2-dichloroethene	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
trans-1,3-dichloropropene	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
Trichloroethene	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	**0.67**	< 5.00	0.71	0.67	1 of 34
Trichlorofluoromethane	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34
Vinyl acetate	< 5.00	**0.74**	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.71	0.74	1 of 34
Vinyl chloride	< 5.00	< 5.00	< 5.00	< 5.00	< 24.60	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	0.70	< 24.60	0 of 34

Notes:

ND- No Data

1. Full priority pollutant scan conducted (see Appendix J, Table J-3). Only constituents that were detected at least 5% of the time are included in this table.
2. Monthly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the month.
3. Daily loadings were calculated by substituting half the detection limit for those values that were reported below detection limits.
4. Yearly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the year.
5. Bold numbers were detected or values that were reported between the method detection limit and reporting limit, also known as "J" values.

Appendix B Table B-5 Nut Island Effluent Loadings, Fiscal Year 1996

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Metals															
Antimony	1.69	1.64	1.70	31.10	52.37	40.76	39.97	15.71	16.17	16.62	15.88	11.41	1.64	20.42	65.74
Arsenic	1.30	0.66	1.36	0.86	2.40	1.12	1.10	1.38	1.42	1.46	1.40	1.00	0.66	1.29	2.93
Beryllium	0.34	0.33	0.34	0.39	0.65	0.51	0.50	0.63	0.65	0.66	0.64	0.46	0.33	0.51	0.82
Boron	307.28	240.36	230.82	224.79	196.40	152.84	195.74	188.52	194.01	199.40	190.55	136.97	136.97	204.81	318.53
Cadmium	0.34	0.33	0.34	1.94	3.27	2.55	2.50	1.26	1.29	1.33	1.27	0.91	0.33	1.44	4.11
Chromium	6.33	4.15	5.22	2.72	4.58	4.97	3.50	4.29	3.65	1.86	2.96	5.56	1.86	4.15	12.70
Hexavalent Chromium	1.75	1.64	1.55	1.93	6.46	5.20	4.67	6.77	7.23	7.91	6.93	4.99	1.55	5.04	9.12
Copper	59.28	55.05	56.40	64.74	80.13	66.87	75.67	60.01	69.66	63.65	58.11	66.41	55.05	63.06	113.02
Iron	2091	2052	1777	ND	1724	1243	1550	1387	1475	1293	1150	1203	1150	1574	3202
Lead	3.80	3.76	4.26	16.99	8.66	4.93	7.11	4.54	6.70	5.65	4.17	5.49	3.76	5.79	40.82
Mercury	0.07	0.15	0.11	0.16	0.21	0.08	0.12	0.12	0.20	0.07	0.36	0.13	0.07	0.15	0.48
Molybdenum	5.96	5.94	3.61	5.44	9.17	7.13	5.49	4.40	4.53	4.65	4.45	4.80	3.61	5.46	11.50
Nickel	5.93	3.94	4.07	12.40	13.09	10.19	9.99	1.89	3.02	7.11	7.43	4.92	1.89	7.00	21.68
Selenium	4.61	0.66	0.68	0.86	1.44	1.12	1.10	1.38	1.42	1.46	1.40	1.00	0.66	1.43	12.44
Silver	1.32	2.28	4.02	4.25	3.77	3.42	3.60	2.47	2.65	2.22	1.88	3.77	1.32	2.97	5.92
Thallium	3.25	0.66	0.68	0.86	1.44	1.12	1.10	1.38	1.42	1.46	1.40	1.00	0.66	1.31	6.22
Zinc	53.58	48.62	50.19	55.38	93.35	68.28	101.16	55.69	65.29	59.93	38.45	65.66	38.45	60.42	132.83
Cyanide and Phenols															
Cyanide	2.64	10.50	9.17	5.09	20.00	10.79	11.73	11.33	14.48	19.74	21.39	4.54	2.64	12.04	35.83
Phenols	11.20	20.35	35.95	10.39	15.50	23.85	69.91	47.74	43.15	29.33	43.81	39.26	10.39	34.54	97.74
Oil and Grease, Petroleum Hydrocarbons, and Surfactants															
Oil and Grease	29347	32771	21640	24616	23675	25743	37362	35408	31179	24822	23190	23694	21640	27775	37362
PHC-IR	1691	5226	3165	1431	1917	1344	575	1628	1173	1375	1211	1077	575	1867	14076
TPH-FID	ND	ND	ND	ND	2059	1608	3354	2954	2223	368	1114	2334	368	2019	5434
Surfactants	4408	4966	4582	4250	3977	4563	4061	4780	4211	3966	3965	5014	3965	4407	6778
Organochlorine Pesticides and PCBs															
4,4'-DDD	0.01	0.01	0.03	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.04
4,4'-DDE	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02
4,4'-DDT	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.02
Aldrin	0.00	0.02	0.00	0.09	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.27
a-BHC	0.03	0.05	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.11
a-Chlordane	ND	ND	ND	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01
b-BHC	0.00	0.00	0.05	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.14
Chlordane (Technical)	0.04	0.03	0.01	0.09	0.16	0.11	0.11	0.13	0.14	0.15	0.16	0.09	0.01	0.10	0.20

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Organochlorine Pesticides and PCBs (cont)															
d-BHC	0.00	0.00	**0.40**	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.04	0.50
Dieldrin	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02
Endosulfan I	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01
Endosulfan II	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02
Endosulfan Sulfate	0.01	0.01	**0.04**	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.06
Endrin	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02
Endrin Aldehyde	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02
Endrin Ketone	ND	ND	ND	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02
g-BHC (Lindane)	0.00	0.00	**0.02**	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.03
g-Chlordane	ND	ND	ND	0.00	0.01	0.01	0.01	0.01	**0.01**	**0.01**	0.01	0.00	0.00	0.01	0.02
Heptachlor	**0.12**	**0.10**	0.00	**0.31**	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.05	0.93
Heptachlor Epoxide	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01
Methoxychlor	0.04	0.03	0.03	0.05	0.08	0.05	0.05	0.07	**0.09**	0.07	0.08	0.05	0.03	0.06	0.10
Toxaphene	0.36	0.34	0.34	0.09	0.16	0.11	0.11	0.13	0.14	0.15	0.16	0.09	0.09	0.18	0.43
Aroclor 1016	0.07	0.07	0.07	0.09	0.16	0.11	0.11	0.13	0.14	0.15	0.16	0.09	0.07	0.11	0.20
Aroclor 1221	0.15	0.14	0.14	0.19	0.32	0.21	0.21	0.26	0.27	0.29	0.32	0.19	0.14	0.22	0.41
Aroclor 1232	0.07	0.07	0.07	0.09	0.16	0.11	0.11	0.13	0.14	0.15	0.16	0.09	0.07	0.11	0.20
Aroclor 1242	0.07	0.07	0.07	0.09	0.16	0.11	0.11	0.13	0.14	0.15	0.16	0.09	0.07	0.11	0.20
Aroclor 1248	0.07	0.07	0.07	0.09	0.16	0.11	0.11	0.13	0.14	0.15	0.16	0.09	0.07	0.11	0.20
Aroclor 1254	0.07	0.07	0.07	0.09	0.16	0.11	0.11	0.13	0.14	0.15	0.16	0.09	0.07	0.11	0.20
Aroclor 1260	0.07	0.07	0.07	0.09	0.16	0.11	0.11	0.13	0.14	0.15	0.16	0.09	0.07	0.11	0.20
Semivolatile Organics															
1,2-dichlorobenzene	1.39	1.35	0.68	0.78	**1.49**	1.05	**3.59**	1.29	1.38	1.44	1.33	0.92	0.68	1.39	8.65
1,2-diphenylhydrazine	1.39	1.35	0.68	0.78	1.42	1.05	**1.56**	1.29	1.38	1.44	1.33	0.92	0.68	1.22	2.53
1,2,4-trichlorobenzene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
1,3-dichlorobenzene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
1,4-dichlorobenzene	1.39	1.35	**0.74**	0.78	**1.42**	**1.05**	1.00	1.29	1.38	1.44	1.33	0.92	0.74	1.18	1.70
2-chloronaphthalene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
2-chlorophenol	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
2-methylnaphthalene	1.39	1.35	**1.39**	0.78	1.42	1.05	**1.00**	1.29	1.38	1.44	1.33	0.92	0.78	1.23	2.77
2-methylphenol	1.39	1.35	0.68	0.78	1.42	**1.53**	**1.43**	1.29	1.38	1.44	1.33	0.92	0.68	1.25	2.58
2-nitroaniline	3.46	3.39	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.51	3.60
2-nitrophenol	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
2,2'-oxybis(1-chloropropane	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
2,4-dichlorophenol	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
2,4-dimethylphenol	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
2,4-dinitrophenol	3.46	3.39	3.39	3.89	7.10	5.25	5.00	2.58	2.76	2.88	2.66	1.84	1.84	3.68	8.22
2,4-dinitrotoluene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
2,4,5-trichlorophenol	3.46	3.39	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.51	3.60

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Semivolatile Organics, cont.															
2,4,6-trichlorophenol	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
2,6-dinitrotoluene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
3-nitroaniline	3.46	3.39	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.51	3.60
3,3'-dichlorobenzidine	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
4-bromophenyl phenyl ether	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
4-chloro-3-methylphenol	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
4-chloroaniline	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
4-chlorophenyl phenyl ether	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
4-methylphenol	**39.02**	**36.56**	**41.92**	**33.72**	**18.43**	**30.86**	**34.81**	**2.87**	**14.27**	**13.23**	**10.78**	**28.71**	2.87	25.43	70.78
4-nitroaniline	3.46	3.39	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.51	3.60
4-nitrophenol	3.46	3.39	3.39	3.89	7.10	5.25	5.00	2.58	2.76	2.88	2.66	1.84	1.84	3.68	8.22
4,6-dinitro-2-methylphenol	3.46	3.39	3.39	3.89	7.10	5.25	5.00	1.29	1.38	1.44	1.33	0.92	0.92	3.15	8.22
Acenaphthene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Acenaphthylene	1.39	1.35	**0.68**	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Aniline	ND	ND	ND	ND	ND	ND	ND	2.58	2.76	2.88	2.66	1.84	1.84	2.54	3.39
Anthracene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Benzidine	3.46	3.39	0.68	0.78	1.42	1.05	1.00	12.92	13.80	14.43	13.30	9.20	0.68	6.28	17.05
Benzoic Acid	**171.54**	**184.07**	0.68	0.78	1.42	1.05	1.00	2.58	**24.78**	2.88	**9.37**	**39.21**	0.68	36.61	267.48
Benzo(a)anthracene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Benzo(b)fluoranthene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Benzo(a)pyrene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Benzo(g,h,i)perylene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Benzo(k)fluoroanthene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Benzyl Alcohol	**9.72**	**11.18**	**18.45**	**17.10**	**9.17**	**11.69**	**10.06**	**6.53**	**11.56**	**10.83**	**5.49**	**9.96**	5.49	10.98	41.54
Bis(2-chloroethoxy)methane	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Bis(2-chloroethyl)ether	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Bis(2-ethylhexyl)phthalate	**10.33**	**10.74**	**7.89**	**4.80**	**7.09**	**3.73**	**5.70**	**2.92**	**3.39**	1.44	1.33	**14.52**	1.33	6.16	17.85
Butylbenzylphthalate	**2.47**	**2.03**	**1.89**	**1.17**	**1.96**	**1.91**	**1.57**	1.29	1.38	1.44	1.33	0.92	0.92	1.61	3.20
Chrysene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Dibenzofuran	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Dibenzo(a,h)anthracene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Diethylphthalate	**7.13**	**7.64**	**8.95**	**6.97**	**6.38**	**7.27**	**8.13**	**3.13**	**5.67**	**3.18**	1.33	**6.45**	1.33	6.02	11.98
Dimethylphthalate	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Di-n-butylphthalate	**3.17**	**2.00**	**1.71**	**1.30**	**2.09**	**1.79**	**1.57**	1.29	1.38	1.44	1.33	0.92	0.92	1.67	4.25
Di-n-octylphthalate	1.39	1.35	**1.48**	0.78	1.42	**1.18**	1.00	1.29	1.38	1.44	1.33	0.92	0.78	1.25	2.88
Fluoranthene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Fluorene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Hexachlorobenzene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Hexachlorobutadiene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Hexachlorocyclopentadiene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Semivolatile Organics, cont.															
Hexachloroethane	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Indeno(1,2,3-cd)pyrene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Isophorone	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Naphthalene	1.39	1.35	**0.95**	0.78	**1.42**	1.05	**1.00**	1.29	1.38	1.44	1.33	0.92	0.78	1.19	1.70
Nitrobenzene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
N-Nitrosodimethylamine	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
N-Nitroso-di-n-propylamine	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
N-Nitrosodiphenylamine	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Pentachlorophenol	3.46	3.39	3.39	3.89	7.10	5.25	5.00	1.29	1.38	1.44	1.33	0.92	0.92	3.15	8.22
Phenanthrene	1.39	1.35	0.70	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.70	1.17	1.70
Phenol	**21.25**	**15.69**	0.68	0.78	**3.70**	**15.15**	1.00	**2.90**	**5.56**	1.44	1.33	**6.58**	0.68	6.34	31.13
Pyrene	1.39	1.35	0.68	0.78	1.42	1.05	1.00	1.29	1.38	1.44	1.33	0.92	0.68	1.17	1.70
Volatile Organics															
1,1-dichloroethane	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
1,1-dichloroethene	0.35	0.33	0.34	0.39	2.89	0.47	**1.77**	0.62	0.66	0.72	0.63	0.45	0.33	0.83	7.68
1,1,1-trichloroethane	0.35	0.33	0.34	0.39	**4.49**	**1.27**	**1.24**	**1.17**	**0.96**	**2.12**	0.63	0.45	0.33	1.19	7.68
1,1,2-trichloroethane	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
1,1,2,2-tetrachloroethane	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
1,2-dichlorobenzene	ND	ND	ND	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.39	0.83	7.68
1,2-dichloroethane	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
1,2-dichloropropane	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
1,3-dichlorobenzene	ND	ND	ND	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.39	0.83	7.68
1,4-dichlorobenzene	ND	ND	ND	**1.20**	2.89	**0.86**	**0.77**	**0.87**	**1.01**	**1.30**	**1.45**	**1.19**	0.77	1.28	7.68
2-butanone	**4.77**	**60.75**	**111.56**	**75.56**	**197.76**	**172.20**	**367.65**	**302.66**	**300.33**	**91.26**	**7.97**	**11.66**	4.77	148.00	489.46
2-chloroethyl vinyl ether	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
2-hexanone	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
4-methyl-2-pentanone	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
Acetone	**38.71**	**85.40**	**78.24**	**30.20**	**126.95**	**132.51**	**94.04**	**166.54**	**176.80**	**151.29**	**118.01**	**275.62**	30.20	128.06	640.25
Acrolein	0.35	**0.71**	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.34	0.75	7.68
Acrylonitrile	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
Benzene	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
Bromodichloromethane	**0.80**	**1.03**	**1.13**	**1.99**	**4.35**	**2.16**	**3.11**	**1.45**	**3.62**	**3.81**	**2.10**	**2.16**	0.80	2.36	7.68
Bromoform	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
Bromomethane	**1.09**	0.33	**1.09**	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.82	7.68
Carbon Disulfide	**1.15**	**5.50**	**2.40**	**0.99**	2.89	0.67	0.47	**0.92**	0.66	0.72	**1.01**	0.45	0.45	1.51	12.36
Carbon Tetrachloride	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
Chlorobenzene	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
Chloroethane	0.35	0.33	**2.09**	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.87	7.68
Chloroform	**4.66**	**5.39**	**5.19**	**6.56**	**6.01**	**5.26**	**5.96**	**4.58**	**7.14**	**5.51**	**7.32**	**7.76**	4.58	5.97	8.86

	Average Monthly Loadings (lbs/day)												SUMMARY		
	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	MIN	AVG	MAX
Volatile Organics, cont.															
Chloromethane	**1.34**	**0.67**	**3.67**	**1.21**	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.45	1.14	7.68
Cis-1,2-dichloroethene	ND	ND	ND	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.39	0.83	7.68
Cis-1,3-dichloropropene	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
Dibromochloromethane	0.35	0.33	0.34	0.39	2.89	0.47	**1.12**	0.62	0.66	**1.33**	0.63	0.45	0.33	0.82	7.68
Ethylbenzene	**0.88**	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.74	7.68
Methylene chloride	**1.18**	**1.20**	**1.60**	**0.96**	2.89	**1.91**	**1.44**	**2.41**	**2.29**	**1.15**	0.63	**1.65**	0.63	1.64	7.68
m,p-xylene	ND	ND	ND	0.39	2.89	0.47	**0.68**	**1.53**	**2.43**	**1.18**	**0.84**	**0.75**	0.39	1.27	7.68
o-xylene	ND	ND	ND	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.39	0.83	7.68
Styrene	**0.70**	0.33	0.34	**2.84**	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.88	7.68
Tetrachloroethene	**0.88**	**1.05**	**0.65**	**2.30**	**4.49**	**3.45**	**2.28**	**3.37**	**3.58**	**2.98**	**3.29**	**3.87**	0.65	2.74	7.68
Toluene	**4.03**	**3.75**	**3.30**	**3.86**	**4.95**	**3.52**	**4.42**	**9.10**	**7.48**	**3.89**	**3.35**	**3.16**	3.16	4.60	18.52
trans-1,2-dichloroethene	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
trans-1,3-dichloropropene	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
Trichloroethene	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	**0.61**	0.33	0.73	7.68
Trichlorofluoromethane	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68
Vinyl acetate	0.35	**0.49**	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.34	0.73	7.68
Vinyl chloride	0.35	0.33	0.34	0.39	2.89	0.47	0.47	0.62	0.66	0.72	0.63	0.45	0.33	0.71	7.68

ND- No Data

Notes:

1. Full priority pollutant scan conducted (see Appendix J, Table J-3). Only constituents that were detected at least 5% of the time are included in this table.
2. Monthly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the month.
3. Daily loadings were calculated by substituting half the detection limit for those values that were reported below detection limits.
4. Yearly average concentration is the weighted concentration back-calculated from daily loadings during each sampling day in the year.
5. Yearly maximum loading is the maximum daily loading for the year.
6. Bold numbers were detected or values that were reported between the method detection limit and reporting limit, also known as "J" values.

Appendix C

Table C-1 Cottage Farm CSO Facility Operations Summary, Fiscal Year 1996

Table C-2 Cottage Farm CSO Facility BOD and TSS Loadings, Fiscal Year 1996

Table C-3 Cottage Farm CSO Facility Priority Pollutants, NPDES Data, Fiscal Year 1996

Table C-4 Cottage Farm CSO Facility Priority Pollutant Loadings, Fiscal Year 1996

Appendix C Table C-1 Cottage Farm CSO Facility Operations Summary, Fiscal Year 1996

DATE	RAINFALL (INCHES)	DISCHARGE DURATION (HOURS)	TOTAL FLOW (MG)	PH (SU)	BOD INFLUENT (MG/L)	BOD EFFLUENT (MG/L)	TSS INFLUENT (MG/L)	TSS EFFLUENT (MG/L)	SETTLEABLE. SOLIDS (ML/L)	FECAL COLIFORM (#/100 ml)	CHLORINE RESIDUAL (MG/L)
JULY											
29	0.88	4.50	11.89	6.89	49	< 46	138	152	1.4	50	3.00
AUGUST											
6	0.63	4.00	4.06	6.84	< 34	< 21	52	28	< 0.4	< 10	2.50
SEPTEMBER											
17	2.77	10.50	61.70	7.02	65	29	56	62	0.4	< 10	3.00
18*	0.00	3.00	1.88	7.05	123	46	104	52	1.2	< 10	2.67
22	0.40	1.50	3.95	6.83	> 141	58	260	82	4.0	< 10	3.00
OCTOBER											
5	1.52	4.00	19.09	7.47	49	145	26	138	7.2	< 10	3.00
6#	1.79	15.00	89.75	6.87	100	42	160	58	2.4	1390	3.00
					99	58	92	56	2.4	10	
15	0.63	4.00	13.20	8.20	110	28	312	53	< 0.4	< 10	3.25
21	1.40	6.25	32.38	7.00	86	53	121	50	< 0.4	< 10	3.00
22*	0.00	3.00	9.80	7.51	36	23	43	28	< 0.4	< 10	3.00
28	0.73	9.50	42.35	6.61	73	27	116	138	4.0	10	3.06
NOVEMBER											
2	0.94	5.00	8.34	7.15	11	56	400	46	1.6	10	3.13
7	1.00	2.00	13.33	7.23	97	48	104	42	< 0.4	< 10	3.00
8*	0.04	2.50	23.87								2.67
12	0.81	6.00	19.97	7.90	< 38	< 17	68	37	< 0.4	< 10	3.00
14	1.34	6.50	39.98	6.94	67	49	80	46	1.2	< 10	2.70
15#	0.35	16.50	67.11	7.20	42	33	37	32	< 0.4	< 10	2.39
				7.16	36	25	44	21	< 0.4	10	
DECEMBER											
9	0.69	6.16	27.32	7.03	120	51	102	76	< 0.2	< 10	2.70
JANUARY											
12	1.43										
13*	0.02	6.50	15.21	7.30	88	31	174	30	< 0.4	< 10	3.00
19	0.94	9.00	61.42	7.40	64	< 56	46	30	< 0.4	< 10	2.97
20**	0.00	24.00	64.04	7.40	65	< 56	34	40	0.8	< 10	2.48
21**	0.00	7.00	4.54	7.40	91	80	232	30	< 0.2	10	2.00
24	0.46										
25*	0.00	10.00	20.81	7.00	< 44	52	92	66	2.4	40	2.50
27	1.82	9.00	62.70	8.30	38	84	84	120	1.8	550	2.36
28*	0.01	24.00	43.36	7.40	< 36	39	30	86	0.6	< 10	2.28

DATE	RAINFALL (INCHES)	DISCHARGE DURATION (HOURS)	TOTAL FLOW (MG)	PH (SU)	BOD INFLUENT (MG/L)	BOD EFFLUENT (MG/L)	TSS INFLUENT (MG/L)	TSS EFFLUENT (MG/L)	SETTLEABLE. SOLIDS (ML/L)	FECAL COLIFORM (#/100 ml)	CHLORINE RESIDUAL (MG/L)
FEBRUARY											
21	0.74	9.00	10.29	7.90	62	53	132	86	8.0	< 10	2.80
24	0.53	6.50	5.38	7.50	131	29	360	64	0.4	< 10	2.75
MARCH											
20	0.55	3.75	6.58	7.60	40	21	166	78	< 0.4	< 10	2.83
APRIL											
16	1.57	14.50	94.02	8.40	98	75	196	122	1.6	70	2.72
17*	0.00	11.00	9.60	6.80	106	< 17	252	46	0.8	< 10	2.06
29	0.59	5.00	6.78	7.20	120	118	223	114	6.0	10	2.53
MAY											
30	0.64	6.25	15.85	7.80	70	67	76	82	1.6	10000	2.25
JUNE											
21	0.11	3.30	7.94	7.01	126	153	224	286	3.6	20.00	1.00
TOTAL		**258.71**	**918.49**								
AVERAGE		**7.84**	**27.83**		**76**	**53**	**136**	**73**	**1.8**	**20**	**2.51**
MINIMUM	**0.00**	**1.50**	**1.88**	**6.61**	**11**	**<17**	**26**	**21**	**< 0.2**	**<10**	**1.00**
MAXIMUM	**2.77**	**24.00**	**94.02**	**8.40**	**>141**	**153**	**400**	**286**	**8.0**	**10000**	**3.25**
NO. of Times CSO ACTIVATED			**26**								
NO. of DAYS CSO ACTIVATED			**33**								

* Activation continued from the previous day, treated as one activation.
@ Activation caused by snowmelt.
# Second set of samples taken.

Appendix C Table C-2 Cottage Farm CSO BOD and TSS Loadings, Fiscal Year 1996

DATE	Total Flow (MG)	Biochemical Oxygen Demand Influent (lbs/d)	Biochemical Oxygen Demand Effluent (lbs/d)	Total Suspended Solids Influent (lbs/d)	Total Suspended Solids Effluent (lbs/d)
JULY					
29	11.89	4879	4581	13684	15073
AUGUST					
6	4.06	1155	694	1761	948
SEPTEMBER					
17	61.70	33448	14665	28816	31904
18*	1.88	1929	720	1631	815
22	3.95	4645	1898	8565	2701
OCTOBER					
5	19.09	7722	23086	4139	21971
6#	89.75	74290	37239	94313	42665
15	13.20	12110	3126	34347	5835
21	32.38	23251	14178	32676	13502
22*	9.80	2926	1896	3514	2288
28	42.35	25642	9395	40971	48741
NOVEMBER					
2	8.34	765	3909	27822	3200
7	13.33	10773	5381	11562	4669
8*	23.87	@	@	@	@
12	19.97	6329	2798	11325	6162
14	39.98	22307	16172	26675	15338
15*	67.11	23506	18525	20707	17909
DECEMBER					
9	27.32	27342	11711	23241	17317
JANUARY					
13*	15.21	11099	3894	22072	3806
19	61.42	32988	28686	23563	15367
20**	64.04	34716	29909	18159	21364
21**	4.54	3461	3029	8784	1136
25*	20.81	7706	9077	15967	11455
27	62.70	19714	43768	43925	62750
28*	43.36	13018	14212	10849	31100

DATE	Total Flow (MG)	Biochemical Oxygen Demand Influent (lbs/d)	Biochemical Oxygen Demand Effluent (lbs/d)	Total Suspended Solids Influent (lbs/d)	Total Suspended Solids Effluent (lbs/d)
FEBRUARY					
21	10.29	5338	4557	11328	7380
24	5.38	5878	1292	16153	2872
MARCH					
20	6.58	2201	1158	9110	4280
APRIL					
16	94.02	77158	58653	153689	95663
17*	9.60	8487	1377	20176	3683
29	6.78	6785	6672	12610	6446
MAY					
30	15.85	9200	8883	10046	10839
JUNE					
21	7.94	8344	10132	14833	18939
TOTAL	**918.49**				
AVERAGE	**35.33**	**16535**	**12352**	**24282**	**17129**
MINIMUM	**1.88**	**765**	**694**	**1631**	**815**
MAXIMUM	**94.02**	**77158**	**58653**	**153689**	**95663**
No. OF ACTIVATIONS	**26**				

Notes:

* Activation continued from previous day.

\# Activation continued from the previous day, two sets of samples taken, results averaged to calculate loadings.

@ No samples taken.

Appendix C Table C-3 Cottage Farm CSO Facility, Effluent Characterization, FY96

	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Summary MIN	Summary AVE	Summary MAX	Times Detecte
Metals (ug/L)																
Cadmium	2	N	< 0.5	< 0.5	N	N	N	< 1	< 1	< 1	N	N	< 0.5	1	2	1 of 6
Copper	140	O	100	100	O	O	O	66.7	53.9	82.5	O	O	53.9	90.52	140	6 of 6
Lead	200		63	61				38.8	48.7	71			38.8	80.47	200	6 of 6
Mercury	0.8	S	0.9	1.7	S	S	S	0.184	1.09	0.34	S	S	0.184	0.836	1.7	6 of 6
Nickel	15	A	< 6	< 6	A	A	A	5.3	4.8	8.7	A	A	< 6	7.633	15	4 of 6
Zinc	240	M	160	150	M	M	M	114	136	156	M	M	114	159.3	240	6 of 6
		P			P	P	P				P	P				
		L			L	L	L				L	L				
Inorganics (ug/L)																
Cyanide	13	E	NA	< 2.5	E	E	E	49.9	44.3	26.2	E	E	< 2.5	27.18	49.9	4 of 6
Phenol	6	S	7.5	12	S	S	S	11	< 1.0	10.5	S	S	< 1.0	8	12	3 of 6
MBAS (mg/L)	NA		NA	1.8				2.88	0.558	1.63			0.558	1.717	2.88	4 of 6
		T			T	T	T				T	T				
		A			A	A	A				A	A				
Pesticides/PCBs (ug/L)																
a-BHC	0.028	K	< 0.005	< 0.005	K	K	K	< 0.005	< 0.00926	< 0.00515	K	K	< 0.005	0.01	0.028	1 of 6
d-BHC	< 0.005	E	0.161	< 0.005	E	E	E	< 0.005	< 0.00926	< 0.00515	E	E	< 0.005	0.032	0.161	1 of 6
Endosulfan I	0.045	N	< 0.005	< 0.005	N	N	N	< 0.005	< 0.00926	< 0.00515	N	N	< 0.005	0.012	0.045	1 of 6
Endrin Aldehyde	0.150		< 0.01	< 0.01				< 0.01	< 0.0185	< 0.0103			< 0.01	0.035	0.15	1 of 6
Methoxychlor	0.360		< 0.05	< 0.05				< 0.05	< 0.0926	0.146			< 0.05	0.125	0.36	2 of 6
Semi-volatile Organic Compounds (ug/L)																
4-methylphenol	7.00		10	12				12.1	< 1.32	12.3			< 1.32	9.12	12.3	5 of 6
Benzo(a)pyrene	3.00		< 1	< 1				< 1.05	< 1.32	< 1.01			< 1.0	1.397	3	1 of 6
Benzo(b)fluoranthene	4.00		< 1	< 1				< 1.05	< 1.32	< 1.01			< 1.0	1.563	4	1 of 6
Bis(2-ethylhexyl)phthalate	96.00		8.4	9.5				11.7	< 1.32	7.88			< 1.32	22.47	96	5 of 6
Butyl benzyl phthalate	< 3.00		1.4	1.6				< 1.05	< 1.32	< 1.01			< 1.01	1.563	1.6	2 of 6
Diethylphthalate	< 3.00		4	3				< 1.05	< 1.32	< 1.01			< 1.01	2.233	4	2 of 6
Di-n-butylphthalate	5.00		1.3	2.1				< 1.05	< 1.32	< 1.01			< 1.01	1.963	5	3 of 6
Di-n-octylphthalate	< 3.00		< 1	1.6				< 1.05	< 1.32	< 1.01			< 1.0	1.497	1.6	1 of 6
Fluoranthene	4.00		< 1	< 1				< 1.05	< 1.32	< 1.01			< 1.0	1.563	4	1 of 6
Pyrene	3.00		< 1	< 1				< 1.05	< 1.32	< 1.01			< 1.0	1.397	3	1 of 6

NA- Not Analyzed
Bold numbers are detected values.

Appendix C Table C-4 Cottage Farm CSO Facility, Effluent Loadings, FY96

	Loadings (lbs/day)												Summary		
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	MIN	AVE	MAX
Metals															
Cadmium	**0.198**	N	0.515	0.749	N	N	N	0.172	0.11	1.568	N	N	0.11	0.552	1.568
Copper	**13.88**	O	**51.46**	**74.85**	O	O	O	**5.724**	**2.958**	**64.69**	O	O	2.958	35.59	74.85
Lead	**19.83**		**32.42**	**45.66**				**3.33**	**2.673**	**55.67**			2.673	26.6	55.67
Mercury	**0.079**	S	**0.463**	**1.272**	S	S	S	**0.016**	**0.06**	**0.267**	S	S	0.016	0.36	1.272
Nickel	**1.487**	A	6.175	8.982	A	A	A	**0.455**	**0.263**	**6.822**	A	A	0.263	4.031	8.982
Zinc	**23.8**	M	**82.33**	**112.3**	M	M	M	**9.783**	**7.463**	**122.3**	M	M	7.463	59.66	122.3
		P			P	P	P				P	P			
		L			L	L	L				L	L			
Inorganics		E			E	E	E				E	E			
Cyanide	**1.289**	S	NA	0.796	S	S	S	**4.282**	**2.431**	**20.54**	S	S	0.796	4.89	20.54
Phenol	**0.595**		**3.859**	**8.982**				**0.944**	0.549	**8.233**			0.549	3.86	8.982
MBAS (mg/L)	NA		NA	**1347**				**247.2**	**30.62**	**1278**			30.62	483.9	1347
		T			T	T	T				T	T			
		A			A	A	A				A	A			
Pesticides/PCBs		K			K	K	K	0.004	0.005	0.04	K	K	0.003	0.019	0.04
a-BHC	**0.003**	E	0.026	0.037	E	E	E	0.004	0.005	0.04	E	E	0.004	0.029	0.083
d-BHC	0.005	N	**0.083**	0.037	N	N	N	0.004	0.005	0.04	N	N	0.004	0.02	0.04
Endosulfan I	**0.004**		0.026	0.037				0.009	0.01	0.081			0.009	0.04	0.081
Endrin Aldehyde	**0.015**		0.051	0.075				0.043	0.051	**0.114**			0.036	0.146	0.374
Methoxychlor	**0.036**		0.257	0.374											
Semi-volatile Organic Compounds															
4-methylphenol	**0.694**		**5.146**	**8.982**				**1.038**	0.724	**9.645**			0.694	4.372	9.645
Benzo(a)pyrene	**0.297**		5.146	7.485				0.901	0.724	7.92			0.297	3.746	7.92
Benzo(b)fluoranthene	**0.397**		5.146	7.485				0.901	0.724	7.92			0.397	3.762	7.92
Bis(2-ethylhexyl)phthalate	**9.52**		**4.322**	**7.111**				**1.004**	0.724	**6.179**			0.724	4.81	9.52
Butyl benzyl phthalate	2.975		**0.72**	**1.198**				0.901	0.724	7.92			0.72	2.406	7.92
Diethylphthalate	2.975		**2.058**	**2.246**				0.901	0.724	7.92			0.724	2.804	7.92
Di-n-butylphthalate	**0.496**		**0.669**	**1.572**				0.901	0.724	7.92			0.496	2.047	7.92
Di-n-octylphthalate	2.975		5.146	**1.198**				0.901	0.724	7.92			0.724	3.144	7.92
Fluoranthene	**0.397**		5.146	7.485				0.901	0.724	7.92			0.397	3.762	7.92
Pyrene	**0.297**		5.146	7.485				0.901	0.724	7.92			0.297	3.746	7.92

NA- Not Analyzed

Appendix D

Table D-1 Prison Point CSO Facility Operations Summary, Fiscal Year 1996

Table D-2 Prison Point CSO Facility BOD and TSS Loadings, Fiscal Year 1996

Table D-3 Prison Point CSO Facility Priority Pollutants, NPDES Data, Fiscal Year 1996

Table D-4 Prison Point CSO Facility Priority Pollutant Loadings, Fiscal Year 1996

Appendix D Table D-1 Prison Point CSO Facility Operations Summary, Fiscal Year 1996

DATE	RAINFALL (INCHES)	DISCHARGE DURATION (HOURS)	TOTAL FLOW (MG)	PH (SU)	BOD INFLUENT (MG/L)	BOD EFFLUENT (MG/L)	TSS INFLUENT (MG/L)	TSS EFFLUENT (MG/L)	SETTL. SOLIDS (ML/L)	FECAL COLIFORM (#/100ml)	CHLORINE RESIDUAL (MG/L)a
JULY											
29	0.88	4.50	11.739	8.80	71	< 46	406	234	1.2	< 10	2.75
AUGUST											
6	0.63	3.00	1.238	6.98	< 64	< 34	1850	138	0.4	< 10	2.88
SEPTEMBER											
17	2.77	10.00	62.602	6.95	39	33	168	140	1.6	30	2.64
OCTOBER											
5	1.52	3.50	18.185	7.45	122	54	1090	96	1.6	110	3.03
6	1.79	11.00	57.153	6.78	57	< 10	160	46	< 0.4	10	2.92
15	0.63	4.00	7.019	7.73	30	50	708	54	1.0	110	3.23
21	1.40	7.00	15.407	7.06	56	42	185	104	1.6	260	2.38
22*	0.00	2.00	4.402	7.58	38	24	110	44	< 0.4	50	2.30
28	0.73	6.00	11.366	7.02	235	18	790	124	2.0	< 10	3.08
NOVEMBER											
2	0.94	3.00	4.000	7.03	39	25	52	50	0.4	130	2.57
7	1.00	1.00	2.649	7.33	130	57	156	24	< 0.4	< 10	3.00
8*	0.04	3.50	6.706								3.07
12	0.81	5.00	11.886	7.20	< 38	< 38	188	112	0.8	< 10	2.83
14	1.34	4.00	24.000	6.87	< 63	< 37	250	76	0.8	< 10	3.30
15*	0.35	5.00	25.808	7.27	15	13	23	17	< 0.4	< 10	2.83
DECEMBER											
9	0.69	4.50	10.905	7.01	93	66	204	132	3.0	40	2.60
JANUARY											
12	1.43										
13*	0.02	5.75	10.754	6.90	74	78	180	200	2.0	< 10	2.94
19	0.94	9.00	37.000	6.90	172	110	938	236	1.6	60	2.50
20*	0.00	3.00	13.254	6.90	75	72	62	58	< 0.4	< 10	3.00
24	0.46	3.75	2.270	6.90	< 89	< 35	232	120	0.8	< 10	2.80
27	1.82	7.50	36.516	7.10	48	47	192	164	0.8	100	2.69
28*	0.01	3.00	6.330	7.20	< 46	34	82	112	1.0	< 10	2.53
FEBRUARY											
21	0.74	8.70	6.334	7.50	114	56	742	222	8.0	< 10	2.84
24	0.53	3.50	4.515	7.50	38	19	204	126	0.8	< 10	2.60
MARCH											
20	0.55	2.50	6.212	7.90	51	38	508	144	0.8	40	2.20

DATE	RAINFALL (INCHES)	DISCHARGE DURATION (HOURS)	TOTAL FLOW (MG)	PH (SU)	BOD INFLUENT (MG/L)	EFFLUENT (MG/L)	TSS INFLUENT (MG/L)	EFFLUENT (MG/L)	SETTL. SOLIDS (ML/L)	FECAL COLIFORM (#/100ml)	CHLORINE RESIDUAL (MG/L)
APRIL											
16	1.57	14.00	33.152	7.00	< 31	22	114	98	1.2	< 10	2.92
29	0.59	5.00	3.761	6.80	80	59	204	90	0.4	< 10	2.57
MAY											
30	0.64	4.00	8.303	6.90	78	58	300	156	1.2	10	2.68
JUNE											
21	0.11	2.50	1.447	7.10	156	95	616	180	1.6	180	1.25
TOTAL		**149.20**	**444.913**								
AVERAGE		**5.14**	**15.34**		**76.41**	**45.39**	**382.64**	**117.75**	**1.31**	**22.81**	**2.72**
MINIMUM	**0.00**	**1.00**	**1.238**	**6.78**	**15**	**<10**	**23**	**17**	**<0.4**	**<10**	**1.25**
MAXIMUM	**2.77**	**14.00**	**62.602**	**8.80**	**235**	**110**	**1850**	**236**	**8.0**	**260**	**3.30**
No. of TIMES CSO ACTIVATED			**24**								
No. of DAYS CSO ACTIVATED			**29**								

* Activation continued from the previous day, treated as one activation.

Appendix D Table D-2 Prison Point CSO BOD and TSS Loadings, Fiscal Year 1996

DATE	Total Flow (MG)	Biochemical Oxygen Demand Influent (lbs/d)	Biochemical Oxygen Demand Effluent (lbs/d)	Total Suspended Solids Influent (lbs/d)	Total Suspended Solids Effluent (lbs/d)
JULY					
29	11.74	6990	4523	39749	22909
AUGUST					
6	1.24	661	352	19101	1425
SEPTEMBER					
17	62.60	20100	17438	87710	73092
OCTOBER					
5	18.185	18503	8220	165313	14560
6	57.153	27074	4957	76265	21926
15	7.019	1762	2909	41445	3161
21	15.407	7157	5422	23771	13363
22*	4.402	1402	881	4038	1615
28	11.366	22276	1678	74886	11754
NOVEMBER					
2	4.000	1294	827	1735	1668
7	2.649	2872	1259	3446	530
8*	6.706				
12	11.886	3797	3777	18636	11102
14	24.000	12690	7366	50040	15212
15*	25.808	3121	2734	4950	3659
DECEMBER					
9	10.905	8413	5975	18553	12005
JANUARY					
13*	10.75	6619	7032	16144	17938
19	37.00	53076	33944	289448	72825
20*	13.25	8235	8003	6853	6411
24	2.27	1681	672	4392	2272
27	36.52	14709	14405	58472	49945
28*	6.33	2418	1795	4329	5913
FEBRUARY					
21	6.33	6022	2964	39197	11727
24	4.52	1427	723	7682	4745
MARCH					
20	6.21	2621	1969	26319	7460

DATE	Total Flow (MG)	Biochemical Oxygen Demand Influent (lbs/d)	Biochemical Oxygen Demand Effluent (lbs/d)	Total Suspended Solids Influent (lbs/d)	Total Suspended Solids Effluent (lbs/d)
APRIL					
16	33.15	8654	6193	31520	27096
29	3.76	2494	1838	6399	2823
MAY					
30	8.30	5429	4002	20774	10803
JUNE					
21	1.45	1883	1149	7434	2172
TOTAL	**444.91**				
AVERAGE	**18.54**	**9049**	**5465**	**41022**	**15361**
MINIMUM	**1.24**	**661**	**352**	**1735**	**530**
MAXIMUM	**62.60**	**53076**	**33944**	**289448**	**73092**
No of ACTIVATIONS	**24**				

Notes:

* Activation continued from the previous day.

Appendix D Table D-3 Prison Point CSO Facility, Effluent Characterization, FY96

	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Summary MIN	Summary AVE	Summary MAX	Times Detected
Metals (ug/L)																
Cadmium	3	N	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0	< 2.0	2.5	2.2	2.1	N	< 0.5	1.93	3	4 of 10
Copper	200	O	75	76	45	63.9	70	82.5	98.4	122	110	O	45	94.28	200	10 of 10
Lead	340		86	74	47	45	86.4	179	159	212	35.5		45	126.4	340	10 of 10
Mercury	1.4	S	0.3	0.4	0.185	0.377	0.18	0.236	0.299	0.36	0.113	S	0.113	0.385	1.4	10 of 10
Nickel	16	A	< 12.0	13	< 20.0	< 20.0	< 20.0	17.9	10.7	12.4	< 3.0	A	< 1.5	10.75	17.9	5 of 10
Zinc	480	M	180	190	116	214	342	342	316	338	145	M	116	266.3	480	10 of 10
		P										P				
Inorganics (ug/L)		L										L				
Cyanide	< 5.0	E	NA	< 5.0	NA	42.4	35	92.4	51.7	56.3	< 10.0	E	< 2.5	41.64	92.4	5 of 10
		S										S				
Other Organics																
Total Phenol (ug/L)	6	T	9.9	12	12	7	< 10.0	< 10.0	10.6	< 10.0	< 20.0	T	< 1.0	1.838	12	6 of 10
MBAS (mg/L)	NA	A	NA	0.59	0.642	0.98	0.766	1.06	0.696	5.54	0.2	A	0.2		5.54	8 of 10
		K										K				
		E										E				
Pesticides/PCBs (ug/L)		N										N				
4,4'-DDT	< 0.10		< 0.10	< 0.10	< 0.109	< 0.116	< 0.108	< 0.11	0.019	< 0.10	< 0.10		< 0.01	0.011	0.019	1 of 10
Aldrin	< 0.052		0.033	< 0.052	< 0.054	< 0.058	< 0.054	< 0.054	< 0.052	< 0.05	< 0.052		< 0.005	0.008	0.033	1 of 10
a-BHC	< 0.052		< 0.05	0.027	< 0.054	< 0.058	< 0.054	< 0.054	< 0.052	< 0.05	< 0.052		< 0.005	0.007	0.027	1 of 10
d-BHC	< 0.052		0.029	< 0.052	< 0.054	< 0.058	< 0.054	< 0.054	< 0.052	< 0.05	< 0.052		< 0.005	0.008	0.029	1 of 10
Dieldrin	< 0.10		< 0.10	< 0.1	< 0.109	< 0.116	< 0.108	< 0.11	0.017	< 0.10	< 0.10		< 0.01	0.011	0.017	1 of 10
Endrin Aldehyde	< 0.10		< 0.10	0.064	< 0.109	< 0.116	< 0.108	< 0.11	< 0.10	< 0.10	< 0.10		< 0.01	0.016	0.064	1 of 10
Methoxychlor	< 0.52		< 0.5	< 0.52	< 0.543	< 0.581	< 0.538	< 0.543	0.102	0.118	< 1.03		< 0.05	0.07	0.118	2 of 10
Semi-volatile Organic Compounds (ug/L)																
2-methylnaphthalene	< 20.0		< 10.0	1.3	2.9	< 12.0	< 11.0	< 10.4	< 52.1	< 10.1	< 13.2		< 1.0	1.808	2.9	2 of 10
4-methylphenol	13		6.4	< 11.0	4	9.3	6	< 10.4	< 52.1	< 10.1	< 13.2		< 1.01	4.838	13	5 of 10
Anthracene	< 20.0		< 10.0	< 11.0	< 11.0	2.9	< 11.0	< 10.4	< 52.1	< 10.1	< 13.2		< 1.0	1.778	2.9	1 of 10
Benzidine	< 50.0		< 10.0	< 11.0	< 11.0	< 12.0	< 11.0	< 10.4	< 52.1	14.7	< 13.2		< 1.0	10.09	14.7	1 of 10
Benzo(a)anthracene	4		< 10.0	< 11.0	< 11.0	< 12.0	< 11.0	< 10.4	< 52.1	< 10.1	< 13.2		< 1.0	1.808	4	1 of 10
Benzo(a)pyrene	3		< 10.0	< 11.0	< 11.0	< 12.0	< 11.0	< 10.4	< 52.1	< 10.1	< 13.2		< 1.0	1.708	3	1 of 10
Benzo(b)fluorathene	6		< 10.0	< 11.0	< 11.0	< 12.0	< 11.0	< 10.4	< 52.1	< 10.1	< 13.2		< 1.0	2.008	6	1 of 10
Benzo(ghi)perylene	3		< 10.0	< 11.0	< 11.0	< 12.0	< 11.0	< 10.4	< 52.1	< 10.1	< 13.2		< 1.0	1.708	3	1 of 10
Benzyl Alcohol	< 20.0		< 10.0	< 11.0	5	2.7	2	< 10.4	< 52.1	< 10.1	< 13.2		< 1.0	2.238	5	3 of 10
Bis(2-ethylhexyl)phthalate	53		7.9	4.4	8.8	9.7	7	11	< 52.1	14	< 13.2		< 1.32	12.23	53	8 of 10
Butyl Benzyl Phthalate	< 20.0		< 10.0	< 11.0	1.4	< 12.0	< 11.0	< 10.4	< 52.1	< 10.1	< 13.2		< 1.0	1.638	1.4	1 of 10

	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Summary MIN	Summary AVE	Summary MAX	Times Detected
Semi-volatile Organic Compounds, cont.																
Chrysene	**5**		< 10.0	< 11.0	< 11.0	**1.2**	**2**	< 10.4	< 52.1	< 10.1	< 13.2		< 1.0	1.998	5	3 of 10
Diethylphthalate	< 20.0		**1.4**	< 11.0	**1.9**	**1.3**	< 11.0	< 10.4	< 52.1	< 10.1	< 13.2		< 1.01	1.738	1.9	3 of 10
Di-n-butylphthalate	< 20.0		**1.1**	< 11.0	**1.5**	< 12.0	< 11.0	< 10.4	< 52.1	< 10.1	< 13.2		< 1.01	1.658	1.5	2 of 10
Di-n-octylphthalate	< 20.0		**1.1**	< 11.0	**1.2**	**2.2**	**2**	< 10.4	< 52.1	< 10.1	< 13.2		< 1.01	1.818	2.2	4 of 10
Fluoranthene	**9**		**2.1**	< 11.0	**1.1**	**2.9**	**4**	< 10.4	< 52.1	**5.22**	< 13.2		< 1.04	3.299	9	6 of 10
Indeno(1,2,3-cd)pyrene	**3**		< 10.0	< 11.0	< 11.0	< 12.0	< 11.0	< 10.4	< 52.1	< 10.1	< 13.2		< 1.0	1.708	3	1 of 10
Naphthalene	< 20.0		< 10.0	< 11.0	**3.7**	< 12.0	< 11.0	< 10.4	< 52.1	< 10.1	< 13.2		< 1.0	1.868	20	1 of 10
Phenanthrene	< 20.0		**2.1**	**1.2**	**1.8**	**2.3**	**4**	< 10.4	< 52.1	**3.5**	< 13.2		< 1.04	2.447	4	6 of 10
Phenol	< 20.0		< 10.0	< 11.0	< 11.0	**2.6**	**2**	< 10.4	< 52.1	< 10.1	< 13.2		< 1.0	1.838	2.6	2 of 10
Pyrene	**7**		**1.5**	< 11.0	< 11.0	< 12.0	**2**	< 10.4	< 52.1	< 10.1	< 13.2		< 1.01	2.248	7	3 of 10

NA-Not Analyzed
Bold numbers are detected values.

Appendix D Table D-4 Prison Point CSO Facility, Effluent Loadings, FY96

	Loadings (lbs/day)												Summary		
	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	MIN	AVE	MAX
Metals															
Cadmium	**0.2937**	N	0.5221	0.4767	0.1668	0.4547	0.4484	0.1057	**0.1295**	**0.6083**	**0.1454**	N	0.1057	0.3351	0.6083
Copper	**19.581**	O	**39.158**	**36.226**	**1.5012**	**5.8116**	**6.2782**	**4.3581**	**5.0979**	**33.731**	**7.6172**	O	1.5012	15.936	39.158
Lead	**33.287**		**44.901**	**35.273**	**1.5679**	**4.0926**	**7.7491**	**9.4558**	**8.2375**	**58.615**	**2.4583**		1.5679	20.564	58.615
Mercury	**0.1371**	S	**0.1566**	**0.1907**	**0.0062**	**0.0343**	**0.0161**	**0.0125**	**0.0155**	**0.0995**	**0.0078**	S	0.0062	0.0676	0.1907
Nickel	**1.5665**	A	6.2652	**6.1965**	0.6672	1.819	1.7938	**0.9456**	**0.5543**	**3.4284**	0.2077	A	0.2077	2.3444	6.2652
Zinc	**46.994**	M	**93.978**	**90.565**	**3.8698**	**19.463**	**30.673**	**18.066**	**16.371**	**93.453**	**10.041**	M	3.8698	42.347	93.978
		P										P			
Inorganics		L										L			
Cyanide	0.4895	E	NA	0.7583	NA	**3.8562**	**3.1391**	**4.8811**	**2.6785**	**15.566**	0.6925	E	0.4895	3.2061	15.566
		S										S			
Other Organics															
Total Phenol	**0.5874**	T	**5.1688**	**5.7199**	**0.4003**	**0.6366**	0.8969	0.5283	**0.5492**	2.7649	1.3849	T	0.4003	1.8637	5.7199
MBAS	NA	A	NA	**281.23**	**21.417**	**89.129**	**68.701**	**55.995**	**36.058**	**1531.7**	**13.849**	A	13.849	209.81	1531.7
		K										K			
Pesticides/PCBs		E										E			
4,4'-DDT	0.0098	N	0.0522	0.0477	0.0036	0.0105	0.0097	0.0058	**0.001**	0.0276	0.0071	N	0.001	0.0175	0.0522
Aldrin	0.0051		**0.0172**	0.0248	0.0018	0.0053	0.0048	0.0029	0.0027	0.0138	0.0036		0.0018	0.0082	0.0248
a-BHC	0.0051		0.0261	**0.0129**	0.0018	0.0053	0.0048	0.0029	0.0027	0.0138	0.0036		0.0018	0.0079	0.0261
d-BHC	0.0051		**0.0151**	0.0248	0.0018	0.0053	0.0048	0.0029	0.0027	0.0138	0.0036		0.0018	0.008	0.0248
Dieldrin	0.0098		0.0522	0.0477	0.0036	0.0105	0.0097	0.0058	**0.0009**	0.0276	0.0071		0.0009	0.0175	0.0522
Endrin Aldehyde	0.0098		0.0522	**0.0305**	0.0036	0.0105	0.0097	0.0058	0.0053	0.0276	0.0071		0.0036	0.0162	0.0522
Methoxychlor	0.0509		0.2611	0.2479	0.0181	0.0528	0.0483	0.0287	**0.0053**	**0.0326**	0.0713		0.0053	0.0817	0.2611

	Loadings (lbs/day)												Summary		
	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	MIN	AVE	MAX
Semi-volatile Organic Compounds															
2-methylnaphthalene	1.9581		5.221	**0.6197**	**0.0967**	1.0914	0.9866	0.5494	2.6992	2.7925	0.9141		0.0967	1.6929	5.221
4-methylphenol	**1.2727**		**3.3414**	5.2432	**0.1334**	**0.8458**	**0.5381**	0.5494	2.6992	2.7925	0.9141		0.1334	1.833	5.2432
Benzidine	4.8952		5.221	5.2432	0.367	**0.2637**	0.9866	5.4939	26.992	**4.0644**	9.1406		0.2637	6.2668	26.992
Benzo(a)anthracene	**0.3916**		5.221	5.2432	0.367	1.0914	0.9866	0.5494	2.6992	2.7925	0.9141		0.367	2.0256	5.2432
Benzo(a)pyrene	**0.2937**		5.221	5.2432	0.367	1.0914	0.9866	0.5494	2.6992	2.7925	0.9141		0.2937	2.0158	5.2432
Benzo(b)fluorathene	**0.5874**		5.221	5.2432	0.367	1.0914	0.9866	0.5494	2.6992	2.7925	0.9141		0.367	2.0452	5.2432
Benzo(ghi)perylene	**0.2937**		5.221	5.2432	0.367	1.0914	0.9866	0.5494	2.6992	2.7925	0.9141		0.2937	2.0158	5.2432
Bis(2-ethylhexyl)phthalate	**5.1889**		**4.1246**	**2.0973**	0.367	1.0914	0.9866	**0.5811**	2.6992	**3.8708**	0.9141		0.367	2.1921	5.1889
Chrysene	**0.4895**		5.221	5.2432	**0.1668**	**0.2456**	**0.1794**	0.5494	2.6992	2.7925	0.9141		0.1668	1.8501	5.2432
Diethylphthalate	1.9581		**0.7309**	5.2432	**0.2936**	**0.8822**	**0.6278**	0.5494	2.6992	2.7925	0.9141		0.2936	1.6691	5.2432
Di-n-butylphthalate	1.9581		**0.5743**	5.2432	**0.0467**	1.0914	0.9866	0.5494	2.6992	2.7925	0.9141		0.0467	1.6855	5.2432
Di-n-octylphthalate	1.9581		**0.5743**	5.2432	0.367	**0.1091**	**0.1794**	0.5494	2.6992	2.7925	0.9141		0.1091	1.5386	5.2432
Fluoranthene	**0.8811**		**1.0964**	5.2432	**0.0634**	**0.1182**	0.9866	0.5494	2.6992	**1.4433**	0.9141		0.0634	1.3995	5.2432
Indeno(1,2,3-cd)pyrene	**0.2937**		5.221	5.2432	**0.05**	1.0914	0.9866	0.5494	2.6992	2.7925	0.9141		0.05	1.9841	5.2432
Phenanthrene	1.9581		**1.0964**	**0.572**	**0.04**	**0.2001**	**0.3588**	0.5494	2.6992	**0.9677**	0.9141		0.04	0.9356	2.6992
Pyrene	**0.6853**		**0.7832**	5.2432	**0.0367**	**0.2637**	**0.1794**	0.5494	2.6992	2.7925	0.9141		0.0367	1.4147	5.2432

NA-Not Analyzed
Bold numbers are detected values.

Appendix E

Table E-1 Somerville Marginal CSO Facility Operations Summary, Fiscal Year 1996

Table E-2 Somerville Marginal CSO Facility BOD and TSS Loadings, Fiscal Year 1996

Table E-3 Somerville Marginal CSO Facility Priority Pollutants, Fiscal Year 1996

Table E-4 Somerville Marginal CSO Facility Priority Pollutant Loadings, FY 1996

Appendix E Table E-1 Somerville Marginal CSO Facility Operations Summary, Fiscal Year 1996

DATE	RAINFALL (INCHES)	DISCHARGE DURATION (HOURS)	TOTAL FLOW (MG)	PH (SU)	BOD INFLUENT (MG/L)	BOD EFFLUENT (MG/L)	TSS INFLUENT (MG/L)	TSS EFFLUENT (MG/L)	SETTL. SOLIDS (ML/L)	FECAL COLIFORM GEO MEAN	CHLORINE RESIDUAL (MG/L)
JULY											
25*	0.38	5.50	2.000	7.13	67	30	310	128	1.2	< 10	4.00
29	0.88	2.75	0.879	7.07	< 31	< 23	86	102	0.8	20	3.00
AUGUST											
6*	0.63	8.25	3.000	6.99	< 26	< 17	80	70	< 0.4	< 10	4.00
SEPTEMBER											
17@	2.77	13.00	8.500	7.63	< 14	< 14	16	58	0.4	< 10	4.00
22@	0.40	6.75	3.750	6.84	12	26	24	78	0.4	< 10	4.00
OCTOBER											
5@	1.52	5.00	2.500	7.83	18	14	22	30	< 0.4	< 10	3.00
6@,#	1.79	12.00	6.000	6.67	< 10	< 10	16	12	< 0.4	< 10	
15@	0.63	7.00	0.250	7.60	70	25	180	156	< 0.4	< 10	4.00
21	1.40	7.00	1.069	7.12	24	43	100	80	0.4	< 10	4.00
22#	0.00	3.50	0.535	7.40	< 10	9	18	14	< 0.4	< 10	
28*	0.73	10.00	3.750	7.28	20	14	88	138	0.6	< 10	4.00
NOVEMBER											
2	0.94	2.50	0.968	7.51	27	21	68	34	< 0.4	< 10	4.00
7*	1.00	11.50	1.750	7.76	56	15	94	35	< 0.4	10	4.00
12	0.81	4.00	2.606	6.70	< 24	< 19	38	39	< 0.4	< 10	4.00
14	1.34	11.50	7.695	6.89	< 30	< 31	30	40	< 0.4	< 10	4.40
DECEMBER											
9	0.69	10.00	1.765	6.61	52	78	162	206	1.6	440	5.00
JANUARY											
13@,#	0.02	14.50	4.750	8.00	58	63	184	284	3.2	70	5.00
19	0.00	15.50	6.146	7.50	80	62	100	128	< 0.4	< 10	
20#	0.94	3.00	1.220	7.60	< 56	< 56	22	20	< 0.4	< 10	4.30
24*	0.46	4.50	0.500	8.00	< 76	< 44	168	136	1.2	< 10	3.90
27	1.82	11.25	6.806	7.50	91	78	260	328	5.0	80	4.40
FEBRUARY											
21@	0.74	7.00	0.686	8.40	54	42	945	259	< 0.4	< 10	4.50
22@,#	0.14	5.75	0.564	7.50	$	< 12	$	60	< 0.4	< 10	$
24	0.53	10.60	1.392	6.50	79	28	152	124	0.8	< 10	3.50
MARCH											
20@	0.55	3.50	1.000	8.30	84	50	&	244	2.0	70	3.20
APRIL											
10@	0.41	8.25	2.500	8.10	< 32	< 22	110	88	< 0.4	< 10	3.60
16	1.57	16.50	2.205	7.90	28	30	338	86	< 0.4	< 10	3.53
29*	0.59	8.75	3.000	6.50	91	83	307	137	1.2	14000	1.60

DATE	RAINFALL (INCHES)	DISCHARGE DURATION (HOURS)	TOTAL FLOW (MG)	PH (SU)	BOD INFLUENT (MG/L)	BOD EFFLUENT (MG/L)	TSS INFLUENT (MG/L)	TSS EFFLUENT (MG/L)	SETTL. SOLIDS (ML/L)	FECAL COLIFORM GEO MEAN	CHLORINE RESIDUAL (MG/L)
MAY											
16*	0.49	7.00	0.750	7.50	18	38	22	58	< 0.4	< 10	4.07
30*	0.64	7.00	1.500	6.50	30	17	60	76	0.4	< 10	4.70
TOTAL		**243.35**	**80.036**								
AVERAGE		**8.11**	**2.67**		**44**	**34**	**223**	**108**	**0.9**	**18**	**3.91**
MINIMUM	**0.00**	**2.50**	**0.250**	**6.50**	**<10**	**9**	**16**	**12**	**0.4**	**< 10**	**1.60**
MAXIMUM	**2.77**	**16.50**	**8.500**	**8.40**	**91**	**83**	**945**	**328**	**5.0**	**14000**	**5.00**
NO. of Times CSO ACTIVATED			**28**								
NO. of DAYS CSO ACTIVATED			**30**								

* Meter recording negative measurements caused by tidal inflow. Flow estimated based on chlorine used.
@ Flow meter malfunction, flow estimated based on chlorine used.
# Continued from previous day. Flow prorated based on hours of activation each day.
$ No samples taken.
& Analytical result suspect.

Appendix E Table E-2 Somerville Marginal CSO BOD and TSS Loadings, Fiscal 1996

DATE	Total Flow (MG)	Biochemical Oxygen Demand Influent (lbs/d)	Biochemical Oxygen Demand Effluent (lbs/d)	Total Suspended Solids Influent (lbs/d)	Total Suspended Solids Effluent (lbs/d)
JULY					
25*	2.000	1116	494	5171	2135
29	0.879	226	169	630	748
AUGUST					
6*	3.000	641	425	2002	1751
SEPTEMBER					
17@	8.500	978	978	1134	4112
22@	3.750	375	801	751	2439
OCTOBER					
5@	2.500	384	290	459	626
6@,#	6.000	500	520	801	600
15@	0.250	146	53	375	325
21	1.069	213	384	892	713
22#	0.535	46	38	80	62
28*	3.750	626	438	2752	4316
NOVEMBER					
2	0.968	219	171	549	274
7*	1.750	811	216	1372	511
12	2.606	522	409	826	848
14	7.695	1951	1970	1925	2567
DECEMBER					
9	1.765	765	1147	2385	3032
JANUARY					
13@,#	4.750	2294	2500	7289	11251
19	6.146	4090	3198	5126	6561
20#	1.220	570	570	224	203
24*	0.500	317	185	701	
27	6.806	5137	4399	14758	18618
FEBRUARY					
21@	0.686	306	237	5407	1482
22@,#	0.564	$	56	$	282
24	1.392	919	320	1765	1440
MARCH					
20@	1.000	701	417	&	2035

DATE	Total Flow (MG)	Biochemical Oxygen Demand Influent (lbs/d)	Biochemical Oxygen Demand Effluent (lbs/d)	Total Suspended Solids Influent (lbs/d)	Total Suspended Solids Effluent (lbs/d)
April					
10@	2.500	667	459	2294	1835
16	2.205	515	552	6216	1582
29*	3.000	2277	2077	7681	3428
May					
16*	0.750	113	238	138	363
30*	1.500	375	213	751	951
TOTAL	**80.036**				
AVERAGE	**2.668**	**963**	**792**	**2635**	**2706**
MINIMUM	**0.250**	**46**	**38**	**80**	**62**
MAXIMUM	**8.500**	**5137**	**4399**	**14758**	**18618**
No of ACTIVATIONS	**28**				

Notes:

* Meter recording negative measurement caused by tidal inflow. Flow estimated based on chlorine used.

@ Flowmeter malfunction. Flow estimated based on chlorine used.

Continued from previous day. Flow prorated based on hours of activation.

$ No samples taken.

& Analytical results suspect.

Appendix E Table E-3 Somerville Marginal CSO Facility, Effluent Characterization, FY96

	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Summary MIN	Summary AVE	Summary MAX	Times Detected
Metals (ug/L)																
Cadmium	< 1.0	N	N	< 1.0	< 5.0	5	6	< 2.0	N	5.8	N	N	< 0.5	3.04	6	3 of 7
Copper	70	O	O	50	36.5	51	52.7	74.4	O	464	O	O	36.5	114.09	464	7 of 7
Lead	140			92	29	46	79.5	198		643			29	175.36	643	7 of 7
Mercury	0.3	S	S	0.2	0.282	0.055	0.092	0.174	S	0.714	S	A	0.055	0.26	0.714	7 of 7
Nickel	< 12.0	A	A	< 12.0	< 20.0	< 20.0	< 20.0	13.6	A	49.3	A	C	< 12.0	14.99	49.3	2 of 7
Zinc	260	M	M	160	120	361	406	322	M	1420	M	T	120	435.57	1420	7 of 7
		P	P						P		P	I				
		L	L						L		L	V				
Inorganics (ug/L)																
Cyanide	< 5.0	E	E	50	NA	19.9	31.9	52.8	E	49.6	E	A	< 2.5	34.45	52.8	5 of 7
		S	S								S	T				
												I				
Other Organics																
Total Phenols (ug/L)	< 6.0	T	T	8	7	< 5.0	< 10.0	< 10.0	S	< 10.0	T	O	< 0.5	2.73	8	2 of 7
MBAS (mg/L)	6.7	A	A	0.49	0.585	0.43	0.621	1.31		1.09	A	N	0.43	1.60	8	7 of 7
		K	K						T		K	S				
		E	E						A		E					
Pesticides/PCBs (ug/L)																
4,4'-DDE	0.066	N	N	< 0.11	< 0.11	< 0.11	< 0.10	< 0.10	K	< 0.145	N		< 0.01	0.019	0.066	1 of 7
4,4'-DDT	< 0.10			< 0.11	< 0.11	< 0.11	< 0.10	< 0.10	E	0.037			< 0.01	0.014	0.037	1 of 7
Aldrin	0.16			< 0.054	<0.056	<0.056	<0.052	< 0.05	N	< 0.073			< 0.005	0.028	0.16	1 of 7
a-BHC	< 0.05			0.046	<0.056	<0.056	<0.052	< 0.05		< 0.073			< 0.005	0.011	0.046	1 of 7
b-BHC	< 0.05			0.045	<0.056	<0.056	<0.052	< 0.05		< 0.073			< 0.005	0.011	0.045	1 of 7
Endrin Aldehyde	< 0.10			0.12	< 0.11	< 0.11	< 0.10	< 0.10		< 0.145			< 0.01	0.027	0.12	1 of 7
g-BHC (Lindane)	0.11			< 0.054	<0.056	<0.056	<0.052	< 0.05		< 0.073			< 0.005	0.021	0.11	1 of 7
Heptachlor Epoxide	0.029			< 0.054	<0.056	<0.056	<0.052	< 0.05		< 0.073			< 0.005	0.009	0.029	1 of 7

	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Summary MIN	Summary AVE	Summary MAX	Times Detected
Semi-volatile Organic Compounds (ug/L)																
Benzidine	< 50.0			< 10.0	< 11.0	< 10.0	< 10.0	< 1100.0		**12.2**			< 1.0	18.76	12.2	1 of 7
Benzoic Acid	**170**			< 10.0	< 11.0	< 10.0	< 10.0	< 220.0		< 26.4			< 1.0	28.39	170	1 of 7
Bis(2-ethylhexyl)phthalate	**40**			**6.5**	**4.7**	**5.8**	**8.0**	< 11.0		**20.6**			< 11.0	13.80	40	6 of 7
Butyl benzyl phthalate	**2**			**1.2**	< 11.0	< 10.0	< 10.0	< 11.0		< 13.2			< 1.0	2.66	2	2 of 7
Diethylphthalate	< 20.0			**1.2**	**1.5**	< 10.0	< 10.0	< 11.0		< 13.2			< 1.0	2.72	1.2	2 of 7
Di-n-octylphthalate	< 20.0			**1.4**	< 11.0	**1.5**	**2.0**	< 11.0		< 13.2			< 1.10	2.90	2	3 of 7
Fluoranthene	< 20.0			**1.3**	< 11.0	**1.1**	**2.0**	< 11.0		**9.12**			< 1.10	3.95	9.12	4 of 7
Phenanthrene	< 20.0			< 10.0	< 11.0	< 10.0	**2.0**	< 11.0		**6.51**			< 1.0	3.52	6.51	2 of 7
Phenol	< 20.0			< 10.0	< 11.0	< 10.0	**2.0**	< 11.0		< 13.2			< 1.0	2.77	2	1 of 7
Pyrene	< 20.0			< 10.0	< 11.0	< 10.0	**2.0**	< 11.0		< 13.2			< 1.0	2.77	2	1 of 7

NA- Not Analyzed
Bold Numbers are detected values.

Appendix E Table E-4 Somerville Marginal CSO Facility, Effluent Loadings, FY96

	Loadings (lbs/day)												Summary		
	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	MIN	AVE	MAX
Metals															
Cadmium	0.0167	N	N	0.05	0.0404	**0.0736**	**0.2377**	0.0114	N	**0.1067**	N	N	0.0114	0.0766	0.2377
Copper	**1.1676**	O	O	**2.502**	**0.2947**	**0.7507**	**2.0877**	**0.4257**	O	**8.5328**	O	O	0.2947	2.2516	8.5328
Lead	**2.3352**			**4.6037**	**0.2341**	**0.6771**	**3.1494**	**1.1328**		**11.825**			0.2341	3.4224	11.825
Mercury	**0.005**	S	S	**0.01**	**0.0023**	**0.0008**	**0.0036**	**0.001**	S	**0.0131**	S	A	0.0008	0.0051	0.0131
Nickel	0.2002	A	A	0.6005	NA	0.2944	0.7923	**0.0778**	A	**0.9066**	A	C	0.0778	0.4103	0.9066
Zinc	**4.3368**	M	M	**8.0064**	**0.9688**	**5.314**	**16.084**	**1.8422**	M	**26.113**	M	T	0.9688	8.9522	26.113
		P	P						P		P	I			
		L	L						L		L	V			
Inorganics															
Cyanide	0.0834	E	E	**1.0425**	NA	**0.2929**	**1.2639**	**0.3021**	E	**0.9121**	E	A	0.0834	0.0649	1.0425
		S	S						S		S	T			
												I			
Other Organics															
Total Phenols	0.1001	T	T	**0.4003**	**0.0565**	0.0736	0.0807	0.0572	T	0.1839	T	O	0.0565	0.136	0.4003
MBAS	**111.76**	A	A	**24.52**	**4.7228**	**6.3296**	**24.604**	**7.4948**	A	**20.045**	A	N	4.7228	28.497	111.76
		K	K						K		K	S			
		E	E						E		E				
Pesticides/PCBs															
4,4'-DDE	**0.0011**	N	N	0.0055	0.0009	0.0016	0.0041	0.0006	N	0.0027	N		0.0006	0.0024	0.0055
4,4'-DDT	0.0017			0.0055	0.0009	0.0016	0.0041	0.0006		**0.0007**			0.0006	0.0022	0.0055
Aldrin	**0.0027**			0.0027	0.0004	0.0008	0.0021	0.0003		0.0013			0.0003	0.0015	0.0027
a-BHC	0.0008			**0.0023**	0.0004	0.0008	0.0021	0.0003		0.0013			0.0003	0.0012	0.0023
b-BHC	0.0008			**0.0023**	0.0004	0.0008	0.0021	0.0003		0.0013			0.0003	0.0011	0.0023
Endrin Aldehyde	0.0017			**0.006**	0.0009	0.0016	0.0041	0.0006		0.0027			0.0006	0.0025	0.006
g-BHC (Lindane)	**0.0018**			0.0027	0.0004	0.0008	0.0021	0.0003		0.0013			0.0003	0.0014	0.0027
Heptachlor Epoxide	**0.0005**			0.0027	0.0004	0.0008	0.0021	0.0003		0.0013			0.0003	0.0012	0.0027
Semi-volatile Organic Compounds															
Benzidine	0.834			0.5004	0.0888	0.1472	0.3962	6.2934		**0.2244**			0.0888	1.212	6.2934
Benzoic Acid	**2.8356**			0.5004	0.0888	0.1472	0.3962	1.2587		0.4855			0.0888	0.816	2.8356
Bis(2-ethylhexyl)phthalate	**0.6672**			**0.3253**	**0.0379**	**0.0854**	**0.3169**	0.6293		**0.3788**			0.0379	0.3487	0.6672
Butyl benzyl phthalate	**0.0334**			**0.06**	0.0888	0.1472	0.3962	0.6293		0.2427			0.0334	0.2282	0.6293
Diethylphthalate	0.3336			**0.06**	**0.0121**	0.1472	0.3962	0.6293		0.2427			0.0121	0.2602	0.6293
Di-n-octylphthalate	0.3336			**0.0701**	0.0888	**0.0221**	**0.0792**	0.6293		0.2427			0.0221	0.2094	0.6293
Fluoranthene	0.3336			**0.0651**	0.0888	**0.0162**	**0.0792**	0.6293		**0.1677**			0.0162	0.1971	0.6293
Phenanthrene	0.3336			0.5004	0.0888	0.1472	**0.0792**	0.6293		**0.1197**			0.0792	0.2712	0.6293
Phenol	0.3336			0.5004	0.0888	0.1472	**0.0792**	0.6293		0.2427			0.0792	0.2888	0.6293
Pyrene	0.3336			0.5004	0.0888	0.1472	**0.0792**	0.6293		0.2427			0.0792	0.2888	0.6293

NA- Not Analyzed
Bold Numbers are detected values.

Appendix F

Table F-1 Constitution Beach CSO Facility Operations Summary, Fiscal Year 1996

Table F-2 Constitution Beach CSO Facility BOD and TSS Loadings, Fiscal Year 1996

Appendix F Table F-1 Constitution Beach CSO Facility Operations Summary, Fiscal Year 1996

DATE	RAINFALL (INCHES)	DISCHARGE DURATION (HOURS)	TOTAL FLOW (MG)	PH (SU)	BOD INFLUENT (MG/L)	BOD EFFLUENT (MG/L)	TSS INFLUENT (MG/L)	TSS EFFLUENT (MG/L)	SETTL. SOLIDS (ML/L)	FECAL COLIFORM GEO MEAN	CHLORINE RESIDUAL (MG/L)
SEPTEMBER											
17	2.77	5.75	0.754	7.10	21	18	15	10	< 0.4	< 10	3.10
OCTOBER											
5	1.52	3.00	0.210	7.20	< 8	16	42	46	0.8	< 10	4.00
6	1.79	11.00	0.772	7.39	< 7	< 10	24	15	< 0.4	< 10	
21	1.40	8.50	0.751	7.16	18	12	23	37	< 0.4	30	3.00
28	0.73	2.00	0.403	7.68	31	20	20	18	< 0.2	< 10	4.00
NOVEMBER											
2	0.94	3.00	0.208	7.14	45	53	50	190	1.2	1100	4.00
7	1.00	2.50	0.215	7.69	23	10	63	22	< 0.4	10	4.00
14	1.34	9.50	0.834	8.37	< 14	< 13	32	87	< 0.4	10	4.00
JANUARY											
12	1.43	12.00	1.201	8.20	< 5	16	54	54	0.3	< 10	5.00
19	0.94	5.00	0.703	7.40	< 56	< 56	130	302	0.4	< 1000	3.50
27	1.82	8.50	0.659	7.30	34	15	100	56	< 0.2	< 10	3.80
FEBRUARY											
21	0.74	6.25	0.630	7.90	156	18	673	44	< 0.4	110	4.00
APRIL											
16	1.57	7.50	0.597	7.70	32	< 17	170	48	< 0.4	50	3.13
TOTAL		**84.50**	**7.937**								
AVERAGE	**1.38**	**6.50**	**0.61**		**35**	**21**	**107**	**71**	**0.5**	**30**	**3.83**
MINIMUM	**0.73**	**2.00**	**0.208**	**7.10**	**<7**	**<10**	**15**	**10**	**<0.2**	**<10**	**3.00**
MAXIMUM	**2.77**	**12.00**	**1.201**	**8.37**	**156**	**53**	**673**	**302**	**1.0**	**1100**	**5.00**
NO. of Times CSO ACTIVATED			**13**								
NO. of DAYS CSO ACTIVATED			**13**								

Appendix F Table F-2 Constitution Beach CSO BOD and TSS Loadings, Fiscal Year 1996

DATE	Total Flow (MG)	Biochemical Oxygen Demand Influent (lbs/d)	Biochemical Oxygen Demand Effluent (lbs/d)	Total Suspended Solids Influent (lbs/d)	Total Suspended Solids Effluent (lbs/d)
SEPTEMBER					
17	0.754	132	111	94	63
OCTOBER					
5	0.210	15	29	74	81
6	0.772	45	67	154	97
21	0.751	111	73	144	232
28	0.403	106	67	67	60
NOVEMBER					
2	0.208	78	91	87	330
7	0.215	41	18	113	39
14	0.834	95	93	223	605
JANUARY					
12	1.201	54	160	541	541
19	0.703	328	328	762	1771
27	0.659	188	81	550	308
FEBRUARY					
21	0.630	820	92	3536	231
APRIL					
16	0.597	158	83	846	239
TOTAL	7.937				
AVERAGE	0.611	167.00	99.58	553.17	353.54
MINIMUM	0.208	14.72	18.29	67.22	39.45
MAXIMUM	1.201	819.66	328.33	3536.08	1770.63
No of ACTIVATIONS	13				

Appendix G

Table G-1 Fox Point CSO Facility Operations Summary, Fiscal Year 1996

Table G-2 Fox Point CSO Facility BOD and TSS Loadings, Fiscal Year 1996

Appendix G Table G-1 Fox Point CSO Facility Operations Summary, Fiscal Year 1996

DATE	RAINFALL (INCHES)	DISCHARGE DURATION (HOURS)	TOTAL FLOW (MG)	PH (SU)	BOD INFLUENT (MG/L)	BOD EFFLUENT (MG/L)	TSS INFLUENT (MG/L)	TSS EFFLUENT (MG/L)	SETTL. SOLIDS (ML/L)	FECAL COLIFORM GEO MEAN	CHLORINE RESIDUAL (MG/L)
AUGUST											
6	0.63	5.00	1.144	6.58	< 21	< 9	18	20	< 0.4	< 100	4.00
SEPTEMBER											
17	2.77	9.75	4.313	6.81	< 96	39	258	72	< 0.40	10	2.20
OCTOBER											
5*	1.52	6.00	5.483	8.02	84	< 17	168	62	0.4	< 10	4.00
6*	1.79	8.50	7.767	7.70	< 21	< 8	76	18	< 0.4	< 10	
NOVEMBER											
12	0.81	2.25	6.669	6.00	< 40	< 23	56	43	< 0.4	< 10	4.00
14	1.34	8.50	11.858	6.79	< 48	< 43	78	76	2.8	30	4.00
JANUARY											
19	0.94	10.00	17.233	7.20	124	82	204	214	1.6	< 10	3.70
20@	0.00	6.25	10.770	6.90	73	< 56	62	36	< 0.4	< 10	4.00
24	0.46	3.75	2.695	7.40	< 67	30	174	348	3.2	< 10	4.00
27	1.82	9.25	15.981	7.90	400	51	552	184	< 0.2	50	3.40
FEBRUARY											
24	0.53	5.50	1.087	8.40	36	< 6	110	68	< 0.2	< 10	2.90
MARCH											
20	0.55	2.25	3.383	8.00	64	42	144	154	1.2	90	4.20
APRIL											
16*	1.57	7.45	4.746	7.00	106	49	412	178	1.6	< 10	3.35
17*,@	0.00	5.50	3.504	7.00	101	66	583	348	5.2	< 10	2.90
TOTAL		**89.95**	**96.633**								
AVERAGE		**6.43**	**6.90**		**91**	**37**	**207**	**130**	**1.3**	**16.73**	**3.51**
MINIMUM	**0.00**	**2.25**	**1.087**	**6.00**	**<21**	**<6**	**18**	**18**	**0.4**	**< 10**	**2.20**
MAXIMUM	**2.77**	**10.00**	**17.233**	**8.40**	**400**	**82**	**583**	**348**	**5.2**	**90.00**	**4.20**
NO. of Times CSO ACTIVATED			**12**								
NO. of DAYS CSO ACTIVATED			**14**								

* Flowmeter malfunction. Flow estimated based on chlorine usage.

@ Continued from previous day. Total flow recorded for both days, flow prorated based on hours of activation.

Appendix G Table G-2 Fox Point CSO BOD and TSS Loadings, Fiscal Year 1996

DATE	Total Flow (MG)	Biochemical Oxygen Demand Influent (lbs/d)	Biochemical Oxygen Demand Effluent (lbs/d)	Total Suspended Solids Influent (lbs/d)	Total Suspended Solids Effluent (lbs/d)
AUGUST					
6	1.144	203	81	172	191
SEPTEMBER					
17	4.313	3464	1410	9280	2590
OCTOBER					
5*	5.483	3850	768	7682	2835
6*	7.767	1347	538	4923	1166
NOVEMBER					
12	6.669	2214	1263	3115	2392
14	11.858	4787	4223	7714	7516
JANUARY					
19	17.233	17821	11843	29319	30756
20@	10.770	6530	5030	5569	3234
24	2.695	1497	674	3911	7822
27	15.981	53313	6797	73571	24524
FEBRUARY					
24	1.087	329	53	997	616
MARCH					
20	3.383	1794	1177	4063	4345
APRIL					
16	4.746	4196	1928	16308	7046
17*,@	3.504	2952	1914	17037	10170
TOTAL	**96.633**				
AVERAGE	**8.053**	**9740**	**4069**	**15877**	**9630**
MINIMUM	**1.087**	**329**	**53**	**997**	**616**
MAXIMUM	**28.003**	**53313**	**19244**	**73571**	**49979**
No. of ACTIVATIONS	**12**				

Notes:

* Flowmeter malfunction, flow estimated based on chlorine used during activation.

@ Continued from previous day. Total flow recorded for both days, flow prorated based on hours of activation for each day.

Appendix H

Table H-1 Commercial Point CSO Facility Operations Summary, Fiscal Year 1996

Table H-2 Commercial Point CSO Facility BOD and TSS Loadings, Fiscal Year 1996

Appendix H Table H-1 Commercial Point CSO Facility Operations Summary, Fiscal Year 1996

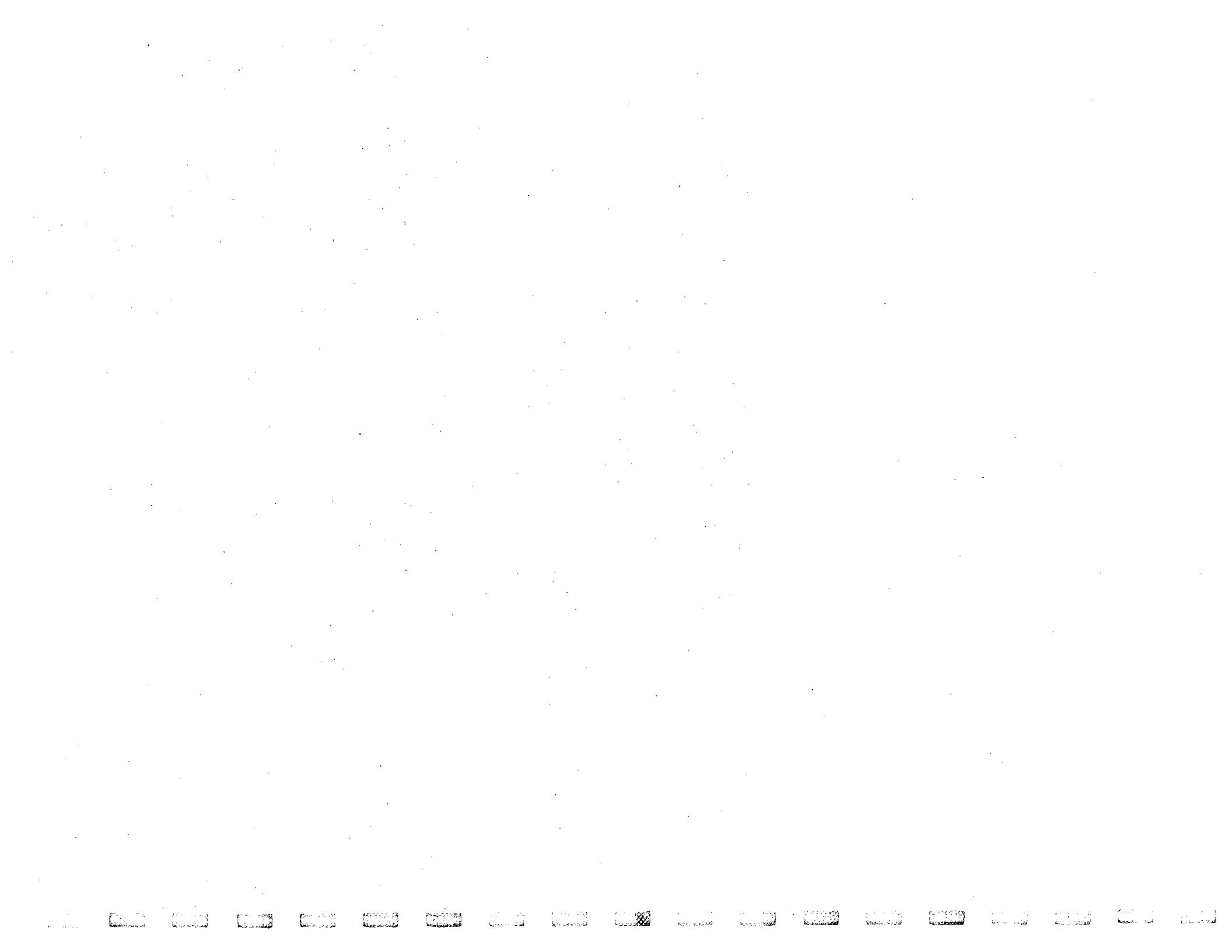
DATE	RAINFALL (INCHES)	DISCHARGE DURATION (HOURS)	TOTAL FLOW (MG)	PH (SU)	BOD INFLUENT (MG/L)	BOD EFFLUENT (MG/L)	TSS INFLUENT (MG/L)	TSS EFFLUENT (MG/L)	SETTL. SOLIDS (ML/L)	FECAL COLIFORM GEO MEAN	CHLORINE RESIDUAL (MG/L)
JULY											
25	0.38	3.50	0.060	6.29	134	45	6510	112	0.4	20	3.00
AUGUST											
6	0.63	1.00	0.290	6.27	25	17	64	26	< 0.4	< 100	4.00
SEPTEMBER											
17	2.77	9.25	18.420	7.20	48	54	116	218	1.6	60	3.00
OCTOBER											
5	1.52	3.00	3.374	8.02	84	< 17	168	62	0.4	< 10	3.40
6	1.79	8.00	8.996	7.70	< 21	< 8	76	18	< 0.4	< 10	
21	1.40	1.50									
22*	0.00	2.50	2.440	8.00	< 21	28	105	132	0.4	100	3.67
NOVEMBER											
14@	1.34	7.50	9.750	6.73	< 53	< 61	214	278	2.0	20	2.50
JANUARY											
19	0.94	10.50	6.810	7.50	143	225	820	1170	16.0	< 100	4.70
27	1.82	9.25	3.360	8.10	22	18	366	96	< 0.2	10	3.53
FEBRUARY											
24	0.53	5.50	0.060	9.10	20	8	90	86	< 0.4	< 10.0	4.70
MARCH											
20	0.55	2.00	0.330	7.50	15	28	182	172	0.8	27000	3.00
APRIL											
16@	1.57	8.50	9.783	6.80	13	< 12	54	58	< 0.4	< 10	3.50
17#	0.00	4.75	2.467	7.00	17	22	88	134	0.8	< 10	
29@	0.59	4.75	4.000	8.50	354	25	550	52	< 0.4	< 10	2.93
TOTAL		**81.50**	**70.140**								
AVERAGE		**5.43**	**5.01**		**69**	**41**	**672**	**187**	**1.8**	**36**	**3.52**
MINIMUM	**0.00**	**1.00**	**0.060**	**6.27**	**13**	**<8**	**54**	**18**	**< 0.2**	**< 10**	**2.50**
MAXIMUM	**2.77**	**10.50**	**18.420**	**9.10**	**354**	**225**	**6510**	**1170**	**16.0**	**27000**	**4.70**
NO. of Times CSO ACTIVATED			**13**								
NO. of DAYS CSO ACTIVATED			**14**								

Notes:

* Activation continued from previous day. Flow reported for both days.

@ Flowmeter malfunction. Flow estimated based on chlorine used.

\# Activation continued from previous day, flow prorated based on hours of activation for each day.



Appendix H Table H-2 Commercial Point CSO BOD and TSS Loadings, Fiscal Year 1996

DATE	Total Flow (MG)	Biochemical Oxygen Demand Influent (lbs/d)	Biochemical Oxygen Demand Effluent (lbs/d)	Total Suspended Solids Influent (lbs/d)	Total Suspended Solids Effluent (lbs/d)
JULY					
25	0.060	67	23	3258	56
AUGUST					
6	0.290	61	41	155	63
SEPTEMBER					
17	18.420	7297	8342	17820	33490
OCTOBER					
5	3.374	2538	506	5064	1869
6	8.996	1672	668	6108	1447
21					
21*	2.440	421	572	2137	2686
NOVEMBER					
14@	9.750	4326	4976	17401	22606
JANUARY					
19	6.810	8122	12779	46572	66451
27	3.360	628	516	10256	2690
FEBRUARY					
24	0.060	10	4	45	43
MARCH					
20	0.330	42	77	501	473
APRIL					
16@	9.783	1093	938	4406	4732
17#	2.467	342	461	381693	2757
29@	4.000	11809	827	18348	1735
TOTAL	70.140				
AVERAGE	5.395	2745	2195	36697	10078
MINIMUM	0.060	10	4	45	43
MAXIMUM	70.140	11809	12779	381693	66451
No of ACTIVATIONS	13				

Notes:

* Activation continued from previous day. Flow reported for both days.

@ Flowmeter malfunction. Flow estimated based on chlorine used.

\# Activation continued from previous day, flow prorated based on hours of activation for each day.

Appendix I NPDES Monitoring Requirements

The Environmental Protection Agency (EPA) mandates that any discharge to a body of water must be permitted through the National Pollutant Discharge Elimination System (NPDES). The EPA and the Massachusetts Department of Environmental Protection (DEP) jointly issued a NPDES permit to MWRA for its two primary treatment plants, Deer Island and Nut Island, and three CSO treatment facilities, Cottage Farm, Prison Point, and Somerville Marginal. The MWRA also owns and operates three additional gravity CSO facilities, Constitution Beach, Fox Point, and Commercial Point. The effluent from these facilities discharges to the City of Boston sewer lines. Thus, the Boston Water and Sewer Commission (BWSC) NPDES Permit allows for the ultimate discharge of this effluent.

The limits set in the MWRA NPDES Permit are limitations for secondary treatment plants. Neither Deer Island nor Nut Island have secondary treatment capabilities. The MWRA currently operates under court-ordered interim limits while a secondary treatment plant is being built. The MWRA is now in negotiating stages for a new NPDES Permit for the soon-to-be-completed upgraded Deer Island Plant.

In addition, the MWRA, through the NPDES Pretreatment Program, monitors the influent quality of wastewater. Those monitoring results provide the basis for determining the adequacy of existing Local Limits to protect the treatment plants and Boston Harbor. Local Limits provide the basis for regulating discharge of toxic chemicals from industrial sources. Current Local Limits were enacted in FY94 and, under the Pretreatment Program requirements, must be re-evaluated every five years.

The MWRA not only monitors to comply with the NPDES requirements, but also has its own monitoring programs, including Plant Monitoring and Harbor Studies. These monitoring programs serve to assure appropriate control of discharges to the system, to assure the most cost-effective wastewater treatment while meeting water quality standards, and to assure the quality of life of the organisms living in the receiving bodies of water.

I.1. Permits and Compliance Order

I.1.a. NPDES Permit

Under the NPDES, "in compliance with the provisions of the Clean Water Act, as amended, 33 U.S.C. § 1251 et seq., and the Massachusetts Clean Water Act, as amended, Mass. Gen. Laws, ch. 21, § 266-53, the MWRA is permitted to discharge from (MWRA Publicly Owned Treatment Works, CSO Treatment Facilities, and CSO Outfalls), in accordance with effluent limitations, monitoring limitations, and other conditions..."

Monitoring Requirements and Effluent Limitations

The NPDES Permit establishes monitoring requirements for existing POTW outfalls as well as CSO treatment facility outfalls. In addition, the Permit mandates CSO outfall identification and receiving water monitoring. It also establishes numerical limitations for certain parameters as well as narrative limits for all authorized discharges.

Reporting Requirements

In addition to POTW and CSO monitoring requirements, the NPDES Permit requires certain reports on the state of the MWRA sewerage and operational systems. These include the Infiltration/Inflow Report, CSO Facilities and Systems Inspection, reports on Operational Upsets, Overflow Reports, Operations Bypass Reports, Maintenance Program, Monthly Discharge Monitoring Reports (DMRs), and reporting on the effects of discharges (Annual Bioaccumulation Study). Table I.1 presents a summary of the Permit limits and monitoring requirements for POTWs while Table I.2 presents permit limits for CSOs.

I.1.b. Court Order

The MWRA also operates under a court order issued in June, 1986. In addition to establishing interim discharge limits for existing treatment plants, the Court Order established a schedule for MWRA to upgrade the sewerage system and treatment plants. Table I.3 summarizes the court-ordered interim limits for both Deer Island and Nut Island.

Table I.1

NPDES PERMIT Numerical Effluent Limitations for POTW Outfalls Deer Island and Nut Island			
Effluent Characteristic	Discharge Limitation Average Monthly Max Daily	Average Weekly	
BOD	a	a	a
TSS	a	a	a
Settleable Solids	a	a	a
pH	Not less than 6.5 nor greater than 8.5 at any time to Boston Harbor, Quincy Bay, Hingham Bay, the Inner Harbor, and the Mystic River.		
Fecal Coliform	a	a	a
Total Coliform	a	a	a
Chlorine, Total Residual	(1) The total chlorine residual and other toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state of federal water quality standard which has been or may be promulgated. Upon promulgation of any such standards, this permit may be modified in accordance with such standards. (2) The permittee shall minimize the use of chlorine, still maintaining adequate bacterial control.		
Oil and Grease of Petroleum Origin (also called TPH or PHC)			15 mg/L

NPDES PERMIT Numerical Effluent Limitations for POTW Outfalls Deer Island and Nut Island			
NOEC[b]	10% or greater (Sample which is composed of 10% or greater effluent.)		
LOEC[c] ; MATC[d] ; LC50[e]	(1) Chronic Toxicity Tests to Establish the NOEC, LOEC, and MATC- Chronic toxicity tests on representative 24-hour composite samples of the discharge using each of the following organisms:(I) the sheepshead minnow, *Cyprinodon variegatus* (7-day tests to measure growth and survival); and (ii) the red marine alga, *Champia parvula* (2 to 4 day tests to evaluate the effects on sexual reproduction). The endpoints to be established in the chronic tests are the No Observed Effect Concentration (NOEC), the Lowest Observed Effect Concentration (LOEC), and the Maximum Acceptable Toxicant Concentration (MATC). (2) Acute Static Toxicity Tests to Establish the NOEL and LC50- 96-hour acute static toxicity tests on representative 24-hour composite samples of the discharge shall be conducted using one to five-day-old juvenile mysid shrimp, *Mysidopsis bahia*, to establish No Observed Acute Effect Levels (NOAEL) and LC50s of the effluents.		

NPDES PERMIT Numerical Effluent Limitations for POTW Outfalls Deer Island and Nut Island			
NOAEL[f]			20% or greater (Sample which is composed of 20% or greater effluent, the remainder being dilution water.)
Other Monitored Parameters			
Pollutants listed in Appendix D of 40 CFR Part 122.			

[a] Court Ordered Interim Limit applies to this parameter.

[b] No Observed Effect Concentration- is the highest concentration of effluent to which organisms are exposed in a life cycle or partial life cycle test which contains no adverse effects (on growth, survival, and reproduction).

[c] Lowest Observed Effect Concentration- is the lowest concentration of effluent to which organisms are exposed in a life cycle or partial life- cycle test which causes an adverse effect (on survival, growth, and reproduction).

[d] MATC is the Maximum Allowable Toxicant Concentration. It is the effluent concentration that may be present in a receiving water without causing significant harm to productivity or other uses. The MATC is determined by the results of chronic tests of either a partial life-cycle with sensitive life stages or a full life-cycle of the test organism. The MATC is the geometric mean of the No Observed Effect Concentration and the Lowest Observed Effect Concentration.

[e] LC50 is defined as the concentration effluent in a sample that causes mortality to 50% of the test population at a specific time of observation.

[f] No Observed Acute Level is the highest concentration of effluent to which organisms are exposed in a short-term test in which at least 90% of the test organisms survive.

Table I.2

NPDES PERMIT Effluent Limitations and Monitoring Requirements for CSO Treatment Facility Outfalls		
Characteristic	Discharge Limitation Average Monthly Maximum Daily	Average Weekly
pH	The pH of the effluent shall not be less than (1) 6.5 nor greater than 8.5 at any time to the Inner Harbor and Mystic River (2) 6.5 nor greater than 9.0 at any time to the Charles River	
Fecal Coliform	1000 MPN/100mL	Not more than 10% of the total samples can exceed 2500 per 100mL during any monthly sampling period.
Chlorine, Total Residual	(1) The total chlorine residual and other toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be modified in accordance with such standard. (2) The permittee shall minimize the use of chlorine, still maintaining adequate bacterial control.	
Other Monitored Parameters		
Rainfall/Precipitation		
Flow		
BOD*		
TSS*		
Settleable Solids		

NPDES PERMIT Effluent Limitations and Monitoring Requirements for CSO Treatment Facility Outfalls	
NOAEL**	"No Observed Acute Effects Level" (NOAEL) is the highest concentration of effluent to which organisms are exposed in a short-term test in which at least 90% of the test organisms survive.
LC50**	"LC50" is defined as the concentration of effluent in a sample that causes mortality to 50% of the test population at a specific time of observation.
Cadmium**	
Chromium (Hexavalent)**	
Copper**	
Lead**	
Mercury**	
Nickel**	
Zinc**	
Chlorinated Hydrocarbons**	
Ammonia Nitrogen**	
Total Phosphorus**	
Pesticides**	
PAHs**	
VOCs**	

* Report both influent and effluent results for this parameter.

** Conducted only during the first and fifth year of the permit. Not required to be monitored this period.

Table I.3

COURT ORDERED SEWAGE TREATMENT PLANT INTERIM LIMITATIONS			
Effluent Characteristic	Effluent Limits Average Monthly	Maximum Daily	Percent Removal*
Deer Island			
$BOD_{(5)}$	140 mg/L	200 mg/L	27%
$TSS_{(5)}$	110 mg/L	180 mg/L	38%
Settleable Solids	2.8 mL/L	N/A	N/A
Fecal Coliform	200/100 mL	N/A	N/A
Total Coliform	1000/100 mL	N/A	N/A
pH	The pH of the effluent shall not be less than 6.5 nor greater than 8.5 at any time unless these values are exceeded due to natural causes or as a result of approved modifications of treatment processes.		
Nut Island			
$BOD_{(5)}$	130 mg/L	185 mg/L	15%
$TSS_{(5)}$	110 mg/L	195 mg/L	43%
Settleable Solids	1.8 mL/L	N/A	N/A
Fecal Coliform	200/100 mL	N/A	N/A
Total Coliform	1000/100 mL	N/A	N/A
pH	The pH of the effluent shall not be less than 6.5 nor greater than 8.5 at any time unless these values are exceeded due to natural causes or as a result of approved modifications or treatment processes.		
Other Effluent Limitations			
Chlorine	The Authority shall minimize the use of chlorine consistent with maintaining adequate bacterial control.		

COURT ORDERED SEWAGE TREATMENT PLANT INTERIM LIMITATIONS		
Effluent Characteristic	Effluent Limits	
	Average Monthly	Maximum Daily
	Percent Removal*	
Reduction of Suspended Solids	Volatile suspended solids shall be reduced through anaerobic digestion as follows, with percentage reductions to be computed as a two month rolling average: Deer Island 50%, Nut Island 61%.	
Special Monitoring of Oil and Grease	The Authority shall separately measure the concentration of the following by means of a weekly grab sample: Influent oil and grease, effluent oil and grease, digester sludge influent oil and grease, and digester sludge effluent oil and grease.	

* Percent Removal is based on a 12 month running average.

I.2. Monitoring Programs

In FY97, the MWRA conducted several monitoring programs. However, this report will present only the influent and effluent monitoring programs. The report will also include information on the "critical areas" in the MWRA and community sewer systems that have historically discharged during and after heavy rainstorms. These "critical areas" were monitored and inspected as part of the NPDES monitoring program.

I.2.a. Treatment Plant Monitoring Program

The Treatment Plant Monitoring Program has two main components: The Influent Monitoring Program and the Effluent Monitoring Program.

The Influent Monitoring Program characterizes the influent to the Deer Island and Nut Island Treatment Plants. Influent monitoring for conventional parameters, in addition to being mandated by the NPDES permit, is also necessary for process control. Data from the Influent Monitoring Program provide influent loading rates and the basis for determining treatment plant

efficiency. In addition, influent monitoring for non-conventional parameters is mandated by the NPDES Permit Pretreatment Program.

The Effluent Monitoring Program characterizes the quality of the effluent discharged to a receiving body of water. Except for whole effluent toxicity (WET) testing, the parameters measured in the effluent are the same as those measured in the influent. The NPDES permit requires effluent monitoring and imposes permit limits to ensure the health of the receiving water.

Table I.4 lists the treatment plant monitoring program parameters, including sample type, sampling frequency, and analytical procedures used.

I.2.b. Combined Sewer Overflow Facilities Monitoring Program

The CSO Monitoring Program includes influent and effluent monitoring at the six CSO facilities, although only three of them are currently included in the MWRA NPDES permit. Influent and effluent samples are collected and tested for conventional parameters at all six CSO facilities. For the permitted facilities, in addition to conventional parameters, select priority pollutants are also analyzed in the effluent. Table I.5 lists the CSO monitoring program parameters, including sample type, sampling frequency, and analytical procedures used.

I.2.c. Sewer System Monitoring Program

The Sewer System Monitoring Program, which attempts to identify Sanitary Sewer Overflows (SSOs), involves conducting visual inspections of areas in the sewer system that have a history of discharging during or shortly after a heavy rainfall event. Because of the hydraulics of the south system, discharges occur in manholes or other low-lying areas, while discharges in the north system are the result of combined sewage overwhelming sewage system capacity.

I.3. Treatment of Results

Sometimes it is hard to decipher analytical results and to be sure if the results of the analyses are truly reflecting what is in the sample, especially when the results are at or below

method detection levels. For the conventional parameters measured in these monitoring programs, calculating the average concentration of a particular parameter was straightforward: The arithmetic average was taken. However, in dealing with metals, pesticides, and organics, where very frequently the analytical results were below method detection level, data were manipulated. Appendix K gives a brief description of method detection limits and how measurements below detection limits are treated in this report.

Daily loadings were calculated using the formula:

Loadings (lb/day) = Q*C*8.34

where Q= flow (mgd)

C = concentration (mg/L)

8.34 = unit conversion factor

Monthly average concentrations for priority pollutants (metals, cyanide, pesticides/PCBs, and organic compounds) were calculated by adding the loadings of the pollutant during each sampling event for that month and then dividing it by the total flow during those sampling events:

Average annual concentrations were calculated using the same method, taking each individual sampling event into account in the calculation.

It should be kept in mind that with the large flows going through both Deer and Nut Island Treatment Plants, taking one small sample may not always be truly representative. It is also important to keep in mind that certain parameters (conventional) were analyzed daily while other parameters (priority pollutants) were only analyzed two or three times per month.

Table I.4

POTW Monitoring Program

Parameter	Sample Type[1]	Sampling Frequency		Analytical Method[2]
		Influent	Effluent	
Metals				
Antimony	Composite	3 x per month	3 x per month	204.2
Arsenic	Composite	3 x per month	3 x per month	206.2
Beryllium	Composite	3 x per month	3 x per month	200.7
Boron	Composite	3 x per month	3 x per month	200.7
Cadmium	Composite	3 x per month	3 x per month	213.1
Chromium	Composite	3 x per month	3 x per month	200.7
Lead	Composite	3 x per month	3 x per month	239.2
Mercury	Composite	3 x per month	3 x per month	245.1
Molybdenum	Composite	3 x per month	3 x per month	200.7
Nickel	Composite	3 x per month	3 x per month	200.7
Selenium	Composite	3 x per month	3 x per month	270.2
Silver	Composite	3 x per month	3 x per month	200.7
Thallium	Composite	3 x per month	3 x per month	279.2
Zinc	Composite	3 x per month	3 x per month	200.7
Cyanide	Grab	3 x per month	3 x per month	335.2
TPH	Grab	2 x per month	6-7 x per month	418.1
Pesticides/PCBs	Composite	2 x month	3 x per month	608
Semi-volatiles	Composite	2 x month	3 x per month	625
Volatiles	Grab	2 x month	3 x per month	624
Whole Effluent Toxicity[3]	Composite	1 x per month	WET Test Protocols	

[1] Influent and effluent composite samples are 24-hour time composite samples
[2] EPA Methods
[3] Effluent sample only

Table I.4 (Continued)

POTW Monitoring Program

Parameter	Sample Type[1]	Sampling Frequency		Analytical Method[2]
		Influent	Effluent	
Conventional				
pH	Grab	1 x per day		150.1
Settleable Solids	Grab	1 x per day		160.5
Biochemical Oxygen Demand	Composite	1 x per day		405.1
Total Suspended Solids	Composite	1 x per day		160.2
Total Coliform	Grab	3 x per day		9222 D [3]
Fecal Coliform	Grab	3 x per day		9222 B [3]
Oil and Grease	Grab	6-7 x per month		413.1
Total Chlorine Residual	Grab	3 x per day		330.5
Chlorides	Composite	1 x per day		4500 B [3]
Nutrients [4]				
Total Kjeldahl Nitrogen	Composite	1 x week		351.3
Ammonia	Composite	1 x week		350.2
Nitrates	Composite	1 x week		353.3
Nitrites	Composite	1 x week		354.1
Orthophosphorus	Composite	1 x week		365.2
Total Phosphorus	Composite	1 x week		365.2

[1] Influent and effluent composite samples are 24-hour time composite except for samples for metals analyses which are aliquot portions of the 24-hour daily composite sample

[2] EPA Methods

[3] Standard Methods

[4] Sampling frequency is once a week at Deer Island but once a month at Nut Island.

Table I.5
CSO Monitoring Program

Parameter	Sample Type	Sampling Frequency	Analytical Method [1]
pH	Grab	One/Discharge	150.1
Biochemical Oxygen Demand	Composite[2]	One/Discharge	405.1
Total Suspended Solids	Composite[2]	One/Discharge	160.2
Settleable Solids	Composite[2]	One/Discharge	160.5
Fecal Coliform	Grab	See Footnote[3]	9222 B [4]
Total Chlorine Residual	Grab	See Footnote[3]	330.5

[1] EPA Methods.
[2] Samples collected during first 4 hours of discharge or any portion thereof for discharges of less than 4 hours duration. Samples shall consist of grab samples collected at 15 minutes, 30 minutes, 45 minutes, 1 hour, 1 and ½ hours, 2 hours, 3 hours, and 4 hours from onset of discharge and combined as flow-weighted composite sample.
[3] Grab samples shall be collected once within the first 2 hours of each discharge from the CSO treatment facility and every eight hours thereafter
[4] Standard Methods.

Appendix J An Overview of the MWRA Sewerage System and Facilities

The MWRA is responsible for the collection, transport, pumping, treatment, and disposal of sewage in Boston and the greater Boston area. The MWRA also operates a third treatment plant. This plant serves the Town of Clinton and the Lancaster Sewer District under special arrangements originating at the time the Metropolitan District Commission (MDC) acquired land in Clinton for the Wachusett Reservoir. The Clinton Treatment Plant operates under a separate permit from the Boston NPDES permit and will not be discussed in this report.

The MWRA serves 43 communities with a total population of over 2.0 million people, over 5,500 businesses, and over 1,400 industries. Over 5,400 miles of town and city-owned local sewers connect at over 1,800 points to over 230 miles of MWRA interceptor sewers. Also included in the vast sewerage system are nine pumping stations, four headworks, over 80 combined sewer overflows, six CSO treatment facilities and two treatment plants. Table J.1 lists the MWRA treatment facilities and relevant information pertaining to each facility.

The two plants, Deer Island in Winthrop and Nut Island in Quincy, serve the 43 communities in the metropolitan Boston sewerage system and are allowed to discharge under the Boston NPDES Permit. The sewerage system is divided into two major regions: the North and the South. Deer Island provides primary treatment to sewage flows from the North System while Nut Island provides primary treatment to sewage flows from the South System. Table J.2 lists the sewerage service area population by community.

J.1. North System

The North System serves a population of about 1.3 million and is located to the north and west of Boston. Most of the North System is a separate system in which sanitary wastewater and stormwater are carried in different conduits. However, portions of Boston, Cambridge, Somerville, and Chelsea still have combined sewers. Community sewer lines tie into the MWRA system through interceptor lines that feed into remote headwork facilities.

Table J.1 List of Treatment Facilities and Discharge Locations

Facility Name	Location	First year of Operation	Treatment Process	Design Flow (MGD)	Conduit Size At Facility In	Conduit Size At Facility Out	Outfall Number	Receiving Water
POTW Deer Island	Deer Island Boston, MA (North System)	1968	Screening Sedimentation Chlorination	343		9'x 10' 6'x 6.5' BLOCKED 9' Dia 9' Dia	MWR001 MWR002 MWR003 MWR004 MWR005	Boston Harbor
Nut Island	147 Sea St. Quincy, MA (South System)	1952	Screening Sedimentation Chlorination	112		5'Dia 5'Dia 5'Dia 5'Dia	MWR101 MWR102 MWR103 MWR104	Boston Harbor
CSO FACILITIES Cottage Farm	Memorial Dr. near Boston University Bridge, Cambridge	1971	Screening Settling Chlorination Detention	233	72" N. Charles Relief 42" S. Charles Relief 54" Brookline	96" Outfall	MWR201	Charles River
Prison Point	Near Museum of Science Bridge, Cambridge	1980	Screening Settling Chlorination Detention	385	10' Conduit	8' Conduit	MWR203	Inner Harbor
Somerville Marginal	McGrath Highway under Route I-93, Somerville	1973*	Screening Chlorination	245	7' x 7.5' Conduit 84" Conduit	6' x 8' Conduit	MWR205	Mystic River
Constitution Beach	Off Shore St. East Boston	1987	Screening Chlorination	20	36" Conduit	36" Conduit	BOS002	Boston Harbor
Fox Point	Freeport Street near Southeast Expressway, Dorchester	1989	Screening Chlorination	119	10' x 12' Conduit	10' x 12' Conduit	BOS089	Dorchester Bay
Commercial Point	Victory Road Dorcester	1991	Screening Chlorination	194	15' x 11' Conduit	15' x 11' Conduit	BOS090	Dorchester Bay

* Rehabilitated in 1988
MWR refers to MWRA
BOS refers to BWSC

TABLE J.2 SEWERAGE SERVICE AREA POPULATION BY COMMUNITY

March 16, 1995

TOWN	COMMUNITY N. SYSTEM	COMMUNITY S. SYSTEM	SEWERED N. SYSTEM	SEWERED S. SYSTEM	COMMUNITY TOTAL	SEWERED TOTAL
Arlington	44,126		44,082		44,126	44,082
Ashland		12,355		7,166	12,355	7,166
Bedford	12,942		10,095		12,942	10,095
Belmont	24,367		23,855		24,367	23,855
Boston	415,727	135,948	415,311	135,812	551,675	551,123
Braintree		33,840		32,994	33,840	32,994
Brookline	21,240	31,823	21,155	31,696	53,063	52,851
Burlington	23,301		21,903		23,301	21,903
Cambridge	93,554		93,460		93,554	93,460
Canton		19,112		13,570	19,112	13,570
Chelsea	26,786		26,759		26,786	26,759
Dedham		23,662		21,532	23,662	21,532
Everett	35,087		35,052		35,087	35,052
Framingham		63,352		58,258	63,352	58,258
Hingham		6,098		5,061	6,098	5,061
Holbrook		11,050		6,630	11,050	6,630
Lexington	28,998		26,968		28,998	26,968
Malden	53,709		53,655		53,709	53,655
Medford	56,702		56,645		56,702	56,645
Melrose	27,777		27,749		27,777	27,749
Milton	1,902	23,999	1,750	22,079	25,901	23,829
Natick		30,428		24,738	30,428	24,738
Needham		27,674		24,353	27,674	24,353
Newton	30,537	51,589	29,713	50,196	82,126	79,909
Norwood		28,654		28,147	28,654	28,147
Quincy		84,457		84,373	84,457	84,373
Randolph		30,372		29,765	30,372	29,765
Reading	22,671		20,404		22,671	20,404
Revere	42,751		42,708		42,751	42,708
Somerville	72,303		72,231		72,303	72,231
Stoneham	22,183		21,628		22,183	21,628
Stoughton		26,979		15,888	26,979	15,888
Wakefield	25,118		24,038		25,118	24,038
Walpole		20,545		12,163	20,545	12,163
Waltham	56,698		56,641		56,698	56,641
Watertown	32,443		32,411		32,443	32,411
Wellesley		26,655		24,549	26,655	24,549
Westwood		12,940		10,352	12,940	10,352
Weymouth		54,584		49,671	54,584	49,671
Wilmington	18,488		1,997		18,488	1,997
Winchester	20,504		20,483		20,504	20,483
Winthrop	17,980		17,962		17,980	17,962
Woburn	36,407		34,951		36,407	34,951
TOTALS	1,264,302	756,115	1,233,607	688,992	2,020,417	1,922,599

Data are from Federal Census Bureau estimates of 1992 population. Hingham population reflects only the Hingham Sewer District.

Population ratios for cross-over communities calculated from following sources: Boston - I/I annual questionnaire; Newton - Facilities Plan; Brookline & Milton - community flow estimates.

Three remote headworks connect to the North Main Pumping Station (NMPS) at Deer Island by two deep rock tunnels, the Boston Main Drainage Tunnel (BMDT) and the North Facilities Metropolitan Relief Tunnel (North Metro Relief). The seven-mile BMDT originates from the Ward Street Headworks and runs under Boston Harbor to the NMPS. Columbus Park Headworks empties into the BMDT. The four-mile North Metro Relief connects the Chelsea Creek Headworks to the NMPS. The two tunnels combined can handle approximately 800 Mgd, matching the combined peak flow capacity of 788 Mgd from the three remote headworks.

A fourth headwork, the Winthrop Terminal, is located on Deer Island and receives flows from the City of Winthrop and the Caruso Pump Station through the North Metro Trunk Sewer. Figure J.1 shows the North System schematics.

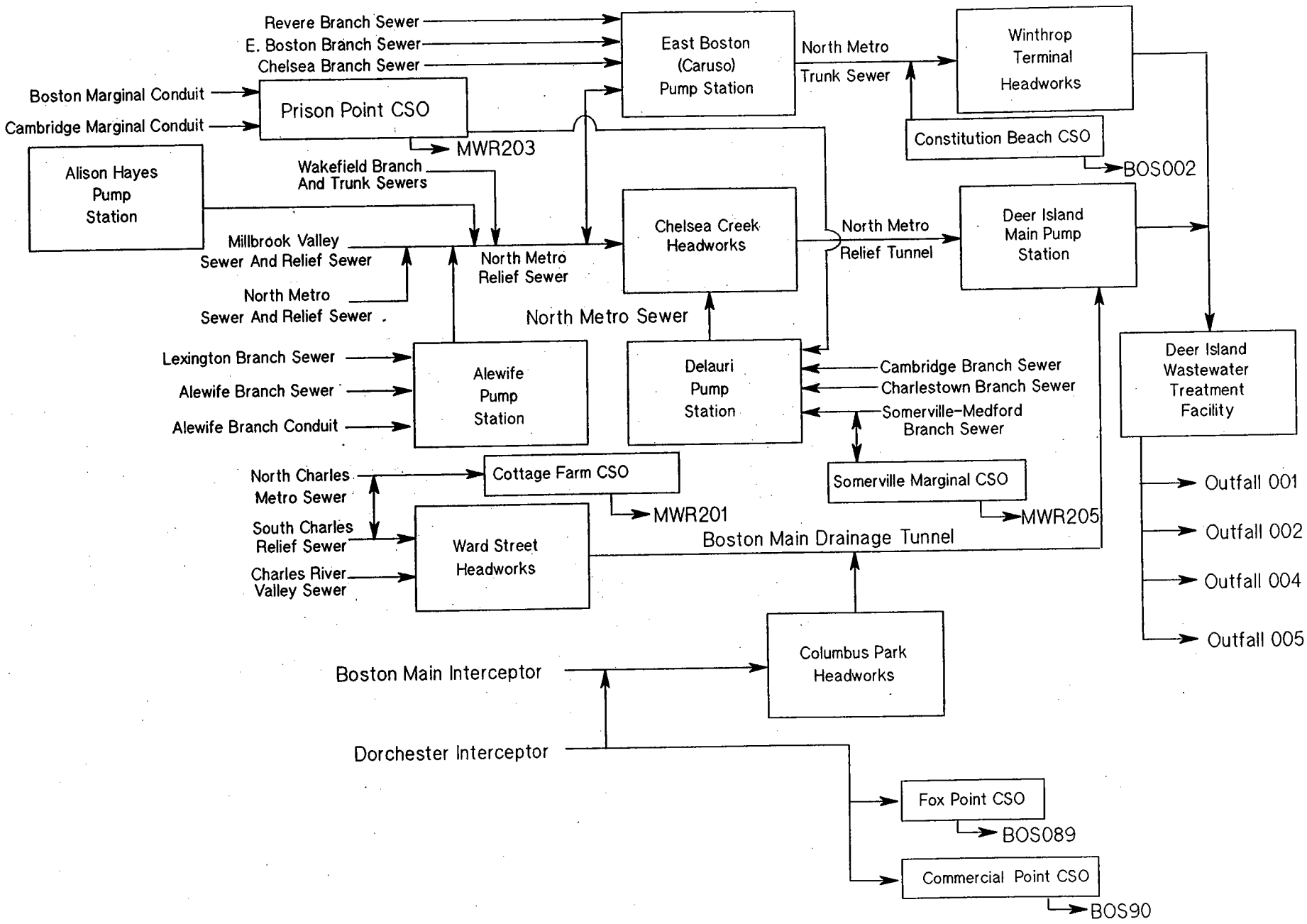
J.1.a. Pump Stations

Four pump stations are located throughout the MWRA North System. Alewife Brook (64 Mgd), Caruso (110 mgd), DeLauri (90 mgd), and Allison Hayes (11 Mgd) convey wastewater to the headwork facilities. The four pump stations receive flow from interceptor lines as follows:

Alewife Brook	Lexington Branch Sewer Alewife Branch Sewer Alewife Branch Conduit
Caruso Station	Revere Branch Sewer East Boston Branch Sewer Chelsea Branch Sewer North Metro Relief Sewer *
DeLauri Station	Cambridge Branch Sewer Charlestown Branch Sewer Medford-Somerville Branch Sewer Prison Point Pump Station Somerville Marginal CSO overflow **
Allison Hayes Station	Wakefield Branch Sewer

*When flow to the Chelsea Headworks is held back, wastewater is diverted to the Caruso Station.
**During low-intensity rainfall when line capacity is not exceeded, the combined wastewater is pumped back to the trunk sewers and ultimately to the DeLauri Station.

Figure J.1 North System Pump Stations, Headworks, CSO's and Tunnel Hydraulic Schematic



J.1.b. Headworks

The Deer Island Treatment Plant receives flow from three remote headworks and the Winthrop Terminal Headworks. The three remote headworks, the Ward Street Headworks (256 Mgd) located in Roxbury, the Columbus Park Headworks (182 Mgd) located in South Boston, and the Chelsea Creek Headworks (350 Mgd) located in Chelsea, have a combined pumping capacity of 788 Mgd. The Winthrop Headworks (125 Mgd) is located on Deer Island. The four headworks receive flows from interceptor lines or pump stations as follows:

Ward Street	South Charles Relief Sewer Charles River Valley Sewer North Charles Metro Sewer * Cottage Farm CSO *
Columbus Park	Boston Main Interceptor Dorchester Interceptor
Chelsea Creek	Alewife Pump Station North Metro Relief Sewer DeLauri Pump Station Caruso Pump Station Overflow
Winthrop Terminal	Winthrop Sewer Caruso Pump Station **

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* During low-intensity rainfall when line or holding capacity are not exceeded, the combined wastewater is pumped back to the trunk sewers and ultimately to the Ward Street Headworks.

** Overflow from the Caruso Pump Station.

J.1.c. Deer Island Treatment Plant

Deer Island Plant receives wastewater at the NMPS and the Winthrop Terminal. The NMPS consists of ten pumps, each rated at 110 Mgd. Currently, five pumps are in service while the other five are being overhauled. Once these pumps are put in service, which is expected in FY98, the NMPS will have a total rated pumping capacity of 1100 Mgd.

The Deer Island Treatment Plant, in operation since June of 1968, serves 22 communities and portions of Boston, Brookline, Newton, and Milton. The service area encompasses approximately 168 square miles. Grit removal and screening is provided at the remote headworks. Flow from the City of Winthrop is degritted at the Winthrop Terminal. Grit chambers and screens remove heavy particles and debris from the wastewater. Grit and screenings are landfilled off-site.

The new primary treatment plant came on line on January 21, 1995. The new primary plant has new grit chambers (16 units) and two batteries of primary sedimentation tanks (24 tanks). Two other batteries of primary tanks, sludge gravity thickeners (3), two modules of anaerobic sludge digesters (8 units), and other components of the new Deer Island plant are scheduled to be put in service within the next fiscal year. The remaining units are scheduled on-line in FY98 and FY99. Figure J.2 presents the new Deer Island plant process flow diagram.

Wastewater flows through the grit chambers for additional grit removal. It then flows to the sedimentation tanks where floatables, consisting mainly of oil, grease, and plastics, rise to the surface while the sludge, consisting of heavy solid particles, settles to the bottom. Effluent from the sedimentation tanks is disinfected with sodium hypochlorite prior to discharge. The scum (floatables) is skimmed off the top while the sludge (settled solids) is scraped from the bottom of the sedimentation tanks. Scum is pumped to the scum concentrator while the sludge is pumped to the sludge thickeners. After the scum and sludge are concentrated and thickened, they are conveyed to the anaerobic digesters for further treatment. The digested sludge is barged to the Fore River Pelletizing Plant, where it is converted into fertilizer.

Effluent is channeled through a common conduit to four potential outfall pipes, 001, 002, 004, and 005. Figure J.3 illustrates the Deer Island outfall schematics while Table J.3 presents

the specifics of each outfall. Outfalls 001, 002 and 004 connect to Chamber C while 005 connects to Chamber A. A sluice gate in Chamber A controls discharge from 005. Likewise, a sluice gate in Chamber C isolates discharge from 004. Of the five permitted outfalls, only outfalls 001 and 002 are used regularly. Outfall 004 is used only during high flow conditions, while relief outfall 005, although not used, can be activated during extremely high flows or emergency situations. Outfall 003 is permanently blocked and out of service.

The amount of wastewater that can be pumped to the plant is not only limited by sewer line capacity, treatment plant capacity, and pumping capacity, but also by the outfall pipe capacity. The approximate amounts of treatment plant effluent that can be discharged through the outfalls are as follows:

Outfalls 001 & 002
High tide 400 Mgd
Low tide 735 Mgd

Outfalls 001 & 002 & 004
High tide 635 Mgd
Low tide 900 Mgd

Outfalls 001 & 002 & 004 & 005
High tide 900 Mgd
Low tide 1,270 Mgd

Table J.3 Deer Island Outfall Characteristics

	Outfall Number			
	No. 001	No. 002	No. 004	No. 005
Length, ft.	2260	2565	500	135
Discharge Elevation, ft.	54.7	54.7	97.8	98
Number of Open Ports	14	47	1	1
Port Diameter, ft.	1.67	1.69	9	9
Chamber Invert Elevation, ft.	98.1	98.1	98.1	103.2
Chamber Overflow Elevation, ft.	120	120	120	125
Pipe Size, in.	16 x 12 to 12 x 10 to 10 (diam)	6 x 6.25 to 9 (diam)	9 (diam)	9 (diam)
Pipe Material	Concrete to Concrete to RC	Brick with Concrete Encasing	Reinforced Concrete (RC)	RC
Year Built	1896	1959	1959	1959

Figure J.2 Deer Island Treatment Facility Flow Diagram

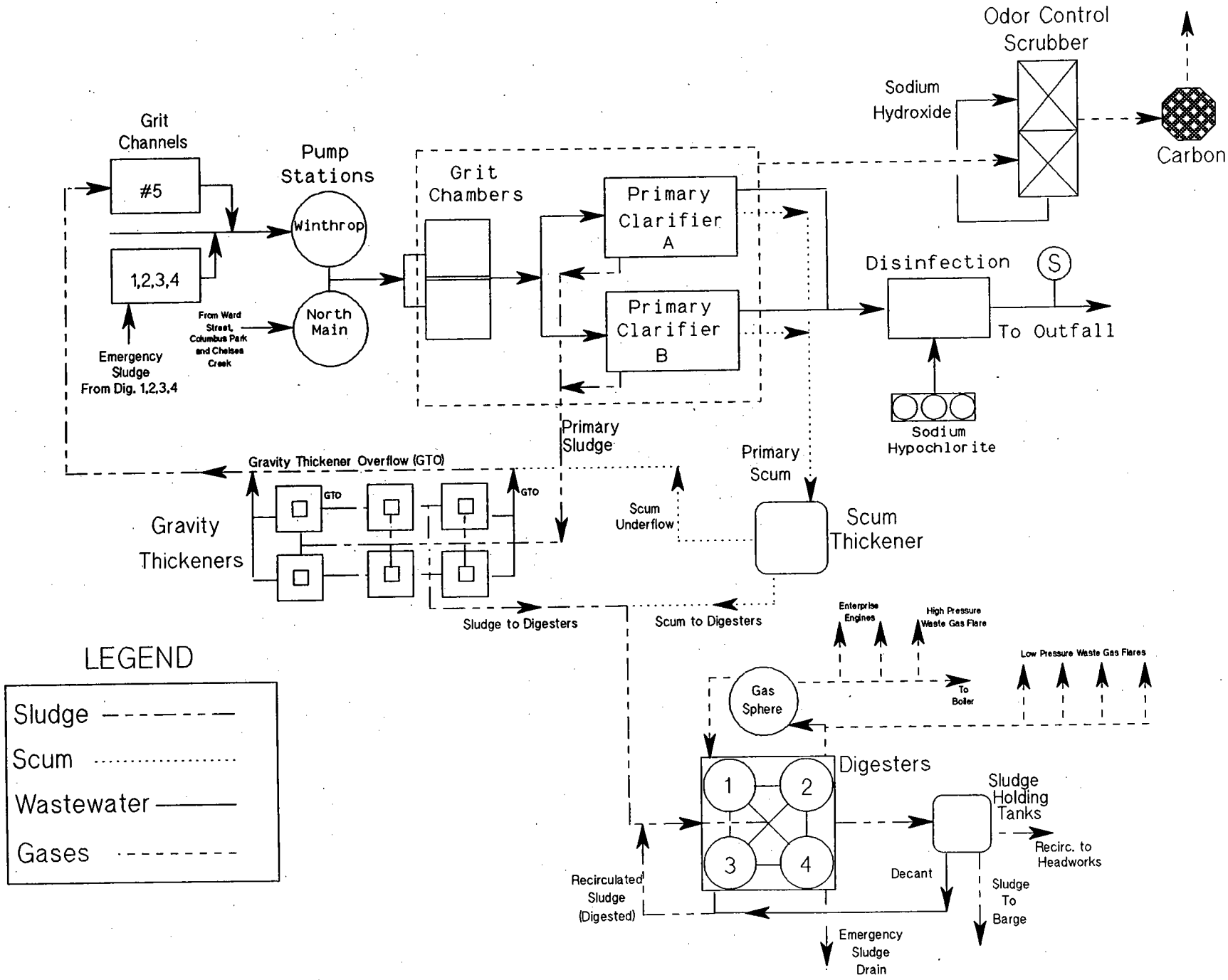
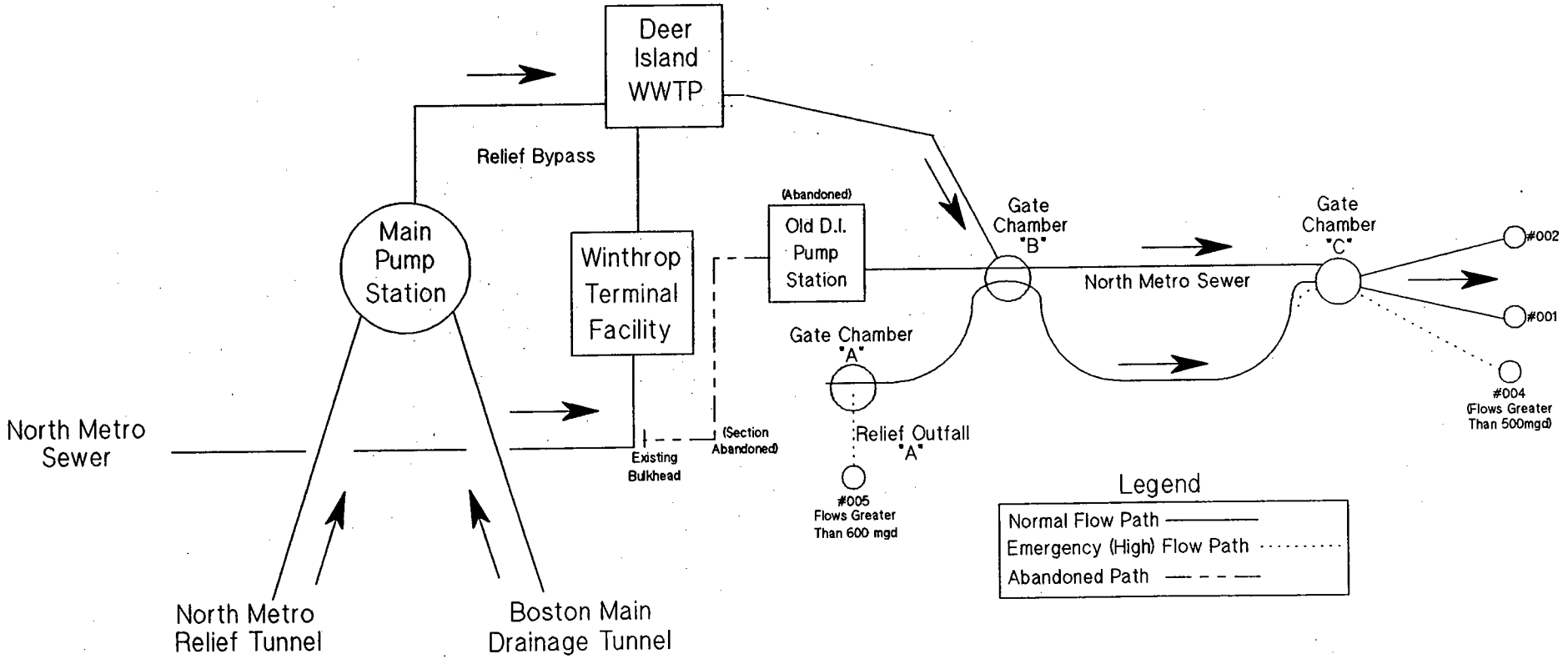


Figure J.3 Deer Island Outfall System Schematic



J.1.d. Combined Sewer Overflow Facilities

The conditions for discharge of effluent from three CSO chlorination facilities are also included in the Boston NPDES Permit. These three CSO chlorination facilities, Cottage Farm in Cambridge, Prison Point in Cambridge, and Somerville Marginal in Somerville, discharge to the Charles River, the Inner Harbor, and the Mystic River respectively. Three other CSO chlorination facilities, Constitution Beach in East Boston, Fox Point in Dorchester, and Commercial Point in Dorchester, are owned and operated by the MWRA. Effluent from these facilities discharges to BWSC lines and is included in the BWSC NPDES permit.

Discharge of combined wastewater from a CSO treatment facility to a receiving body of water is defined in this report as a CSO activation. Discharge of combined wastewater to a CSO outfall pipe is defined as a CSO overflow. CSO overflows will not be discussed in this report. In general, CSO activations occur as a result of heavy rain, snowmelt, or choking at the headworks. Choking is the process by which the headworks restrict the flow to Deer Island. During wet weather, when the wastewater volume exceeds the hydraulic capacity of the treatment plant, the headworks chokes" the flow and holds the wastewater in the lines. As a result, the combined wastewater backs up into the system, forcing the combined wastewater to overflow to CSO treatment facilities and CSO outfall pipes, resulting in potential CSO activations and overflow.

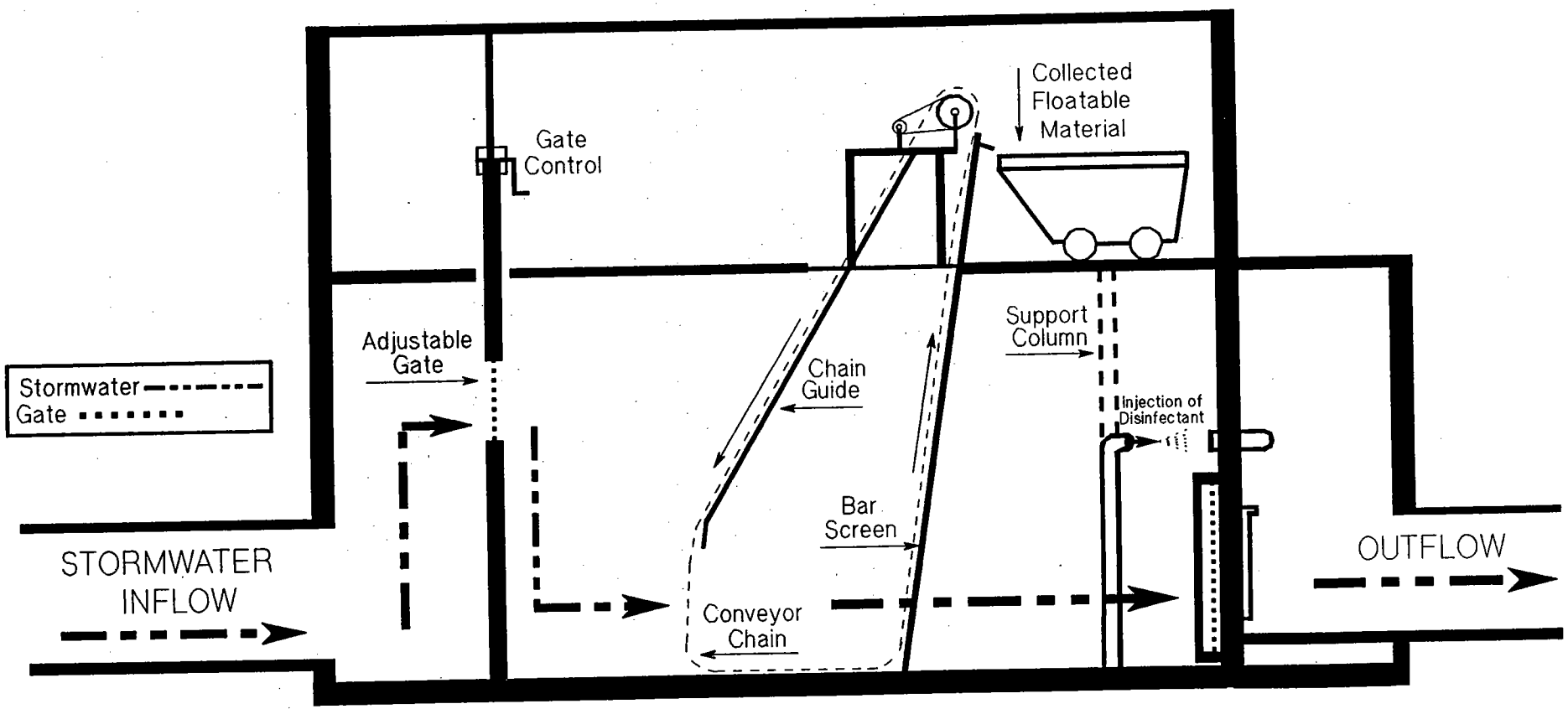
In addition to choking in response to hydraulic demand on the system, the headworks may choke to perform emergency repairs, system testing, or maintenance work at the treatment plant. Most of the choking that occurred in FY97 was for these reasons and did not result in any CSO activations. Choking at Ward Street and Columbus Park Headworks influences Cottage Farm activations. Choking at the Columbus Park Headworks influences activations at Fox Point and Commercial Point CSOs. Backups at the DeLauri Pumping Station brought about by choking at the Chelsea Headworks activate the Somerville Marginal CSO.

At the CSO facility, the combined wastewater is chlorinated prior to discharge. Of the six CSO facilities, only Cottage Farm and Prison Point have pumping and tank storage capacities. This allows for chlorinated wastewater to be held at these facilities up to their storage

capacities. Any wastewater exceeding that storage capacity overflows and is discharged to the river. The four other CSO facilities are gravity CSO facilities, which means combined wastewater arrives and leaves the CSO facility by gravity. This type of facility provides disinfection and allows the chlorinated combined wastewater to overflow to the receiving water as quickly as the wastewater arrives at the facility. Figure J.4 is a schematic of a typical CSO treatment facility.

The six CSO facilities provide treatment for approximately 50% of the CSO volume while the other half overflows in any of the 85 permitted CSO overflow structures of the sewerage system without the benefit of any type of treatment. Of the 85 permitted CSO overflow structures, 53 are located in Boston, 15 in Cambridge, 5 in Chelsea, and 12 in Somerville. These outfalls discharge into Boston Harbor, the Alewife Brook, the Mystic River, the Charles River, and the Neponset River.

Figure J.4 Combined Sewer Overflow Treatment Facility



Prison Point Combined Sewer Overflow Facility

Prison Point is a both dry weather and stormwater pumping station. The dry weather phase is a five-Mgd capacity sewer pumping station that receives flow from the Boston Marginal Conduit and the Cambridge Marginal Conduit. Prison Point feeds into the DeLauri Pumping Station.

The stormwater phase has a maximum pumping capacity of 385 Mgd. Treatment includes screening, detention, and disinfection. During wet weather, if the dry pumping capacity is exceeded, the combined flow is screened, chlorinated, and held in detention basins. Once the basins fill, treated flow is discharged downstream below the new Charles River Dam at outfall MWR203. Combined wastewater volume that is held back (up to 1.2 Mgd) is pumped back to the DeLauri Station. This facility came on line in 1980.

Cottage Farm Combined Sewer Overflow Facility

Cottage Farm, like Prison Point, is a two-phase facility. During dry weather conditions, wastewater arrives at the Ward Street Headworks where it is pumped to the Deer Island Plant. Under storm conditions, wastewater backs up into sewer lines and into the Cottage Farm CSO facility. Cottage Farm detains wastewater up to a volume of 1.3 MG. Any excess flow is screened, settled, chlorinated, and discharged to the Charles River through outfall MWR201. Combined wastewater that is held back is pumped back to the Ward Street Headworks. This facility, on line since 1971, has a design pumping capacity of 233 Mgd.

Somerville Marginal Combined Sewer Overflow Facility

Somerville Marginal CSO is an unmanned gravity facility with a design capacity of 245 Mgd. It receives wet weather flow from the northeast portion of Somerville and part of Medford. Normally, dry weather flow from these areas arrives at the DeLauri Station via the Somerville-Medford trunk sewers. During wet weather, combined sewer flow backs up to the Somerville CSO facility. Unlike Cottage Farm or Prison Point, this facility does not provide any detention capacity during storm conditions. Treatment consists of screening and chlorination. Effluent is discharged to the lower Mystic River basin at outfall number MWR205. During

low-intensity rainfall when line capacity is not exceeded, the combined wastewater is pumped back from a wet well to the DeLauri Station. This facility came on line in 1973 and was upgraded in 1988.

Constitution Beach Combined Sewer Overflow Facility

Constitution Beach is an unmanned gravity facility with a design capacity of 20 Mgd. It receives flows from the North Metro Trunk sewer. Treatment consists of screening and disinfection. Effluent is discharged to a BWSC line that ultimately discharges to Boston Harbor through BOS002. This outfall is included in the BWSC permit. Since the issuance of that permit, full ownership of Constitution Beach CSO Facility has been transferred to MWRA. This facility came on line in 1987.

Fox Point Combined Sewer Overflow Facility

Fox Point has a design capacity of 119 Mgd. It receives wet weather flows from the Dorchester Interceptor sewer line. Operation of this facility parallels that of the Constitution Beach CSO; treatment includes screening and disinfection. Effluent is discharged to a BWSC sewer line that discharges to Dorchester Bay through BOS089. This outfall is included in the BWSC permit. This facility came on line in 1989.

Commercial Point Combined Sewer Overflow Facility

Commercial Point is an unmanned gravity CSO with a design capacity of 194 Mgd. This facility also receives wet weather backups from the Dorchester Interceptor. Treatment includes screening and disinfection. Effluent is discharged to a BWSC line that ultimately discharges to Dorchester Bay through BOS090. This outfall is included in the BWSC permit. This facility came on line in 1991.

J.2 South System

The South System serves a population of about 0.70 million and is located to the south and southwest of Boston. The South System is all separate. Figure J.5 illustrates the South System schematics. Community sewer lines tie into the South System through MWRA interceptor lines. The Framingham Extension Sewer, Wellesley Extension Sewer, Upper Neponset Valley Sewer, Wellesley Extension Relief Sewer, Neponset Valley Sewer, Walpole Extension Sewer, Stoughton Extension Sewer, Braintree-Randolph Trunk Sewer, and several other branch sewers discharge to the High Level Sewer. Five pump stations move the wastewater through the High Level Sewer to Nut Island Treatment Plant.

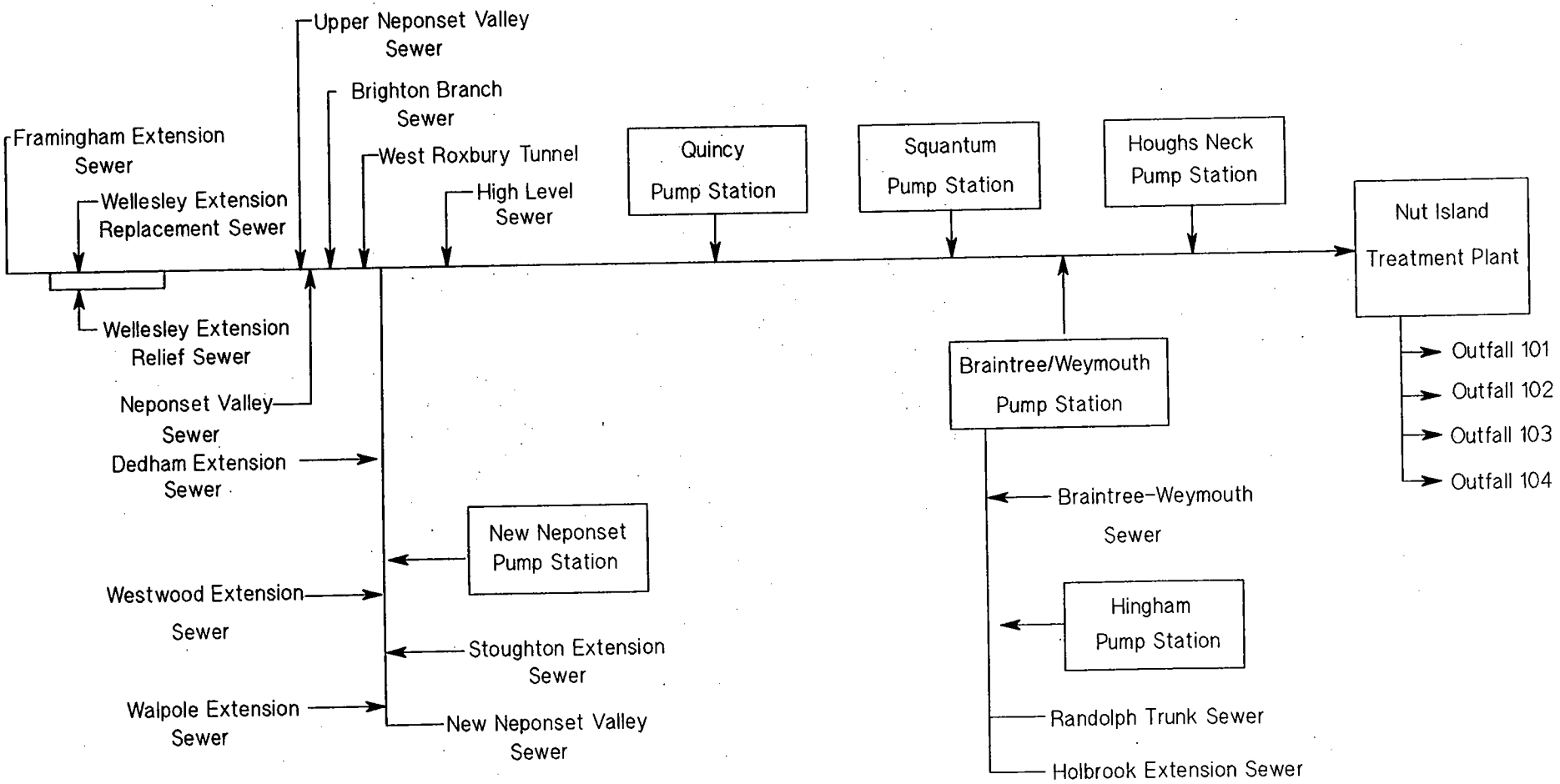
J.2.a. Pump Stations

Six MWRA pump stations move wastewater from low-lying areas to the High Level Sewer: Hingham Pump Station (16.5 mgd), Braintree-Weymouth Pump Station (60 mgd), Quincy Pump Station (52 mgd), Squantum Pump Station (12 mgd), Houghs Neck Pump Station (2.8 mgd), and Neponset Pump Station (90 mgd). The high level sewer conveys wastewater to the Nut Island Plant.

The six pumping stations receive flow from interceptor or community lines as follows:

Hingham Pump Station	Weymouth-Hingham Sewer Lines
Braintree-Weymouth Pump Station	Braintree-Randolph Trunk Sewer Braintree-Weymouth Extension Sewer Holbrook Extension Sewer Hingham Pumping Station
Quincy Pump Station	Quincy Sewers
Squantum Pumping Station	Squantum Sewers
Houghs Neck Lift Station	Houghs Neck Sewer
Neponset Pump Station	Neponset Valley Sewer

Figure J.5 South System Hydraulic Schematic



J.2.b. Nut Island Treatment Plant

The Nut Island Treatment Plant, in operation since 1952, serves 17 communities in the southern portion of the sewerage system and parts of Boston, Brookline, Newton, and Milton, a total of 21 communities. The area served by Nut Island is approximately 238 square miles. Nut Island plant was designed to provide primary treatment for an average daily flow of 112 Mgd and a peak flow of 230 Mgd. Figure J.6 presents the Nut Island process flow diagram.

Current treatment processes include:

- screening and grit removal
- preaeration
- primary settling
- disinfection
- anaerobic digestion.

Nut Island consists of two bar screens, six grit chambers, five preaeration tanks, six sedimentation tanks, and four digesters. Wastewater entering Nut Island passes through bar screens and grit chambers. Grit and screenings are sent to a landfill. Wastewater is pumped to the preaeration channels and then flows by gravity through the sedimentation tanks. Scum is skimmed off the top and sent to a landfill. Sludge is scraped from the bottom and pumped to the anaerobic digesters for further treatment. The digested sludge is barged to the Fore River Pelletizing Plant where it is converted to fertilizer. Effluent is disinfected with chlorine gas prior to discharge through outfalls that discharge to Nantasket Roads Channel in Boston Harbor and Hingham Bay.

The Nut Island outfall system consists of four outfalls. The three main outfalls, designated 101, 102, and 103 are each five feet in diameter but of varying lengths. Outfalls 101 and 102 are used on a daily basis while outfall 104 is used only during extreme high tide conditions (el. 115.7) and plant inflows approaching 230 Mgd. Outfalls 101, 102, and 103 discharge to Boston Harbor. Outfall 104, used to handle flow in excess of the capacity of the three main outfalls, discharges to Hingham Bay.

The amount of wastewater that can be pumped to the plant is not only limited by sewer

line capacity, treatment plant capacity, and pumping capacity, but also by the outfall pipe capacity. Figure J.7 shows the Nut Island outfall system schematic while Table J.4 lists pertinent information about the Nut Island outfalls.

The approximate amounts of treatment plant effluent that can be discharged through the outfalls are estimated as follows:

Outfalls 101 & 102
High tide 105 Mgd
Low tide 150 Mgd

Outfalls 101, 102, & 103
High tide 166 Mgd
Low tide 245 Mgd

Outfalls 101, 102, 103 & 104
High tide 245 Mgd
Low tide 260 Mgd

Table J.4 Nut Island Outfall Characteristics

	Outfall Number			
	No. 101	No. 102	No. 103	No. 104
Length, ft.	5830	5545	1412	663
Pipe Size, in.	60 (diam)	60 (diam)	60 (diam)	60 (diam)
Pipe Material	Cast Iron	Cast Iron	Cast Iron	Reinforced Concrete (RC)
Year Built	1904		1904	

Figure J.6 Nut Island

Wastewater Treatment Plant Flow Diagram

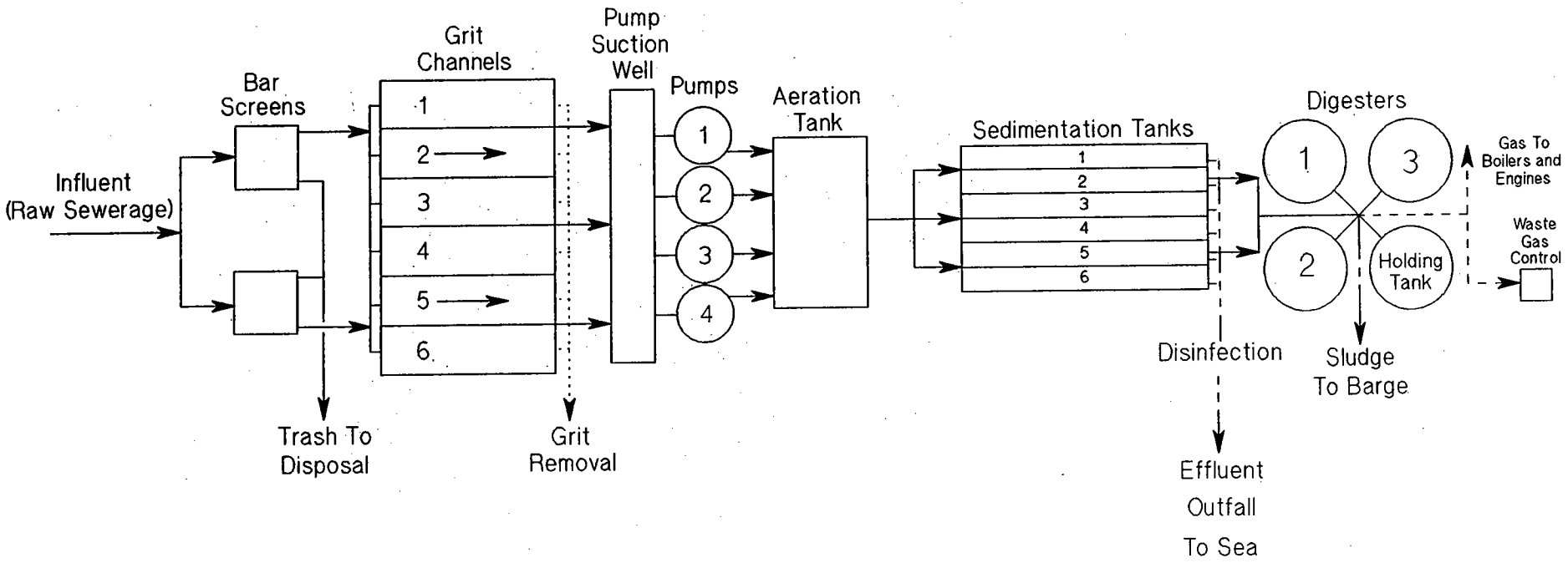
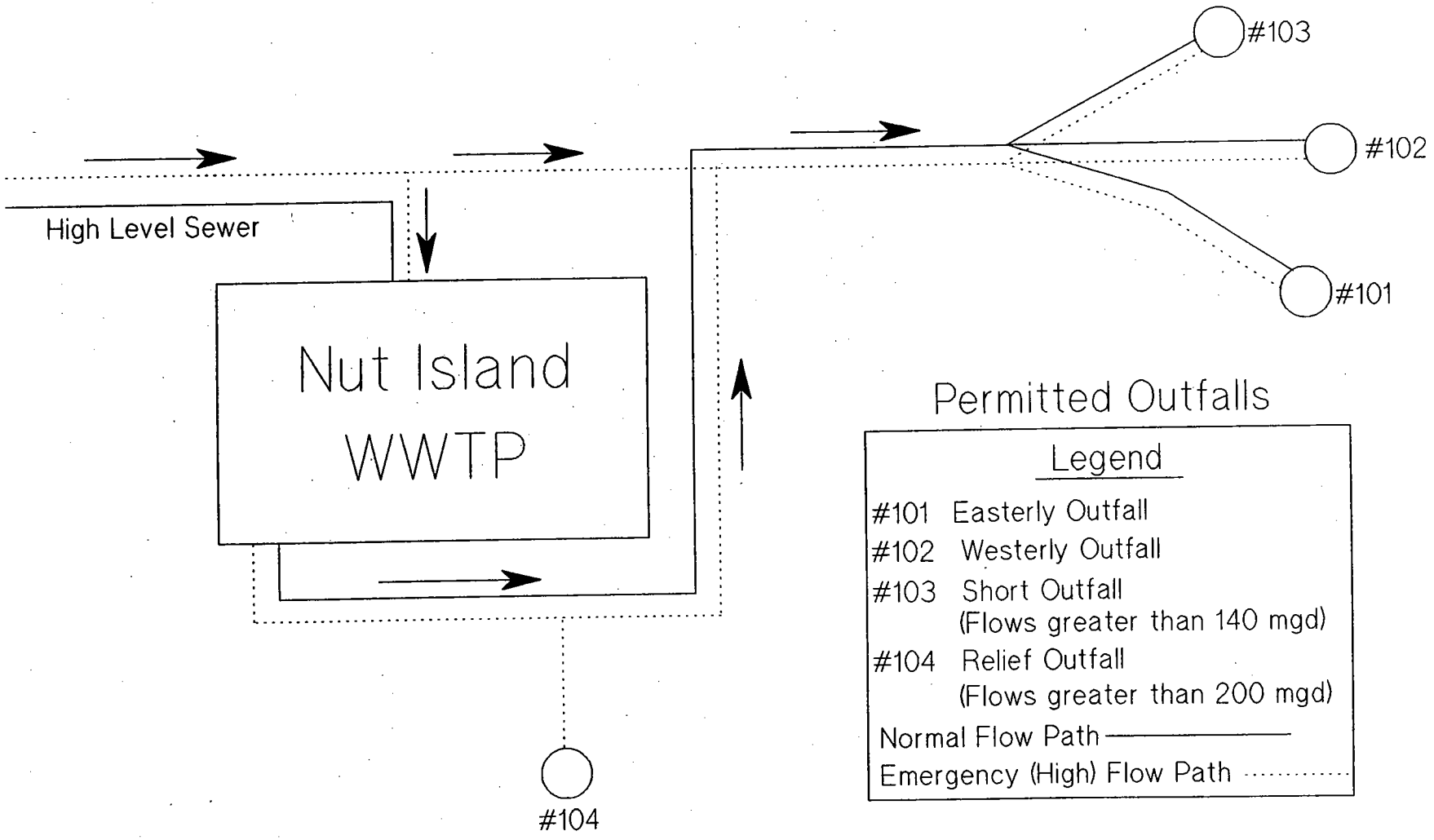


Figure J.7 Nut Island Outfall System Schematic



J.3 Sanitary Sewer Overflows

An issue of concern in both the North System and the South System is the occurrence of Sanitary Sewer Overflows (SSOs). These occur during extreme rainfall events, when the combined wastewater and stormwater flows exceed the capacity of the pipes and cause certain areas to become inundated. As a matter of course, whenever there is a high amount of rainfall, a crew from the Transport Department investigates a number of critical areas to visually monitor overflows. While some of these critical areas are the MWRA's responsibility, most of them are the responsibility of the local communities. A list of these areas and who is responsible for them is included in Table J.5. Not all of these areas are checked during every rainfall, and some are monitored by the MWRA only during extreme storm events.

Table J.5 MWRA Sewer System Overflow Locations

Number	Owner	Location and Description
1	MWRA[1,3]	Section 107 (Overflow Relief Point) Medford, On Median Strip Of On Ramp To Rt. 16
2	MWRA[1]	Section C (Overflow Relief Point) Medford, Auburn St. At Rt. 16
3	MWRA[1]	Section 91B (Siphon) Medford, Lakeview Ter. At Mystic Valley Pkwy
4	MWRA[1,3]	Section 91B (Manhole) Medford, Lakeview Ter.
5	MWRA[2,3]	Section 126 (Siphon) Braintree, Easement Between Commercial St. & Quincy Ave.
6	MWRA[2,3]	Section 126 (Manhole) Braintree, Idlewell Blvd.
7	MWRA[2]	Section 128 (Siphon) Braintree, Pearl St.
8	MWRA[2]	Norwood, Manhole
9	MWRA[2]	Weymouth, Manhole, Regina Rd.
10	Newton	Manhole, 100 Peregrine Rd.
11A	Roslindale	Manhole, Florence St. Sycamore St.
11B	Roslindale	Manhole, Sammett Ave. Mt. Hope Rd. Holly St.
11C	Roslindale	Manhole, Archdale St.
12	Everett	Manhole, Preston St.
13	Malden	Manhole, Taylor St.
14	Medford	Manhole, Roosevelt St.
15	Medford	Manhole, Mystic Ave.
16	Arlington	Manhole, Kimball Rd.
17	Arlington	Manhole, Summer St.
18	Quincy	Manhole, 40 Willard St.
19	W. Roxbury	Manhole, 307 V.F.W. Parkway
20	Hyde Park	Manhole, Clark Ave. American Legion Hwy.
21	Arlington	Manhole, 22 Grove St.
22	Weymouth	Manhole, 159 Spring Way
23	Hyde Park	Manhole, 46 Collins St.
24	Hyde Park	Manhole, 45 Sierra St.
25	Braintree	Manhole, 16 Allen St.
26	Newton	Manhole, 183 Old Farm Rd.
27	Arlington	Section 80 (Overflow Relief Point) Behind Brattle Court Pumping Station
28	Arlington	Section 80 (Overflow Relief Point) Hobbs Court Plug- Temporary

29	Medford	Section 43.5 (Overflow Relief Point) Boston Ave. At Rt. 16
30	Cambridge	Section B (Overflow Relief Point) Alewife Brook at T-Station
31	Malden	Section 19 (Overflow Relief Point) Off Commercial Street at Malden River
32	Winchester	Section 113 (Siphon) Wedgemere Siphon
33	Natick	Section 132 (Siphon) Eliot St.
34	Norwood	Section 117 (Siphon and Manhole) Wooded Area at Neponset River
35	Canton	Section 121 (Manhole) Wooded Area at Steep Hill Brook Neponset River 36
	Norwood	Manhole, New Walpole Extension Sewer Behind Overlook Dr.

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[1] North System

[2] South System

[3] Active during severe storms in conjunction with high ground water and limited capacity

Appendix K Instrument Detection Limits, Method Detection Limits, and Quantitation Limits- A Brief Description

An understanding of the detection limits of analysis is essential to reviewing the data from chemical analyses. There are three different types of detection limits that are most often encountered:

- **Instrument Detection Limits**
- **Method Detection Limits**
- **Quantitation Limits**, also known as **Reporting Limits.**

Instrument detection limits (IDL) reflect only the capability of the Gas Chromatograph (GC), or any other instrument, used to conduct the analysis. This will be the lowest of the three detection limits. The IDL will not take into account the losses of the pollutant associated with the matrix (soil or wastewater) and extraction procedure. This discrepancy is known as matrix interference.

Method detection limits (MDL) are the smallest amount of a substance that can be detected above background noise by following a particular method. The MDL is statistically determined by running a series of analyses using various low concentrations of a pollutant. Using a Student's "T" test, the smallest concentration that has a 99% probability of being detected above the background is designated the MDL for that pollutant. The EPA, using several private laboratories, has determined what the MDLs are for most priority pollutants using their detailed methods. These are published in the 40 CFR and some are listed in Appendix J, Table J-1 of this report.

In general, if a plot is made of pollutant concentration versus instrument response, it will generate a linear relationship. As the pollutant concentration approaches zero, the linearity of the relationship is lost. At the point where the linearity is lost is the **Quantitation Limit (QL)** or sometimes the **Reporting Limit**. In other words, the smallest concentration where the linear relationship holds is the smallest concentration that can be quantified. Generally, the QL can be thought of as about five times the MDL. Quantitative limits only

come into play on GC/MS analyses, that is, methods 608, 624, and 625. Specific limits are highly matrix dependent .

The EPA has developed **Contract Required Quantitation Limits (CRQL)**, which serve as a guideline for selecting contract laboratories to perform analyses. Some CRQLs are listed in Appendix J, Table J-1 of this report.

In short, the IDL is the lowest concentration that a particular instrument can detect. The MDL is the lowest concentration that can be detected using a particular method. The QL is the smallest concentration that can be confidently considered to be accurate.

Reported concentrations that are between the MDL and the QL indicate that a pollutant is present, but at a concentration too low to be accurately quantified. For example, using EPA method 624, chloroform has a MDL of 1.6 and a QL of 10 ug/L. If the concentration from an analysis is reported as 5 ug/L then what can be inferred is "A very low concentration of chloroform was detected. We are not sure what the concentration present in the wastewater really is, but our best guess is 5 ug/L." The EPA requires that these intermediate values be flagged with a "J" on any reports submitted to them. Therefore, these are sometimes simply called "J-values."

For non-detects in analyses of metals, cyanide, petroleum hydrocarbons, etc., it is customary for "less than the MDL" to be listed as a result. For a non-detect in the 608, 624, and 625 analyses "less than the QL" is typically listed.

Often it becomes necessary to estimate a concentration for below detection limit values, specifically when calculating the average yearly concentration of a pollutant. A well established method is to assume the actual concentration of a non-detected pollutant is simply one half of the MDL. While no scientific theory supports this assumption, it is more reasonable than either assuming the concentration is zero, or the MDL itself. It is also accepted by the EPA and DEP as a standard practice that can be applied to any series of tests.

This technique is utilized in this report. For all metals, cyanide, petroleum hydrocarbons, etc., half the MDL was assumed for all non-detects (i.e. values below MDL). For the 608, 624, and 625 analyses, 1/2 the MDL, which is the same as 1/10 the QL, was assumed for all non-detects (i.e. values below QL).

In Appendix J, Table J-1 is a list of the parameters regularly tested for in the MWRA 's effluent. The required EPA method is referenced by its number and the recommended EPA detection limit is given. The CRQL is also provided when applicable. These limits are then compared to the detection levels normally attained by the contract laboratory analyzing MWRA effluent.

Appendix L Priority Pollutants List and Other Parameters

Table L.1 List of Parameters Tested

Table L.2 EPA List of 126 Priority Pollutants

Table L.3 NPDES Permit Testing Requirements, 40 CFR 122, Appendix D, Tables I and II

Table L-1 List of Parameters Tested

'(Influent and Effluent)*

	EPA Method Number	EPA MDL	CRQL	Contract Lab MDL	Contract Lab QL
METALS					
Antimony	204.2	3.0	NA	5.0	NA
Arsenic	206.2	1.0	NA	2.0	NA
Beryllium	200.7	0.3	NA	1.0	NA
Cadmium	213.2	0.1	NA	1.0	NA
Chromium	218.2	1.0	NA	5.0	NA
Copper	200.7	6.0	NA	4.0	NA
Lead	239.2	1.0	NA	1.5	NA
Mercury	245.1	0.2	NA	0.2	NA
Nickel	200.7	15.0	NA	12.0	NA
Selenium	270.2	2.0	NA	2.0	NA
Thallium	279.2	1.0	NA	2.0	NA
Zinc	200.7	2.0	NA	10.0	NA
Boron	200.7	5.0	NA	30.0	NA
Molybdenum	246.2	1.0	NA	8.0	NA
Silver	272.2	0.2	NA	3.0	NA
OTHER INORGANIC CHEMICALS					
Cyanide	335.2	20.0	NA	10.0	NA
Hexavalent Chromium	307 B	10.0	NA	5.0	NA
Oil & Grease (mg/L)	413.1	5.0	NA	5.0	NA
Petroleum Hydrocarbons (mg/L)		1.0	NA	1.0	NA
Surfactants (mg/L)		25.0	NA	25.0	NA
PESTICIDES	608			NA	
alpha-BHC		0.003	0.05		0.05
beta-BHC		0.006	0.05		0.05
delta-BHC		0.009	0.05		0.05
gamma-BHC (Lindane)		0.004	0.05		0.05
Heptachlor		0.003	0.05		0.05
Aldrin		0.004	0.05		0.05
Heptachlor epoxide		0.083	0.05		0.05
Endosulfan I		0.014	0.05		0.05
Endrin aldehyde		0.023	0.10		0.10
Dieldrin		0.002	0.10		0.10
4,4'-DDE		0.004	0.10		0.10
Endrin		0.006	0.10		0.10
Endosulfan II		0.004	0.10		0.10
4,4'-DDD		0.011	0.10		0.10
Endosulfan sulfate		0.066	0.10		0.10
4,4'-DDT		0.012	0.10		0.10
Methoxychlor			0.50		0.50
Toxaphene		0.240	0.50		5.00

Table L-1 List of Parameters Tested, cont.

'(Influent and Effluent)*

	EPA Method Number	EPA MDL	CRQL	Contract Lab MDL	Contract Lab QL
Chlordane		0.014	1.00		1.00
PCBs					
Aroclor-1016		ND	2.00		2.00
Aroclor-1221		ND	1.00		1.00
Aroclor-1232		ND	1.00		1.00
Aroclor-1242		0.065	1.00		1.00
Aroclor-1248		ND	1.00		1.00
Aroclor-1254		ND	1.00		1.00
Aroclor-1260		ND	0.05		0.20
VOLATILE ORGANICS	624				
Chloromethane		ND	10		10
Bromomethane		ND	10		10
Vinyl chloride		ND	10		10
Chloroethane		ND	10		10
Methylene chloride		2.8	10		10
Acetone			10		10
Carbon disulfide			10		10
1,1-dichloroethylene		2.8	10		10
1,1-dichloroethane		4.7	10		10
1,2-dichloroethylene		1.6	10		10
Chloroform		1.6	10		10
Methylethyl ketone (2-butanone)			10		10
1,2-dichloroethane		2.8	10		10
1,1,1-trichloroethane		3.8	10		10
Carbon tetrachloride		2.8	10		10
Vinyl acetate			10		10
Bromodichloromethane		2.2	10		10
1,2-dichloropropane		6.0			
Cis 1,3 dichloropropene		5.0	10		10
Trichloroethylene		1.9	10		10
Chlorodibromomethane		3.1	10		10
1,1,2-trichloroethane		5.0	10		10
Benzene		4.4	10		10
Trans-1,3-dichloropropene		ND	10		10
Bromoform		4.7	10		10
4-methyl-2-pentanone			10		10
2-hexanone			10		10
Tetrachloroethylene		4.1	10		10
1,1,2,2-tetrachloroethane		6.9	10		10
Toluene		6.0	10		10
Chlorobenzene		6.0	10		10
Ethlybenzene		7.2	10		10

Table L-1 List of Parameters Tested, cont.

'(Influent and Effluent)*

	EPA Method Number	EPA MDL	CRQL	Contract Lab MDL	Contract Lab QL
Styrene			10		10
Xylene (Total)			10		10
2-chloroethylvinylether			10		10
Volatile Organics (cont)					
Trichlorofluoromethane			10		10
Acrolein			10		10
Acrylontrile			10		10
SEMI-VOLATILES	625				
Phenol		1.5	10		10
Bis (2-chloroethyl) ether		5.7	10		10
2-chlorophenol		3.3	10		10
m-dichlorobenzene		1.9	10		10
p-dichlorobenzene		1.9	10		10
o-dichlorobenzene		1.9	10		10
o-cresol			10		10
2,2'oxybis (1-chloropropane)		5.7	10		10
p-cresol			10		10
N-nitroso-di-n-propylamine		ND	10		10
Hexachloroethane		1.6	10		10
Nitrobenzene		1.9	10		10
Isophrone		2.2	10		10
o-nitrophenol		3.6	10		10
2,4-dimethylphenol		2.7	10		10
Bis (2-chloroethoxy)methane		5.3	10		10
2,4-dichlorophenol		2.7	10		25
1,2,4-trichlorobenzene		1.9	10		10
Naphthalene		1.6	10		10
p-chloroaniline			10		10
Hexachlorobutadiene			10		10
p-chloro-m-cresol			10		10
2-methylnaphthalene			10		10
Hexachlorocyclopentadiene		ND	10		10
2,4,6-trichlorophenol		2.7	10		10
2,4,5-trichlorophenol			25		25
2-chloronaphthalene		1.9	10		10
o-nitroaniline			25		25
Dimethyl phthalate		1.6	10		10
Acenaphthylene		3.5	10		10
2,6-dinitrotoluene		1.9	10		10
m-nitroaniline			25		25
Acenaphthene		1.9	10		10

Table L-1 List of Parameters Tested, cont.

(Influent and Effluent)*

	EPA Method Number	EPA MDL	CRQL	Contract Lab MDL	Contract Lab QL
2,4-dinitrophenol		42.0	25		25
p-nitrophenol		3.6	25		25
Dibenzofuran			10		10
2,4-dinitrotoluene		5.7	10		10
Diethyl phthalate		1.9	10		10
4-chlorophenyl phenyl ether		4.2	10		10
Fluorene		1.9	10		10
Semivolatiles (Cont)					
p-nitroaniline			25		25
4,6-dinitro-o-cresol			10		10
N-nitrosodiphenylamine		1.9	10		10
4-bromopheyl phenyl ether		1.9	10		10
Hexacholobenzene		1.9	10		10
Pentachlorophenol		3.6	25		10
Phenanthrene		5.4	10		10
Anthracene		1.9	10		10
Di-n-butyl phthalate		2.5	10		10
Fluoranthene		2.2	10		10
Pyrene		1.9	10		10
Butyl benzyl phthalate		2.5	10		10
3,3'dichlorobenzidiene		16.5	10		10
Benzo(a)anthracene		7.8	10		10
Chrysene		2.5	10		10
Bis (2-ethylhexyl) phthalate		2.5	10		10
Di-n-octyl phthalate		2.5	10		10
Benzo(b)fluoranthene		4.8	10		10
Benzo(k)fluoranthene		2.5	10		10
Benzo(a)pyrene		2.5	10		10
Indeno(1,2,3-cd)pyrene		3.7	10		10
Dibenz(a,h)anthracene		2.5	10		10
Benzo(ghi)perylene		4.1	10		10
Benzoic acid			10		10
Benzyl alcohol		ND	10		10
Benzidene		44	10		10
1,2-diphenylhydrazine			10		10
N-nitrosodimethylamine		ND	10		10

* Pollutants analyzed in addition to influent and effluent analyses of conventional pollutants listed in Appen
All units expressed in ug/L unless otherwise noted.

$ Units expressed in mg/L

ND Not determined by EPA

NA Not Applicable

Table L-2 EPA List of 126 Priority Pollutants

Chlorinated Benzenes
- Chlorobenzene
- 1,2-dichlorobenzene
- 1,3-dichlorobenzene
- 1,4-dichlorobenzene
- 1,2,4-trichlorobenzene
- Hexachlorobenzene

Chlorinated Ethanes
- Chloroethane
- 1,1-dichloroethane
- 1,2-dichloroethane
- 1,1,1-trichloroethane
- 1,1,2,2-tetrachloroethane
- Hexachloroethane

Chlorinated Phenols
- 2-chlorophenol
- 2,4-dichlorophenol
- 2,4,6-trichlorophenol
- Parametachlorocresol (4-chloro-3-methyl phenol)

Other Chlorinated Organics
- Chloroform (trichloromethane)
- Carbon tetrachloride (tetrachloromethane)
- Bis(2-chloroethoxy)methane
- Bis(2-chloroethyl)ether
- 2-chloroethyl vinyl ether (mixed)
- 2-chloronaphthalene
- 3,3-dichlorobenzidine
- 1,1-dichlorethylene
- 1,2-trans-dichloroethylene
- 1,2-dichloropropane
- 1,2-dichloropropylene (1,3-dichloropropene)
- Tetrachloroethylene
- Trichloroethylene
- Vinyl chloride (chloroethylene)
- Hexachlorobutadiene
- Hexachlorocyclopentadiene
- 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD)

Haloethers
- 4-chlorophenyl phenyl ether
- 2-bromophenyl phenyl ether
- Bis(2-chloroisopropyl) ether

Halomethanes
- Mehthylene chloride (dichloromethane)
- Methyl chloride (chloromethane)
- Methyl bromide (bromomethane)
- Bromoform (tribromomethane)
- Dichlorobromomethane
- Chlorodibromomethane

Nitroamines
- N-nitrosodimethylamine
- N-nitrosodiphenylamine
- N-nitrosodi-n-propylamine

Phenols (other than chlorinated)
- 2-nitrophenol
- 4-nitrophenol
- 2,4-dinitrophenol
- 4,6-dinitro-o-cresol (4,6-dinitro-2-methylphenol)
- Pentachlorophenol
- Phenol
- 2,4-dimethylphenol

Phthalate Esters
- Bis(2-ethylhexyl)phthalate
- Butyl benzyl phthalate
- Di-N-butyl phthalate
- Di-n-octyl phthalate
- Diethyl phthalate
- Dimethyl phthalate

Polynuclear Aromatic Hydrocarbons (PAHs)

Acenaphthene
1,2-benzanthracene (benzo (a) anthracene)
Benzo(a)pyrene (3,4-benzo-pyrene)
3,4-benzofluoranthene (benzo(b) fluoranthene)
11,12-benzofluoranthene (benzo(k) fluoranthene)
Chrysene
Acenphthalene
Anthracene
1,12-benzoperylene (bonze(ghi) perylene)
Fluorene
Fluoranthene
Phenanthrene

PAHs cont.

1,2,5,6-dibenzanthracene (dibenzo(a,h)anthracene)
Indeno (1,2,3-cd) pyrene (2,3-o-phenylene pyrene)
Pyrene

Pesticides and Metabolites

Aldrin
Dieldrin
Chlordane (technical mixture and metabolites)
Alpha-endosulfan
Beta-endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor epoxide (BHC-hexachlorocyclohexane)
Alpha-BHC
Beta-BHC
Gamma-BHC (Lindane)
Delta-BHC
Toxaphene

DDT and Metabolites

4,4-DDT
4,4-DDE (p,p-DDX)

Appendix M: Glossary, Abbreviations/Acronyms, and Units

GLOSSARY

ABNs- See Acid Base Neutrals
Acid Base Neutrals (ABNs)- Also called semivolatile organics. A category of organic chemical pollutants. See Appendix J, Table J.3.
Acute- A stimulus severe enough to rapidly induce an effect; in aquatic toxicity tests, an effect observed in 96 hours or less typically is considered acute. When referring to aquatic toxicology or human health, an acute effect is not always measured in terms of lethality.
Acute Criteria- The maximum concentration of a constituent in water that an organism may be exposed to one hour over three years without dying.
Acute Static Toxicity Test- Test designed to measure water quality effect on mortality. It measures the effect of the whole effluent sample on an organism. Animals are put in a vial with effluent and the fatal effects are monitored. To calculate water quality standards, the test is run on sensitive animals. The concentration that shows a 95% mortality rate is then multiplied by two.
Activation- An event when the wastewater flow exceeds the holding capacity of the sewer lines and exceeds the hydraulic capacity of the treatment plant causing a diversion of flow to the CSO facilities.
Aeration- The process of adding air to a liquid (e.g. wastewater).
Aliquot- A measured portion of a sample.
Anaerobic Digester- The structure where organic material is broken down by organisms in the absence of oxygen.
Anoxia- The absence of oxygen.
Average Monthly Discharge Limitation- The highest allowable average of "daily discharge" over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges.
Average Weekly Discharge Limitation- The highest allowable average of "daily discharge" over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.
Bar Screen- A screen made of bars designed to catch large debris (e.g. rags, wood, shoes) in waterways.
Below Detection Limit/Level (BDL)- Values below the Reporting or Quantification Limit. For a further explanation see Appendix I.
Bioaccumulation- The process by which a compound is taken up by an aquatic organism, both from water and through food.
Biochemical- Having to do with a chemical change resulting from the metabolic activities of living organisms.
Biochemical Oxygen Demand (BOD)- The amount of oxygen needed to oxidize inorganic materials and to degrade organic materials by *biochemical reactions* in a certain time at a certain temperature. BOD is used as a measure of organic pollution.
Biomagnification- The process by which the concentration of a compound increases in species occupying successive trophic levels.
BDL- See Below Detection Limit
Bloom- A large mass of algae (microscopic and or macroscopic) in water.
BOD- See Biochemical Oxygen Demand.
Buffering Capacity- The amount certain water bodies are able to resist changes in pH from addition of an acidic or caustic substances.
CFR- See Code of Federal Regulations
40 CFR Part 122- Code of Federal Regulations- Protection of the Environment. Part 122 is Administered Permit Programs: The National Pollutant Discharge Elimination System. Appendix D lists the Permit Application Requirements.
Chemical Oxygen Demand (COD)- The amount of oxygen needed for the *chemical oxidation* of chemicals in water. COD is used to measure the suitability of water for organisms that require oxygen.
Chlorination- The addition of chlorine or chlorine compounds to wastewater. Chlorination is most often done for disinfection purposes.
Choking- A process by which flows that can not be handled by existing pumps are "choked back" into the sewer

system, frequently leading to local overflows.
Chronic- A stimulus that lingers or continues for a relatively long period of time, often one-tenth of the life span or more. Chronic should be considered a relative term depending on the life span of an organism. The measurement of a chronic effect can be reduced growth, reduced reproduction, etc., in addition to lethality.
Chronic Criteria- The maximum concentration of a constituent in water that an organism may be exposed to four days over three years without showing long term, short of mortality, harmful effects. Chronic criteria involve the growth, reproductivity, fertility, and sublethal effects on organisms.
Chronic Reproduction Test- A test designed to measure the chronic effects of wastewater on reproduction and fertility.
Chronic Survival and Growth Test- Test designed to see if any mortality occurs after the chronic criteria have been passed. After the organism has survived the size of the animals are measured after seven days and statistically compared to controls.
Clean Water Act (CWA)- (Formally referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended by Pub. L. 95-576, Pub. L. 96-483, and Pub. L. 97-117: 33 U.S.C.§1251 et seq.
COD- See Chemical Oxygen Demand
Code of Federal Regulations (CFR)- Codification of the general and permanent rules of the Federal Government. CFR 40 covers environmental protection.
Combined Sewer- A sewer receiving both sanitary wastewater and storm water runoff.
Combined Sewer Overflow Facility- A place where overflow from combined sewers is screened, settled, and chlorinated before being discharged.
Combined Sewer Overflow Pipe- A pipe that discharges overflow from combined sewers in order to prevent back ups in the sewerage system.
Composite Sample- A sample consisting of a minimum of eight grab samples collected at equal intervals during a 24-hour period (or lesser period if specified) and combined proportional to flow, or a sample continuously collected proportionally to flow over that same time period.
Conventional Parameters/Pollutants- Those pollutants and constituents that are removed from wastewater by conventional treatment. Generally these constituents are settleable solids, biochemical oxygen demand, total suspended solids, oil and grease, total coliforms, fecal coliform, residual chlorine, and chlorides.
Conventional Treatment- Well-known or well-established water or wastewater treatment methods, usually consisting of primary and secondary processes and does include advanced or tertiary treatment.
Criteria- The numerical and or narrative elements of water quality standards.
Critical Dilution- Dilution of the effluent required to meet Water Quality Standards.
CWA- See Clean Water Act.

Daily Discharge- The discharge of a pollutant measured during a calendar day or any 24-hours period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the daily discharge is calculated as the average measurement of the pollutant over the day.
Designated Use- Specified use of a body of water included in state water quality standards.
Digester- A place where organic matter is broken either with oxygen (aerobically) or without oxygen (anaerobically).
Disinfection- The destruction of pathogens (e.g. fecal bacteria) in a water source or wastewater.
Effluent- The wastewater or other water coming out of a treatment facility or process.
Effluent Limitation- Any restriction imposed by the Director (the person authorized to sign NPDES permits by EPA and/or the State) on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States," the waters of the "contiguous zone," or the ocean.
Eutrophication- The natural process by which a body of water ages. Nutrients stimulate plant growth and lakes, estuaries, and bays evolve into bogs or marshes. Effluent high in nutrient loadings cause excessive plant growth

that accelerates eutrophication.
Fecal Coliform- Bacteria found in the wastes of warm blooded animals. Fecal coliform is used as an indicator that disease causing bacteria and viruses are present. It is a component of Total Coliform.
Floatables- Constituents of wastewater that rise to the surface in the settling process, consisting mainly of oil, grease, and plastics.
Grab Sample- An individual sample collected in a period of less than 15 minutes.
Gravity Facility- A combined sewer overflow facility that receives flows by gravity (descending gradients from source to outfall) and no pumping is required.
Grit- Heavy suspended mineral matter in wastewater like sand and gravel.
Grit Chamber- A detention tank were grit is separated by sedimentation (grit settles to the bottom). The settling is controlled by the velocity of the water.
Headwork- A structure where wastewater are screened out and grit and other solids are trapped before the wastewater is pumped to a treatment facility.
Human Health Criteria- Estimated concentrations or quantities of chemicals that can be expected to occur in the environment in water, sediment, or food and that are not likely to pose a significant risk to the exposed human population. Human health criteria are published under section 304(a) of the CWA and are based on the latest scientific information. This information is updated and issued to the states to serve as guidance for the development of criteria.
Hydrocarbons- Chemical compounds only containing hydrogen and carbon.
Hypochlorite- The chemical used for chlorine disinfection of wastewater (either calcium, sodium, or lithium).
Hypoxia- The state of very low oxygen concentration.
IDL- See Instrument Detection Limit.
I/I- Infiltration and Inflow.
Infiltration- Groundwater that enters sewer pipes through cracks.
Inflow- Water that enters sewer pipes through illegal connections and storm water runoff.
Inorganic- Not containing carbon.
Influent- Wastewater or other water going into treatment facility or process.

Instrument Detection Limit (IDL)- The smallest amount of a substance a particular instrument is capable of detecting. See Appendix I for a further explanation.
Interceptor- A large sewerage line collecting water from smaller sewerage pipes.
J values- Values between the Method Detection Limit and the Quantification (or Reporting) Limit. See Appendix I for further explanation.
LC50- See Lethal Concentration 50%
Lethal Concentration 50% (LC50)- The concentration of effluent in a sample that causes mortality to 50% of the test population at a specific tim of observation.
Limiting Nutrient- In a given ecosystem, the limiting nutritional factor that controls the growth of plants or animals. Usually the limiting nutrient for plant growth is nitrogen in the marine environment and phosphorus in the fresh water environment. The limiting nutrient can also be thought of as the specific nutrient that will have the most impact on a receiving body of water (for example, the acceleration eutrophication of fresh water bodies caused by phosphorus in wastewater effluent).
Local Limits- The development of specific limits as part of the General Pretreatment Program- "The permittee shall develop and enforce specific effluent limits for industrial users, and all other users, as appropriate, pursuant to 40 CFR 403.5."
LOEC- See Lowest Observed Effect Concentration
Lowest Observed Effect Concentration (LOEC)- The lowest concentration of effluent to which organisms are exposed in a life cycle or partial life-cycle test which contains an adverse effect (on survival, growth, and reproduction).
MATC- See Maximum Acceptable Toxicant Concentration
Maximum Acceptable Toxicant Concentration (MATC)- The effluent concentration that may be present in a

receiving water without causing significant harm to productivity or other uses. The MATC is determined by the results of chronic tests of either a partial life-cycle with sensitive life stages or a full life-cycle of the test organism. The MATC is the geometric mean of the No Observed Effect Concentration and the Lowest Observed Effect Concentration.

Maximum Daily Discharge Limitation- The highest allowable daily discharge.

MBAS- See Methylene Blue Anion Surfactant

MDL- See Method Detection Limit

Metals- A group of priority pollutants. See Appendix J, Table J.2 for a complete list.

Method Detection Limit (MDL)- The smallest amount of a substance that can be detected above background noise by following a particular method of analysis. See Appendix I for a further explanation.

Methylene Blue Anion Surfactant- See Surfactant.

Mixing Zone- Area where discharged effluent is first diluted. The area is extended to cover the secondary mixing in the ambient water body. A mixing zone is an allocated impact zone where water quality criteria can be exceeded as long as toxic conditions are prevented.

National Pollutant Discharge Elimination System (NPDES)- The national program for issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, and 405 of the Clean Water Act (CWA). The term includes and "approved program."

Nine Minimum Controls- Part of the EPA's CSO Policy. The Nine Minimum Controls are:

1) Proper operation and regular maintenance (O&M) programs for the sewer system and combined sewer overflow points
2) Maximum use of the collection system for storage
3) Review and modification of the pretreatment programs to assure CSO impacts are minimized
4) Maximization of flow to the POTW for treatment
5) Prohibition of CSO discharges during dry weather
6) Control of solid and floatable materials in CSO discharges
7) Pollution prevention programs that focus on contaminant reduction activities
8) Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts, and
9) Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

Nitrification- The conversion of ammonia and nitrite to nitrate.

NOAL- See No Observed Acute Level

NOEC- See No Observed Effect Concentration

No Observed Acute Level (NOAL)- The highest concentration of effluent to which organisms are exposed in a short-term test in which at least 90% of the test organisms survive.

No Observed Effect Concentration (NOEC)- The highest concentration of effluent to which organisms are exposed in a life cycle of partial life cycle test which contains no adverse effects (on growth, survival, and reproduction).

NPDES- See National Pollutant Discharge Elimination System

Nutrient- Any element or compound essential as raw material for organism growth and development. Examples- phosphorus and nitrogen.

Oil and Grease- Fats, oils, and grease from animal and plant derivation. Also called FOGs.

Organic Compounds- Volatiles, Acid Compounds, Base/Neutral, and Pesticides. Organics are listed in 40 CFR Ch. 1 Appendix D of CWA Section 307(a). See Appendix I, Table J.3 for a complete list.

Ortho-Phosphorus- A form of phosphorus, included in nutrients.

Outfall- the site of initial discharge

PAH- See Polynuclear Aromatic Hydrocarbon

Pesticides/PCBs- Subdivision of priority pollutants. See Appendix J, Table J.2 for a complete list.

Petroleum Hydrocarbon (PHC)- Oil and grease from petroleum derivation.

pH- The negative log of the hydrogen ion concentration used to express acidity (<7) and alkalinity (>7).

PHC- See Petroleum Hydrocarbon.

Pollutant- Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemicals wastes, biological materials, radioactive materials, (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. §2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean: (a) Sewage from vessels; or (b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed or in a well, if the well used either to facilitate production or for disposal purposes is approved by authority of the State in which the well is located, and if the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.
Polynuclear Aromatic Hydrocarbon (PAH)- A type of semivolatile organic. Also know as polycyclic aromatic hydrocarbon.
POTW- See Publicly Owned Treatment Works
Preaeration- The process by which air is added to primary influent to help in the removal of gases, addition of oxygen, flotation of grease, and in the settling or coagulation of wastewater.
Prechlorination- The addition of chlorine to primary influent at or near the beginning of the treatment facility/process.
Primary Settling- The detention of wastewater as part of primary treatment to settle out solids (sludge) and collect floatables (scum).
Primary Treatment- Screening and settling of wastewater.
Priority Pollutants- Refers to some of the chemicals listed in 40 CFR Ch. 1 Appendix D under Section 307(a) of the CWA. There are 65 compounds and families of compounds that are among the most persistent, prevalent, and toxic of chemicals know to man. These 65 compounds or families of compounds have been translated into 126 individual pollutants. See Appendix J, Table J.2 for a the complete list.
Priority Pollutant Scan- A series of chemical analyses to identify the presence of priority pollutants.
Publicly Owned Treatment Works (POTW)- Any facility or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of liquid nature that is owned by a "State" or "municipality." This definition includes sewers, pipes,or other conveyances only if they convey wastewater to a POTW providing treatment.
Pumping Station- Structures where wastewater from low lying areas is pumped.
Quantification Limit- See Reporting Limit.
Reporting Limit- The smallest concentration that can be quantified. On a graph of pollutant concentration versus instrument response, the reporting limit is the smallest concentration where the linear relationship holds before starting to curve as the pollutant concentration goes to zero. Also called the Quantification Limit. See Appendix I for a further explanation.
Residuals- Matter left over by treatment processes including screenings, scum, and sludge.
Screening- The process by which sewage from interceptors first goes through headworks where grit and large objects like leaves, sticks, and hygiene products (like tampon applicators and condoms) are screened out.
Screenings- The objects that are collected by the process of screening.
Scum- Solids that float to the top of wastewater.
Secondary Treatment- The treatment of wastewater beyond solids and grit removal. The process decreases the organic load.
Sedimentation- The process by which solids are a allowed to settle by gravity.
Sedimentation Tank- Tanks used to detain wastewater while the solids settle out.
Semi Volatile Organics- Also known as Acid Base Neutrals (ABNs). A subcategory of organic pollutants. See Appendix J, Table J.3 for a complete list.
Separate Sewer- A sewerage system divided into a storm sewer and a sanitary sewer.
Settleable Solids- The estimated amount of sludge that will settle by sedimentation. It is a fraction of the suspended-solids.
Settled Solids- Sludge. See sludge.
Sewage- Any wastes, including wastes from humans, households, commercial establishments, industries, and storm water runoff, that are discharged to or otherwise enter a POTW.

Sludge- Solids, residues, and precipitate separated from or created in sewage by the unit processes of a POTW.
SOPs- See System Optimization Plans or Standard Operating Procedures
Stratification- The separation of water into layers characterized by thermal differences.
Standard Operating Procedures- Documented protocols for plant operation, laboratory procedures, etc.
Surcharging- When the capacity of the sewer is insufficient and sewage escapes through a manhole.
Surfactant- Surface-active agent. Large organic molecules that cause foaming. They are usually found in detergents.
System Optimization Plans (SOPs)- Hydraulic improvements that, in conjunction with ongoing programs of municipal sewerage agencies, might promote a balanced hydraulic system, including optimization of the collector/interceptor system upstream of regulators, to ensure that the storage and transport capacity of the system is maximized within constraints unalterable except for major structural modifications.
Thickeners- The structure where sludge is sent to be thickened by removing water.
TKN- See Total Kjeldahl Nitrogen.
Total Coliform- Bacteria found in decaying matter, feces, and soil. It used as an indicator of pathogens that are present in wastewater. A component of Total Coliform is Fecal Coliform.
Total Kjeldahl Nitrogen (TKN)- The total organic and ammonia nitrogen.
Total Phosphorus- A measure of all the forms of phosphorus, a nutrient, found in water (orthophosphates, polyphosphates, and organic phosphates).
Total Suspended Solids (TSS)- The sum of insoluble solids that either float on the surface of, or are in suspension in water, wastewater, or other liquids.
Toxic Pollutant- Any pollutant listed as toxic in Appendix D of 40 CFR Part 122, under Section 307(a)(1) of CWA.
Toxics- Pollutants that have a toxic effect on living organisms. The CWA Section 307(a) "priority pollutants" are a subset of this group of pollutants.
Toxicity Test- A procedure to determine the toxicity of a chemical or an effluent using living organisms. A toxicity test measures the degree of effect on exposed test organisms of a specific chemical or effluent.
TSS- See Total Suspended Solids.
Twelve Month Running Average- The monthly average computed using the specific month AND the previous 11 months.
Unregulated Community- Dischargers not required to have Permits to discharge into MWRA sewerage system. They are not regulated or required to meet Local Limits, nor are they regulated under the Local Limits Discharge Program.
Vertical Mixing- The vertical movement of the water column caused by either wind, and/or density and/or temperature differences.
VOA- See Volatile Organic Acid. Same as Volatile Organic Compound (VOC).
VOC- See Volatile Organic Compound
Volatile Organic Compound (VOC)- Same as Volatile Organic Acid (VOA).
Volatile Solids- Those solids of a suspended solid sample that are burned off in a muffle oven at 550 ±50° C.
Water Quality- The chemical, biological, and physical conditions of a body of water.
Water Quality Criteria- Specific levels of pollutants that would make a body of water unsuitable for its designated use (i.e. harmful if used for drinking, swimming, farming, fishing, or industrial processes).

Water Quality Standard- A law or regulation that consists of: the beneficial designated use or uses of a water body; the numeric and narrative water quality criteria that are necessary to protect the use or uses of that particular water body; and an antidegradation statement.
WET- See Whole-Effluent Toxicity
Whole-Effluent Toxicity (WET)- The total toxic effect of effluent, not chemical specific but rather the cumulative effect - whether it be synergic or antagonsitic, of the chemicals found in the effluent.

ABBREVIATIONS, ACRONYMS, AND UNITS

Abbreviations, Acronyms

ABNs- Acids Bases Neutrals
BDL- Below Detection Limit
BOD- Biochemical Oxygen Demand
BWSC- Boston Water and Sewer Commission
CFR- Code of Federal Regulations
CSO- Combined Sewer Overflow
CWA- Clean Water Act
DEP- Department of Environmental Protection
DI- Deer Island
ENQUAD- Environmental Quality Department
EPA- Environmental Protection Agency
FY- Fiscal Year
IDL- Instrument Detection Level
I/I- Infiltration and Inflow
LC50- Median Lethal Concentration
LD50- Median Lethal Dose
LOAEL- Lowest Observed Adverse Effect Level
LOEC- Lowest Observed Effect Concentration
MATC- Maximum Acceptable Toxicant Concentration
MDC- Metropolitan District Commission
MDL- Method Detection Limit
MPN- Most Probable Number
MWRA- Massachusetts Water Resources Authority
NI- Nut Island
NOAL- No Observed Acute Level
NOEC- No Obeserved Effect Concentration
NPDES- National Pollutant Discharge Elimination System
PAH- Polycyclic (or Polynuclear) Aromatic Hydrocarbon
PCB- Polychlorinated Biphenyl
PHC- Petroleum Hydrocarbon
POTW- Publicly Owned Treatment Works
SD- Standard Deviation
SOP- Standard Operating Procedure or System Optimization Plan (CSO)
TKN- Total Kjeldahl Nitrogen
TRAC- Toxic Reduction and Control Department
TSS- Total Suspended Solids
VOA- Volatile Organic Acid
VOC- Volatile Organic Compound
WET- Whole Effluent Toxicity Test

Units

in/yr- Inches per year
L- Liter
lbs- pounds
lbs/day- pounds per day
mL/L- milliliters per liter
MG- Million Gallons
MGD- Million Gallons per Day
mg/L- milligrams per liter
ug/L- micrograms per liter

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