#146

Annual Stormwater Monitoring Report

for

Seattle-Tacoma International Airport

for the period July 1, 1998 through June 30, 1999

Port of Seattle

September 1999

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1 EXECUTIVE SUMMARY

This Annual Stormwater Monitoring Report has been prepared pursuant to the NPDES permit for the Port of Seattle's Seattle-Tacoma International Airport (STIA). The Port took a total of 96 grab and 66 composite stormwater samples in the past year, bringing the 5-year totals to over 300 samples. A total of 23 storms were sampled, about two thirds of the total number occurring that met monitoring criteria. The Port complied with all sampling and reporting requirements.

In summary, STIA stormwater quality, especially airfield runoff continues to have pollutant concentrations lower than comparable regional studies. Results continue to demonstrate that typical constituent concentrations in airfield outfall discharges are much lower than from the landside subbasin outfalls. This difference is most likely due to the runoff from high vehicular use areas, including public roadways in the landside subbasins. Nonetheless, overall STIA results are generally lower than results from other studies for roadways and commercial areas.

Whole effluent toxicity (WET) testing was performed at four outfalls. Toxic conditions were not found in the stormwater discharges sampled at outfalls SDE4, SDS3, and SDN4. These results met performance standards for WET according to Ecology guidelines. Results from outfall SDN1 indicated conditions that warranted further investigation. Testing revealed that uncoated, galvanized metal rooftops are the most likely source of toxicity. This problem will be rectified and follow-on monitoring will verify the effectiveness. The Port submitted the required WET testing reports to Ecology. The final summary report will be submitted by mid November 1999.

Several drainage system improvements included adding a berm to prevent track-out of the rental carwash water from entering SDE4 and covering three drain inlets with solid lids to eliminate a small area of ramp drainage to SDS3 near the C-Concourse. Investigations also led to the identification of drainage connections that may require improvements, including a loading dock drain in SDN1 and a clogged IWS drain inlet that may overflow to the SDS3 storm drainage system.

Based on sampling results the following suggestions are recommended.

1. Petition Ecology to eliminate sampling at outfalls SDS1 (003) and SDN2 (007) as allowed for in permit condition S2.B.4. The Port has satisfied the minimum number of sampling events at these two outfalls where the data verify the achievements of previous BMPs.
2. Continue to investigate possible sources of fecal coliforms in SDE4 discharges.
3. Investigate potential sources of stormwater contamination in subbasin SDS1.

4. Modify the SWPPP to address appropriate resolution of the following items:
   - an IWS drain inlet drainage backs up at structure IWS-563 near C-Concourse gate C8. Overflow from this inlet appears to drain to the next IWS slot drain, but may escape to the nearby and contiguous SDS3 subbasin, and
   - a loading dock drain that connects to the SDN1 system.

2 INTRODUCTION

The STIA stormwater monitoring program has been in place since 1993 pursuant to the National Pollutant Discharge Elimination System (NPDES) permit. The first permit was renewed and reissued on February 20, 1998, becoming effective March 1, 1998 (permit number WA-002465-1.) In early 1999, a major permit modification issued by Ecology reduced sampling frequency based upon a permit appeal settlement (WDOE 1999.)

The Port conducts the required monitoring activities according to the specific guidelines and criteria of the Procedure Manual for Stormwater Monitoring (POS, 1999a). This report summarizes and discusses results from the fifth year of sampling conducted in the past year (July 1998 through June 1999), the conclusions, and potential new initiatives to be undertaken. Results summarized in this report include data already submitted to Ecology in Discharge Monitoring Reports (DMRs) plus additional results from other samples unrelated to DMR reporting. The Port has previously submitted four Annual Reports (POS 1995, 1996, 1997a, 1998c.)

This report satisfies Special Condition S2.E of the National Pollutant Discharge Elimination System (NPDES) permit for the Port of Seattle's (Port) Sea-Tac International Airport (STIA). Special Condition S2.E of the permit states: "On or before October 1 of each year, the Permittee shall submit a report to the Department summarizing the results of the stormwater monitoring conducted pursuant to Special Condition S2.B or S3.E of this permit during the preceding twelve (12) month period from July 1 through June 30. The report shall present the analytical data, the Port's conclusions as to what is being learned from the data, and any new initiatives to be undertaken as part of the Stormwater Pollution Prevention Plan for Airport Operations required in Special Condition S12."

Additionally, the permit requires in Special Condition S2B that: "The permittee shall include the following data for each storm event in the Annual Stormwater Monitoring Summary Report...: date, duration, the number of dry hours preceding the storm event, total rainfall during the storm event (inches), maximum flow rate during the rain event (gallons per minute), and the total flow from the rain event (gallons). The permittee shall also include a monthly summary of daily rainfall..." This information appears in Appendix A.

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3 BACKGROUND

3.1 Sea-Tac International Airport

Seattle-Tacoma International Airport (STIA) lies about mid way between the cities of Seattle and Tacoma, Washington. The airport was built in the 1940s and expanded throughout the years to become the 18th busiest airport in the U.S. The areas surrounding the airport urbanized as the airport grew and incorporated as the cities of Seatac, Des Moines, and Burien.

STIA storm drainage discharges through 14 individual outfalls, four that drain to Miller Creek, eight that drain to Des Moines Creek, and two that drain to a City of Seatac system. These outfalls drain a total of 963 acres which contain about 44% impervious surfaces. Another 370 acres, mostly the impervious surfaces of terminal gate and ramp areas, drain to the Industrial Waste System (IWS) and the Industrial Waste Treatment Plant (IWTP.) IWTP sampling results are not included in this report.

3.2 STIA Storm Drainage Subbasins

STIA storm drainage subbasin names are coded according to location, for example, "SDS1" means storm drain south number 1. The NPDES permit refers to outfalls by number; however, this report refers to subbasins and their outfalls by location names (see Table 2). The Port identifies all manholes according to an alphanumeric scheme, some of which are referred to in this report. For convenience and consistency, many of these locations will be renamed and renumbered next year. Drainage area estimates are included in Appendix A. Figure 1 shows the individual stormwater drainage subbasins and the STIA stormwater management boundaries.

STIA stormwater subbasins fall into the general categories listed in Table 2. These categories group subbasins together that have similar land use and other characteristics. These categories include "landside," "airfield," and other non-specific, low-activity areas. A previous report showed that sampling results were different for each of these categories (POS, 1997.)

Airfield subbasins SDS3, SDS4, SDN3, and SDN4 drain 626 acres (45% impervious) of the Aircraft Movement Area (AMA), which includes the airport runways, taxiways, and other open space of the "airfield." These four airfield subbasins represent approximately 65 percent of the total STIA storm drainage area. Previously an airfield outfall, SDN2 now discharges to the Industrial Waste System (IWS) via two pump stations constructed as BMPs in 1997.

Four subbasins (SDE4, SDN1, EY, and TY) compose the 165 acres (60% impervious) of "landside" areas of the airport, primarily public roads, parking, and passenger vehicle areas. Although 11 percent of the total impervious area of SDE4 drains portions of Taxiways A and B, the "landside" designation is appropriate because roads, parking, and other vehicle areas on the landside of the airport make up more than 50 percent of the total impervious area.

In previous reports, the SDS1 subbasin was included in the "terminal" category. However, several stormwater BMPs were undertaken in 1996-97 near the terminal, removing 1.5 acres of ramp areas from SDS1. Other BMPs disconnected yet more ramp area that occasionally drained to SDS1 when certain structures were surcharged during intense rainfall. As a result, SDS1 now drains mostly rooftops, plus a minor area of ramp. Therefore, the "terminal" category is no longer appropriate for SDS1. In addition, recently expanded drainage from South 188th Street was added to SDS1 in 1998-99, increasing the total offsite (non-Port) area to 5.1 acres, nearly 50% of the total SDS1 area.[1] Four other outfalls (SDS2, SDW3, B, and D) drain 110 acres, mostly open spaces (11% impervious) in the southwest portion of STIA.

3.3 Sampling locations

The Port monitors stormwater discharges at 14 locations, one for each subbasin within the boundary of the permit. Figure 1 shows the location of the outfalls and monitoring locations.

Four monitoring locations (subbasins SDE4, SDN1, EY, and TY) are upstream from the final discharge point. Runoff contributions from other, non-STIA sources enter these storm drains and therefore necessitate monitoring at the first location, often a manhole, upstream of the majority of offsite inputs. Table 3 lists these offsite influences. Eliminating all offsite runoff is not possible for sampling stations in SDE4, SDS1, SDS2, and SDS3.

To remove unfavorable biases from highway SR518 runoff, the sampling location for SDN1 was moved upstream to its current location in 1997. Therefore, outfall SDN1 has two datasets, one for the period prior to January 1997 that includes results influenced by SR518 runoff, and the other for "SDN1up" for the ensuing period.

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[1] In 1998-99 the City of SeaTac added drainage area to SDS1 through the widening of about 800 linear feet of S. 188th Street, adding curb, gutter, piping and a number of storm drain inlets. This section of roadway previously drained sheetwise off the shoulder to grassed ditches. Prior to these improvements, only one inlet drained a much smaller portion of this public roadway outside the Port's jurisdiction.

3.4 Storm sampling procedures and analytes

The Port's Procedure Manual for Stormwater Monitoring (Port 1999) describes the criteria for sampling storm events, and describes all relevant sampling, programming, and handling necessary to comply with requirements of the permit. Table 4 lists required sampling frequencies, pollutant analytes, methods, and detection limits. Only results from storms and samples that meet representativeness criteria are reported in DMRs. Results from samples not meeting these criteria, or those taken for other purposes are also included in this report. Using automatic samplers, the Port generally takes a grab then a flow-weighted composite sample during rain storms of 0.20 inches or greater.

Table 1 Outfall Nomenclature

Outfall Number in Permit	Port Nomenclature	Category
002	SDE4	landside
003	SDS1	none
004	SDS2	none
005	SDS3	airfield
006	SDN1	landside
007	SDN2	Drains to IWS
008	SDN3	airfield
009	SDS4	airfield
010	SDW3	none
011	SDN4	airfield
012	EY	landside
013	TY	landside
014	B	none
015	D	none

Table 2 Offsite Influences in STIA Monitoring Locations(a)

Outfall (manhole)	Total Area (ac)	Offsite Area (ac)	Percent Offsite	Comment
SDE4 (SDE4-47)	149	0.6	<1%	Offsite area of SR99.
SDS1 (outfall)	10.7	5.1	47%	Offsite area of S. 188th St. includes area added by City in Fall 1998
SDS2 (outfall)	13.2	2.9+	21%	Offsite 16th Ave S., S. 188th St, and possible non-Port commercial area.
SDS3 (outfall)	462	3	<1%	Approximate offsite area of S. 188th St.
SDN1 (manhole SDN1-27)	24+	9.9+	>40%	Former SDN1 location includes public road runoff. Additional 49 acres enters below this point.
SDN1up (SDN1-22)	13.8	0	0%	Air cargo road is about 1/2 of SDN1.

(a) All area estimates are as of 27 October 1998 and subject to change.

Table 3 Analytes, Methods and Detection Limits

Analyte	Method[a]	Detection limit (MDL) mg/l	Subbasins			
			SDE4, SDS3, SDN1, SDN4	EY TY, SDN2	SDS1, SDN2	SDS1, SDS2,SDN3, SDS4, SDW3, B, D
pH	150.1	0.10	X	X	X	
FOG (Oil and Grease)	413.1	1.0	n/a	n/a	n/a	n/a
TPH (IR)	418.1 mod[b]	1.0	n/a	n/a	n/a	n/a
TPH (GC)	NWTPH-Dx	0.15	X	X	X	X
Fecal coliforms (MPN)	9221 E	2	X			X
TSS (total suspended solids)	160.2	0.50	X	X	X	X
Turbidity	180.1	0.10	X		X	X
BOD_5	405.1	4.0	X		X	
Total Ammonia	350.2S	0.010	n/a	n/a	n/a	n/a
Total Glycols[c]	GC FID	4	X		X	X
Total Recoverable copper, lead, zinc[d]	200	Varies	X			
Surfactants	425.1	0.10	X*	X		

(a) Method refers to EPA-600/4-79-020, March 1979. Fecal coliform method refers to 18th edition of Standard Methods for the Examination of Water and Wastewater (APHA, 1995), or as revised.

(b) Washington State Department of Ecology method WTPH-418.1 Modified.

(c) Analyzed by Gas Chromatograph, Flame Ionization Detector.

(d) Lead by atomic absorption (AA) furnace, copper and zinc by ICP.

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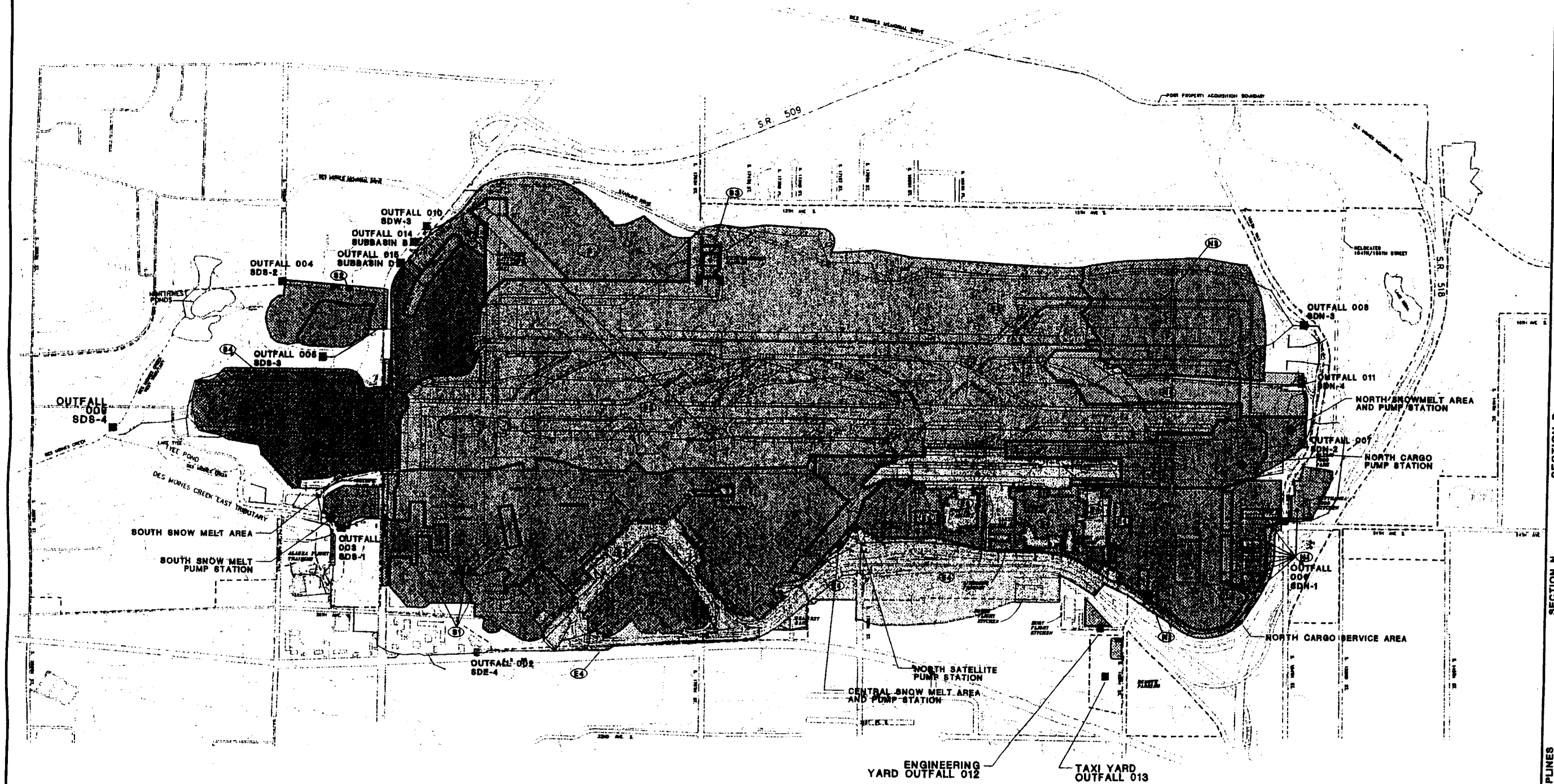
LEGEND

○	MANHOLE	PP	PERFORATED PIPE
▪	CATCH BASIN	SDE-20	STORM WATER SYSTEM STRUCTURE IDENTIFICATION
• C.O.	CLEANOUT	- - - - - -	PROPERTY BOUNDARY
℄	CLEANOUT	- - - - - -	PORT PROPERTY ACQUISITION BOUNDARY
———	STORM WATER CONVEYANCE		
———→	DIRECTION OF FLOW		

N

0 300 600 1200 1800 2400

SCALE IN FEET



SECTION B | SECTION T | SECTION G | SECTION N | DISCIPLINES | DWG

PROJECT ENGR./ARCH.
DESIGNED:
DRAWN BY:
SCALE:
DATE:
FILE NAME: P8SKD02

STORMWATER DRAINAGE BASIN COLOR CODES:

N1	SDN1	B1	SDS1	W3	SDW3
N3	SDN3	B3	SDS3	B	B
N4	SDN4	B4	SDS4	D	D
		E4	SDE4	B2	SDS2

IWS

■ OUTFALL LOCATION ◆ PUMPSTATION LOCATION

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D
1	11/98	K/J	UPDATE FIGURE	
2	10/98	K/J	UPDATE FIGURE	
3	2/98	K/J	UPDATE FIGURE	
4	12/97	K/J	UPDATE FIGURE	
5	7/97	K/J	RELOCATED AND ADDED OUTFALL LOCATIONS	

PROJECT ENGINEER: DESIGNED:
REVIEWED: DATE: DRAWN BY: CHECKED BY:
APPROVED BY:

PORT OF SEATTLE

SEA-TAC INTERNATIONAL AIRPORT

COMPREHENSIVE STORM DRAINAGE SYSTEM PLAN AND DESIGN

DRAINAGE BASINS

WORK ORDER NO.
CONSULTANT'S NO. 976079.23
FIGURE NO. FIGURE 1

AR 042885

4 SAMPLING RESULTS

4.1 General

Data are discussed separately for results from grab samples, composite samples, and deicing event (glycol) samples because of the differences in sampling protocols (i.e., grab samples versus composite samples) and because some rainfall events sampled did not meet the "storm" criteria.

The required hydraulic and hydrologic data are included in Appendix A. Samples were validated according to the representativeness criteria described in the Port's Procedure Manual for Stormwater Monitoring (Port 1998a). Analytical results are tabulated and summarized for each outfall in Appendix B. Data previously submitted to Ecology in the monthly discharge monitoring reports (DMRs) represent samples collected from strictly those storms and sampling routines that fully met the criteria of the Procedure Manual. This report summarizes all data collected at storm drain outfalls.

4.2 Method of Data Presentation and Comparisons

This report compares the Port's stormwater data to others' stormwater data listed as reference comparators in Table 5. In general, the reference comparator used was selected as the more conservative (1995) of two City of Bellevue studies because they were comprehensive, local studies, and had similar sampling protocols. However, the samples in the 1995 Bellevue study were taken at instream stations and therefore reflect receiving water conditions, as opposed to outfall discharges. Nonetheless, contrasting STIA *outfall* discharges to this *instream* comparator should result in more conservative conclusions. The Portland NPDES data for copper better represents commercial and industrial outfall discharges before mixing with receiving waters.

These comparators and outfall sampling results appear on box plots that illustrate the central tendency, spread, and skew of the Port's data. The bold line within a box represents the median value, while the bottom and top of a box show the 25th and 75th percentiles, respectively. In other words, the interquartile range (central 50 percent) of the data fall within values highlighted by the box. SPSS software was used to generate the box plots (SPSS 1999).

When summarizing data to compare typical values, outliers usually represent unusual conditions, atypical of what one could expect under usual circumstances. In a box plot, the "whiskers" show the largest values that are not considered outliers. SPSS box plots show two types of outliers:

those more than 1.5 box-lengths from the 75th percentile plotted with the symbol "o", and those more than 3.0 boxlengths with a star symbol ("*".)

Table 4 Stormwater Quality Comparators(a)

Pollutant	Units	Study						WA State Standard[e]
		NURP, 1983	BURP, 1984	Metro, 1982	Bellevue, 1995[b]	Highway Runoff[c] 1981	Portland NPDES[d] 1993	
pH	std units		5.2 - 7.4		7.2 - 7.8			6.5 - 8.5
TPH	mg/l						6.5	*no standard*
Fecal coliforms	mpn per 100 ml	1000 to 21000	*980*					100
BOD_5	mg/l	9					20	*no standard*
TSS	mg/l	100			82.3	106	119	*no standard*
Turb	mg/l		19					based on background
glycols	mg/l	*not analyzed in any of these studies*						*no standard*
Cu (TR)[f]	µg/l	34		20	10.4	43		5.3[f]
Pb (TR)[f]	µg/l	144	170	210		466	36	16[f]
Zn (TR)[f]	µg/l	160	120	110		638	253	40[f]
statistic reported:		median	mean[g], *median*	mean	log-normal median	mean	mean	metals standards[f] at hardness =28 mg/l

(a) Comparative Values in bold. Blank space means no data available, reported, or applicable.

(b) Bellevue, 1995 data are for instream samples from the "Sturtevant Creek, downstream" site.

(c) Highway runoff from an I5 location in Seattle with 57,000 ADT, 43 to 54 storm samples in 1980-81 (Chui, Mar, and Horner, 1982).

(d) City of Portland 1993 NPDES Part 2 Municipal Application, data from NW Yeon Blvd.

(e) Standards are for class A waters, see WAC 173-201A.

(f) Total recoverable metals. WA State acute standards expressed as total recoverable, calculated at 28 mg/l hardness using Ecology's "TSDCALC6.XLW" spreadsheet. The hardness value is the 10th percentile for the streams sampled in the Stormwater Receiving Environment Study (POS, 1997c.)

(g) For Turb, Cu, Pb, and Zn, BURP 1984 data was mean of grab samples, therefore Bellevue, 1995 data are more representative comparators because they represent median of composite samples.

4.3 Storm events sampled

The 1998-99 sampling season began in July 1998 during the "El Nino" dry weather pattern and progressed into the very wet "La Nina" pattern from October 1998-March 1999. During this unusually wet period, about 40 inches of rain fell at STIA, which is a typical *total annual* amount, and was 12 inches more than typical in just this 6 month wet season. Rainfall in November 1998 set a new monthly record at 11.6 inches, breaking a previous record by almost an inch.

In the past 12 months ending June 1999, rainfall meeting "storm" criteria[2] occurred on 33 occasions. The Port sampled 23 (two thirds) of these "storms" where rainfall ranged from 0.2 to over 3 inches preceded by up to 33 days of dry weather. In August, September, and December 1998, only one event met criteria existing at the time[3]. One month, July 1998, had no rainfall that qualified as a storm. Extra samples were taken in October 1998 to make up for those taken, but which failed to meet sample criteria during the single "storm" sampling opportunity in September 1998 (POS 1998a.) Appendix A summarizes daily rainfall on a monthly basis graphically and in tabular form.

In the past year, there were four storm events generally associated with higher than typical sample results experienced at several outfalls. Two of these were due to late summer thunderstorms on August 16 and September 24, 1998 where intense rainfall of greater than 0.25 inches per hour fell after protracted dry periods of up to more than a month. These factors resulted in the unusual condition of a lengthy accumulation period combined with high scour potential from the intense rainfall. Two other storms on November 3 and December 24, 1998 had similar characteristics. The product of maximum rainfall intensity and length of the antecedent dry period, termed the "load factor", was much higher for these four events than for the 25 other events sampled (See Appendix A.) These facts are important to take into account when examining the sample results in the following sections.

The change in the criterion for the duration of the antecedent dry period provided, as intended, two to three more sampling opportunities per month[3]. Yet because total rainfall from a particular event can be highly unpredictable, six potential sampling events failed to fruit to the 0.20-inch

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[2] A "storm" event is defined as having total rainfall of at least 0.20 inch, separated by more than 12 hours of dry weather from past or subsequent events, and preceded by a period of 24 hours with no more than 0.10 inch rainfall from discrete events.

[3] A minor permit modification became effective in 1999 allowing the Port to reduce the criteria for the duration of the antecedent dry period from 48 hours to 24 hours. This change was intended to allow more storm events for sampling than the prior definition.

minimum rainfall, and hence resulted in false starts, or "non-storm" samples. Despite the incomplete and therefore non-representative composite samples that resulted (which were usually discarded), the grab samples were still considered representative and comparable[4] to those taken from "storms." The Procedure Manual was revised in 1998 to allow for this comparability (POS, 1998b). Data from all such grab samples were included on DMRs beginning in January 1999.

4.4 Grab Sample Results

The following discussion includes results from 96 grab samples collected in the past year. The entire five-year data set for grab sample results comprises 322 samples from "storms", plus 26 samples from other rainfall events (non-storms) that did not reach the minimum rainfall criterion of 0.20 inches.

4.4.1 Total Petroleum Hydrocarbons (TPH)

The results from the current year presented in Figures 2 and 3 continue to demonstrate that concentrations of petroleum-type pollutants in STIA stormwater are consistently less than in stormwater from other urban areas. The following bulleted items present a discussion of these results.

The TPH method was changed from an infrared absorbance (IR) method (WTPH 418.1) to a gas-chromatographic (GC) method (NWTPH-Dx.) in 1998. Only results from the new method are discussed below. The previous Annual Report (POS, 1998c) demonstrated that data from the old and new methods were comparable however.

- STIA stormwater overall continues to have less petroleum-type pollutants than typical urban runoff. During the past year, more than 90 percent of the 93 STIA results were less than the Bellevue, 1995 median (instream samples) of 3.7 milligrams per liter (mg/l). The overall STIA TPH median is 0.4 mg/l, and was 0.27 mg/l for the past year. On the whole, TPH was not detected above 0.15 mg/l in 44 (36%) of a total of 121 samples taken since March 1998.

[4] These "non-storm" grab samples were collected on the same basis as grab samples taken from true "storms". Therefore, given the consistent sampling protocol, all grab sample results can be aggregated regardless of total rainfall.

- Airfield stormwater (SDS3, SDS4, SDN3, and SDN4) contains far less TPH concentrations than runoff from the landside subbasins (SDE4, SDN1, and TY.) TPH was not detected in 31 (67 percent) of the 46 airfield outfall samples analyzed by the new method in the past two years. The maximum TPH value of these 46 airfield outfall samples was 0.5 mg/l. Current results are similar. See Figure 2.

- Most of the TPH detected in landside runoff is likely attributable to cars and trucks. Figure 2 shows that motor oil represents the majority of the TPH at these outfalls (SDE4, SDN1, and TY.)

- The IWS effectively isolates aviation-related fuel spills and drips from the storm drains. TPH concentrations are generally low in stormwater from subbasin SDE4 and are generally not detectable in SDS3 samples. More than 85% of the 24 samples from SDE4 had TPH less than the 3.7 mg/l comparative value for urban areas. These 2 subbasins are contiguous with aircraft service (IWS) areas.

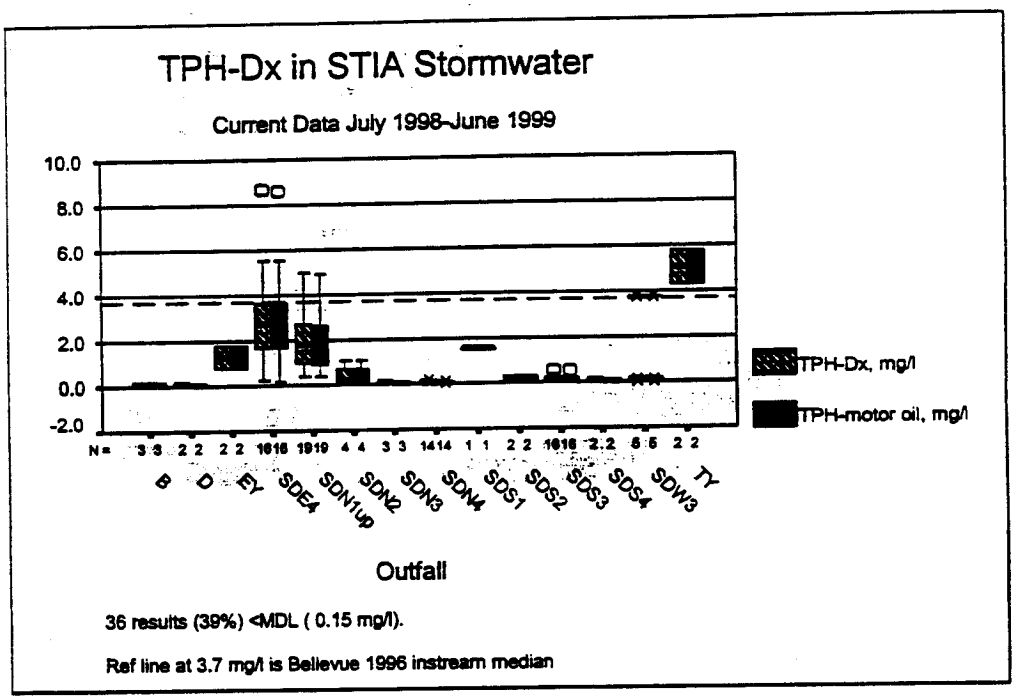

Figure 2 TPH for current year

4.4.2 Fecal Coliforms

Overall, the median value for fecal coliforms in 268 samples to date is 50 per 100 ml, with two thirds of the results less than 200 per 100 ml. Relative to the comparative values (Table 4), these overall results indicate that STIA stormwater contains fewer fecal coliforms than typical urban stormwater. More than 79 percent of the airfield subbasin samples showed fecal coliforms less than the comparative value of 201 per 100 ml (Bellevue, 1995.) See Figure 3.

There are numerous sources of fecal coliforms: birds and all mammals. Small animals and birds inhabit many of the respective drainage areas and are believed to be the sources of these infrequent findings. Urban stormwater often contains fecal coliforms in elevated numbers, and sanitary sewage is not always implicated.

In past reports, the Port showed that fecal coliforms were found principally in the landside subbasin SDE4. Current results for six of 16 SDE4 samples showed elevated results greater than 500 per 100 ml. However, another six of the 16 samples showed fecal coliforms less than 240 per 100 ml. Nonetheless, the Port is continuing to conduct a source tracing study intended to identify potential sources of contamination. Preliminary results, included in Section 4.6, do not indicate sanitary sewage as a source in storm or baseflows. Uncontaminated baseflow samples indicate that there is no continuous source of fecal coliform bacteria. Investigations are ongoing and results will be presented in subsequent Annual Stormwater Monitoring Reports.

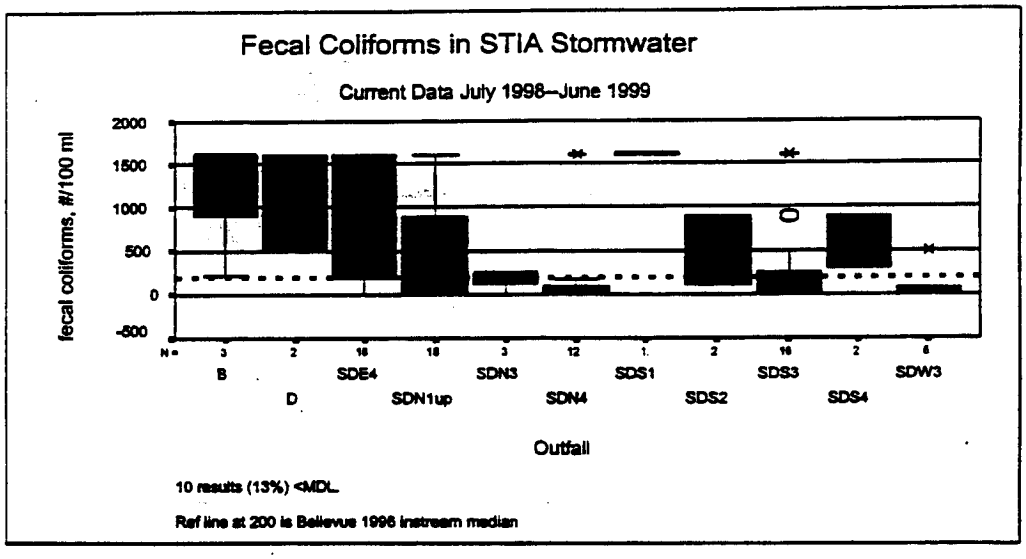

Figure 3 Fecal Coliforms for Current year

4.5 Composite Sample Results

In the past year, the Port took a total of 66 flow-weighted composite samples, bringing the five year total to 317. The discussion of these composite sample results are segregated from grab samples because the latter represent only instantaneous values. Composite sample results, especially those from samples that comprise the entire hydrograph, represent an average value over a longer time period.

4.5.1 Suspended Solids and Turbidity

STIA outfalls continue to discharge typically less total suspended solids (TSS) and turbidity than urban areas. In the 5 year sampling history at STIA, more than 80 percent of the 293 TSS samples and 250 turbidity samples were below the comparative values of 50 mg/l, and 29 NTUs, respectively. As shown in Figure 4 and Figure 5 the majority of results for the past year continue to be consistently low.

The four airfield outfalls (SDS3, SDS4, SDN3, and SDN4) continue to produce less TSS and turbidity than the two principal landside subbasins (SDE4 and SDN1). In the past 5 years, 95 percent of the 97 TSS results from the airfield outfalls were less than one-half the regional comparative median value[5]. Because these airfield outfalls represent about 61 percent of the total SDS area, the data show that the majority of STIA runoff is much lower in suspended material than runoff from comparable regional urban areas.

In the past year, there were 4 storm events generally associated with higher than typical TSS and turbidity experienced at several outfalls. These results are considered outliers because they were new maxima and atypical based on the abundance of data for the particular outfalls. Samples from these storms were associated with the unusual condition of a lengthy dry period prior to the event combined with high scour potential of intense rainfall. As a result, samples from these storms that coincided with certain construction activity showed higher TSS and turbidity in late summer and fall of 1998. See Figure 6. A number of construction BMPs became effective after these first storms of the wet season. In the late fall as work ceased and sites stabilized, TSS and turbidity rapidly returned to typical values at outfalls SDS3, SDN4, and SDN1. See Figure 6 which illustrates typical results for these three outfalls. Outlying TSS and turbidity results for SDE4 and SDN1 for the December 24, 1998 storm were associated with sand applied to

[5] This is the case where 9 results considered outliers or from unusual storm conditions are trimmed from the dataset.

roadways during a snow event. Trimming these outliers reduces the maximum, 95th and 75th percentile values, but has little effect on median values[6]. Appendix B lists these trimmed statistics.

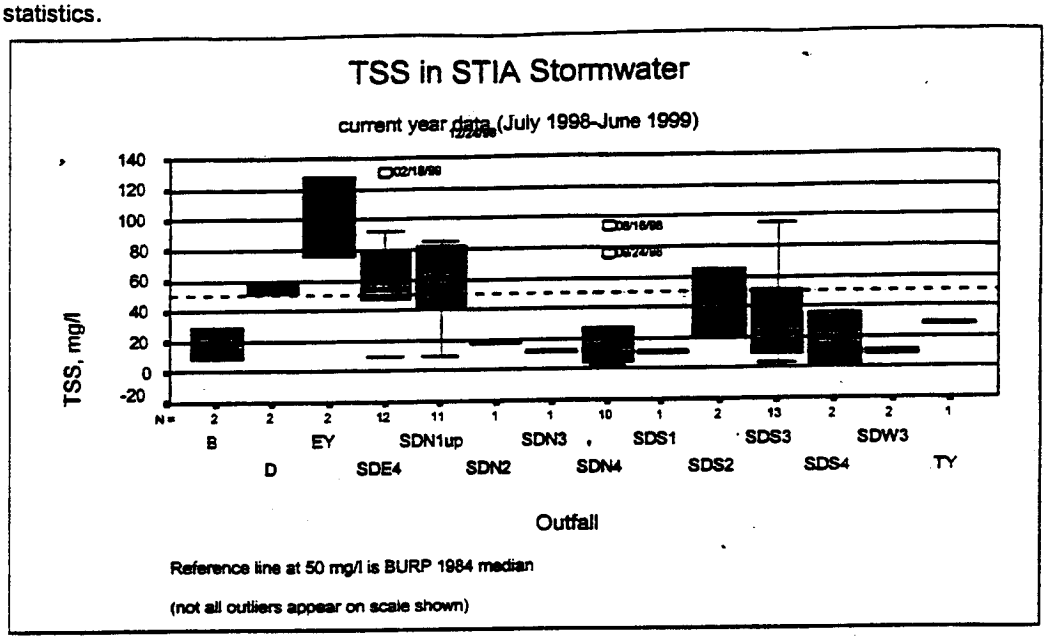

Figure 4 TSS for Current Year

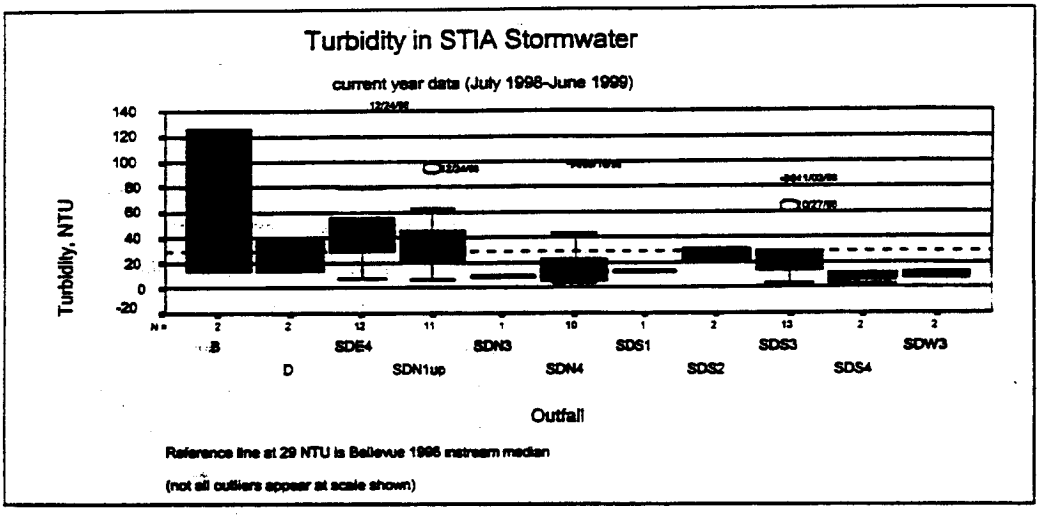

Figure 5 Turbidity for Current Year

[6] Trimming is a statistical approach that deals with the influence of outlying data that are not representative or otherwise not comparable with other data. Trimming outliers yields summary statistics that better represent typical results.

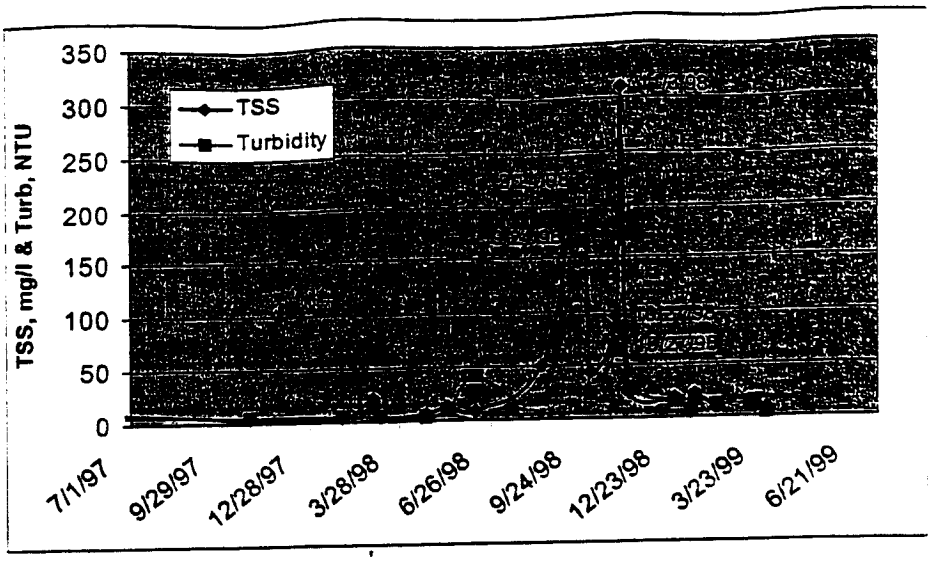

Figure 6 TSS and Turbidity peak and return for SDS3

4.5.2 Biochemical Oxygen Demand (BOD_5)

Results for the past year continue to indicate overall low levels of BOD_5 in STIA stormwater. In 55 samples analyzed in the past year, the median BOD_5 was 5.5 mg/l, and 60 percent were below the 6.6 mg/l regional urban comparator (BURP, 1984, see Table 4). Excluding 7 samples where the BOD_5 was attributable to runway deicing events, the 95 percent of the 48 sample results in the last year were less than 18 mg/l. See Figure 7. Trimming these outliers reduces the maximum, 95th and 75th percentile values, but has little effect on median values. Appendix B lists these trimmed statistics.

Principal sources of elevated BOD_5 concentrations in the past were associated primarily with major winter weather episodes and the accompanying deicing events. Acetate-based ground surface deicers were the primary sources of BOD_5, with isolated indications of aircraft deicing glycols. All known direct sources of glycols have been eliminated from the storm drains.

In the past year, two limited periods of winter weather (December 24-25, 1998 and February 8, 1999) occurred where the Port applied chemicals to ground surfaces (primarily runways and taxiways.) Storms following both events were sampled at various outfalls. Compared to past years, snowfall and chemical usage, including aircraft glycols, was less (POS 1998c, POS 1997b.) During the December event, BOD_5 results ranged from 116 to 450 mg/l at the five

outfalls sampled. Because glycol concentrations were generally low (15 to 44 mg/l) in these samples, the elevated BOD_5 concentrations were attributable to the acetate-based runway (ground) deicing chemicals. There were no discharges from outfall SDN2 during these events[7].

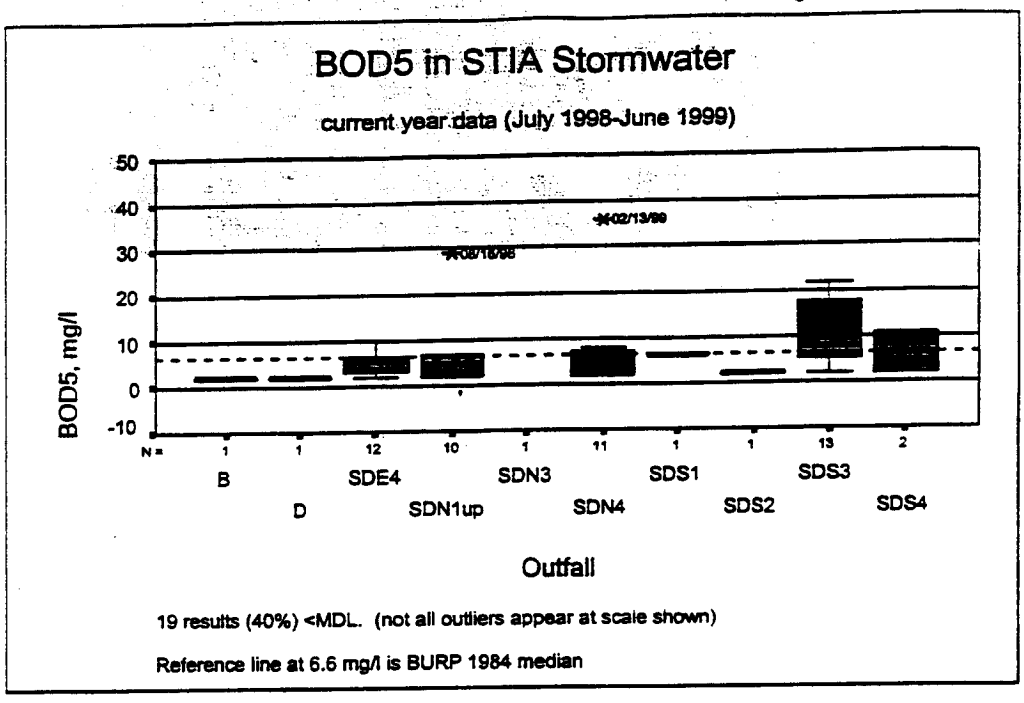

Figure 7 BOD_5 for Current Year

4.5.3 Metals

All data reported below are for total recoverable metals. It is important to note that Washington State Water Quality Standards (WAC 173-201A) apply to the receiving waters, not to the discharges from a particular outfall. Stormwater discharges are mixed in receiving waters. Therefore, it is inappropriate to compare outfall sample results directly with Ecology or other receiving water standards without accounting for mixing.

The Washington water quality standards for copper, lead, and zinc are based on the dissolved fraction of the metal. The dissolved fraction is generally used to determine potential toxicity, an

[7] The entire drainage area of outfall SDN2 was re-routed to the IWS in 1997 as a result of two BMPs.

approximation of what is actually available (i.e., the bioavailable fraction for uptake by aquatic organisms). Limited results for dissolved metals analyzed in source tracing studies appear in Appendix F.

General Results.

Samples from airfield outfalls continue to contain less lead and zinc concentrations than typical urban sources. In the five-year permit sampling history, over 97 percent of the results for lead and zinc in airfield outfalls were below the median for comparable regional data for commercial areas. This is important given that the commercial/industrial comparators cited (see Table 4) are the most conservative and, these reflect *instream* sample concentrations after outfall discharges mixed with receiving waters. Current results continue these patterns, See Figure 9 and Figure 10.

Much of the airfield outfall lead and zinc data are below water quality standards. Nearly all lead results in the past five years are below the standard calculated at the very low hardness listed in Table 4. In fact, lead was not detected in 42% of the total of these 104 samples. Airfield zinc was similar in that more than half the results are less than the standard. And when the total zinc standard is calculated as 0.071 mg/l at 56 mg/l hardness[8], more than 70% of the STIA airfield results are less.

It should also be noted that lead and zinc concentrations measured in airfield outfall samples were far lower in lead and zinc than the landside outfall samples. The overall median lead and zinc values for landside outfalls SDE4 and SDN1 were nearly 5 times or more those from the airfield samples. See Figure 9 and Figure 10. This difference is likely due to the amount of passenger vehicle usage in the landside areas, much of which is beyond the Port's jurisdiction. The landside subbasins experience considerable vehicle traffic where tire wear is a likely source of zinc (EPA 1993). Roads and parking areas constitute more than 50 percent of the impervious surfaces draining to SDE4 and SDN1.

Overall, in 225 samples in the past five years the median copper value was 0.027 mg/l. Airfield and landside outfall data in this case are similar, with medians ranging from 0.023 to 0.038 mg/l. See Figure 8. This similarity is likely related to the considerable vehicle activity within SDE4 and SDN1. Nonetheless, STIA data are generally less than, but comparable to the 0.039 mg/l median

[8] In two storms in 1999, hardness values in seven Miller and Des Moines Creek instream composite samples ranged from 41 to 74 mg/l with a median of 56 mg/l.

for copper from the City of Portland's sampling results (City of Portland, 1993.) This comparison is more representative of outfall discharges than the Bellevue, 1995 median of 0.01 mg/l for *instream* stormwater samples.

As indicated for TSS and turbidity, there were several outliers for primarily copper and zinc results obtained in the past year. Again, the causes are attributable to unusual storm events that coincided with certain construction projects in subbasins SDS3 and SDN1. The outlying metals results were correlated to outlying TSS and/or turbidity results and were new maxima. Subsequent samples showed a rapid return to typical ranges as discussed under section 4.5.1. Trimming these outliers reduces the maximum, 95th and 75th percentile values, but has little effect on median values. Appendix B lists these trimmed statistics.

A prior data entry error for a copper value for an SDS3 sample was discovered and corrected in the fall of 1998 (POS 1998e.) The correct value of 0.0388 mg/l for the November 23, 1996 sample was erroneously entered as 0.388 mg/l, an order of magnitude higher. The error did not effect DMRs because the data was transcribed correctly during DMR preparation. The error occurred only during data entry into the Port's database. In the past two annual reports, only the 75th and 95th percentile statistics reported are affected, but not the medians. Boxplots are affected only slightly. Table 5 below shows the pertinent changes required to correct the error.

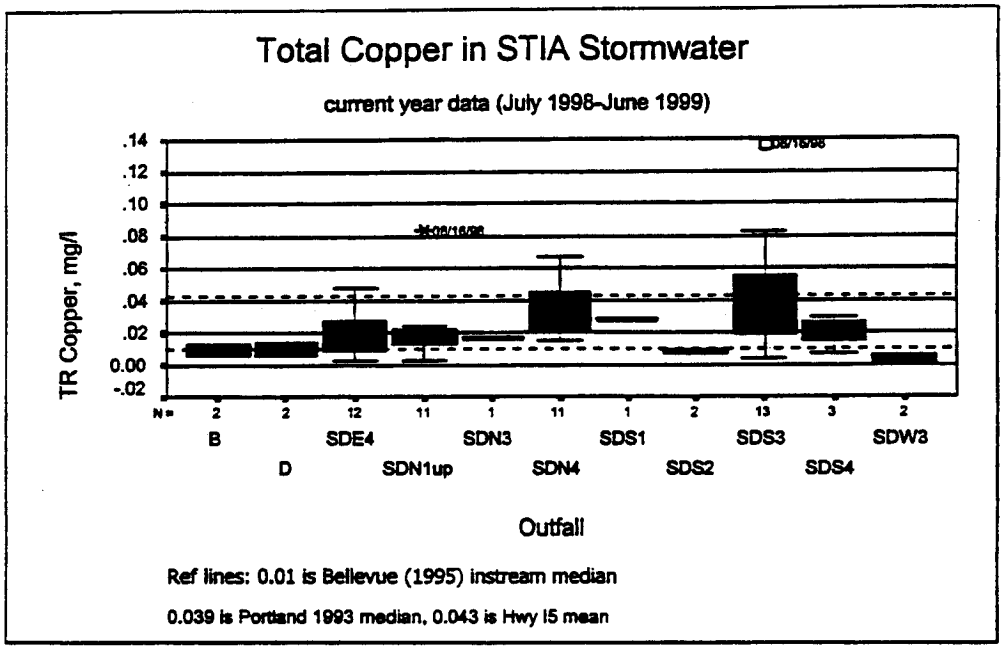

Figure 8 Total Recoverable Copper for Current Year

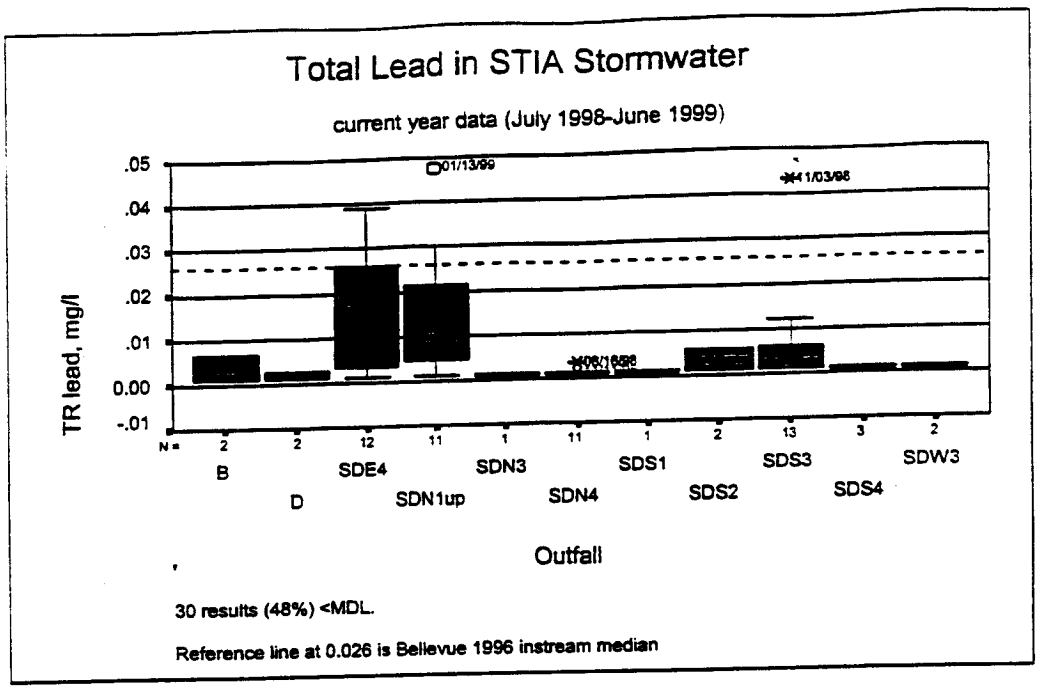

Figure 9 Total Recoverable Lead for Current Year

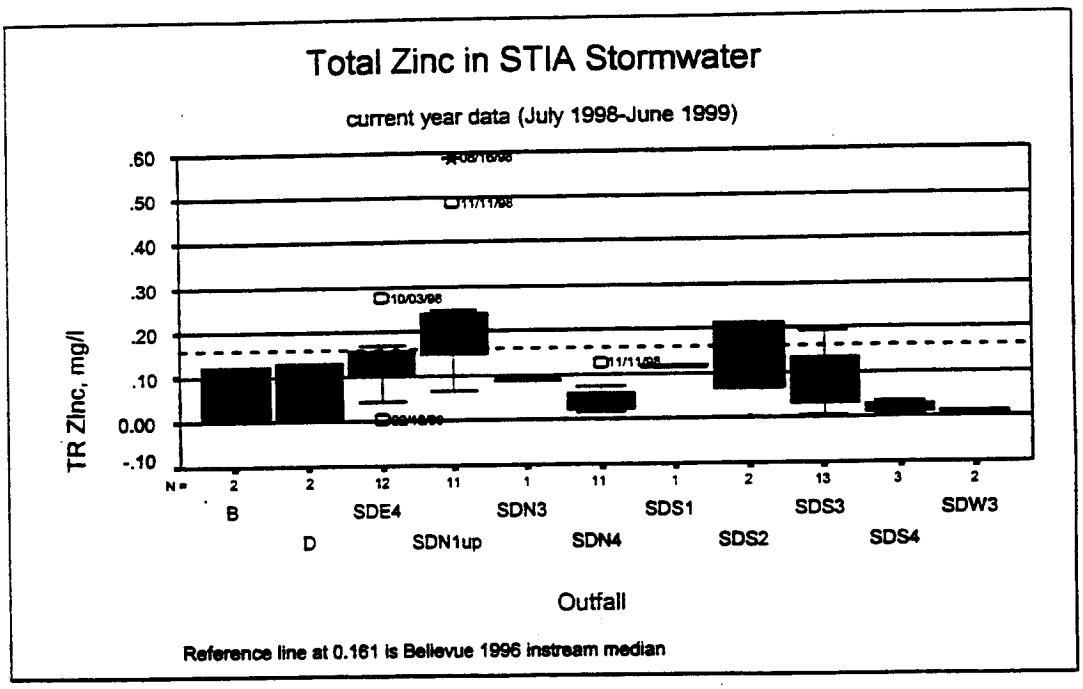

Figure 10 Total Recoverable Zinc for Current Year

Table 5 Corrections to Total Recoverable Copper Data Summaries in Past Reports*

	1997 Annual Report		1998 Annual Report	
"All Data"	**Change From**	**Change To**	**Change From**	**Change To**
95th percentile	*No change*	*No change*	0.115	0.102
75th percentile	0.042	0.041	0.045	0.042
"SDS3"	**Change From**	**Change To**	**Change From**	**Change To**
95th percentile	0.170	0.093	0.109	0.086
75th percentile	0.053	0.046	0.068	0.054
"All Airfield"	**Change From**	**Change To**	**Change From**	**Change To**
95th percentile	n/a	n/a	0.101	0.089
75th percentile	n/a	n/a	*No change*	*No change*

*all values in mg/l

Copper and zinc in SDN1 samples continue to show lower values attributable to removing the bias imparted by SR 518 runoff that was inextricably combined in samples from the previous location[9]. Therefore, the current station provides results more representative of STIA discharges, and prior data must be considered to contain a high bias. Data for the two stations have been segregated and discussed separately in this report and the past two Annual Reports (POS 1998c, 1997a.)

4.6 Deicing Event Samples

4.6.1 Background.

The permit requires sampling and analysis for glycols during "deicing events" The Port conducts this sampling according to the Procedure Manual (POS, 1999a.) The glycol data discussed below encompass mostly composite samples collected during periods of aircraft deicing, representing average values during a storm event discharge.

[9] In October 1996, the Port changed the sampling location for SDN1 from manhole SDN1-27 to manhole SDN1-22, upgradient from public road runoff. Past annual reports compare data from both locations.

As of June 1997, all ramp areas where aircraft are routinely deiced drain to the IWS. Prior to this date, drainage from several aircraft service areas of limited extent flowed to the SDS. As a result, the Port completed necessary Stormwater Pollution Prevention Plan (SWPPP, POS 1998f) actions by implementing seven BMPs that rerouted this drainage to the IWS from the four affected SDS subbasins (SDE4, SDS1, SDS3, and SDN2.)

The Port's Annual Glycol Reports (Port 1996, 1997c, 1998b) detail the history of glycol application airport-wide. These reports summarize data reported by the airlines for the volumes of both ethylene and propylene glycol applied and number of aircraft treated each day. The Federal Aviation Administration (FAA) authorizes only ethylene and propylene glycols for aircraft deicing and anti-icing. Port tenants perform all glycol application at STIA (applied by airlines or their ground service providers). However, to ensure public safety, aircraft pilots make the ultimate decision on whether to apply glycols or not.

4.6.2 Results

In the past year, glycols were analyzed in a total of 54 samples from eight outfalls. The majority of samples were collected at the regular sampling locations (SDE4, SDS3, and SDN4.) Total glycol concentrations ranged from non-detectable to a maximum of 158 mg/l. The majority of these results (72 percent) were below the detection limits. The total number of aircraft deiced in the dry period before sampling events ranged from 2 to 373, with a median of 15. Data appear in Figure 11 and are summarized in tabular form in Appendix C.

In the past year, two limited periods of winter weather occurred: December 24-25, 1998 and February 8, 1999. During the December event, the minor snowfall of 2 to 3 inches did not require plowing because it melted rapidly with the ensuing rainfall. During the February event, no snowfall accumulated, yet the melted precipitation froze on ground surface during clear night skies. These were the only periods where the Port applied chemicals to ground surfaces (primarily runways and taxiways.) Storms following both events were sampled at various outfalls. In addition to this NPDES sampling, both of these events were also monitored for the Dissolved Oxygen Study (POS, 1999b.) Because of the limited snowfall, the snow storage areas were not used.

Compared to past years, snowfall and chemical usage, including aircraft glycols, was less (POS 1998d, POS 1997cb) During the December event, glycol results ranged from 15 to 113 mg/l at the five outfalls sampled (SDE4, SDS3, SDN1, SDN3, and SDN4.) Because glycol concentrations were generally low in these samples, the elevated BOD_5 concentrations were

attributable to the acetate-based runway (ground) deicing chemicals. There were no discharges from outfall SDN2 during either of these events[10].

Results for samples from SDS3 and SDS1 may warrant further investigation to determine if direct glycol sources can be further stemmed. An IWS drain structure (IWS-563) at a slot drain terminus near Concourse C, gate C8 seems to be capable of overflowing to the SDS3 drainage area, yet most of any overflow would probably run to the next IWS slot drain in the series. The cause of the overflow should be investigated to determine if a repair is appropriate. Several SDS3 drain inlets under the C- Concourse overhang were covered with solid lids in early 1999, therefore these possible source areas were eliminated. Because of several drainage re-route BMPs in SDS1, there should be little or no glycol detected in SDS1 samples. However, the source of the March 12, 1999 glycol result of 49 mg/l should be investigated.

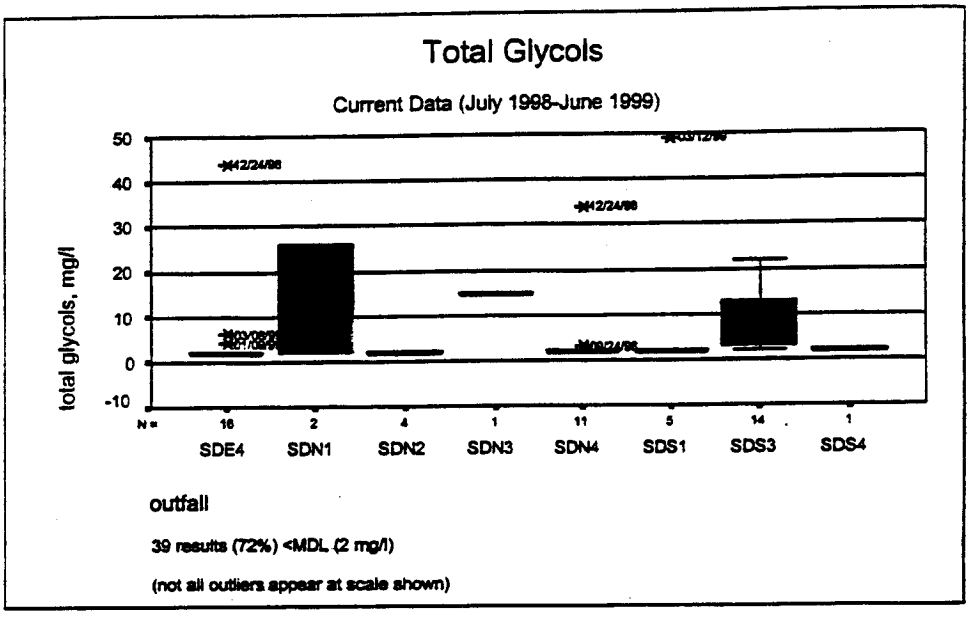

Figure 11 Glycol results for Current Year

The Port has completed sampling of at least four deicing events at outfalls SDS1 (003) and SDN2 (007) since the permit became effective on March 1, 1998. According to permit condition S2.B.4, footnote (a), the Port is eligible to petition Ecology for elimination of further monitoring at these two outfalls. Sampling results demonstrate effective abatement of glycol attributable to several

[10] The entire drainage area of outfall SDN2 was re-routed to the IWS in 1997 as a result of two BMPs.

BMPs implemented in the past few years in these two subbasins. In the 5 deicing event samples taken at SDS1, glycols were not detected in 3 samples, and minor amounts (7 and 49 mg/l) were detected in two samples. These samples were taken from runoff preceded by dry periods during which up to 154 aircraft were deiced. In the past, as little as a single aircraft deicing could result in much higher glycols in SDS1 runoff. Glycols were not detected in four samples of the limited duration discharges to SDN2 caused by storms that exceeded operating designs for the two IWS pump stations built as BMPs in 1997. Therefore, the data indicate that the BMPs have been effective and the intent of this monitoring requirement is satisfied.

4.7 Other Results

The following results were obtained from samples taken for purposes other than to satisfy permit condition S2B.

4.7.1 WET samples

As required by permit condition S10, The Port completed two rounds of whole effluent toxicity (WET) testing at the four principal outfalls in the past year. Two outfalls were sampled on additional occasions to corroborate results from the first two tests. The Port submitted the required WET testing reports to Ecology within 60 days of each sampling date. The final summary report summarizing all results will be submitted by mid November 1999.

WET testing bioassays used the two required aquatic test species: *Daphnia pulex* (a daphnid or waterflea), and *Pimephales promelas* (fathead minnow.) Results did not indicate toxic conditions in the stormwater discharges sampled at outfalls SDE4, SDS3, and SDN4. Furthermore these results exceeded the performance standards for WET according to Ecology guidelines[11]. In contrast, results from outfall SDN1 exhibited toxicity that appears to be attributable to metals leaching from uncoated galvanized metal rooftops. The Port is currently verifying the source of toxicity so that this problem can be rectified in a timely manner.

Table 6 summarizes WET testing results and Appendix D lists all accompanying data. Analyses for supplemental parameters indicated that these samples were representative of typical conditions based upon past sampling history. The average percent rank value for each parameter shows these results were within the ranges of historical data for each outfall.

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[11] Performance standards for acute WET tests: the average survival in 100% effluent must be at least 80%, and no single sample must have less than 65% survival (WAC 173-205)

Table 6 WET Testing Summary

Outfall	Sample date	avg rank*	WET, % survival daphnid	WET, % survival fathead	Comment
SDE4	11/19/98	71%	90	100	
(002)	1/20/99	58%	100	98	1
	2/22/99	39%	95	65	
	3/24/99	43%	95	98	
	7/2/99	50%	100	70	2
SDS3	11/13/98	79%	90	98	
(005)	1/13/99	58%	80	95	
SDN1	11/13/98	67%	80	40	
(006)	1/13/99	61%	30	78	
	3/24/99	52%	10	63	
	5/11/99	56%	5	not tested	4
	7/2/99	59%	not tested	33	2, 3
SDN4	11/13/98	65%	75	100	
(007)	1/13/99	41%	100	100	

* Average rank is average of percent ranks for each supplemental parameter analyzed relative to the data history for the particular outfall.

comments:

1. SDE4 Jan 20, 1999 sample: lab error on fathead test: was 48-hr instead of 96-hr
2. July 2, 1999 samples: control failed at 72.5% survival (performance standard is >90%)
3. July 2, 1999 SDN1 sample: insufficient # of organisms to start daphnid test.
4. May 11, 1999 SDN1 sample taken for source tracing (was a non-storm) only, not to explicitly satisfy permit condition S10

shaded results indicate exceedance of single value and/or averagestandard for survival

The Port conducted additional rounds of WET testing for SDN1 to verify results from the first two tests. Upstream sub-area drainage was also tested to determine where and under what conditions the problems occurred. Because stormwater from SDN1 exhibits historically higher zinc than other outfalls (see Figure 10), this metal was suspected as a potential source of toxicity. After removing metals in these samples with two different chelating agents test organisms had much higher survival. Based on the methods of Hockett and Mount (1996), this pattern of toxicity

reduction following chelation confirmed that zinc was indeed the most likely source of toxicity[12]. Additional samples indicated that zinc originated from uncoated, galvanized metal rooftops on two cargo building rooftops (a total of 2.2 acres, 25% of the SDN1 subbasin impervious area). Other parameters analyzed, such as surfactants and ammonia were not correlated with survival. A final round of source tracing will be conducted this fall to verify these findings. The Port is currently investigating how to remedy this source of zinc.

4.7.2 Non-representative composites

As discussed in Section 4.3, some composite samples failed to meet representativeness criteria for the storm event itself, or for the resultant sampling routine. In addition, several samples were taken for other purposes, such as source tracing, where the compliance sampling criteria are not necessary. Because the Port strives for representative results for reporting and comparability to past NPDES reporting data, these 9 composite sample results are segregated and reported in Appendix E.

4.7.3 Field Quality Control Samples

The Port routinely collects duplicate and equipment blank samples during NPDES sampling events according to the Procedure Manual. Appendix E summarizes these results which continue to generally indicate effective sampling techniques.

4.7.4 Metals During Ground Deicing Event Runoff

A requested by Ecology, the Port analyzed metals in samples taken during the two ground deicing events in the past year. Cancilla (1998) suggested that glycols used for aircraft deicing can mobilize metals resulting in higher concentrations than might be expected during non-deicing event runoff. Airlines typically apply the most aircraft deicing glycol during these ground deicing/anti-icing events. Glycols are not used for ground surface deicing. Ecology also had a concern based upon what turned out to be an erroneous copper value incorrectly reported from the November 1996 deicing event and concurrent NPDES storm sample (see Section 4.5.3.)

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[12] These tests use EDTA (ethylenediaminetetraacetic acid) and sodium thiosulphate (STS) as chelating agents. EDTA and STS remove heavy metals from solution by binding them through the chelation reaction. Comparing bioassay results before and after adding these agents indicates if and to what degree metals influence toxicity. According to the method, strong toxicty removal by EDTA coupled with weak removal by STS indicates zinc as a likely source.

During both events monitored this past winter the Port analyzed metals in flow-weighted composite samples taken at four outfalls and in composite and discrete samples taken at select instream sampling stations. These samples were taken concurrently with those for the Dissolved Oxygen (DO) Study (POS, 1999b), where instream DO was monitored continuously *in situ* to determine if and to what extent ground deicing chemicals affect the streams. The tables below outline the samples and locations where they were taken. Because the December 1998 event also coincided with the only storm qualifying for monthly sampling for NPDES permit compliance (POS, 1999a), other outfalls (SDE4 and SDN1) were also sampled in addition to those targeted specifically for this study. Both storm events sampled met compliance sampling and reporting criteria (POS, 1999a). All flow-weighted composite samples taken by automatic sampler also met these criteria. Therefore, data from the two deicing events sampled are comparable to other NPDES samples in the Port's extensive stormwater database.

Overall, metal concentrations in outfall samples were within ranges typically measured during non-deicing events sampled during the past 4 or more years. Table 7 summarizes metals data for outfall samples and compares the data to the overall NPDES sampling history for each outfall. Only one value for total recoverable lead in the February 1999 SDN3 sample exceeded the historical maximum for this outfall. The result of 0.010 mg/l for this sample is less than one third of the water quality standard for total recoverable lead of 0.032 mg/l at 56 mg/l total hardness.

Table 8 summarizes total recoverable metals data for instream samples and compares results to water quality standards calculated at average hardness values measured during this study. In this table, "MC" stands for Miller Creek, and "NWP" stands for Northwest Ponds stations in Des Moines Creek. Metal concentrations were below standards at all locations sampled downstream of Port outfalls. In two cases, concentrations were lower downstream than up, indicating STIA runoff was cleaner than upstream samples.

Because virtually all metals data were within ranges recorded for non-deicing events, the Port believes that the metals measured during ground deicing events monitored this year are not atypical. Therefore, the theory that higher metals occur during these events was not manifested during the two events monitored.

Table 7 Outfall Metals Samples During Ground Deicing Events

		total recoverable metals, mg/l						
outfall	event	Cu	rank,%	Pb	rank,%	Zn	rank,%	hard, mg/l
SDS3	Dec-98	0.047	65%	0.002	29%	0.134	91%	
SDS3 calc*	Dec-98	0.044	61%	0.004	62%	0.093	82%	51.3
SDS3	Feb-99	0.049	66%	0.001	0%	0.074	76%	53.6
SDS4	Dec-98	only discrete samples taken/analyzed, results calculated below						
SDS4 calc*	Dec-98	0.016	5%	0.001	26%	0.063	95%	58.1
SDS4	Feb-99	0.006	0%	0.001	26%	0.036	77%	94.2
SDN3	Dec-98	0.017	68%	0.001	28%	0.089	72%	
SDN3 calc*	Dec-98	0.012	45%	0.002	61%	0.056	52%	57.2
SDN3	Feb-99	0.020	84%	0.010	max	0.060	54%	33.5
SDN4	Dec-98	0.023	11%	0.001	32%	0.075	95%	
SDN4 calc*	Dec-98	0.018	0%	0.001	32%	0.034	75%	34.2
SDN4	Feb-99	0.036	48%	0.001	32%	0.026	61%	55.8
SDE4	Dec-98	0.005	4%	0.006	11%	0.151	43%	
SDN1	Dec-98	0.003	0%	0.004	14%	0.122	12%	

*flow-weighted average of multiple discrete grab samples, others are automatic flow-weighted composites.

Table 8 Instream Metals Samples During Ground Deicing Events

instream		total recoverable metals, mg/l			
location	event	Cu	Pb	Zn	hard, mg/l
NWP in	Feb-99	0.003	0.001	0.035	58.7
NWP out	Feb-99	0.007	0.001	0.057	58.3
MC up	Feb-99	0.003	0.001	0.070	41.4
MC down	Feb-99	0.003	0.001	0.062	64.3
Acute*		0.011	0.032	0.071	55.7
NWP in	Dec-98	0.002	0.002	0.059	40.9
NWP out	Dec-98	0.005	0.001	0.032	74.5
MC up	Dec-98	0.008	0.017	0.147	46.9
MC down	Dec-98	sampling error			
Acute*		0.010	0.037	0.070	54.1

Shaded results are <MDL, value shown is 1/2 MDL

*total metals standards calculated (using Ecology's TSDCALC6.xls) at average of hardness values for each event

4.7.5 Source Tracing Studies

Because certain sampling results have indicated the possibility of contamination, the Port has conducted source tracing studies aimed at identifying and characterizing potential sources. Through past efforts, the Port has already discovered and eliminated several other sources of stormwater contamination in subbasins SDE4, SDN1, and SDS4 discussed in previous Annual Reports[13]

As discussed in the WET testing section above, during the past year, the Port investigated and found the likely source of toxicity exhibited in SDN1 samples. These results from SDN1 are included in Appendix D, and will be elaborated further in the final WET characterization report expected to be submitted to Ecology this fall. Other source tracing investigations are summarized below.

SDE4 Source Tracing

The Port began studying fecal coliforms in SDE4 discharges in 1998 and continues to investigate causes of sporadic elevated results. Approximately 60% of the 31 NPDES grab samples to date were less than 600 per 100 ml, yet 24% were greater than 1600. Though, it is not unusual for stormwater to contain such elevated numbers. The BURP (1984) study found a fecal coliform median of 980 per 100 ml in 326 stormwater samples. Fecal coliforms were often several thousand or more in the 200 stormwater samples taken at instream and outfall locations during the comprehensive Bellevue (1995) study, which concluded that the high concentrations were probably due to animal wastes. Preliminary STIA findings summarized below do not implicate sanitary sewage or other domestic wastewater as a cause.

No obvious inappropriate drainage connections were found after reviewing site plans and inspecting field conditions in August 1998. Sanitary sewer lines run parallel to SDE4 drain lines in several areas, but in most cases are at lower grades. The field review identified a minor source of wash water from the rental car wash attributable to track-out by vehicles. This source was corrected by an asphalt berm added by POS maintenance.

The Port conducted two detailed sampling routines in November 1998, collecting grab samples at up to 11 branches of the SDE4 drainage system upstream from the NPDES monitoring location

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[13] See POS 1997, 1998. Inappropriate connections to the stormdrains were found and eliminated in subbasins SDE4, SDN1, and SDS4.

(SDE4-47.) These samples indicated elevated fecal coliforms stemming from several locations. Nonetheless, results for other parameters analyzed did not indicate domestic wastewater contamination. The consistency of these findings is limited by the two rainfall events sampled, the first of which ceased before all samples could be collected.

Samples were analyzed for fecal coliforms by two methods that yield the number of colonies per 100 milliliters: 1) the routine NPDES testing method or multiple tube fermentation process (9221E) that yields the most probable number or "MPN" metric, and 2) the membrane filter (MF) method (9221D). The latter method was used because it has a higher endpoint without sample dilution. Field QC blanks verified sterile sampling conditions were achieved using the specially developed device used to collect samples remotely in the deep pipes. Sample results are summarized in Appendix F.

According to Lalor, Pitt and Field (1993), surfactants, fluoride, potassium, ammonia and conductivity can be highly effective indicators to determine if and to what degree a variety of domestic wastewaters, including sanitary sewage may contaminate stormwater. When the ratio of ammonia to potassium exceeds 0.9, the presence of sanitary sewage or septage is indicated. In the two November 1998 upstream source tracing sequences, this ratio ranged from 0.01 to 0.46. Ongoing NPDES grab samples taken from manhole SDE4-47 since these two events show ratios ranging from 0.04 to 0.79. Figure 12 shows that the elevated fecal coliform results are not correlated with these ammonia to potassium ratios. Surfactants, fluoride and ammonia were generally low, near detection limits in nearly all samples. Therefore, these results do not appear to implicate the presence of sanitary sewage. Furthermore, given the sporadic nature of the elevated results and the fact that several baseflow samples showed no contamination, a direct cross connection is unlikely. Nonetheless, the Port is proceeding with other diagnostic tools (similar to Trial, 1993 and King County, 1995) to determine the source of the elevated fecal coliforms.

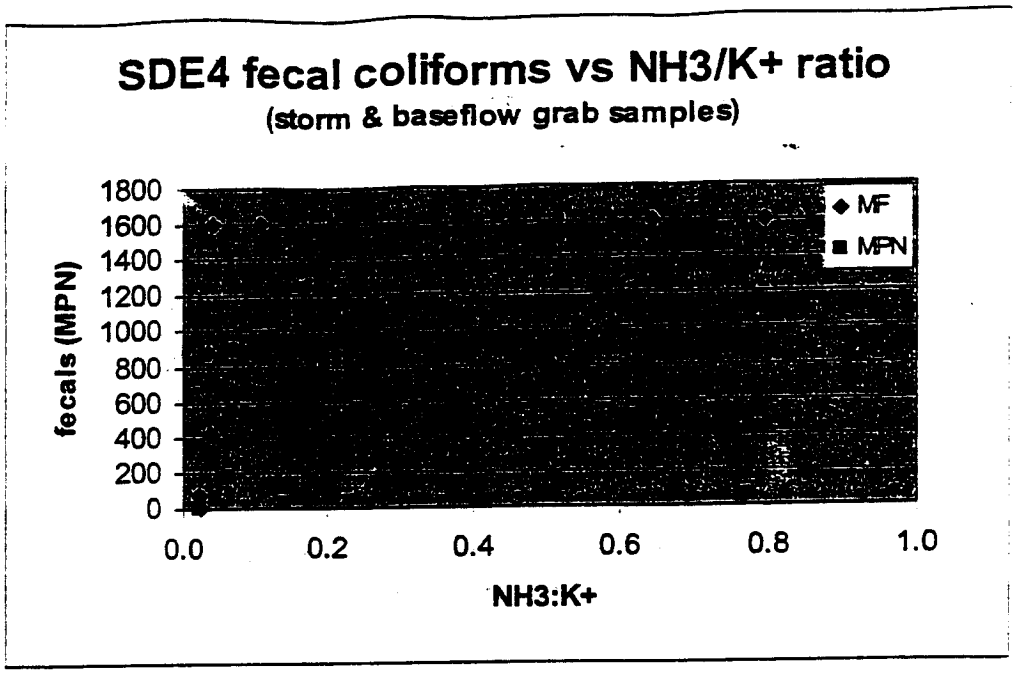

Figure 12 SDE4 Source Tracing

Observations in SDS1 discharges

Several SDS1 grab samples and observations in 1999 indicated potential contamination. Foam was observed below the outfall during initial runoff from storms sampled on March 12 and June 20. Surfactants and phosphates were analyzed and may indicate contaminants in these samples. Table 9 below summarizes sampling results. Potential sources and areas to investigate include several small area drain inlets under the South Satellite overhang.

Table 9 SDS1 Samples (mg/l)

SDS1 031299	12-Mar-99				123	0.012	3.92	48.7			quarterly deice grab sample
SDS1 062099 #1	20-Jun-99	6.7	>1600	1.56			0.470	<4.0	0.145	0.075	Foam observed below outfall
SDS1 062099 # 2	20-Jun-99						0.689	<4.0	0.175	0.085	Foam observed below outfall

Inappropriate connection in SDN1

During the source tracing study conducted relative to the WET testing results, the Port also found an inappropriate connection in the SDN1 subbasin. A slot drain that drains several loading docks in the Avia building number 2 connects to manhole SDN1-19 via a 6" PVC pipe. Instead, this drain should be connected to the nearby IWS drain system. The Port will investigate re-routing this drainage.

4.8 Accomplishments

In the past year, monitoring activities led to several noteworthy accomplishments, some of which have been discussed above. In addition to completing the required routine sampling work, these actions were:

1. Identification of a drainage connection from a loading dock drain to the SDN1 storm drainage system.
2. Identification of a clogged IWS drain inlet that may overflow to the SDS3 storm drainage system.
3. Addition of a berm to prevent the limited water tracked-out of the rental carwash from entering the SDE4 storm drainage system.
4. Identification of the likely source of toxicity exhibited in SDN1 WET tests.
5. Completion of the WET testing characterization requirements.
6. Covering of three SDS3 drain inlets with solid lids, eliminating a limited area of ramp drainage near the C- Concourse.

4.9 Outfall Inspections

Appendix G summarizes the visual observations made at outfalls during the past year. The number of instances exceeds inspection requirements of the Stormwater Pollution Prevention Plan (SWPPP, POS 1998f.) The annual dry-weather inspection was conducted during August 1998. Visual observations and samples taken did not indicate problems associated with baseflows or other dry-weather flow.

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5 CONCLUSIONS

Storm sample results from the past year continue to support the conclusions reached in previous reports that STIA stormwater compares favorably to other comparable regional data, even with instream stormwater data. Constituents and concentrations of concern at STIA have been generally associated with specific activities or locations, and usually not routine runoff. The Port has alleviated many concerns by implementing various BMPs and data generally indicate that these BMPs have been effective. Still, the Port continues to investigate other issues to resolve problems indicated by the data.

In addition to completing all required routine stormwater sampling, the Port accomplished the following actions in the past year.

1. Discovered an inappropriate drainage connection from a loading dock drain to the SDN1 storm drainage system.
2. Identified a clogged IWS drain inlet that may overflow to the SDS3 storm drainage system.
3. Added a berm to prevent the limited water tracked-out of the rental carwash from entering the SDE4 storm drainage system.
4. Identified the likely source of toxicity exhibited in SDN1 WET tests.
5. Completed the WET testing characterization requirements.
6. Eliminated a limited area of ramp drainage to SDS3 near the C- Concourse by covering three drain inlets with solid lids.

Below are suggestions for further work indicated by the past year's monitoring efforts:

1. petition Ecology to eliminate sampling at outfalls SDS1 (003) and SDN2 (007) as allowed for in permit condition S2.B.4. The Port has satisfied the minimum number of sampling events at these two outfalls. The data show that BMPs have been effective,
2. continue to investigate possible sources of fecal coliforms in SDE4 discharges,
3. investigate the IWS drain inlet drainage backup at structure IWS-563 near C-Concourse gate C8. Overflow from this inlet appears to drain to the next IWS slot drain, but may escape to the nearby and contiguous SDS3 subbasin,
4. investigate potential sources of stormwater contamination in subbasin SDS1, and
5. investigate alternatives for connection of a loading dock drain that connects to the SDN1 system.

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APPENDICES

APPENDIX A STORM EVENT HYDROLOGIC AND HYDRAULIC DATA

Summary of Storms Sampled July 1998-June 1999

stormdate	depth, in.	dur, hr	max int, in/hr	24hrant, in.	48hrant, in.	dryant, hr	dryant, days	load factor	event type*	comment
6/24/99	1.12	24	0.35	0.03	0.08	10	0.4	3.5	NPDES	grabs only due to more rain than forecast
6/20/99	0.21	38	0.03	0	0	48	2.0	1.4	NPDES	
5/11/99	0.14	10	0.08	0	0	50	2.1	4.0	*non-storm*	WET & source trace at SDN1 only
5/7/99	0.25	22	0.06	0	0	79	3.3	4.7	NPDES	annual samples
3/27/99	0.24	9	0.07	0	0.09	26	1.1	1.8	NPDES	
3/24/99	0.28	19	0.08	0	0.15	40	1.7	3.2	NPDES	WET @ SDE4, SDN1 & monthlies
3/12/99	0.83	23	0.07	0	0	71	3.0	5.0	NPDES	
3/8/99	0.28	15	0.05	0	0	96	4.0	4.8	NPDES	
2/22/99	0.56	34	0.14	0.02	0.04	9	0.4	1.3	NPDES	WET @ SDE4
2/18/99	0.6	32	0.06	0.01	0.35	20	0.8	1.2	NPDES	
2/15/99	0.45	28	0.08	0	0	59	2.5	4.7	NPDES	
2/3/99	0.28	19	0.07	0	0.61	27	1.1	1.9	NPDES	
1/28/99	1.16	33	0.1	0	0.02	33	1.4	3.3	NPDES	SDN2 bypass (maintenance related)
1/20/99	0.42	28	0.09	0.01	0.95	22	0.9	2.0	NPDES	WET @ SDE4
1/13/99	1.07	22	0.16	0	0	85	3.5	13.6	NPDES	WET @ SDS3, SDN1, SDN4 + WER (SDS3)
1/9/99	0.27	21	0.05	0	0	54	2.3	2.7	NPDES	
12/24/98	1.19	39	0.16	0	0	153	6.4	24.5	NPDES	Snow & runway deicing event
12/17/98	0.11	4	0.03	0	0.02	33	1.4	1.0	*non-storm*	
12/10/98	0.14	4	0.03	0	0	49	2.0	1.5	*non-storm*	
11/25/98	3.45	52	0.32	0.28	0.31	8	0.3	2.6	*non-storm*	pump station bypass to SDN2
11/19/98	2.34	66	0.18	0	0	73	3	13	NPDES	
11/11/98	0.98	62	0.15	0	0.05	31	1.3	4.7	NPDES	WET @ SDS3, SDN1, SDN4
11/3/98	1.62	39	0.98	0	0.08	35	1.5	6.6	NPDES	very intense storm, 0.48 & 0.49 in/hr consec.
10/27/98	0.64	9	0.19	0	0	72	3	14	NPDES	
10/3/98	0.4	3	0.22	0	0.07	36	1.5	7.9	NPDES	short, intense storm
9/24/98	0.47	23	0.26	0	0	118	6.2	38.5	NPDES	
9/18/98	0.19	20	0.16	0	0	456	19	73	*non-storm*	thunderstorm
8/16/98	0.31	10	0.25	0	0	792	33	198	NPDES	thunderstorm
7/14/98	0.13	16	0.04	0	0	264	11	11	*non-storm*	
count	29	29	29	29	29	29	29	29		
median	0.42	22	0.09	0	0	49	2.0	4.7		
average	0.69	25	0.14	0.01	0.10	99	4.1	16.0		

load factor = maxint (in/hr)*dryant (hrs)

* see criteria in Procedure Manual for Stormwater Monitoring (POS 1999a)

"dur" is rainfall duration in hours

"24hrant" and "48hrant" is the total rainfall in the 24 and 48 hours preceding the event respectively

"dryant" is the duration of the antecedent dry period to the last measurable (0.01") rainfall

1998-99 Rainfall at Sea-Tac Airport

1998-99 Daily Rainfall

day	Jul-98	Aug-98	Sep-98	Oct-98	Nov-98	Dec-98	Jan-99	Feb-99	Mar-99	Apr-99	May-99	Jun-99
1	0	0	0	0.08	0.08	0.69	0	0.41	0.32	0	0.05	0
2	0.02	0	0	0.01	0.05	0.2	0	0.27	0.15	0.14	0.2	0
3	0.09	0	0	**0.35**	**0.16**	0	0	**0.27**	0.2	0.12	0.18	0
4	0.06	0	0	0	1.5	0.01	0	0.04	0.09	0.05	0	0.06
5	0	0	0	0	0.08	0.1	0	0.12	0	0.01	0	
6	0	0	0	0	0	0	0.12	**0.48**	0	0	0	0
7	0	0	0	0	0	**0.34**	**0.01**	0.52	0	**0.1**	**0.19**	0.08
8	0	0	0	**0.54**	**0.02**	**0.02**	0	**0.26**	**0.27**	**0.04**	0	0.01
9	0	0	0	0.1	0.06	0	**0.14**	0.01	0	0	0.09	
10	0.02	0	0	0.09	0.03	[redacted]	**0.16**	0.01	0	0.08	0	0
11	0.04	0	0	0	**0.22**	0.91	0	0	0	0	[redacted]	0
12	0	0	0	0.7	0.68	0.96	0.01	0	**0.67**	0.02	0.2	0
13	0	0	0	0.28	0.31	1.02	**0.26**	0.26	0.56	0	0.04	0
14	[redacted]	0	0	0.41	0.45	0	0.92	0	0.21	0	0	0
15	0.11	**0.14**	0	0	0.22	0.02	**0.25**	0.03	0.06	0	0	0
16	0	**0.20**	0	0	0.08	0	0.16	**0.3**	0	0	0.06	
17	0	0	0.02	0.14	0	[redacted]	0.81	0.07	0.02	0	0.65	0
18	0	0	[redacted]	0	0	0	0.65	**0.54**	0.02	0	0.04	0.02
19	0	0	0	0	**0.5**	0	0.45	0.09	0	0.21	0	0
20	0	0	0	0	**1.3**	0	**0.18**	0.02	0	0.16	0	0.19
21	0	0	0	0	0.78	0	0.19	0.03	0.1	0	0	0.08
22	0	0	0	0	0.15	0	0.44	**0.44**	0.15	0	0	0.05
23	0	0.01	0	0	0.22	0	0.18	0.61	0	0	0	**1.27**
24	0	0	**0.10**	0.03	0.49	**0.43**	0	0.74	**0.27**	0	0.11	0.02
25	0	0	**0.46**	0.01	[redacted]	1.06	0	0.01	0.08	0.18	0	0
26	0	0	0	0	0.58	0.07	0.02	m	0.02	0.01	0	0
27	0	0	0	**0.55**	0.04	1.53	**0.38**	0.85	0.04	0.27	0	0
28	0	0	0	0	0.05	0.11	**0.78**	0.47	**0.26**	0	0	0.04
29	0	0	0	0	0.35	0.97	0.16		0.17	0	0	0.02
30	0.01	0	0	0	0.25	0	0.2		0	0.09	0	0.01
31	0	0		0.19		0.18	0.37		0			

daily max	0.11	0.2	0.46	0.7	2.96	1.53	0.92	0.85	0.67	0.27	0.65	1.27
total	0.4	0.35	0.72	3.48	***11.61***	**8.89**	6.84	6.85	3.66	1.48	2.10	1.85
% avg*	27%	46%	63%	185%	359%	152%	115%	127%	92%	42%	90%	109%
ytd	0.4	0.75	1.47	4.95	16.56	25.45	32.29	39.14	42.8	44.28	46.38	48.23
%avg*	27%	33%	43%	94%	195%	177%	159%	152%	144%	133%	130%	129%
avg*	1.5	0.76	1.14	1.88	3.23	5.83	5.97	5.38	3.99	3.54	2.33	1.7
avg cum*	1.5	2.26	3.4	5.28	8.51	14.34	20.31	25.69	29.68	33.22	35.55	37.25
# "storms"	0	1	1	4	4	1	6	6	4	2	2	1
# sampled	**0**	**1**	**1**	**2**	**3**	**1**	**4**	**4**	**4**	**0**	**1**	**1**
month max*	3.82	2.39	4.59	5.95	8.95	10.71	11.85	12.92	9.11	8.4	6.53	4.76
month min*	0.13	T	0.01	T	0.31	0.74	1.37	0.58	0.35	0.57	0.33	0.12

*Source: National Weather Service (http://161.55.224.1/smith/climate/search.html)

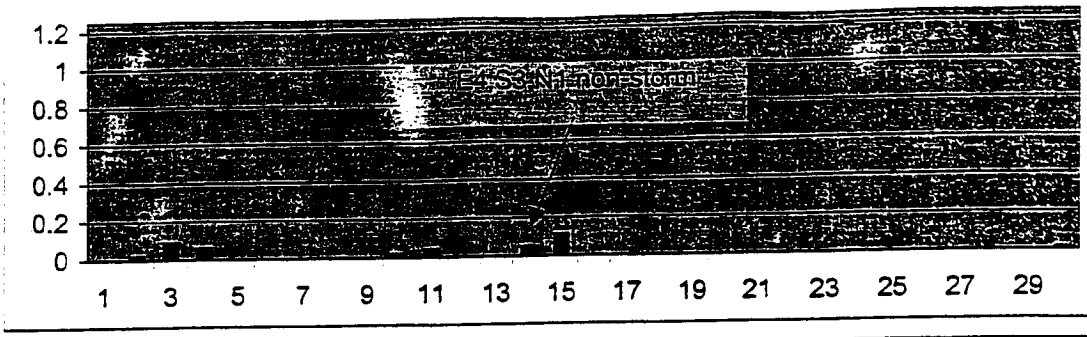
32 possible "storm" events

22 Sampled events in bold in table. Totals are for 24-hr period and not necessarily an entire "event"

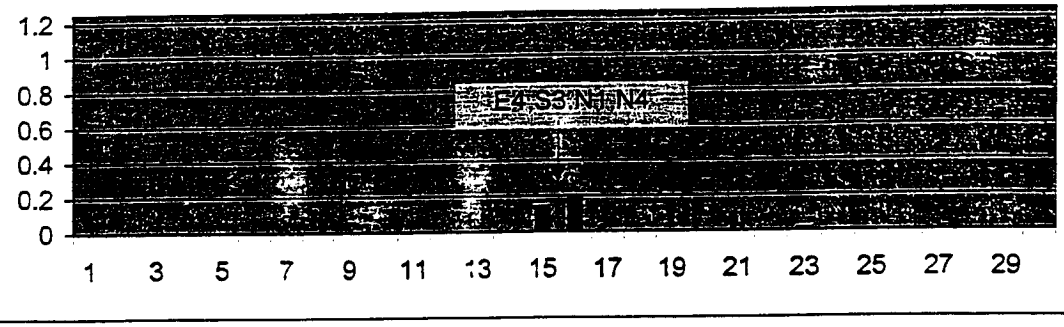
6 [redacted]

Nov 98 total is new monthly max record (previous 10.71)

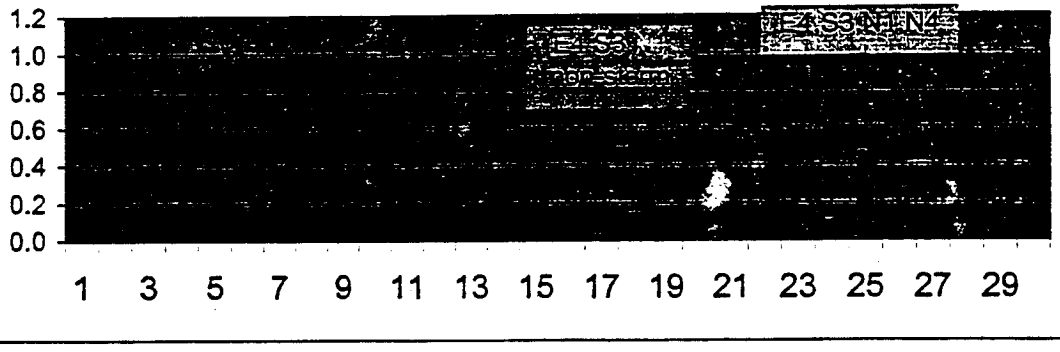
Jul-98



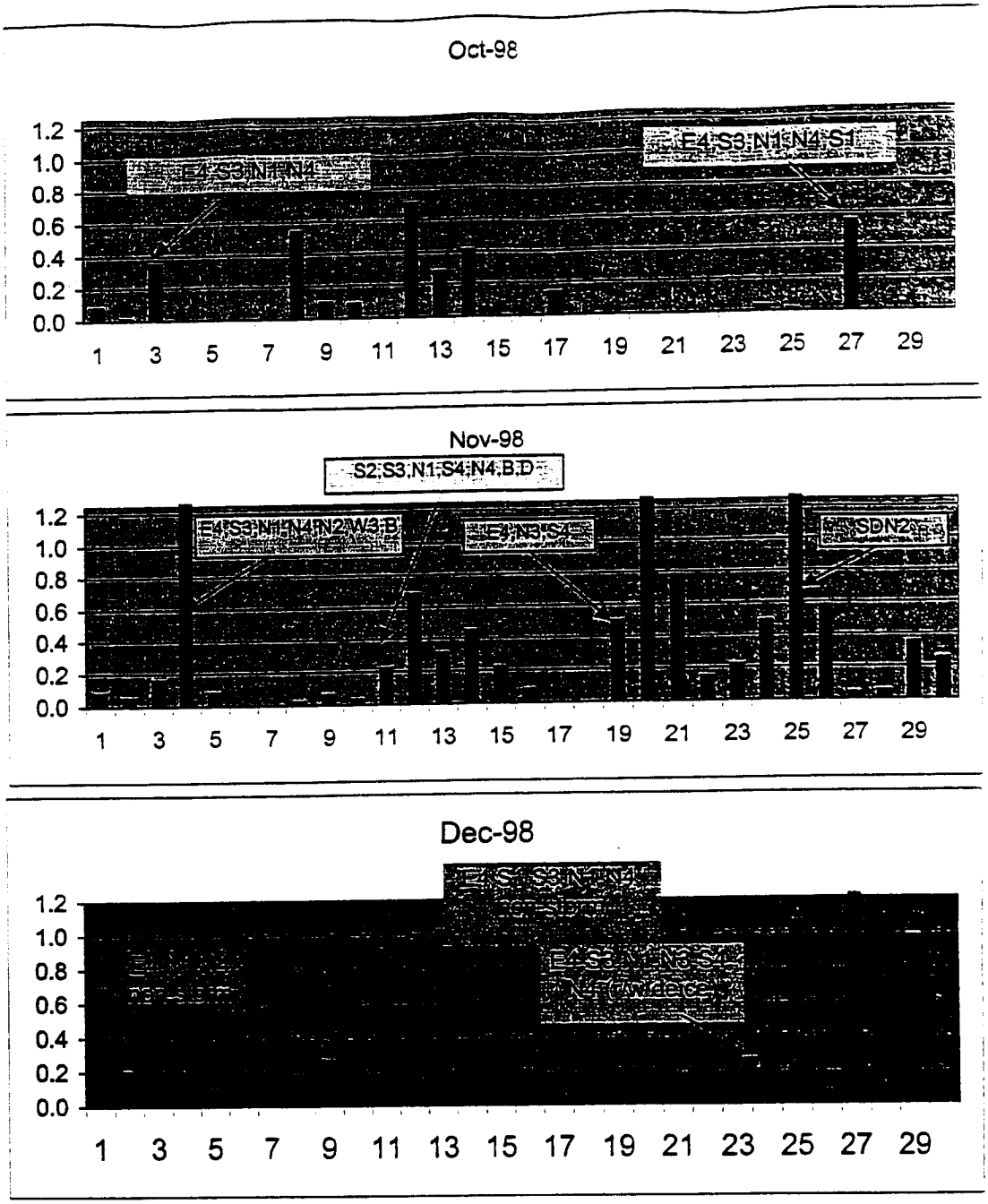
Aug-98



Sep-98

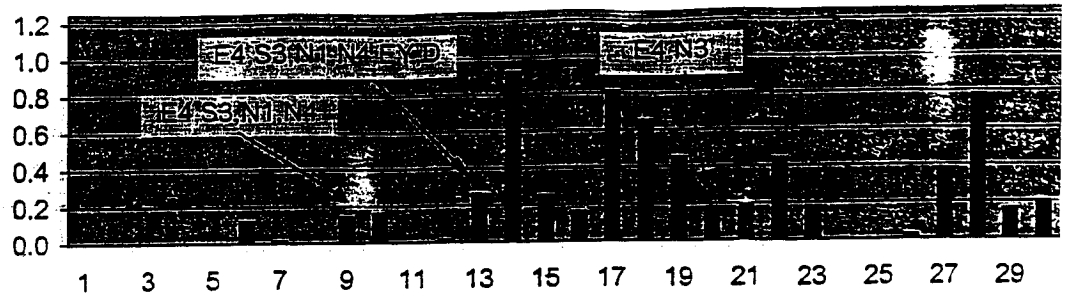


1998-99 Rainfall at Sea-Tac Airport

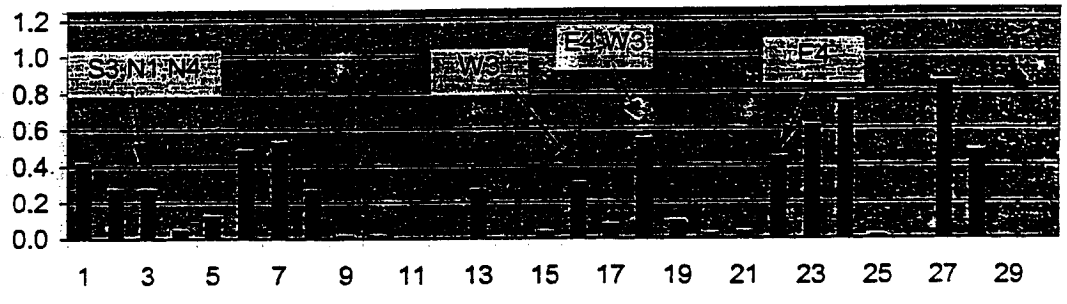


AR 042921

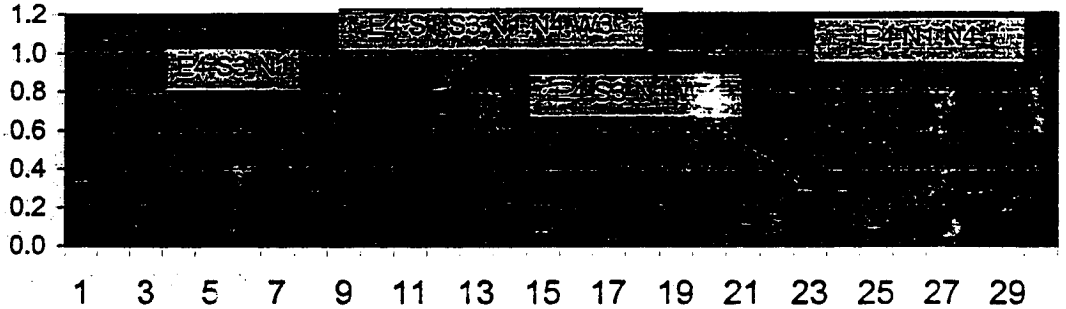
Jan-99



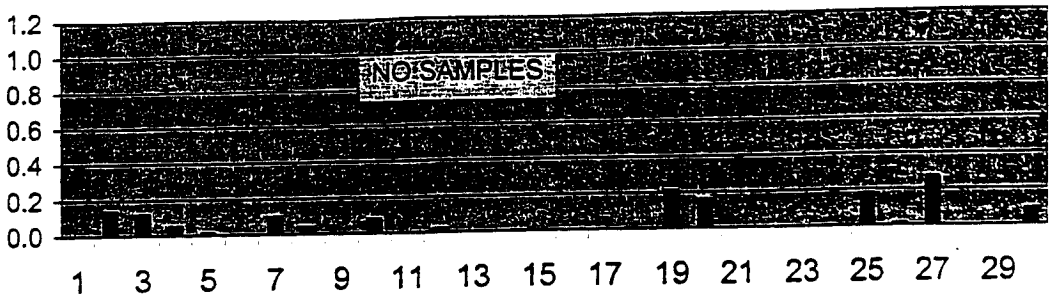
Feb-99



Mar-99

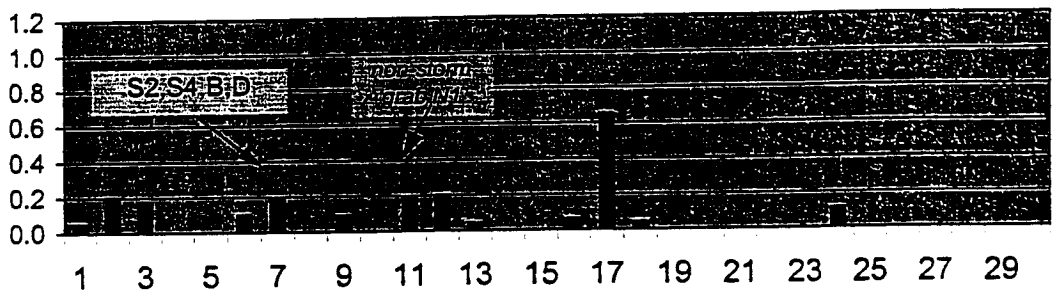


Apr-99



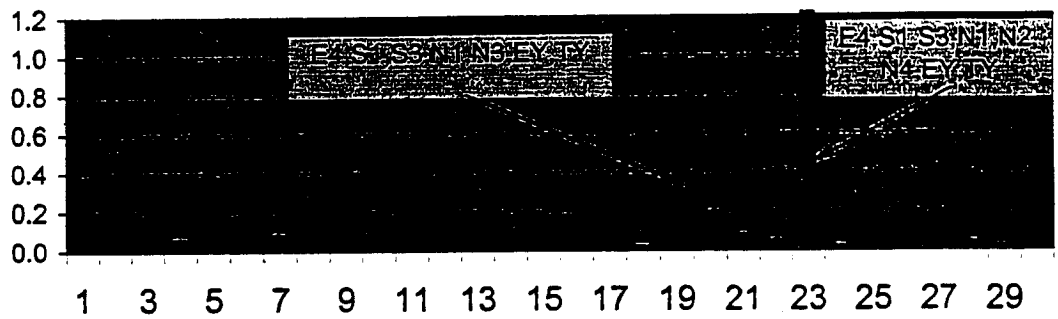
May-99

Note: New NPDES permit in effect 3/1/98: requires monthly samples at 4 outfalls



Jun-99

Note: New NPDES permit in effect 3/1/98: requires monthly samples at 4 outfalls



Estimated Runoff Volumes for Storm Events Monitored July 1998 through June 1999

		Runoff Volumes for Sub-Basins Tributary to Outfall													
6/24/99	1.12	3,121,000	98,000		6,902,000	376,000	10,300				380,000	35,000	22,000		
6/20/99	0.21	141,000	5,000		305,000	17,000		27,000				7,000	5,000		
5/11/99	0.14					5,000									
5/7/99	0.25			27,000					51,000					90,000	72,000
3/27/99	0.24	204,000				25,000					82,000				
3/24/99	0.28	306,000			664,000	37,000				62,000					
3/12/99	0.83	2,218,000	68,000		4,707,000	268,000				182,000	282,000				
3/8/99	0.28	306,000			664,000	37,000									
2/22/99	0.56	1,438,000													
2/18/99	0.60	1,550,000								132,000					
2/15/99	0.45									99,000					
2/3/99	0.28				664,000	37,000					95,000		6,000		
1/28/99	1.16						6,150								
1/20/99	0.42	816,000						154,000							
1/13/99	1.07				6,503,000	357,000					363,000	34,000			307,000
1/9/99	0.27	279,000			605,000	34,000					92,000				
12/24/98	1.19	3,349,000			7,474,000	403,000		827,000	962,000		404,000				
12/17/98	0.11	7,000	1,000		15,000	1,000					38,000				
12/10/98	0.14	34,000				5,000					48,000				
11/25/98	3.45						42,300								
11/19/98	2.34	7,640,000						2,854,000	2,724,000						
11/11/98	0.98			106,000	5,807,000	323,000			728,000		333,000			352,000	281,000
11/3/98	1.62	4,832,000			11,354,000	579,000	119,510			355,000	550,000			582,000	
10/27/98	0.64	1,663,000	50,000		3,424,000	202,000					218,000				
10/3/98	0.40	729,000			1,581,000	88,000					136,000				
9/24/98	0.47	1,056,000			2,291,000	128,000					160,000				
9/18/98	0.19	104,000			226,000	13,000									
8/16/98	0.31	396,000			858,000	48,000					106,000				
7/14/98	0.13	24,000			52,000	3,000									
Volumes estimated for each outfall sampled in a particular event. Samples may include grab or composite or both types.															
Rainfall data from National Weather Service and/or Port of Seattle rain gage at Sea-Tac Airport															
Runoff volumes based upon basin-specific estimation models															
SDN2 volumes gaged by flowmeter during pump station bypass sampling events															
Note: equations built into embedded functions above apply for rainfall from 0.1" to 2.0"															
Basin Areas, Ac		149	11	13	462	14	0	70	63	14	30	1.5	0.8	50	34
max runoff, gal/in		4,045,708	290,531	358,412	12,544,409	366,557	0	1,900,668	1,721,462	380,134	820,002	40,186	21,179	1,346,759	920,466
"Ai", impervious area, ac		97	9.2	1	224	10.2	0	27	20.8	7	8	1	1	1	3.2
"Ap", pervious area, ac		52	1.5	12.2	238	3.3	0	43	42.6	7	23	0	0	48	30.7
Cr (=0.90(Ai) + 0.25(Ap)		0.67	0.81	0.30	0.57	0.74		0.50	0.46	0.58	0.41	0.78	0.90	0.27	0.31
Cr est runoff, gal/in		2,723,386	235,004	107,252	7,089,492	271,660		951,692	797,466	218,577	339,133	31,225	19,061	358,955	286,594

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Estimated Peak Runoff Rates for Storm Events Monitored July 1998 through June 199

Storm Event Date	Rainfall (in)	Peak Runoff Rates for Sea Tac Airport Sub-Basins (gpm)												
6/24/99	0.35	15880	1370	630	41300	1580	5550	4650	1270	1980	182	111	2090	1670
6/20/99	0.03	1360	120	50	3500	140	480	400	110	170	16	10	180	140
5/11/99	0.08	3630	310	140	9400	360	1270	1060	290	450	42	25	480	380
5/7/99	0.06	2720	230	110	7100	270	950	800	220	340	31	19	360	290
3/27/99	0.07	3180	270	130	8300	320	1110	930	250	400	36	22	420	330
3/24/99	0.08	3630	310	140	9400	360	1270	1060	290	450	42	25	480	380
3/12/99	0.07	3180	270	130	8300	320	1110	930	250	400	36	22	420	330
3/8/99	0.05	2270	200	90	5900	230	790	660	180	280	26	16	300	240
2/22/99	0.14	6350	550	250	16500	630	2220	1860	510	790	73	45	840	670
2/18/99	0.06	2720	230	110	7100	270	950	800	220	340	31	19	360	290
2/15/99	0.08	3630	310	140	9400	360	1270	1060	290	450	42	25	480	380
2/3/99	0.07	3180	270	130	8300	320	1110	930	250	400	36	22	420	330
1/28/99	0.10	4540	390	180	11800	450	1590	1330	360	570	52	32	600	480
1/20/99	0.09	4080	350	160	10600	410	1430	1200	330	510	47	29	540	430
1/13/99	0.16	7260	630	290	18900	720	2540	2130	580	900	83	51	960	760
1/9/99	0.05	2270	200	90	5900	230	790	660	180	280	26	16	300	240
12/24/98	0.16	7260	630	290	18900	720	2540	2130	580	900	83	51	960	760
12/17/98	0.03	1360	120	50	3500	140	480	400	110	170	16	10	180	140
12/10/98	0.03	1360	120	50	3500	140	480	400	110	170	16	10	180	140
11/25/98	0.32	14520	1250	570	37800	1450	5070	4250	1170	1810	167	102	1910	1530
11/19/98	0.18	8170	700	320	21300	810	2850	2390	660	1020	94	57	1080	860
11/11/98	0.15	6810	590	270	17700	680	2380	1990	550	850	78	48	900	720
11/3/98	0.48	21780	1880	860	56700	2170	7610	6380	1750	2710	250	152	2870	2290
10/27/98	0.19	8620	740	340	22400	860	3010	2520	690	1070	99	60	1140	910
10/3/98	0.22	9980	860	390	26000	1000	3490	2920	800	1240	115	70	1320	1050
9/24/98	0.26	11800	1020	460	30700	1180	4120	3450	950	1470	135	83	1550	1240
9/18/98	0.16	7260	630	290	18900	720	2540	2130	580	900	83	51	960	760
8/16/98	0.25	11340	980	450	29500	1130	3960	3320	910	1410	130	79	1500	1190
7/14/98	0.04	1820	160	70	4700	180	630	530	150	230	21	13	240	190
Rainfall data from Port of Seattle and/or National Weather Service rain gage at Sea Tac Airport														
Peak runoff rates based upon "rational method": Q=CIA.														
"A", Basin Areas, ac		149	11	13	462	14	70	63	14	30	1.5	0.8	50	34
"I", Time of Concentration, m		20	40	60	80	10	55	50	40	50	5	5	80	80
"AI", impervious area, ac		97	9.2	1	224	10.2	27	20.8	7	8	1.2	0.8	1	3.2
"Ap", pervious area, ac		52	1.5	12.2	238	3.3	43	42.6	7	23	0	0	48	30.7
Cr (=0.90(AI) + 0.25(Ap))		0.67	0.81	0.30	0.57	0.74	0.50	0.46	0.58	0.41	0.78	0.90	0.27	0.31

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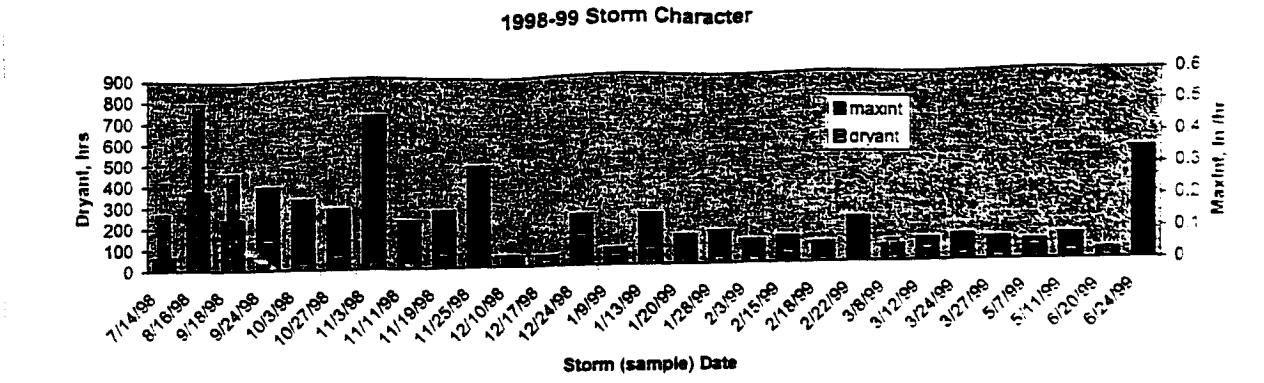
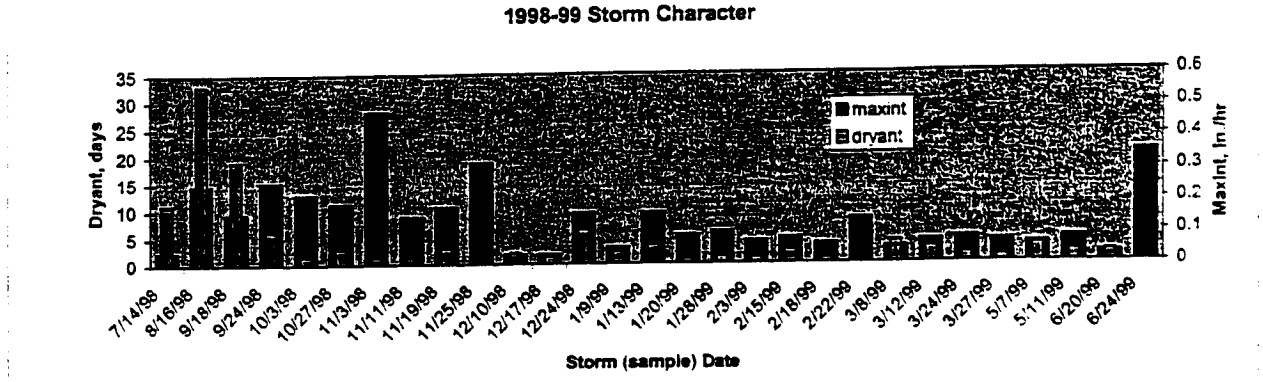
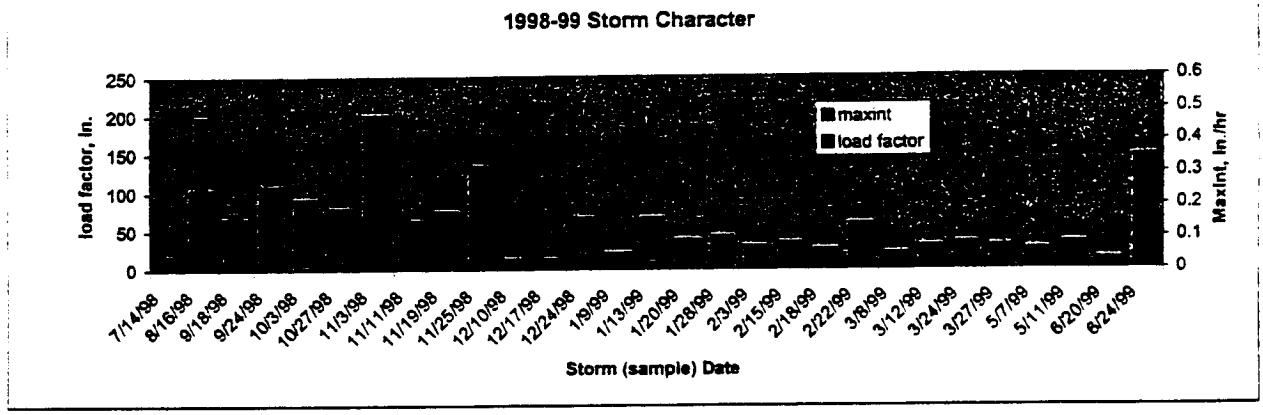

1998-99 Storm Character
Dryant, hrs
MaxInt, In./hr
maxint
dryant
Storm (sample) Date


1998-99 Storm Character
Dryant, days
MaxInt, In./hr
maxint
dryant
Storm (sample) Date


1998-99 Storm Character
load factor, in.
MaxInt, In./hr
maxint
load factor
Storm (sample) Date

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APPENDIX B TABULAR NPDES SAMPLE DATA SUMMARIES

All Composite Sample Data

order	outfall	POS ID	reported	month	stormdate	Storm Characteristics: depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	purpose	type	ground delce?	TSS	concentration, mgl: Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
1	SDE4	SDE4 111594	1995	11	11/11/94	0.26	14				46	NPDES		no	58	46	7	2.5	2.5	5	0.021	0.006	0.195	
2	SDE4	SDE4 111994	1995	11	11/19/94	0.42	24			0.06	52	NPDES		no			8	2.5	2.5	5				
3	SDE4	SDE4 010795	1995	1	1/7/95	0.21	82			0	282	NPDES		no	16	27	26				0.031	0.014	0.337	
4	SDE4	SDE4 030695	1995	3	3/6/95	2.16	114			0	66	other		no							0.013	0.004	0.132	
5	SDE4	SDE4 041095	1995	4	4/10/95	0.29	16			0	66	NPDES		no	16	19	6	2.5	2.5	5	0.029	0.011	0.263	
6	SDE4	SDE4 072695	1995	7	7/26/95	0.41	36			0		NPDES		no	41	30	29				0.121	0.023	0.779	Zn is outlier
7	SDE4	SDE4 081795	1995	8	8/16/95	1.34	12			0.01		NPDES		no				2.5	7.9	7.9				
8	SDE4	SDE4 102695	1995	10	10/26/95	0.26	8			0.01		NPDES		no	14	27	27				0.033	0.021	0.204	
9	SDE4	SDE4 020396	1996	2	2/3/96	1.9	8					NPDES		yes	210	190	74	14	12	26	0.054	0.184	0.279	
10	SDE4	SDE4 032296	1996	3	3/22/96	0.21				0		SlpAg		no	44	19	12	2.5	2.5	5	0.057	0.026	0.361	
11	SDE4	SDE4 041696	1996	4	4/16/96	0.49	16			0.09		NPDES		no	53	11	8.64	2.5	2.5	5	0.078	0.006	0.320	
12	SDE4	SDE4 051796	1996	5	5/17/96	0.24	15			0		SES		no							0.027	0.011	0.110	has metals results only
13	SDE4	SDE4 062296	1996	6	6/21/96	0.31	30			0.02		SES		no	6.8		22				0.045	0.018	0.243	
14	SDE4	SDE4 090396	1996	9	9/3/96	0.29	12			0	76	NPDES		no	40	18	7.06	12.5	12.5	25	0.063	0.026	0.136	
15	SDE4	SDE4 122196	1996	12	12/19/96	0.36	37			0	103	NPDES		no	42	24	11.7	2.5	2.5	5	0.030	0.029	0.171	
16	SDE4	SDE4 011697	1997	1	1/16/97	1.21	23			0	164	NPDES		no	140	1.5	12.5	2.5	2.5	5	0.042	0.076	0.190	
17	SDE4	SDE4 012797	1997	1	1/27/97	0.41	26			0	109	SlpAg		no	49	20	12.5	24.7	49.4	49.4	0.031	0.049	0.148	
18	SDE4	SDE4 030697	1997	3	3/5/97	0.39	20			0.24	42	NPDES		no	30	14	4.36	2.5	2.5	5	0.023	0.023	0.098	
19	SDE4	SDE4 090397	1997	9	9/3/97	0.26	16			0	76	NPDES	EMC	no	79	19	8.24	2.5	2.5	5	0.036	0.033	0.122	
20	SDE4	SDE4 102697	1997	10	10/26/97	0.47	10.8			0.06	26	NPDES	EMC	no	34	41	4.02	2.5	2.5	5	0.206	0.016	0.106	
21	SDE4	SDE4 121697	1997	12	12/16/97	1	33			0	87	NPDES	SMC	no	86	30	12.2	2.5	2.5	5	0.024	0.031	0.182	
22	SDE4	SDE4 030198	1998	3	3/1/98	0.98	86			0.07	6	NPDES	SMC	no	263	76	6.4	2.5	2.5	5	0.003	0.006	0.106	
																								taken for aircraft deicing only, GRAB FAILED (No Liquid Detected)
23	SDE4	SDE4 030998	1998	3	3/9/98	0.86	27			0	132	NPDES	SMC	no										
24	SDE4	SDE4 042398	1998	4	4/23/98	0.46	20			0	264	NPDES	SMC	no	64	27	20.8	2.5	2.5	5	0.076	0.042	0.312	
25	SDE4	SDE4 051498	1998	5	5/14/98	0.21	8			0.01	126	NPDES	EMC	no	60	21	11.1	2.5	2.5	5	0.062	0.038	0.299	
26	SDE4	SDE4 062498	1998	6	6/24/98	0.43	4			0	286	NPDES	EMC	no	33	26	4.06	2.5	2.5	5	0.024	0.013	0.096	
27	SDE4	SDE4 092598	1998	9	9/24/98	0.47	23	0.26	0	0	148	NPDES	EMC	no	64	78	22.2	2.5	2.5	5	0.037	0.029	0.094	
28	SDE4	SDE4 100398	1998	10	10/3/98	0.4	3	0.22	0	0.07	36	NPDES	EMC	no	67	20	8.46	2.5	2.5	5	0.048	0.030	0.276	
29	SDE4	SDE4 102798	1998	10	10/27/98	0.64	9	0.19	0	0	72	NPDES	SMC	no	46	28	4.76	2.5	2.5	5	0.008	0.001	0.041	
30	SDE4	SDE4 111998	1998	11	11/19/98	2.34	66	0.18	0	0	73	NPDES	SMC	no	66	62	6.8	2.5	2.5	5	0.032	0.031	0.163	concurrent WET sample
31	SDE4	SDE4 122498	1998	12	12/24/98	1.19	39	0.16	0	0	153	NPDES	SMC	yes	280	145	336	13.4	30.9	44.3	0.005	0.006	0.161	
32	SDE4	SDE4 012299	1999	1	1/20/99	0.42	26	0.09	0.01	0.05	22	NPDES	EMC	no	92	62	8.82	2.5	2.5	5	0.022	0.013	0.166	concurrent WET sample
33	SDE4	SDE4 021899	1999	2	2/18/99	0.6	32	0.06	0.01	0.35	20	NPDES	SMC	no	131	64	4.26	2.5	2.5	5	0.003	0.001	0.003	
34	SDE4	SDE4 022399	1999	2	2/22/99	0.66	34	0.14	0.02	0.04	9	NPDES	EMC	no	63	44	5.52	2.5	2.5	5	0.016	0.022	0.100	concurrent WET sample
35	SDE4	SDE4 030899	1999	3	3/8/99	0.28	16	0.06	0	0	96	NPDES	EMC	no	49	31	9.72	4.76	6.78	11.5	0.018	0.018	0.118	
36	SDE4	SDE4 031399	1999	3	3/12/99	0.83	23	0.07	0	0	71	NPDES	EMC	no	82	67	8.16				0.018	0.023	0.113	
37	SDE4	SDE4 032499	1999	3	3/24/99	0.28	19	0.06	0	0.16	40	NPDES	EMC	no	41	32	5.66				0.020	0.017	0.134	concurrent WET sample
38	SDE4	SDE4 032699	1999	3	3/27/99	0.24	9	0.07	0	0.09	28	NPDES	EMC	no	9.6	7.9	2.5	2.5	2.5	5	0.012	0.001	0.106	
39	SDS1	SDS1 101994	1994	10	10/19/94	0.2	32				120	NPDES		no	2.5	11	12				0.084	0.006	0.234	
40	SDS1	SDS1 111994	1994	11	11/19/94	0.42	24			0.06	52	NPDES		no			48	14	2.5	16				
41	SDS1	SDS1 021695	1995	2	2/16/95	1.1	56			0	66	NPDES		yes	6.7	40	62.2	260	16	276	0.016	0.006	0.126	
42	SDS1	SDS1 061195	1995	6	6/11/95	0.2	8			0.12		NPDES		no	34	25	2				0.119	0.045	0.304	
43	SDS1	SDS1 060495	1995	6	6/4/95	0.7	28			0	384	NPDES		no	14	36	16				0.115	0.017	0.290	
44	SDS1	SDS1 080795	1995	8	8/6/95	0.4	8			0		NPDES		no	28	69	13				0.069	0.019	0.211	
45	SDS1	SDS1 101695	1995	10	10/16/95	0.35	12			0		NPDES		no	66	36	6				0.042	0.005	0.116	
46	SDS1	SDS1 011496	1996	1	1/13/96	0.37	20			0		NPDES		no	3.2	4	16	2.5	2.5	5	0.019	0.006	0.104	
47	SDS1	SDS1 041696	1996	4	4/16/96	0.49	16			0.09		NPDES		no	74	16	23.9	2.5	2.5	5	0.117	0.088	0.255	
48	SDS1	SDS1 042296	1996	4	4/22/96	2.83	8			0		SlpAg		no	17	6.3	9.28	2.5	2.5	5	0.012	0.006	0.062	
49	SDS1	SDS1 062296	1996	6	6/21/96	0.31	30			0.02		SES		no	7.6		29				0.035	0.010	0.106	
50	SDS1	SDS1 070496	1996	7	7/3/96	0.23	12			0		NPDES		no	17	6	11.2	2.5	2.5	5	0.038	0.013	0.166	
51	SDS1	SDS1 080296	1996	8	8/2/96	1.01	27			0	326	SlpAg		no	16	7.2	12.5				0.102	0.016	0.209	
52	SDS1	SDS1 120496	1996	12	12/4/96	0.82	7.5			0.16	44	NPDES		no	22	21	40.5	2.5	247	250	0.028	0.001	0.096	
53	SDS1	SDS1 011697	1997	1	1/16/97	1.21	23			0	154	NPDES		no	97	17	70	2.5	33.4	33.4	0.041	0.027	0.112	
54	SDS1	SDS1 041397	1997	4	4/13/97	0.31	12			0.04		NPDES		no	49	27	21.2	2.5	2.5	5	0.071	0.041	0.263	
55	SDS1	SDS1 081797	1997	8	8/16/97	0.36	28			0	135	NPDES	EMC	no	25	16	4.6		1	2	0.038	0.027	0.119	
56	SDS1	SDS1 102697	1997	10	10/26/97	0.47	10.8			0.06	26	NPDES	EMC	no	12	46	7.18		1	2	0.030	0.011	0.162	
57	SDS1	SDS1 112097	1997	11	11/19/97	0.65	38			0.12	24	NPDES	EMC	no			9.14		1	2	0.013	0.004	0.082	
58	SDS1	SDS1 121697	1997	12	12/16/97	1	33			0	87	NPDES	EMC	no	18	6.2	8.44		1	2	0.013	0.003	0.080	
59	SDS1	SDS1 030998	1998	3	3/9/98	0.86	27			0	132	NPDES	SMC	no	6	12			6.1	7.1	0.022	0.005	0.075	FULFILLS ANNUAL SAMPLE ROMI
60	SDS1	SDS1 102798	1998	10	10/27/98	0.64	9	0.19	0	0	72	NPDES	SMC	no	11	13	6.3		1	2	0.028	0.001	0.116	

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All Composite Sample Data					Storm Characteristics									concentration, mg/l								
order	outfall	POS ID	reported	month	stormdate	depth, in.	dur, hr	maxint, in/hr	24hrint, in.	48hrint, in.	dryint, hr	purpose	type	ground delce?	TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
61	SDS2	SDS2 061096	1996	6	6/9/96	0.12	7.5			0	102	NPDES		no	16	16	11							
62	SDS2	SDS2 061196	1996	6	6/11/96	0.2	8			0.12		NPDES		no	7.8	6.1	4							
63	SDS2	SDS2 061696	1996	6	6/16/96	0.3	10			0	96	NPDES		no	16	6.2	6							
64	SDS2	SDS2 090596	1996	9	9/5/96							NPDES		no	62	28	6							
65	SDS2	SDS2 120496	1996	12	12/4/96	0.62	7.5			0.16	44	NPDES		no	37	29	[illegible]							
66	SDS2	SDS2 011797	1997	1	1/19/97	1.21	23			0	164	StipAg		no	16	19	[illegible]							
67	SDS2	SDS2 021197	1997	2	2/11/97	0.46	16			0	205	StipAg		no	32	39	[illegible]							LAST FOR STIP AG
68	SDS2	SDS2 111396	1996	11	11/11/96	0.98	62	0.16	0	0.06	31	NPDES	SMC	no	20	31	[illegible]				0.009	0.006	0.213	
69	SDS2	SDS2 060796	1996	6	6/6/96	0.26	22	0.06	0	0	76	NPDES	EMC	no	65	20					0.007	[illegible]	0.064	ANNUAL SAMPLE
70	SDS3	SDS3 090694	1994	9	9/6/94	0.66	22				93	NPDES		no				[illegible]	[illegible]	[illegible]				
71	SDS3	SDS3 091494	1994	9	9/13/94	0.16	9				118	NPDES		no	4.5	5.8	6				0.041	0.004	0.031	
72	SDS3	SDS3 101394	1994	10	10/13/94	0.32	14			0	480	NPDES		no	6.7	12	22				0.063	0.003	0.076	
73	SDS3	SDS3 111994	1994	11	11/19/94	0.42	24			0.05	52	NPDES		no	2.3	4.9	18	[illegible]	[illegible]	[illegible]	0.027	0.004	0.106	
74	SDS3	SDS3 010795	1995	1	1/7/95	0.21	52			0	252	NPDES		no	2	3.7	5				0.016	0.002	0.058	
75	SDS3	SDS3 030995	1995	3	3/9/95	2.16	114			0	66	other		no							0.005	0.001	0.029	
76	SDS3	SDS3 041295	1995	4	4/10/95	0.29	16			0	66	NPDES		no	[illegible]	1.9	4	[illegible]	[illegible]	[illegible]	0.041	0.002	0.044	
77	SDS3	SDS3 072695	1995	7	7/26/95	0.41	36			0		NPDES		no	20	16	8				0.067	0.005	0.069	
78	SDS3	SDS3 101695	1995	10	10/16/95	0.36	12			0		NPDES		no	2.2	3	5				0.032	0.002	0.037	
79	SDS3	SDS3 011496	1996	1	1/13/96	0.37	20			0		NPDES		no	1.6	2.1	6	[illegible]	[illegible]	[illegible]	0.029	0.002	0.064	
80	SDS3	SDS3 032296	1996	3	3/22/96	0.21				0		StipAg		no	4.1	2.9	8	[illegible]	[illegible]	[illegible]	0.026	0.002	0.054	
81	SDS3	SDS3 041696	1996	4	4/16/96	0.49	16			0.09		NPDES		no	20	6.6	0.36	[illegible]	[illegible]	[illegible]	0.046	0.012	0.074	
82	SDS3	SDS3 062296	1996	6	6/21/96	0.31	30			0.02		SES		no	2.6		14				0.036	0.001	0.036	
83	SDS3	SDS3 090296	1996	9	9/2/96	1.81	27			0	326	NPDES		no	16	13	9.6				0.115	0.009	0.097	
84	SDS3	SDS3 090396	1996	9	9/3/96	0.29	1.2			0	76	NPDES		no	33	16	11.4				0.060	0.016	0.062	
85	SDS3	SDS3 102196	1996	10	10/21/96	0.66	4.1			0	84	NPDES		no	4.8	4.2	[illegible]	[illegible]	[illegible]	[illegible]	0.026	0.003	0.022	
86	SDS3	SDS3 112396	1996	11	11/23/96	0.63	34.1			0	72	StipAg		yes	16	9.2	34.2	18	16	28	0.039	0.014	0.061	Cu data entry error corrected
87	SDS3	SDS3 011497	1997	1	1/19/97	1.21	23			0	164	NPDES		no	6.6	6.7	9.76	[illegible]	[illegible]	[illegible]	0.029	0.002	0.042	
88	SDS3	SDS3 030697	1997	3	3/6/97	0.39	20			0.24	42	NPDES		no	3.4	2.8	[illegible]	[illegible]	[illegible]	[illegible]	0.018	0.002	0.037	
89	SDS3	SDS3 090397	1997	9	9/3/97	0.26	16			0	76	NPDES	EMC	no	10	9	2.8				0.064	0.004	0.039	
90	SDS3	SDS3 102897	1997	10	10/28/97	0.47	10.8			0.06	26	NPDES	EMC	no	3.6	5.3	15.9				0.028	0.003	0.037	
91	SDS3	SDS3 013098	1998	1	1/2/98	0.2	14			0	107	NPDES	EMC	no	3.6	5.4	13.6	6.4	4.2	9.8	0.028	0.002	0.056	
92	SDS3	SDS3 030198	1998	3	3/1/98	0.98	66			0.07	8	NPDES	SMC	no	21	13	8.2	[illegible]	[illegible]	[illegible]	0.034	0.007	0.046	
93	SDS3	SDS3 030998	1998	3	3/8/98	0.86	27			0	132	NPDES	SMC	no	3.2	5.2	30.3	23	8.7	31.7	0.037	0.002	0.034	backup monthly sample in case 3/1/98 sample didn't qualify under new permit
94	SDS3	SDS3 042398	1998	4	4/23/98	0.48	20			0	264	NPDES	SMC	no	7.3	4	9.4	[illegible]	[illegible]	[illegible]	0.061	0.001	0.064	
95	SDS3	SDS3 061498	1998	6	6/14/98	0.21	8			0.01	126	NPDES	EMC	no	14	9.5	0.32	[illegible]	[illegible]	[illegible]	0.076	0.003	0.116	
96	SDS3	SDS3 081098	1998	8	8/10/98	0.26	10			0	266	NPDES	EMC	no	8	42	8.3		-		0.068	0.002	0.060	
97	SDS3	SDS3 081798	1998	8	8/16/98	0.31	10	0.26	0	0	782	NPDES	EMC	no	61	19	10.4				0.136	0.006	0.066	thunderstorm, 0.26 in/hr
98	SDS3	SDS3 092598	1998	9	9/24/98	0.47	23	0.26	0	0	148	NPDES	EMC	no	224	186	8.14	[illegible]	2.2	3.2	0.060	0.012	0.043	GLYCOLS MAY BE HIGH BIASED, DUPE WAS <MDL
99	SDS3	SDS3 100398	1998	10	10/3/98	0.4	3	0.22	0	0.07	36	NPDES	EMC	no	43	23	4.2	[illegible]	[illegible]	[illegible]	0.056	0.008	0.194	
100	SDS3	SDS3 102798	1998	10	10/27/98	0.64	9	0.18	0	0	72	NPDES	SMC	no	96	84	4.74	[illegible]	4.2	8.2	0.004	[illegible]	[illegible]	
101	SDS3	SDS3 110498	1998	11	11/3/98	1.62	39	0.48	0	0.06	36	NPDES	SMC	no	316	66	9.76	4.7	[illegible]	8.7	0.063	0.043	0.149	
102	SDS3	SDS3 111398	1998	11	11/11/98	0.66	62	0.16	0	0.06	31	NPDES	SMC	no	24	29	17.6	10.6	[illegible]	11.6	0.022	0.004	0.189	concurrent WET sample
103	SDS3	SDS3 122698	1998	12	12/24/98	1.19	39	0.18	0	0	163	NPDES	SMC	yes	18	16	460	31.6	81.6	113	0.047	0.002	0.134	
104	SDS3	SDS3 011699	1999	1	1/8/99	0.27	21	0.06	0	0	64	NPDES	EMC	no	3.7	6.2	21.9	8.4	14	22.4	0.019	[illegible]	0.030	
105	SDS3	SDS3 011499	1999	1	1/13/99	1.07	22	0.18	0	0	85	NPDES	EMC	no	22	16	7.84	[illegible]	10	11	0.023	0.004	0.030	concurrent WET and WER
106	SDS3	SDS3 020399	1999	2	2/3/99	0.26	19	0.07	0	0.61	27	NPDES	SMC	no	9.2	11	9.66	[illegible]	2.06	3.06	0.016	[illegible]	0.027	
107	SDS3	SDS3 021499	1999	2	2/13/99	0.26	6	0.04	0	0	102	other	EMC	yes			60				0.049	[illegible]	0.074	for DO study
108	SDS3	SDS3 030999	1999	3	3/8/99	0.28	16	0.06	0	0	96	NPDES	EMC	no	9.2	14	220	6.62	161	167.6	0.024	0.002	0.063	
109	SDS3	SDS3 031399	1999	3	3/12/99	0.83	23	0.07	0	0	71	NPDES	SMC	no	7.6	16	16	[illegible]	8.21	7.21	0.022	[illegible]	0.036	
110	SDS3	SDS3 032599	1999	3	3/24/99	0.28	10	0.08	0	0.16	40	NPDES	EMC	no	8.7	3.5	[illegible]	[illegible]	[illegible]	[illegible]	0.016	[illegible]	0.027	
111	SDS4	SDS4 091494	1994	9	9/13/94	0.16	9				118	NPDES		no	2.8	1.3	6				0.020	0.004	0.009	
112	SDS4	SDS4 101394	1994	10	10/13/94	0.32	14			0	480	NPDES		no	6.7	5.6	16				0.036	0.001	0.047	
113	SDS4	SDS4 111994	1994	11	11/19/94	0.42	24			0.05	52	NPDES		no			5	[illegible]	[illegible]	[illegible]				
114	SDS4	SDS4 011295	1995	1	1/11/95	0.3	60			0.04	24	NPDES		no	3.6	6.4	3				0.017	0.003	0.019	
115	SDS4	SDS4 021695	1995	2	2/16/95	1.1	56			0	86	NPDES		yes			60	[illegible]	[illegible]	[illegible]				
116	SDS4	SDS4 061295	1995	6	6/11/95	0.2	8			0.12		NPDES		no	7.7	6.3	4				0.008	[illegible]	0.010	
117	SDS4	SDS4 080795	1995	8	8/6/95	0.4	8			0		NPDES		no	4.2	3.7	9				0.020	0.002	0.018	
118	SDS4	SDS4 101695	1995	10	10/16/95	0.36	12			0		NPDES		no	6.8	4.2	5				0.023	0.001	0.022	
119	SDS4	SDS4 011496	1996	1	1/13/96	0.37	20			0		NPDES		no	20	8	6	[illegible]	[illegible]	[illegible]	0.019	[illegible]	0.019	

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99Appe... ...ll comps

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All Composite Sample Data					Storm Characteristics											concentration, mg/l									
order	outfall	POS ID	reported	month	stormdate	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	purpose	type	ground delco?	TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
120	SDS4	SDS4 041886	1986	4	4/15/86	0.49	16			0.09		NPDES		no	26	14	4.64							
121	SDS4	SDS4 042296	1986	4	4/22/86	2.83	8			0		SlpAg		no	19	8.9	6.44				0.033	0.001	0.017	
122	SDS4	SDS4 052286	1986	5	5/21/86	0.31	30			0.02		SES		no	4.8		16				0.036	0.001	0.018	
123	SDS4	SDS4 070496	1987	7	7/3/86	0.23	12			0		NPDES		no	20	11	8				0.024	0.001	0.020	
124	SDS4	SDS4 100486	1987	10	10/4/86	0.59	8.1			0.06	18	NPDES		no	4310[1]	2650[1]	6.04				0.18[1]	0.048[1]	0.228[1]	results not typical due to POS construction (34R safety fill), BMP implemented.
125	SDS4	SDS4 120486	1987	12	12/4/86	0.82	7.5			0.16	44	NPDES		no	11	6.5					0.023	0.002	0.032	
126	SDS4	SDS4 011787	1987	1	1/16/87	1.21	23			0	164	NPDES		no	17	2.2	3.92				0.031	0.002	0.024	
127	SDS4	SDS4 012787	1987	1	1/27/87	0.41	26			0	109	SlpAg		no	12	9.1	4.3				0.017	0.001	0.020	
128	SDS4	SDS4 041987	1987	4	4/19/87	1.18	26			0	64	NPDES		no	42	12	4.44				0.039	0.003	0.036	
129	SDS4	SDS4 062487	1987	6	6/25/87	0.2	10.5			0.07	98	NPDES	EMC	no	104	95	5.38				0.032	0.004	0.044	
130	SDS4	SDS4 111787	1987	11	11/16/87	0.47	12.6			0	222	NPDES	SMC	no	31	34	4.64				0.019	0.002	0.039	
131	SDS4	SDS4 030888	1988	3	3/8/88	0.66	27			0	132	NPDES	SMC	no	3.8	6.7					0.016	0.000	0.012	makeup comp for 98Qw non rep comp, has extra grab
132	SDS4	SDS4 111988	1988	11	11/19/88	2.34	66	0.18	0	0	73	NPDES	SMC	no	2.1	2.9					0.029	0.001	0.016	
133	SDS4	SDS4 021389	1989	2	2/13/89	0.26	8	0.04	0	0	102	other	EMC	yes			10.5				0.006	0.001	0.038	for DO study
134	SDS4	SDS4 060789	1989	6	6/6/89	0.26	22	0.06	0	0	76	NPDES	EMC	no	36	12					0.023	0.001	0.006	ANNUAL SAMPLE
135	SDW3	SDW3 061095	1995	6	6/9/95	0.12	7.5			0	102	NPDES		no	98	310	15							
136	SDW3	SDW3 061195	1995	6	6/11/95	0.2	8			0.12		NPDES		no	20	28	4							
137	SDW3	SDW3 061095	1995	6	6/10/95	0.3	10			0	98	NPDES		no	6.7	2.3	5							
138	SDW3	SDW3 061795	1995	6	6/16/95	1.34	12			0.01		NPDES		no	58	20	8							
139	SDW3	SDW3 120496	1996	12	12/4/96	0.82	7.5			0.16	44	NPDES		no	7.2	2.6								grab missed
140	SDW3	SDW3 011697	1997	1	1/16/97	1.21	23			0	164	SlpAg		no	7.1	1	4.18							
141	SDW3	SDW3 012797	1997	1	1/27/97	0.41	26			0	109	SlpAg		no	3.2	3.2	6.7							no grab sample taken
142	SDW3	SDW3 021197	1997	2	2/11/97	0.48	18			0	206	SlpAg		no	2.2	1.9								
143	SDW3	SDW3 021998	1998	2	2/18/98	0.6	32	0.06	0.01	0.38	20	NPDES	EMC	no	8.6	13					0.001	0.001	0.005	1998 annual sample
144	SDW3	SDW3 032598	1998	3	3/24/98	0.28	19	0.06	0	0.16	40	NPDES	EMC	no	12	7.3					0.008	0.001	0.010	1998 annual sample
145	B	B 120496	1996	12	12/4/96	0.82	7.5			0.16	44	NPDES		no	91	110					0.028	0.006	0.041	
146	B	B 011797	1997	1	1/16/97	1.21	23			0	164	NPDES		no	37	40	6.66				0.018	0.002	0.034	no grab sample for this event, equipment malfunction
147	B	B 012997	1997	1	1/27/97	0.41	26			0	109	NPDES		no	23	35	3.26				0.016	0.002	0.029	
148	B	B 030697	1997	3	3/6/97	0.39	20			0.24	42	NPDES		no	13	23					0.007	0.001	0.017	had QC dupe, no grab sample (no liquid detected) pairs with 4/19/97 grab
149	B	B 111398	1998	11	11/11/98	0.99	62	0.16	0	0.06	31	NPDES	EMC	no	29	129					0.013	0.007	0.124	
150	B	B 060798	1998	6	6/6/98	0.26	22	0.06	0	0	76	NPDES	EMC	no	8.8	14					0.006	0.000	0.006	ANNUAL SAMPLE
151	D	D 012797	1997	1	1/27/97	0.41	26			0	109	NPDES		no	36	35	11.3				0.018	0.004	0.023	makeup for 98Q4 (3 unsuccessful attempts)
152	D	D 021297	1997	2	2/11/97	0.48	18			0	206	NPDES		no	36	49					0.006	0.001	0.009	
153	D	D 030597	1997	3	3/6/97	0.39	20			0.24	42	NPDES		no	34	26					0.021	0.000	0.022	
154	D	D 011498	1998	1	1/13/98	1.07	22	0.16	0	0	86	NPDES	SMC	no	61	40					0.014	0.003	0.129	
155	D	D 060798	1998	6	6/6/98	0.26	22	0.06	0	0	76	NPDES	EMC	no	58	14					0.006	0.000	0.006	ANNUAL SAMPLE
156	SDN1	SDN1 091494	1994	9	9/13/94	0.15	9				118	NPDES		no	21.6	6.4	164				0.064	0.008	1.030	
157	SDN1	SDN1 101994	1994	10	10/19/94	0.2	32				120	NPDES		no	13	10	8				0.034	0.008	0.416	
158	SDN1	SDN1 111994	1994	11	11/19/94	0.42	24			0.06	52	NPDES		no			6							
159	SDN1	SDN1 011295	1995	1	1/11/95	0.3	60			0.04	24	NPDES		no	22	30	4				0.020	0.018	0.285	
160	SDN1	SDN1 021895	1995	2	2/16/95	1.1	66			0	98	NPDES		yes			31			6.1				
161	SDN1	SDN1 030595	1995	3	3/4/95	0.18	24			0	158	SlpAg		no	51	3.5	4							
162	SDN1	SDN1 030995	1995	3	3/8/95	2.16	114			0	68	SlpAg		no	14	17	9							
163	SDN1	SDN1 040595	1995	4	4/4/95	0.17	4			0	270	SlpAg		no	6	7.6	6							
164	SDN1	SDN1 040795	1995	4	4/6/95	0.61	28			0.04	60	NPDES		no	18	6.2	40				0.009	0.001	0.286	
165	SDN1	SDN1 060795	1995	6	6/6/95	0.4	8			0		NPDES		no	58	18	27				0.035	0.009	0.464	
166	SDN1	SDN1 110795	1995	11	11/6/95	3.89	48			0.09		NPDES		no	16	14	8				0.023	0.013	0.376	
167	SDN1	SDN1 020496	1996	2	2/3/96	1.6	8					NPDES		yes	130	150	16				0.019	0.021	0.288	
168	SDN1	SDN1 041696	1996	4	4/16/96	0.49	16			0.09		SlpAg		no	47	7.1								
169	SDN1	SDN1 042296	1996	4	4/22/96	2.83	8			0		NPDES		no	31	9.5	8.8				0.016	0.011	0.160	
170	SDN1	SDN1 061396	1996	6	6/13/96	0.99	20			0.07	12	SlpAg		no	14	16	4.22							
171	SDN1	SDN1 062296	1996	6	6/21/96	0.31	30			0.02		SlpAg		no	11	7.3	10.2				0.027	0.007	0.209	xtra NPDES/Slp Ag
172	SDN1	SDN1 062396	1996	6	6/23/96	0.48	10			0		SlpAg		no	36	6.3	20				0.060	0.013	0.569	xtra NPDES/Slp Ag
173	SDN1	SDN1 062396 A	1996	6	6/23/96	0.48	10			0		SES		no	22		16				0.061	0.010	0.506	
174	SDN1	SDN1 070496	1997	7	7/3/96	0.23	12			0		NPDES		no	61	18	10.7				0.046	0.019	0.355	
175	SDN1	SDN1 071796	1997	7	7/17/96	0.27	31			0		SlpAg		no	19	2.1	26.1							
176	SDN1	SDN1 080296	1997	8	8/2/96	1.01	27			0	326	SlpAg		no	35	20	14.2							

All Composite Sample Data

order	outfall	POS ID	reported	month	Storm Characteristics: stormdate	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	purpose	type	ground delce?	concentration, mg/l: TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
177	SDN1	SDN1 [illegible]	1997	9	9/3/96	0.29	1.2			0	76	SlpAg		no	49.3	15	9.86							
178	SDN1	SDN1 091400	1997	9	9/13/96	0.72	48			0	144	SlpAg		no	60	22	10.3							
179	SDN1	SDN1 091896	1997	9	9/18/96	0.38	20			0.02	28	SlpAg		no	5.6	7	[illegible]							
180	SDN1	SDN1 011697	1997	1	1/16/97	1.21	23			0	164	NPDES		no	66	30	23.6				0.039	0.039	0.343	paired up/down sample
181	SDN1	SDN1 041397	1997	4	4/13/97	0.31	12			0.04		NPDES		no	34	19	17				0.042	0.013	0.433	downstream location at SDN1-27
182	SDN1up	SDN1up 100496	1997	10	10/4/96	0.66	8.1			0.06	16	NPDES		no	21	6.7	[illegible]				0.025	0.016	0.216	paired up/down sample
183	SDN1up	SDN1up 011697	1997	1	1/16/97	1.21	23			0	164	NPDES		no	62	29	9.04				0.030	0.040	0.391	paired up/down sample
184	SDN1up	SDN1 090397	1997	9	9/3/97	0.29	16			0	76	NPDES	EMC	no	77	30	17.9				0.038	0.027	0.211	
185	SDN1up	SDN1 102697	1997	10	10/26/97	0.47	10.8			0.06	29	NPDES	EMC	no	19	28	4				0.019	0.017	0.222	
186	SDN1up	SDN1 121697	1997	12	12/16/97	1	33			0	87	NPDES	SMC	no	22	21	4.66				0.017	0.013	0.191	
187	SDN1up	SDN1 030198	1998	3	3/1/98	0.98	86			0.07	8	NPDES	SMC	no	104	39	4.62				0.010	0.007	0.064	
188	SDN1up	SDN1 042398	1998	4	4/23/98	0.48	20			0	264	NPDES	SMC	no	26	12	12.8				0.062	0.006	0.401	
189	SDN1up	SDN1 051498	1998	5	5/14/98	0.21	9			0.01	126	NPDES	EMC	no	43	21	8.8				0.053	0.010	0.540	
190	SDN1up	SDN1 091098	1998	9	9/10/98	0.28	10			0	288	NPDES	EMC	no	34	71	9.84				0.058	0.009	0.360	
191	SDN1up	SDN1 091898	1998	9	9/18/98	0.31	19	0.25	0	0	792	NPDES	EMC	no	182	83	28.9				0.083	0.030	0.589	thunderstorm, 0.25 in/hr
192	SDN1up	SDN1 100398	1998	10	10/3/98	0.4	3	0.22	0	0.07	36	NPDES	EMC	no	67	21	4.22				0.018	0.017	0.247	
193	SDN1up	SDN1 102798	1998	10	10/27/98	0.64	9	0.19	0	0	72	NPDES	SMC	no	85	44	6.82				0.008	[illegible]	0.066	
194	SDN1up	SDN1 110498	1998	11	11/3/98	1.62	39	0.48	0	0.06	36	NPDES	SMC	no	32	17	[illegible]				0.014	0.011	0.127	
195	SDN1up	SDN1 111398	1998	11	11/1/98	0.98	62	0.16	0	0.05	31	NPDES	EMC	no	53	46	[illegible]				0.024	0.025	0.487	concurrent WET sample
196	SDN1up	SDN1 122698	1998	12	12/24/98	1.18	39	0.16	0	0	153	NPDES	SMC	yes	168	95	116	13.6	12.3	26.1	0.003	0.004	0.122	
197	SDN1up	SDN1 011499	1999	1	1/13/99	1.07	22	0.16	0	0	65	NPDES	EMC	no	78	31	[illegible]				0.024	0.048	0.162	concurrent WET sample
198	SDN1up	SDN1 020499	1999	2	2/3/99	0.28	19	0.07	0	0.61	27	NPDES	EMC	no	45	22	6.84				0.020	0.006	0.233	
199	SDN1up	SDN1 030899	1999	3	3/8/99	0.28	16	0.05	0	0	96	NPDES	EMC	no	40	24					0.015	0.009	0.170	
200	SDN1up	SDN1 032499	1999	3	3/24/99	0.28	19	0.06	0	0.15	40	NPDES	EMC	no	61	40	4.86				0.015	0.010	0.176	concurrent WET sample
201	SDN1up	SDN1 032699	1999	3	3/27/99	0.24	8	0.07	0	0.09	26	NPDES	EMC	no	9.7	6.4	[illegible]				0.012	[illegible]	0.218	
202	SDN2	SDN2 090804	1995	9	9/8/94	0.59	22				93	NPDES		no	3.2	4.1	11				0.026	0.007	0.022	
203	SDN2	SDN2 101394	1995	10	10/13/94	0.32	14				480	NPDES		no	0.6	8.1	86				0.069	0.006	0.067	
204	SDN2	SDN2 111994	1995	11	11/11/94	0.28	14				48	NPDES		no	2	5.4	7				0.013	0.004	0.030	
205	SDN2	SDN2 111994	1995	11	11/19/94	0.42	24			0.05	62	NPDES		no			10	[illegible]						
206	SDN2	SDN2 011296	1996	1	1/11/96	0.3	60			0.04	24	NPDES		no	7.6	14	4				0.036	0.022	0.076	
207	SDN2	SDN2 030696	1996	3	3/4/96	0.16	24			0	168	SlpAg		no	2.4	2.1	[illegible]	36	[illegible]	36				
208	SDN2	SDN2 030896	1996	3	3/8/96	2.16	114			0	66	other		no							0.012	0.003	0.026	
209	SDN2	SDN2 040796	1996	4	4/6/96	0.61	28			0.04	60	SlpAg		no	7.2	4.8	16	[illegible]						
210	SDN2	SDN2 041296	1996	4	4/10/96	0.29	16			0	60	NPDES		no	6.6	4.9	30	[illegible]	19	19	0.026	0.003	0.066	
211	SDN2	SDN2 080796	1996	8	8/6/96	0.4	8			0		NPDES		no	8.8	8.1	8				0.028	0.010	0.040	
212	SDN2	SDN2 101696	1996	10	10/15/96	0.36	12			0		NPDES		no	1.26	1.8	6				0.016	0.002	0.024	
213	SDN2	SDN2 021796	1996	2	2/17/96	1.29	12			0		NPDES		no	[illegible]	2	6	6.3	11	17.3	0.009	0.006	0.027	
214	SDN2	SDN2 041896	1996	4	4/16/96	0.49	16			0.09		SlpAg		no	16	11	[illegible]							
215	SDN2	SDN2 042296	1996	4	4/22/96	2.63	8			0		NPDES		no	6.3	2.6	6.84				0.013	0.001	0.017	
216	SDN2	SDN2 051396	1996	5	5/13/96	0.99	20			0.07	12	SlpAg		no	5.6	6.3	4.66							
217	SDN2	SDN2 062296	1996	6	6/21/96	0.31	30			0.02		SlpAg		no	10	2	6.66				0.014	0.002	0.076	xtra NPDES/Slp Ag
218	SDN2	SDN2 062396 A	1996	6	6/23/96	0.46	10			0		SES		no	46		24				0.076	0.022	0.136	
219	SDN2	SDN2 062396	1996	6	6/23/96	0.46	10			0		SlpAg		no	33	7.6	16.3	[illegible]			0.066	0.012	0.076	xtra NPDES/Slp Ag
220	SDN2	SDN2 090396	1997	9	9/3/96	0.29	1.2			0	76	NPDES		no	10	10	12.3				0.033	0.006	0.042	
221	SDN2	SDN2 102196	1997	10	10/21/96	0.66	4.1			0	64	NPDES		no	4.2	2.9	4.6	[illegible]			0.010	0.002	0.020	
222	SDN2	SDN2 011697	1997	1	1/16/97	1.21	23			0	164	NPDES		no	8.6	1.6	120		60.9	60.9	0.018	0.011	0.048	
223	SDN2	SDN2 041997	1997	4	4/19/97	1.16	28			0	64	NPDES		no	17	8.8	[illegible]				0.042	0.019	0.083	
224	SDN2	SDN2 062499	1999	6	6/24/99	1.12	24	0.35	0.03	0.08	.10	NPDES	EMC	no	16									30 MIN PUMP STATION BYPASS
225	SDN3	SDN3 090804	1995	9	9/8/94	0.59	22				93	NPDES		no	2.1	6.1	5				0.032	0.002	0.063	
226	SDN3	SDN3 102994	1995	10	10/29/94	1.96	44				114	NPDES		no	9.2	8	4							
227	SDN3	SDN3 111994	1995	11	11/19/94	0.42	24			0.05	62	NPDES		no			4	[illegible]						
228	SDN3	SDN3 010795	1995	1	1/7/95	0.21	62			0	252	NPDES		no	0.62	1.6	2				0.003	0.001	0.062	
229	SDN3	SDN3 021695	1995	2	2/15/95	1.1	66			0	66	NPDES		yes	[illegible]									
230	SDN3	SDN3 030595	1995	3	3/4/95	0.16	24			0	168	SlpAg		no	[illegible]	2.3	3	[illegible]						
231	SDN3	SDN3 030995	1995	3	3/8/95	2.16	114			0	66	SlpAg		no	[illegible]	12	3	[illegible]						
232	SDN3	SDN3 040695	1995	4	4/4/95	0.17	4			0	270	SlpAg		no	[illegible]	1.8	3	[illegible]						
233	SDN3	SDN3 080495	1995	8	8/4/95	0.7	28			0	384	NPDES		no	16	25	8				0.011	0.001	0.126	
234	SDN3	SDN3 071096	1996	7	7/9/96	0.61	13			0		NPDES		no	21	24	7				0.036	0.004	0.180	
235	SDN3	SDN3 110796	1996	11	11/6/96	3.89	48			0.09		NPDES		no	16	16	3				0.010	0.001	0.068	
236	SDN3	SDN3 011496	1996	1	1/13/96	0.37	20			0		NPDES		no	3.6	4.7	6				0.010	0.002	0.047	
237	SDN3	SDN3 020496	1996	2	2/3/96	1.6	8					SlpAg		yes		9.7	[illegible]							storm after runway deice

All Composite Sample Data					Storm Characteristics									concentration, mg/l									
order	outfall	POS ID	reported	month	stormdate	depth, in.	dur, hr	maxint, in/hr	24hrint, in.	48hrint, in.	dryant, hr	purpose	type	ground deice?	TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
238	SDN3	SDN3 040196	1996	3	3/31/96	0.64	0			0.01		SlipAg		no	11	16	5	[illegible]	[illegible]	[illegible]	0.015	0.002	0.101	xtra NPDES/Slip Ag
239	SDN3	SDN3 041696	1996	4	4/16/96	0.49	16			0.09		NPDES		no	27	22	[illegible]	[illegible]	[illegible]	[illegible]	0.016	0.003	0.121	
240	SDN3	SDN3 042296	1996	4	4/22/96	2.83	8			0		SlipAg		no	16	9.8	6.86	[illegible]	[illegible]	[illegible]	0.016	0.001	0.063	xtra NPDES/Slip Ag
241	SDN3	SDN3 051396	1996	5	5/13/96	0.99	20			0.07	12	SlipAg		no	16	16	[illegible]	[illegible]	[illegible]	[illegible]				
242	SDN3	SDN3 052296	1996	5	5/21/96	0.31	30			0.02		SlipAg		no	16	6.2	[illegible]	[illegible]	[illegible]	[illegible]				
243	SDN3	SDN3 062396 A	1996	6	6/23/96	0.46	10			0		SES		no	7.3		6				0.004	0.000	0.051	
244	SDN3	SDN3 080396	1997	8	8/2/96	1.01	27			0	326	NPDES		no	26	26	[illegible]				0.037	0.004	0.166	delayed hydrograph, very dry antecedent
245	SDN3	SDN3 120496	1997	12	12/4/96	0.82	7.5			0.16	44	NPDES		no	16	14	[illegible]	2.5	2.5	2.5	0.016	0.002	0.033	
246	SDN3	SDN3 122196	1997	12	12/19/96	0.36	37			0	103	NPDES		no	2.6	4.5	[illegible]	2.5	2.5	2.5	0.011	0.001	0.045	
247	SDN3	SDN3 011797	1997	1	1/16/97	1.21	23			0	164	NPDES		no	13	13	4.92				0.012	0.001	0.043	
248	SDN3	SDN3 030697	1997	3	3/5/97	0.39	20			0.24	42	NPDES		no	10	10	[illegible]	6.2	12.5	6.2	0.011	0.001	0.032	
249	SDN3	SDN3 062197	1997	6	6/21/97	0.27	11.5		0.01	0.02	24	NPDES	EMC	no	2.2	10	[illegible]				0.014	0.001	0.048	
250	SDN3	SDN3 111797	1997	11	11/16/97	0.47	12.5			0	222	NPDES	EMC	no	12	42	[illegible]				0.016	0.002	0.049	
251	SDN3	SDN3 121697	1997	12	12/15/97	1	33			0	87	NPDES	SMC	no	11	26	[illegible]	[illegible]	[illegible]	[illegible]	0.011	0.002	0.040	HAD QC DUPLICATE: GOOD DUPLICATION
252	SDN3	SDN3 122498	1998	12	12/24/98	1.19	39	0.16	0	0	163	NPDES	SMC	yes	12	9	222	[illegible]	[illegible]	[illegible]	0.017	0.001	0.069	
253	SDN3	SDN3 021398	1998	2	2/13/98	0.26	6	0.04	0	0	102	other	EMC	yes			17.6				0.020	0.010	0.060	for DO study
254	SDN4	SDN4 090396	1997	9	9/3/96	0.29	1.2			0	76	NPDES		no	8	3	14.1				0.139	0.001	0.047	
255	SDN4	SDN4 120496	1997	12	12/4/96	0.82	7.5			0.16	44	NPDES		no	7	4.5	8.46	2.5	2.5	2.5	0.034	0.002	0.023	
256	SDN4	SDN4 011697	1997	1	1/16/97	1.21	23			0	164	NPDES		no	11	1.7	12.1				0.036	0.001	0.026	
257	SDN4	SDN4 030597	1997	3	3/5/97	0.39	20			0.24	42	NPDES		no	3.8	2.8	[illegible]	2.5	2.5	2.5	0.031	0.001	0.019	
258	SDN4	SDN4 060397	1997	6	6/3/97	0.26	16			0	76	NPDES	EMC	no	2.2	2.8	3.12				0.052	0.001	0.020	
259	SDN4	SDN4 102697	1996	10	10/26/97	0.47	10.5			0.08	28	NPDES	EMC	no	2.8	6	7.38				0.039	0.002	0.024	
260	SDN4	SDN4 121697	1996	12	12/15/97	1	33			0	87	NPDES	SMC	no	2.6	3.9	4.66				0.026	0.001	0.022	
261	SDN4	SDN4 030198	1998	3	3/1/98	0.98	88			0.07	6	NPDES	SMC	no	17	16	[illegible]				0.031	0.001	0.029	
																								backup monthly sample in case 3/1/98
262	SDN4	SDN4 030998	1998	3	3/8/98	0.86	27			0	132	NPDES	SMC	no	3.2	6.1	4.06				0.049	0.001	0.018	sample didn't qualify under new permit
263	SDN4	SDN4 042498	1998	4	4/23/98	0.46	20			0	264	NPDES	EMC	no	2	3.5	5.44				0.091	0.001	0.029	
264	SDN4	SDN4 052698	1998	5	5/24/98	0.58	11			0	87	NPDES	EMC	no	3.7	6.5	6.2	[illegible]	[illegible]	[illegible]	0.030	0.001	0.027	
265	SDN4	SDN4 062498	1998	6	6/24/98	0.43	4			0	268	NPDES	EMC	no	4	4	4.84				0.047	0.001	0.018	
266	SDN4	SDN4 081698	1998	8	8/16/98	0.31	10	0.26	0	0	792	NPDES	EMC	no	94	99	8				0.067	0.003	0.022	thunderstorm, 0.26 in/hr
																						0.025		GLYCOLS MAY BE HIGH BIASED, DUPE
267	SDN4	SDN4 092598	1998	9	9/29/98	0.47	23	0.26	0	0	148	NPDES	EMC	no	76	45	0.74		2.2	3.2	0.043	0.001	0.018	WAS <MDL
268	SDN4	SDN4 100398	1998	10	10/3/98	0.4	3	0.22	0	0.07	36	NPDES	EMC	no	27	23	[illegible]	[illegible]	[illegible]	[illegible]	0.061	0.001	0.045	
269	SDN4	SDN4 110498	1998	11	11/3/98	1.62	39	0.48	0	0.08	35	NPDES	SMC	no	18	5.6	[illegible]	[illegible]	[illegible]	[illegible]	0.047	0.001	0.070	
270	SDN4	SDN4 111398	1998	11	11/11/98	0.98	62	0.16	0	0.06	31	NPDES	EMC	no	22	15	[illegible]	[illegible]	[illegible]	[illegible]	0.026	0.001	0.127	concurrent WET sample
271	SDN4	SDN4 122598	1998	12	12/24/98	1.19	39	0.16	0	0	163	NPDES	SMC	yes	12	12	188	7	27.3	34.3	0.023	0.001	0.076	
272	SDN4	SDN4 011499	1999	1	1/13/99	1.07	22	0.16	0	0	86	NPDES	EMC	no	7	9.2	[illegible]	[illegible]	[illegible]	[illegible]	0.020	0.001	0.034	concurrent WET sample
273	SDN4	SDN4 020499	1999	2	2/3/99	0.28	19	0.07	0	0.01	27	NPDES	EMC	no	3.6	4.6	[illegible]	[illegible]	[illegible]	[illegible]	0.015	0.001	0.024	
274	SDN4	SDN4 021399	1999	2	2/13/99	0.26	6	0.04	0	0	102	other	EMC	yes			30				0.036	0.001	0.026	for DO study
275	SDN4	SDN4 031399	1999	3	3/12/99	0.83	23	0.07	0	0	71	NPDES	EMC	no	2.9	7	[illegible]	[illegible]	[illegible]	[illegible]	0.019	0.001	0.026	
276	SDN4	SDN4 032699	1999	3	3/27/99	0.24	9	0.07	0	0.09	28	NPDES	EMC	no	4.3	3.6	[illegible]	[illegible]	[illegible]	[illegible]	0.022	0.001	0.014	
277	EY	EY 091494	1995	9	9/13/94	0.16	9				116	NPDES		no	24.9									
278	EY	EY 101394	1995	10	10/13/94	0.32	14			0	480	NPDES		no	26									
279	EY	EY 030995	1995	3	3/8/95	2.16	114			0	68	NPDES		no	3.2									
280	EY	EY 080495	1995	8	8/4/95	0.7	28			0	384	NPDES		no	26									
281	EY	EY 072695	1995	7	7/26/95	0.41	36			0		NPDES		no	56									
282	EY	EY 101695	1995	10	10/16/95	0.35	12			0		NPDES		no	12									
283	EY	EY 021796	1996	2	2/17/96	1.29	12			0		NPDES		no	24									
284	EY	EY 042296	1996	4	4/22/96	2.83	8			0		NPDES		no	39									
285	EY	EY 052296	1996	5	5/21/96	0.31	30			0.02		SlipAg		no	26									
286	EY	EY 062396	1996	6	6/23/96	0.46	10			0		SlipAg		no	282									
287	EY	EY 070496	1997	7	7/3/96	0.23	12			0		NPDES		no	16									
288	EY	EY 102196	1997	10	10/21/96	0.66	4.1			0	64	NPDES		no	12	4.3								
289	EY	EY 021297	1997	2	2/11/97	0.48	19			0	206	NPDES		no	8.6									
290	EY	EY 030697	1997	3	3/6/97	0.39	20			0.24	42	NPDES		no	17									
291	EY	EY 061797	1997	6	6/18/97	0.36	28			0	138	NPDES	EMC	no	72									
292	EY	EY 110697	1998	11	11/6/97	0.16	4.4			0.01	72	NPDES	EMC	no	10									
293	EY	EY 013098	1998	1	1/29/98	0.2	14			0	107	NPDES	EMC	no	12									
294	EY	EY 052598	1998	5	5/24/98	0.58	11			0	87	NPDES	EMC	no	28									
295	EY	EY 011499	1999	1	1/13/99	1.07	22	0.16	0	0	86	NPDES	EMC	no	76									
296	EY	EY 062499	1999	6	6/24/99	1.12	24	0.36	0.03	0.06	10	NPDES	SMC	no	128									

All Composite Sample Data					Storm Characteristics									concentration, mg/l									
order	outfall	POS ID	reported	month	stormdate	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	purpose	type	ground delco?	TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
297	TY	TY 090894	1995	9	9/8/94	0.69	22				93	NPDES		no	4									
298	TY	TY 101894	1995	10	10/18/94	0.2	32				120	NPDES		no	10									
299	TY	TY 030495	1995	3	3/4/95	0.19	24			0	168	NPDES		no	19			[illegible]	2.5	[illegible]	2.5	[illegible]	6	
300	TY	TY 080495	1995	8	8/4/95	0.7	28			0	384	NPDES		no	22									
301	TY	TY 081795	1995	8	8/16/95	1.34	12			0.01		NPDES		no	20									
302	TY	TY 090595	1995	9	9/5/95							NPDES		no										
303	TY	TY 101695-1	1995	10	10/16/95	0.35	12			0		NPDES		no	480									
304	TY	TY 032296	1996	3	3/22/96	0.21				0		NPDES		no		12								
305	TY	TY 041696	1996	4	4/16/96	0.49	16			0.09		NPDES		no	30									
306	TY	TY 042296	1996	4	4/22/96	2.83	8			0		NPDES		no	23									
307	TY	TY 070496	1997	7	7/3/96	0.23	12			0		NPDES		no	28									
308	TY	TY 071896	1997	7	7/17/96	0.27	31			0		StpAg		no	13									
309	TY	TY 080296	1997	8	8/2/96	1.01	27			0	326	StpAg		no	33									
310	TY	TY 100496	1997	10	10/4/96	0.59	6.1			0.06	16	NPDES		no	17	4								
311	TY	TY 021297	1997	2	2/11/97	0.48	16			0	206	NPDES		no	29									
312	TY	TY 030697	1997	3	3/6/97	0.36	20			0.24	42	NPDES		no	186									possible insert (BMP) failure indicated by elevated FOG and TSS
313	TY	TY 060397	1997	6	6/3/97	0.26	16			0	76	NPDES	SMC	no	73									
314	TY	TY 111797	1997	11	11/16/97	0.47	12.8			0	222	NPDES	SMC	no	28									
315	TY	TY 030698	1998	3	3/6/98	0.86	27			0	132	NPDES	SMC	no	16									MAKEUP COMPOSITE FOR 98QW, HAS EXTRA GRAB
316	TY	TY 061098	1998	6	6/10/98	0.29	10			0	288	NPDES	EMC	no	20									
317	TY	TY 020399	1999	2	2/3/99	0.26	19	0.07	0	0.61	27	NPDES	SMC	no	28									
	[redacted]											All outfalls	count		282	249	259	160	160	160	226	226	226	
													max		480	310	450	260	151	276	0.208	0.104	1.030	
	[redacted]												95th		104	73	79	14	22	34	0.066	0.039	0.387	
	lined-out values are non-representative data trimmed from data analysis												75th		38	25	12	2.5	2.5	5.0	0.041	0.013	0.167	
													median		19	13	6.0	2.5	2.5	5.0	0.027	0.004	0.072	
													25th		7.5	6.5	4.0	1.0	1.0	2.0	0.016	0.001	0.031	
													min		0.6	0.7	2.0	1.0	1.0	2.0	0.001	0.000	0.003	
													sd		61	33	44.6	21.5	15.4	27.9	0.028	0.015	0.140	
													CV, %		183%	148%	266%	436%	271%	266%	83%	164%	113%	
													# non-detected		6	0	61	132	123	117	1	68	4	
													% non-detected		2%	0%	20%	86%	82%	78%	0.4%	26%	1.6%	
												SDE4	count		33	32	34	31	31	31	36	36	36	
												(982)	max		283	190	336	14	49	49	0.208	0.104	0.779	
													95th		226	100	46	6	21	35	0.091	0.082	0.344	
													75th		66	48	12	2.5	2.5	5.0	0.046	0.031	0.263	
													median		52	27	6.7	1.0	1.0	2.0	0.030	0.022	0.162	
													25th		40.0	19.0	4.0	1.0	1.0	2.0	0.019	0.012	0.112	
													min		6.8	1.5	2.0	1.0	1.0	2.0	0.003	0.001	0.003	
													sd		62	36	67.1	3.1	10.0	11.0	0.038	0.024	0.134	
													CV, %		90%	96%	277%	132%	215%	169%	99%	92%	99%	
													# non-detected		0	0	6	29	28	28	0	3	0	
													% non-detected		0%	0%	15%	94%	84%	84%	0%	9%	0%	
												SDS1	count		20	19	21	15	15	15	21	21	21	
												(983)	max		74	46	92	260	33	276	0.119	0.066	0.304	
													95th		60	41	79	86	27	109	0.117	0.045	0.290	
													75th		26	23	24	2.6	4.3	10.8	0.064	0.019	0.211	
													median		16	13	12.6	2.5	2.5	5.0	0.038	0.010	0.119	
													25th		7.5	6.8	6.4	1.0	1.0	2.0	0.022	0.005	0.104	
													min		1.8	3.6	2.0	1.0	1.0	2.0	0.012	0.001	0.062	
													sd		18	13	24.3	66.5	9.6	69.5	0.036	0.020	0.076	
													CV, %		92%	75%	112%	336%	160%	266%	74%	120%	48%	
													# non-detected		0	0	2	13	11	10	0	1	0	
													% non-detected		0%	0%	10%	87%	73%	67%	0%	5%	0%	

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All Composite Sample Data					Storm Characteristics											concentration, mg/l										
order	outfall	POS ID	reported	month	stormdate	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	purpose	type	ground delce?	TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
												SDS2 (004)	count		9	9	8	0	0	0	2	2	2	
													max		66	39	11				0.009	0.006	0.213	
													95th		60	36	10				0.009	0.005	0.206	
													75th		37	29	8				0.008	0.005	0.176	
													median		20	20	3.6				0.008	0.003	0.139	
													25th		16.0	15.0	2.0				0.007	0.002	0.101	
													min		7.8	6.1	2.0				0.007	0.001	0.064	
													sd		19	11	3.3				0.001	0.003	0.106	
													CV, %		65%	60%	71%				17%	99%	78%	
													# non-detected		0	0	3				0	1	0	
													% non-detected		0%	0%	38%				0%	50%	0%	
												SDS3 (005)	count		38	37	30	27	27	27	40	40	40	
													max		310	186	450	32	161	168	0.136	0.043	0.194	
													95th		114	66	94	22	61	89	0.066	0.014	0.151	
													75th		20	15	15	6.1	6.2	10.3	0.054	0.004	0.070	
													median		8	9	8.2	2.6	2.6	6.0	0.034	0.002	0.054	
													25th		3.6	4.2	6.6	1.0	1.6	4.1	0.024	0.002	0.036	
													min		1.0	0.7	2.0	1.0	1.0	2.0	0.004	0.001	0.003	
													sd		61	30	78.0	7.5	31.7	36.4	0.029	0.007	0.043	
													CV, %		221%	170%	269%	144%	285%	206%	67%	148%	99%	
													# non-detected		1	0	3	19	19	14	0	7	0	
													% non-detected		3%	0%	8%	70%	68%	52%	0%	18%	0%	
												SDS4 (009)	count		20	19	23	10	10	10	21	21	21	
													max		104	96	96	3	3	6	0.041	0.006	0.047	
													95th		45	40	16	3	3	6	0.039	0.004	0.044	
													75th		22	12	7	2.5	2.5	5.0	0.032	0.002	0.032	
													median		12	7	5.0	2.5	2.5	5.0	0.023	0.001	0.020	
													25th		4.7	4.6	4.2	2.5	2.5	5.0	0.018	0.001	0.018	
													min		2.1	1.3	2.0	1.0	1.0	2.0	0.006	0.001	0.008	
													sd		23	21	19.2	0.8	0.8	1.3	0.010	0.001	0.012	
													CV, %		123%	162%	100%	29%	29%	29%	39%	77%	60%	
													# non-detected		0	0	3	10	10	10	0	6	0	
													% non-detected		0%	0%	13%	100%	100%	100%	0%	29%	0%	
												SDW3 (010)	count		10	10	8	0	0	0	2	2	2	
													max		88	310	16				0.006	0.001	0.010	
													95th		74	162	12				0.006	0.001	0.010	
													75th		16	16	8				0.004	0.001	0.008	
													median		8	5	4.6				0.003	0.001	0.006	
													25th		6.1	2.4	3.6				0.002	0.001	0.004	
													min		2.2	1.0	2.0				0.001	0.001	0.003	
													sd		28	96	4.2				0.003	0.000	0.006	
													CV, %		136%	248%	74%				98%	0%	85%	
													# non-detected		0	0	2				1	2	0	
													% non-detected		0%	0%	25%				50%	100%	0%	
												B (014)	count		6	6	6	0	0	0	6	6	6	
													max		91	126	6				0.028	0.007	0.124	
													95th		78	122	6				0.026	0.006	0.103	
													75th		35	93	3				0.017	0.005	0.039	
													median		28	36	2.0				0.014	0.002	0.031	
													25th		16.6	28.0	2.0				0.008	0.001	0.020	
													min		6.6	14.0	2.0				0.006	0.001	0.006	
													sd		30	48	1.6				0.008	0.003	0.042	
													CV, %		89%	82%	53%				67%	92%	101%	
													# non-detected		0	0	3				0	1	0	
													% non-detected		0%	0%	60%				0%	17%	0%	

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All Composite Sample Data

order	outfall	POS ID	reported	month	Storm Characteristics: stormdate	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	purpose	type	ground delcs?	concentration, mg/l: TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
												D	count		6	6	4	0	0	0	6	6	6	
												(915)	max		58	49	11				0.021	0.006	0.129	
													95th		57	47	10				0.020	0.006	0.106	
													75th		51	40	5				0.016	0.004	0.023	
													median		36	35	2.5				0.014	0.003	0.022	
													25th		36.0	26.0	2.0				0.008	0.001	0.008	
													min		34.0	14.0	2.0				0.005	0.001	0.003	
													sd		10	14	4.5				0.006	0.002	0.052	
													CV, %		23%	42%	99%				46%	81%	142%	
													# non-detected		0	0	2				0	1	0	
													% non-detected		0%	0%	50%				0%	20%	0%	
												SDN1	count		24	23	20	18	18	18	14	14	14	
												(006)	max		130	180	194	9	3	9	0.061	0.039	1.030	
					(former location downstream at SDN1-27, ends 1996)								95th		66	30	36	3	3	5	0.060	0.027	0.730	
													75th		48	19	10	2.5	2.5	5.0	0.046	0.016	0.458	
													median		22	14	10.3	2.5	2.5	5.0	0.036	0.012	0.385	
													25th		14.0	7.2	6.0	2.5	2.5	5.0	0.021	0.006	0.291	
													min		1.0	2.1	2.0	2.5	2.5	5.0	0.009	0.001	0.160	
													sd		28	30	36.6	0.8	0.0	0.3	0.023	0.009	0.206	
													CV, %		86%	154%	183%	31%	0%	5%	60%	66%	60%	
													# non-detected		1	0	2	17	18	17	0	1	0	
													% non-detected		4%	0%	8%	94%	100%	94%	0%	7%	0%	
												SDN1up	count		20	20	19	2	2	2	20	20	20	
												(008)	max		102	95	116	14	12	26	0.063	0.048	0.686	
					(upstream location at SDN1-22, begins 1997)								95th		100	72	38	13	12	26	0.063	0.040	0.642	
													75th		77	41	10	10.6	9.5	20.1	0.032	0.019	0.366	
													median		40	29	4.9	7.4	6.7	14.1	0.018	0.011	0.219	
													25th		30.5	21.0	3.0	4.2	3.8	8.0	0.016	0.006	0.174	
													min		9.7	6.4	2.0	1.0	1.0	2.0	0.003	0.001	0.068	
													sd		46	22	26.8	9.1	8.0	17.0	0.021	0.013	0.160	
													CV, %		75%	80%	197%	122%	120%	121%	77%	84%	67%	
													# non-detected		0	0	6	1	1	1	0	2	0	
													% non-detected		0%	0%	26%	60%	60%	60%	0%	10%	0%	
												SDN2	count		21	19	21	13	13	13	17	17	17	
												(007)	max		46	14	120	36	61	61	0.076	0.022	0.138	
													95th		33	11	66	16	32	42	0.062	0.022	0.106	
												(pumped to IWS as of late 1997)	75th		10	8	16	2.5	2.5	17.3	0.035	0.011	0.078	
													median		7	6	7.0	2.5	2.5	5.0	0.026	0.006	0.048	
													25th		4.2	2.3	6.0	2.5	2.5	5.0	0.013	0.003	0.026	
													min		1.0	1.6	2.0	2.5	2.5	5.0	0.009	0.002	0.017	
													sd		11	4	28.4	9.3	13.8	14.7	0.019	0.007	0.034	
													CV, %		108%	85%	158%	173%	160%	114%	88%	85%	82%	
													# non-detected		1	0	2	11	10	9	0	0	0	
													% non-detected		5%	0%	10%	85%	77%	69%	0%	0%	0%	
												SDN3	count		26	26	26	17	17	17	20	20	20	
												(009)	max		27	42	222	8	14	16	0.037	0.010	0.180	
													95th		26	26	65	3	8	6	0.036	0.006	0.167	
													75th		16	16	6	2.5	2.5	5.0	0.018	0.002	0.092	
													median		11	10	3.5	2.5	2.5	5.0	0.016	0.002	0.060	
													25th		3.8	6.2	2.0	2.5	2.5	5.0	0.011	0.001	0.047	
													min		0.6	1.6	2.0	1.0	1.0	2.0	0.003	0.000	0.032	
													sd		8	10	43.0	1.1	2.9	2.8	0.009	0.002	0.042	
													CV, %		69%	73%	292%	42%	93%	48%	67%	107%	67%	
													# non-detected		2	0	10	10	10	15	0	4	0	
													% non-detected		8%	0%	38%	94%	94%	88%	0%	20%	0%	

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All Composite Sample Data					Storm Characteristics										concentration, mg/l										
order	outfall	POS ID	reported	month	stormdate	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	purpose	type	ground deice?	TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
												SDN4 (911)	count		22	22	23	16	16	16	23	23	23	
													max		94	96	168	7	27	34	0.139	0.003	0.127	
													95th		74	42	34	4	9	12	0.089	0.002	0.076	
													75th		16	11	8	1.0	1.3	2.3	0.048	0.001	0.032	
													median		8	8	4.5	1.0	1.0	2.0	0.036	0.001	0.025	
													25th		3.3	3.7	2.0	1.0	1.0	2.0	0.028	0.001	0.021	
													min		2.0	1.7	2.0	1.0	1.0	2.0	0.016	0.001	0.014	
													sd		24	21	34.6	1.5	6.6	8.0	0.027	0.001	0.026	
													CV, %		157%	165%	200%	98%	226%	180%	84%	55%	76%	
													# non-detected		0	0	9	15	14	14	0	11	0	
													% non-detected		0%	0%	39%	94%	88%	88%	0%	48%	0%	
												EY (912)	count		20	1	0	0	0	0	0	0	0	
													max		262	4.3								
													95th		136									
													75th		43									
													median		26									
													25th		12.0									
													min		3.2	4.3								
													sd		60									
													CV, %		136%									
													# non-detected		0	0								
													% non-detected		0%	0%								
												TY (913)	count		39	3	0	1	1	1	0	0	0	
													max		466	12.0								
													95th		217	12								
													75th		30	10								
													median		23	8								
													25th		18	8								
													min		4	4								
													sd		110	6								
													CV, %		194%	71%								
													# non-detected		0	0								
													% non-detected		0%	0%								
												All Sites (SDS3, SDS4, SDN3, SDN4)	count		105	103	113	70	70	70	104	104	104	
													max		310	166	460	32	161	168	0.139	0.043	0.194	
													95th		71	43	84	10	14	30	0.083	0.010	0.133	
													75th		19	16	9	3	3	6	0.041	0.003	0.060	
													median		8	8	6	3	3	6	0.029	0.002	0.039	
													25th		3.7	4.4	3.0	1.0	1.0	2.0	0.018	0.001	0.024	
													min		0.8	0.7	2.0	1.0	1.0	2.0	0.003	0.000	0.003	
													sd		40	23	64	5	20	23	0.025	0.006	0.039	
													CV, %		262%	178%	404%	316%	696%	513%	59%	467%	116%	
													# non-detected		3	0	28	60	59	58	0	44	0	
													% non-detected		3%	0%	22%	86%	84%	83%	0%	42%	0%	

	1998-99 Composite Sample Data				Storm Characteristics									concentration, mg/l								
order	outfall	POS ID	reported	month	stormdate	depth, in.	dur, hr	maxint, in/hr	24hrint, in.	48hrint, in.	dryant, hr	purpose	comp	ground delcs?	TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
27	SDE4	SDE4 092698	1999	9	9/24/99	0.47	23	0.26	0	0	148	NPDES	EMC	no	54	70[2]	[illegible]	[illegible]	[illegible]	[illegible]	0.037	0.029	0.094	
28	SDE4	SDE4 100399	1999	10	10/3/99	0.4	3	0.22	0	0.07	36	NPDES	EMC	no	67	20	6.46	[illegible]	[illegible]	[illegible]	0.048	0.039	0.276	
29	SDE4	SDE4 102799	1999	10	10/27/99	0.64	9	0.19	0	0	72	NPDES	SMC	no	45	26	4.78	[illegible]	[illegible]	[illegible]	0.006	0.001	0.041	
30	SDE4	SDE4 111999	1999	11	11/19/99	2.34	66	0.18	0	0	73	NPDES	SMC	no	66	62	6.6	[illegible]	[illegible]	[illegible]	0.032	0.031	0.183	concurrent WET sample
31	SDE4	SDE4 122499	1999	12	12/24/99	1.19	39	0.19	0	0	153	NPDES	SMC	yes	260[3]	146[3]	336[3]	13.4	30.9	44.3	0.005	0.006	0.151	
32	SDE4	SDE4 012299	1999	1	1/20/99	0.42	28	0.09	0.01	0.05	22	NPDES	EMC	no	92	62	6.62	[illegible]	[illegible]	[illegible]	0.022	0.013	0.166	concurrent WET sample
33	SDE4	SDE4 021899	1999	2	2/18/99	0.8	32	0.06	0.01	0.35	20	NPDES	SMC	no	131	64	4.26	[illegible]	[illegible]	[illegible]	0.003	0.001	0.005	
34	SDE4	SDE4 022399	1999	2	2/22/99	0.86	34	0.14	0.02	0.04	9	NPDES	EMC	no	53	44	[illegible]	[illegible]	[illegible]	[illegible]	0.016	0.022	0.106	concurrent WET sample
35	SDE4	SDE4 030899	1999	3	3/8/99	0.28	16	0.06	0	0	96	NPDES	EMC	no	49	31	0.72	[illegible]	4.76	5.76	0.016	0.018	0.118	
36	SDE4	SDE4 031399	1999	3	3/12/99	0.83	23	0.07	0	0	71	NPDES	EMC	no	82	67	5.16	[illegible]	[illegible]	[illegible]	0.018	0.023	0.113	
37	SDE4	SDE4 032499	1999	3	3/24/99	0.28	19	0.09	0	0.16	40	NPDES	EMC	no	41	32	5.66	[illegible]	[illegible]	[illegible]	0.020	0.017	0.134	concurrent WET sample
38	SDE4	SDE4 032899	1999	3	3/27/99	0.24	9	0.07	0	0.09	26	NPDES	EMC	no	9.6	7.9	[illegible]	[illegible]	[illegible]	[illegible]	0.012	0.001	0.106	
80	SDS1	SDS1 102799	1999	10	10/27/99	0.64	9	0.19	0	0	72	NPDES	SMC	no	11	13	6.3	[illegible]	[illegible]	[illegible]	0.028	0.001	0.116	
98	SDS2	SDS2 111399	1999	11	11/11/99	0.98	62	0.16	0	0.05	31	NPDES	SMC	no	20	31	[illegible]				0.009	0.006	0.213	
99	SDS2	SDS2 060799	1999	6	6/6/99	0.26	22	0.06	0	0	79	NPDES	EMC	no	66	26					0.007	0.001	0.064	ANNUAL SAMPLE
97	SDS3	SDS3 081799	1999	8	8/16/99	0.31	10	0.26	0	0	792	NPDES	EMC	no	64[3]	19	10.4				0.139[3]	0.009	0.058	thunderstorm, 0.25 in/hr
96	SDS3	SDS3 092699	1999	9	9/24/99	0.47	23	0.26	0	0	148	NPDES	EMC	no	224[3]	186[3]	5.14	[illegible]	2.2	3.2	0.069	0.012	0.043	GLYCOLS MAY BE HIGH BIASED, DUPE WAS <MDL
99	SDS3	SDS3 100399	1999	10	10/3/99	0.4	3	0.22	0	0.07	36	NPDES	EMC	no	43[3]	33[3]	4.2	[illegible]	[illegible]	[illegible]	0.065	0.008	0.164[3]	
100	SDS3	SDS3 102799	1999	10	10/27/99	0.64	9	0.19	0	0	72	NPDES	SMC	no	96[3]	64[3]	4.74	[illegible]	4.2	8.2	0.004	0.001	0.009	
101	SDS3	SDS3 110499	1999	11	11/3/99	1.62	39	0.48	0	0.08	35	NPDES	SMC	no	310[3]	96[3]	6.78	4.7	1.11	5.7	0.0626	0.0434[3]	0.149[3]	
102	SDS3	SDS3 111399	1999	11	11/11/99	0.98	62	0.16	0	0.05	31	NPDES	SMC	no	24	29	17.6	10.6	[illegible]	11.6	0.022	0.004	0.186[3]	concurrent WET sample
103	SDS3	SDS3 122699	1999	12	12/24/99	1.19	39	0.19	0	0	153	NPDES	SMC	yes	18	16	480[3]	31.5	81.6	113	0.047	0.002	0.134	
104	SDS3	SDS3 011099	1999	1	1/6/99	0.27	21	0.06	0	0	64	NPDES	EMC	no	3.7	6.2	21.9	8.4	14	22.4	0.019	0.001	0.030	
105	SDS3	SDS3 011499	1999	1	1/13/99	1.07	22	0.19	0	0	86	NPDES	EMC	no	22	16	7.64	[illegible]	10	11	0.023	0.004	0.030	concurrent WET and WER
106	SDS3	SDS3 020399	1999	2	2/3/99	0.28	19	0.07	0	0.61	27	NPDES	SMC	no	9.2	11	6.06	[illegible]	2.06	3.06	0.016	0.001	0.027	
107	SDS3	SDS3 021499	1999	2	2/13/99	0.26	6	0.04	0	0	102	other	EMC	yes			86[3]				0.049	0.001	0.074	for DO study
108	SDS3	SDS3 030999	1999	3	3/8/99	0.28	16	0.06	0	0	96	NPDES	EMC	no	9.2	14	220[3]	6.52	161	167.5	0.024	0.002	0.063	
109	SDS3	SDS3 031399	1999	3	3/12/99	0.83	23	0.07	0	0	71	NPDES	SMC	no	7.6	16	16	[illegible]	6.21	7.21	0.022	0.001	0.036	
110	SDS3	SDS3 032599	1999	3	3/24/99	0.28	19	0.06	0	0.16	40	NPDES	EMC	no	8.7	3.5	[illegible]	[illegible]	[illegible]	[illegible]	0.019	0.001	0.027	
132	SDS4	SDS4 111999	1999	11	11/19/99	2.34	66	0.18	0	0	73	NPDES	SMC	no	2.1	2.6	[illegible]	[illegible]	[illegible]	[illegible]	0.029	0.001	0.016	
133	SDS4	SDS4 021399	1999	2	2/13/99	0.26	6	0.04	0	0	102	other	EMC	yes			10.6				0.006	0.00	0.036	for DO study
134	SDS4	SDS4 060799	1999	6	6/6/99	0.26	22	0.06	0	0	79	NPDES	EMC	no	36	12					0.023	0.00	0.009	ANNUAL SAMPLE
143	SDW3	SDW3 021999	1999	2	2/18/99	0.8	32	0.06	0.01	0.35	20	NPDES	EMC	no	8.6	13					0.001	0.001	0.003	1998 annual sample
144	SDW3	SDW3 032599	1999	3	3/24/99	0.28	19	0.06	0	0.16	40	NPDES	EMC	no	12	7.3					0.008	0.001	0.010	1999 annual sample
149	B	B 111399	1999	11	11/11/99	0.98	62	0.16	0	0.05	31	NPDES	EMC	no	29	126	[illegible]				0.013	0.007	0.124	
150	B	B 060799	1999	6	6/6/99	0.26	22	0.06	0	0	79	NPDES	EMC	no	8.8	14					0.006	0.001	0.006	ANNUAL SAMPLE
154	D	D 011499	1999	1	1/13/99	1.07	22	0.19	0	0	86	NPDES	SMC	no	61	40	[illegible]				0.014	0.003	0.126	
155	D	D 060799	1999	6	6/6/99	0.26	22	0.06	0	0	79	NPDES	EMC	no	66	14					0.005	0.001	0.006	ANNUAL SAMPLE
181	SDN1up	SDN1 081699	1999	8	8/16/99	0.31	10	0.26	0	0	792	NPDES	EMC	no	162[3]	63	26.6				0.0833	0.030	0.650[3]	thunderstorm, 0.25 in/hr
182	SDN1up	SDN1 100399	1999	10	10/3/99	0.4	3	0.22	0	0.07	36	NPDES	EMC	no	67	21	4.22				0.018	0.017	0.247	
183	SDN1up	SDN1 102799	1999	10	10/27/99	0.64	9	0.19	0	0	72	NPDES	SMC	no	85	44	6.82				0.009	0.001	0.009	
184	SDN1up	SDN1 110499	1999	11	11/3/99	1.62	39	0.48	0	0.08	35	NPDES	SMC	no	32	17	[illegible]				0.014	0.011	0.127	
185	SDN1up	SDN1 111399	1999	11	11/11/99	0.98	62	0.16	0	0.05	31	NPDES	EMC	no	53	46	[illegible]				0.024	0.026	0.487	concurrent WET sample
186	SDN1up	SDN1 122699	1999	12	12/24/99	1.19	39	0.19	0	0	153	NPDES	SMC	yes	168[3]	96[3]	448[3]	13.8	12.3	26.1	0.003	0.004	0.122	
197	SDN1up	SDN1 011499	1999	1	1/13/99	1.07	22	0.19	0	0	86	NPDES	EMC	no	78	31	[illegible]				0.024	0.048	0.182	concurrent WET sample
198	SDN1up	SDN1 020499	1999	2	2/3/99	0.28	19	0.07	0	0.61	27	NPDES	EMC	no	45	22	6.84				0.020	0.008	0.233	
199	SDN1up	SDN1 030099	1999	3	3/8/99	0.28	16	0.06	0	0	96	NPDES	EMC	no	40	24					0.016	0.009	0.170	
200	SDN1up	SDN1 032499	1999	3	3/24/99	0.28	19	0.06	0	0.16	40	NPDES	EMC	no	81	40	4.86				0.016	0.010	0.176	concurrent WET sample
201	SDN1up	SDN1 032899	1999	3	3/27/99	0.24	9	0.07	0	0.09	26	NPDES	EMC	no	9.7	8.4	[illegible]				0.012	0.001	0.216	
224	SDN2	SDN2 082499	1999	8	8/24/99	1.12	24	0.35	0.03	0.08	10	NPDES	EMC	no	18									30 MIN PUMP STATION BYPASS
262	SDN3	SDN3 122499	1999	12	12/24/99	1.19	39	0.19	0	0	153	NPDES	SMC	yes	12	9	222[3]	[illegible]	14.2	16.2	0.017	0.001	0.069	
263	SDN3	SDN3 021399	1999	2	2/13/99	0.26	6	0.04	0	0	102	other	EMC	yes			17.6				0.020	0.010	0.060	for DO study
286	SDN4	SDN4 081699	1999	8	8/16/99	0.31	10	0.26	0	0	792	NPDES	EMC	no	104	108	6				0.067	0.003	0.022	thunderstorm, 0.25 in/hr
287	SDN4	SDN4 092699	1999	9	9/29/99	0.47	23	0.26	0	0	148	NPDES	EMC	no	136	143	0.74	[illegible]	2.2	3.2	0.043	0.001	0.016	GLYCOLS MAY BE HIGH BIASED, DUPE WAS <MDL
288	SDN4	SDN4 100399	1999	10	10/3/99	0.4	3	0.22	0	0.07	36	NPDES	EMC	no	27	23	[illegible]	[illegible]	[illegible]	[illegible]	0.061	0.001	0.045	
289	SDN4	SDN4 110499	1999	11	11/3/99	1.62	39	0.48	0	0.08	35	NPDES	SMC	no	18	5.6	[illegible]	[illegible]	[illegible]	[illegible]	0.047	0.001	0.070	
290	SDN4	SDN4 111399	1999	11	11/11/99	0.98	62	0.16	0	0.05	31	NPDES	EMC	no	22	16	[illegible]	[illegible]	[illegible]	[illegible]	0.025	0.001	0.127	concurrent WET sample
291	SDN4	SDN4 122699	1999	12	12/24/99	1.19	39	0.19	0	0	153	NPDES	SMC	yes	12	12	168[3]	7	27.3	34.3	0.023	0.001	0.076	
272	SDN4	SDN4 011499	1999	1	1/13/99	1.07	22	0.19	0	0	86	NPDES	EMC	no	7	9.2	[illegible]	[illegible]	[illegible]	[illegible]	0.020	0.001	0.034	concurrent WET sample
273	SDN4	SDN4 020499	1999	2	2/3/99	0.28	19	0.07	0	0.61	27	NPDES	EMC	no	3.6	4.8	[illegible]	[illegible]	[illegible]	[illegible]	0.016	0.001	0.024	
274	SDN4	SDN4 021399	1999	2	2/13/99	0.26	6	0.04	0	0	102	other	EMC	yes			30				0.036	0.001	0.026	for DO study
276	SDN4	SDN4 031399	1999	3	3/12/99	0.83	23	0.07	0	0	71	NPDES	EMC	no	2.9	7	[illegible]	[illegible]	[illegible]	[illegible]	0.019	0.001	0.025	

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	1998-99 Composite Sample Data				Storm Characteristics										concentration, mg/l									
order	outfall	POS ID	reported	month	stormdate	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	purpose	comp	ground ddice?	TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
278	SDN4	SDN4 032699	1999	3	3/27/99	0.24	9	0.07	0	0.09	28	NPDES	EMC	no	4.3	3.8	[illegible]	[illegible]	[illegible]	[illegible]	0.022	[illegible]	0.014	
295	EY	EY 011499	1999	1	1/13/99	1.07	22	0.18	0	0	65	NPDES	EMC	no	76									
296	EY	EY 062499	1999	6	6/24/99	1.12	24	0.35	0.03	0.08	10	NPDES	SMC	no	128									
317	TY	TY 020399	1999	2	2/3/99	0.28	19	0.07	0	0.61	27	NPDES	SMC	no	28									
	[redacted]											All outfalls	count		84	81	55	37	37	37	63	62	62	
													max		131	126	36	32	161	166	0.060	0.048	0.487	
													95th		66	66	20	13	41	58	0.055	0.030	0.236	
													75th		53	31	6.8	1.0	4.8	7.2	0.025	0.010	0.129	
													median		28	17	4.8	1.0	1.0	2.0	0.019	0.001	0.068	
													25th		9.7	11.0	2.0	1.0	1.0	2.0	0.012	0.001	0.027	
													min		2.1	2.9	2.0	1.0	1.0	2.0	0.001	0.001	0.003	
													sd		31	22	7.1	6.9	27.8	31.4	0.018	0.011	0.086	
													CV, %		85%	89%	106%	176%	267%	226%	72%	143%	96%	
													# non-detected		0	0	19	29	23	21	1	30	3	
													% non-detected		0%	0%	35%	78%	62%	57%	1.6%	48%	4.8%	
													# trimmed		10	9	7	0	0	0	4	1	4	
													% trimmed		16%	15%	13%	0%	0%	0%	6%	2%	6%	
												SDE4 (002)	count		12	12	12	12	12	12	12	12	12	
													max		131	67	10	13	31	44	0.048	0.039	0.276	
													95th		112	66	8	7	17	23	0.042	0.035	0.217	
													75th		67	62	6	1.0	1.0	2.0	0.026	0.024	0.164	
													median		53	38	5.2	1.0	1.0	2.0	0.017	0.018	0.116	
													25th		47.0	27.3	3.1	1.0	1.0	2.0	0.010	0.004	0.103	
													min		9.6	7.9	2.0	1.0	1.0	2.0	0.003	0.001	0.003	
													sd		31	17	2.3	3.6	8.6	12.2	0.014	0.013	0.068	
													CV, %		52%	44%	46%	176%	226%	206%	70%	77%	65%	
													# non-detected		0	0	3	11	10	10	0	3	0	
													% non-detected		0%	0%	25%	92%	83%	83%	0%	25%	0%	
													# trimmed		1	2	1				0	0	0	
													% trimmed		8%	17%	8%	0%	0%	0%	0%	0%	0%	
												SDS1 (003)	count		1	1	1	1	1	1	1	1	1	
													max		11	13	6	1	1	2	0.028	0.001	0.118	
													95th		11	13	6	1	1	2	0.028	0.001	0.118	
													75th		11	13	6	1.0	1.0	2.0	0.028	0.001	0.118	
													median		11	13	6.3	1.0	1.0	2.0	0.028	0.001	0.118	
													25th		11.0	13.0	6.3	1.0	1.0	2.0	0.028	0.001	0.118	
													min		11.0	13.0	6.3	1.0	1.0	2.0	0.028	0.001	0.118	
													sd											
													CV, %											
													# non-detected		0	0	0	1	1	1	0	1	0	
													% non-detected		0%	0%	0%	100%	100%	100%	0%	100%	0%	
												SDS2 (004)	count		2	2	2	0	0	0	2	2	2	
													max		66	31	2				0.009	0.006	0.213	
													95th		63	30	2				0.009	0.005	0.206	
													75th		64	28	2				0.008	0.006	0.176	
													median		43	26	2.0				0.008	0.003	0.139	
													25th		31.3	22.8	2.0				0.007	0.002	0.101	
													min		20.0	20.0	2.0				0.007	0.001	0.064	
													sd		32	8					0.001	0.003	0.105	
													CV, %		76%	31%					17%	90%	76%	
													# non-detected		0	0	1				0	1	0	
													% non-detected		0%	0%	50%				0%	50%	0%	

[redacted]

lined-out values are outliers or non-representative data trimmed from data analysis

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1998-99 Composite Sample Data					Storm Characteristics									concentration, mg/l									
order	outfall	POS ID	reported	month	stormdate	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	purpose	comp	ground delco?	TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
												SD83 (985)	count		13	13	14	12	12	12	14	14	14	
													max		24	29	22	32	161	166	0.069	0.012	0.134	
													95th		23	25	20	20	113	133	0.061	0.009	0.104	
													75th		19	16	13	7.0	11.0	14.2	0.047	0.004	0.055	
													median		9	15	6.8	1.0	3.2	6.5	0.023	0.002	0.036	
													25th		8.4	11.0	4.9	1.0	1.0	3.2	0.019	0.001	0.029	
													min		3.7	3.6	2.0	1.0	1.0	2.0	0.004	0.001	0.003	
													sd		7	7	6.3	6.8	46.2	61.0	0.019	0.003	0.036	
													CV, %		68%	62%	66%	154%	202%	176%	62%	100%	74%	
													# non-detected		0	0	1	7	4	2	0	6	0	
													% non-detected		0%	0%	7%	58%	33%	17%	0%	43%	0%	
													# trimmed		5	4	3				2	1	3	
													% trimmed		38%	31%	21%	0%	0%	0%	14%	7%	21%	
												SD84 (986)	count		2	2	2	1	1	1	3	3	3	
													max		36	12	11	1	1	2	0.029	0.001	0.036	
													95th		34	12	10	1	1	2	0.026	0.001	0.034	
													75th		26	10	8	1.0	1.0	2.0	0.026	0.001	0.029	
													median		19	7	6.3	1.0	1.0	2.0	0.023	0.001	0.016	
													25th		10.6	8.2	4.1	1.0	1.0	2.0	0.016	0.001	0.012	
													min		2.1	2.8	2.0	1.0	1.0	2.0	0.006	0.001	0.006	
													sd		24	8	6.0				0.012	0.000	0.016	
													CV, %		126%	86%	96%				61%	0%	74%	
													# non-detected		0	0	1	1	1	1	0	3	0	
													% non-detected		0%	0%	50%	100%	100%	100%	0%	100%	0%	
												SD83 (810)	count		2	2	0	0	0	0	2	2	2	
													max		12	13	0				0.006	0.001	0.010	
													95th		12	13					0.006	0.001	0.010	
													75th		11	12					0.004	0.001	0.008	
													median		10	10					0.003	0.001	0.006	
													25th		9.5	8.7					0.002	0.001	0.004	
													min		8.6	7.3					0.001	0.001	0.003	
													sd		2	4					0.003	0.000	0.005	
													CV, %		23%	40%					96%	0%	86%	
													# non-detected		0	0					1	2	0	
													% non-detected		0%	0%					50%	100%	0%	
												B (814)	count		2	2	1	0	0	0	2	2	2	
													max		29	120	2				0.013	0.007	0.124	
													95th		28	120	2				0.012	0.006	0.119	
													75th		24	96	2				0.011	0.006	0.085	
													median		19	70	2.0				0.009	0.004	0.065	
													25th		13.9	42.6	2.0				0.007	0.002	0.036	
													min		8.8	14.0	2.0				0.006	0.001	0.006	
													sd		14	79					0.006	0.004	0.083	
													CV, %		76%	113%					64%	104%	129%	
													# non-detected		0	0	1				0	1	0	
													% non-detected		0%	0%	100%				0%	50%	0%	
												D (815)	count		2	2	1	0	0	0	2	2	2	
													max		58	40	2				0.014	0.003	0.129	
													95th		58	39	2				0.013	0.002	0.123	
													75th		56	34	2				0.012	0.002	0.099	
													median		55	27	2.0				0.010	0.002	0.069	
													25th		52.8	20.8	2.0				0.007	0.001	0.038	
													min		51.0	14.0	2.0				0.006	0.001	0.006	
													sd		5	18					0.006	0.001	0.066	
													CV, %		9%	66%					61%	61%	126%	
													# non-detected		0	0	1				0	1	0	
													% non-detected		0%	0%	100%				0%	50%	0%	

1998-99 Composite Sample Data					Storm Characteristics										concentration, mg/l									
order	outfall	POS ID	reported	month	stormdate	depth, in.	dur, hr	maxint, in/hr	24hrxint, in.	48hrxint, in.	dryant, hr	purpose	comp	ground dcice?	TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
												SDN1 (996)	count		0	0	0	0	0	0	0	0	0	
													max											
												(former location downstream at SDN1-27, ends 1996)	95th											
													75th											
													median					(This location no longer sampled)					
													25th											
													min											
													sd											
													CV, %											
													# non-detected											
													% non-detected											
												SDN1up (996)	count		11	11	10	1	1	1	11	11	11	
													max		85	63	29	14	12	26	0.024	0.048	0.487	
												(upstream location at SDN1-22, begins 1997)	95th		82	56	20	14	12	26	0.024	0.039	0.379	
													75th		67	43	8	13.9	12.3	26.1	0.019	0.021	0.229	
													median		53	28	4.2	13.9	12.3	26.1	0.016	0.010	0.179	
													25th		40.0	21.5	2.0	13.9	12.3	26.1	0.013	0.006	0.138	
													min		9.7	8.4	2.0	13.9	12.3	26.1	0.003	0.001	0.066	
													sd		24	17	8.8				0.007	0.016	0.114	
													CV, %		45%	65%	132%				48%	99%	56%	
													# non-detected		0	0	4	0	0	0	0	2	0	
													% non-detected		0%	0%	40%	0%	0%	0%	0%	18%	0%	
													# trimmed		2	1	1				1	0	1	
													% trimmed		18%	9%	10%	0%	0%	0%	9%	0%	9%	
												SDN2 (997)	count		1	0	0	0	0	0	0	0	0	
													max		18									
												(pumped to IWS as of late 1997)	95th		18									
													75th		18									
													median		18									
													25th		18.0									
													min		18.0									
													sd											
													CV, %											
													# non-detected		0									
													% non-detected		0%									
												SDN3 (998)	count		1	1	2	1	1	1	2	2	2	
													max		12	9	18	1	14	16	0.020	0.010	0.089	
													95th		12	9	18	1	14	16	0.020	0.010	0.086	
													75th		12	9	18	1.0	14.2	16.2	0.019	0.008	0.082	
													median		12	9	17.6	1.0	14.2	16.2	0.018	0.006	0.075	
													25th		12.0	9.0	17.6	1.0	14.2	16.2	0.017	0.003	0.067	
													min		12.0	9.0	17.6	1.0	14.2	16.2	0.017	0.001	0.060	
													sd								0.002	0.006	0.021	
													CV, %								13%	118%	28%	
													# non-detected		0	0	0	1	0	0	0	1	0	
													% non-detected		0%	0%	0%	100%	0%	0%	0%	50%	0%	
													# trimmed		0	0	1				0	0	0	
													% trimmed		0%	0%	50%	0%	0%	0%	0%	0%	0%	

1998-99 Composite Sample Data					Storm Characteristics									concentration, mg/l								
order	outfall	POS ID	reported	month	stormdate	depth, in.	dur, hr	maxint, in/hr	24hrint, in.	48hrint, in.	dryint, hr	purpose	comp	ground delce?	TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
												SDN4 (911)	count		10	10	11	9	9	9	11	11	11	
													max		27	23	36	7	27	34	0.067	0.003	0.127	
													95th		25	20	23	6	17	22	0.064	0.002	0.101	
													75th		19	13	8	1.0	1.0	2.0	0.046	0.001	0.058	
													median		10	8	2.0	1.0	1.0	2.0	0.025	0.001	0.026	
													25th		4.2	5.4	2.0	1.0	1.0	2.0	0.021	0.001	0.023	
													min		2.9	3.6	2.0	1.0	1.0	2.0	0.015	0.001	0.014	
													sd		9	6	10.6	2.0	6.7	10.7	0.018	0.001	0.034	
													CV, %		76%	65%	164%	120%	216%	167%	62%	54%	76%	
													# non-detected		0	0	7	6	7	7	0	9	0	
													% non-detected		0%	0%	64%	56%	78%	78%	0%	82%	0%	
													# trimmed		2	2	1				1			
													% trimmed		20%	20%	9%	0%	0%	0%	9%	0%	0%	
												EY (912)	count		2	0	0	0	0	0	0	0	0	
													max		128									
													95th		125									
													75th		116									
													median		102									
													25th		89.0									
													min		76.0									
													sd		37									
													CV, %		36%									
													# non-detected		0									
													% non-detected		0%									
												TY (913)	count		3	0	0	0	0	0	0	0	0	
													max		28									
													95th		28									
													75th		28									
													median		28									
													25th		28									
													min		28									
													sd											
													CV, %											
													# non-detected		0									
													% non-detected		0%									
												AirField (SDS3, SDS4, SDN3, SDN4)	count		28	28	29	23	23	23	30	30	30	
													max		36	29	36	32	161	186	0.068	0.012	0.134	
													95th		28	23	21	10	76	106	0.065	0.008	0.116	
													75th		20	16	10	3	6	11	0.044	0.002	0.058	
													median		9	12	6	1	1	3	0.023	0.001	0.034	
													25th		6.7	6.1	2.0	1.0	1.0	2.0	0.019	0.001	0.026	
													min		2.1	2.9	2.0	1.0	1.0	2.0	0.004	0.001	0.003	
													sd		10	7	8	7	34	36	0.018	0.003	0.033	
													CV, %		79%	69%	128%	401%	850%	672%	61%	239%	76%	
													# non-detected		0	0	9	17	15	15	0	19	0	
													% non-detected		0%	0%	31%	74%	65%	65%	0%	63%	0%	
													# trimmed		7	6	5				3	1	3	
													% trimmed		27%	23%	17%	0%	0%	0%	10%	3%	10%	

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All Grab Sample Data			storm characteristics										concentration, mg/l							
outfall	POS ID	reported	stormdate	event	depth, in.	dur, hr	maxint, in/hr	24hrsnt, in.	48hrsnt, in.	drysnt, hr	Dbj	ground delce?	ph	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-MO	Fecals (MPN)	comments
SDE4	SDE4 111394	1995	11/11/94	1	0.28	14				48	NPDES	No		2.8	1.1				1100	
SDE4	SDE4 111994	1995	11/19/94	1	0.42	24			0.05	62	NPDES	No								
SDE4	SDE4 010795	1995	1/7/95	1	0.21	62			0	262	NPDES	No	7	3.6	2.8				45	
SDE4	SDE4 041095	1995	4/10/95	1	0.29	18			0	56	NPDES	No	6.6	[illegible]	1.1				280	
SDE4	SDE4 050295	1995	5/2/95	2	0.42	20				36	NPDES	No								
SDE4	SDE4 072695	1995	7/26/95	1	0.41	36			0		NPDES	No	6.9	5.7	3.9				[illegible]	
SDE4	SDE4 081795	1995	8/18/95	1	1.34	12			0.01		NPDES	No								
SDE4	SDE4 102695	1995	10/25/95	1	0.28	8			0.01		NPDES	No	7.1	6.9	[illegible]				300	
SDE4	SDE4 020496 GRA	1996	2/3/96	1	1.6	8					NPDES	Yes	7.9	17	8.6				22	
SDE4	SDE4 032296 GRA	1996	3/22/96	1	0.21				0		StpAg	No	7.1	2.8	3.9				20	
SDE4	SDE4 041696 GRA	1996	4/16/96	1	0.49	16			0.09		NPDES	No	6.39	2.8	3.35				17	
SDE4	SDE4 071796 GRA	1997	7/17/96	1	0.27	31			0		NPDES	No							220	
SDE4	SDE4 080396 GRA	1997	8/3/96	1	0.29	1.2			0	76	NPDES	No	7.31	3.1	2.64				[illegible]	
SDE4	SDE4 121596 GRAB	1997	12/15/96	2	0.19	4			0	72	NPDES	No	6.61	2.8	1.6				50	backup data in case short on data for 96 Q4
SDE4	SDE4 121996 GRA	1997	12/19/96	1	0.36	37			0	103	NPDES	No	6.45	3.3	1.97				220	
SDE4	SDE4 011697 GRA	1997	1/16/97	1	1.21	23			0	154	NPDES	No	7.08	9	10				[illegible]	
SDE4	SDE4 012797 GRA	1997	1/27/97	1	0.41	28			0	109	StpAg	No	6.17	[illegible]	5				50	
SDE4	SDE4 030597 GRAB	1997	3/5/97	1	0.38	20			0.24	42	NPDES	No	6.33	103[2]	3.08				[illegible]	FOG result not representative, laboratory error, see letter of May 15, 1997
SDE4	SDE4 053097	1997	5/30/97	1	1.84	36			0.04	14	NPDES	No		1.1	1.2					backup FOG/TPH for March 1997 Lab errors (SDE4 030597 grab)
SDE4	SDE4 061697 GRA	1997	6/16/97	1	0.36	28			0	135	NPDES	No	6	1.6	1.48				180	
SDE4	SDE4 102897 GRA	1998	10/28/97	1	0.47	10.8			0.08	26	NPDES	No	6.6	[illegible]	2.09				[illegible]	
SDE4	SDE4 121597 GRA	1998	12/15/97	1	1	33			0	87	NPDES	No	6.59	1.6	2.3				80	
SDE4	SDE4 030198 GRAB	1998	3/1/98	1	0.86	66			0.07	6	NPDES	No	7.16		1.6	1.66	[illegible]	1.54	600[2]	fecal coliform result not representative: exceeded holding time by 9+ hours
SDE4	SDE4 040798 GRA	1998	4/7/98	2	0.03	0.5			0.04	87	NPDES	No	7.03		2.4	3.4	[illegible]	3.4	110	NON-"STORM"
SDE4	SDE4 041098 GRA	1998	4/8/98	2	0.09	17			0	62	NPDES	No	6.86		2.27	3.1	[illegible]	3.05	900	NON-"STORM"
SDE4	SDE4 042398 GRA	1998	4/23/98	1	0.46	20			0	264	NPDES	No	6		3.6	2.6	[illegible]	2.48	500	
SDE4	SDE4 050898 GRA	1998	5/8/98	2	0.12	8			0	360	NPDES	No	7.03		1.8	2.63	0.09	2.44	1600	NON-"STORM"
SDE4	SDE4 051498 GRA	1998	5/14/98	1	0.21	8			0.01	125	NPDES	No	6.83		2.6	3.04	0.1	2.94	80	
SDE4	SDE4 062498 GRA	1998	6/24/98	1	0.43	4			0	288	NPDES	No	6.94		1.9	2.77	0.84	1.93	300	
SDE4	SDE4 071498 GRA	1998	7/14/98	2	0.13	16	0.04	0	0	264	NPDES	No	6.72		2.9	6.58	[illegible]	6.54	[illegible]	nonstorm
SDE4	SDE4 081898 GRA	1998	8/18/98	1	0.31	10	0.25	0	0	792	NPDES	No	6.62		[illegible]	0.21	[illegible]	0.17	500	thunderstorm, 0.25 in/hr
SDE4	SDE4 081898 GRA	1998	8/18/98	2	0.19	20	0.16	0	0	456	NPDES	No	7.42			2.11	[illegible]	2.06	500	nonstorm
SDE4	SDE4 082498 GRA	1998	8/24/98	1	0.47	23	0.26	0	0	148	NPDES	No	6.79			1.19	[illegible]	1.17	[illegible]	
SDE4	SDE4 100398 GRA	1998	10/3/98	1	0.4	3	0.22	0	0.07	36	NPDES	No	6.87		2.2	4.94	[illegible]	4.82	[illegible]	
SDE4	SDE4 110398 GRA	1998	11/3/98	1	1.62	39	0.49	0	0.09	36	NPDES	No	6.56			2.86	[illegible]	2.83	[illegible]	
SDE4	SDE4 111898 GRA	1998	11/19/98	1	2.34	66	0.19	0	0	73	NPDES	No	6			1.48	[illegible]	1.44	240	
SDE4	SDE4 121098 GRA	1998	12/10/98	2	0.14	4	0.03	0	0	48	NPDES	No	6.62			0.98	[illegible]	0.88	220	nonstorm
SDE4	SDE4 121798 GRA	1998	12/17/98	2	0.11	4	0.03	0	0.02	33	NPDES	No	6.47			3.67	[illegible]	3.65	900	nonstorm
SDE4	SDE4 122498 GRA	1998	12/24/98	1	1.19	39	0.16	0	0	153	NPDES	Yes	7.76			6.86	[illegible]	6.84		fecals not analyzed due to holiday lab closure
SDE4	SDE4 012099 GRA	1999	1/20/99	1	0.42	28	0.09	0.01	0.06	22	NPDES	No	6.86			3.03	[illegible]	3	170	CONCURRENT WET TEST
SDE4	SDE4 021899 GRA	1999	2/18/99	1	0.8	32	0.06	0.01	0.36	20	NPDES	No	10.7			0.27	[illegible]	0.26	[illegible]	
SDE4	SDE4 030899 GRA	1999	3/8/99	1	0.26	16	0.05	0	0	98	NPDES	No	6.6			3.86	[illegible]	3.84	30	
SDE4	SDE4 031299 GRA	1999	3/12/99	1	0.83	23	0.07	0	0	71	NPDES	No	6.94			1.99	[illegible]	1.97	500	
SDE4	SDE4 032499 GRA	1999	3/24/99	1	0.28	19	0.06	0	0.16	40	NPDES	No	6.32			3.17	0.06	3.11	500	CONCURRENT WET TEST
SDE4	SDE4 032799 GRA	1999	3/27/99	1	0.24	9	0.07	0	0.09	26	NPDES	No	6.45			2.93	0.05	2.58	50	
SDE4	SDE4 062099 GRA	1999	6/20/99	1	0.21	36	0.03	0	0	48	NPDES	No	6.65			2.84	[illegible]	2.62	[illegible]	
SDS1	SDS1 101894	1995	10/19/94	1	0.2	32				120	NPDES	No	5.76	1.1	[illegible]	[illegible]	[illegible]	[illegible]	10	
SDS1	SDS1 111994	1995	11/19/94	1	0.42	24			0.09	62	NPDES	No								
SDS1	SDS1 021695	1995	2/16/95	1	1.1	56			0	86	NPDES	Yes	6.6	3.4	5.3				[illegible]	
SDS1	SDS1 050295	1995	5/2/95	2	0.42	20				36	NPDES	No								
SDS1	SDS1 051195	1995	5/11/95	1	0.2	8			0.12		NPDES	No	7.4	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
SDS1	SDS1 080495	1995	8/4/95	1	0.7	28			0	384	NPDES	No	6.4	6.6	5.4				80	
SDS1	SDS1 080795	1995	8/8/95	1	0.4	8			0		NPDES	No	7.2	3.3	[illegible]	[illegible]	[illegible]	[illegible]	4	
SDS1	SDS1 101695	1995	10/16/95	1	0.36	12			0		NPDES	No	7.1	1.2	[illegible]	[illegible]	[illegible]	[illegible]	200	
SDS1	SDS1 011396 GRA	1996	1/13/96	1	0.37	20			0		NPDES	No	7.1	[illegible]	1.8				[illegible]	
SDS1	SDS1 041696 GRA	1996	4/16/96	1	0.49	16			0.09		NPDES	No	6.65	2.8	0.32				4	

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All Grab Sample Data			storm caharcteristics										concentration. mg/l							
outfall	POS ID	reported	stormdate	event	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	Obj	ground deice?	ph	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-MO	Fecals (MPN)	comments
SDS1	SDS1 042296 GRA	1996	4/22/96	1	2.83	8			0		SlipAg	No	7.54	1.9	0.58				23	
SDS1	SDS1 070396 GRAB	1997	7/3/96	1	0.23	12			0		NPDES	No	6.68	0.5	0.35				2±	Fecals exceeded 30 hour holding time, results not representative
SDS1	SDS1 071796 GRA	1997	7/17/96	1	0.27	31			0		NPDES	No							[illegible]	fecals make up for 7/3/96
SDS1	SDS1 080296 GRA	1997	8/2/96	1	1.01	27			0	325	SlipAg	No	5.36	0.5	0.42				130	
SDS1	SDS1 120496 GRA	1997	12/4/96	1	0.82	7.5			0.18	44	NPDES	No	6.81	2.4	0.35				1600	
SDS1	SDS1 011697 GRA	1997	1/16/97	1	1.21	23			0	154	NPDES	No	6.62	0.5	2.8				350	
SDS1	SDS1 041397 GRA	1997	4/13/97	1	0.31	12			0.04		NPDES	No	7.13	0.5	2.6				23	
SDS1	SDS1 061797 GRA	1997	6/16/97	1	0.38	26			0	135	NPDES	No	7	0.5	0.95				[illegible]	
SDS1	SDS1 102897 GRA	1998	10/28/97	1	0.47	10.8			0.06	26	NPDES	No	6.86	0.5	0.84				80	
SDS1	SDS1 111997 GRA	1998	11/19/97	1	0.66	39			0.12	24	NPDES	No			0.83				1600	
SDS1	SDS1 121597 GRA	1998	12/15/97	1	1	33			0	87	NPDES	No	6.09	0.5	1.3				23	
SDS1	SDS1 030698 GRAB	1998	3/6/98	1	0.86	27			0	132	NPDES	No	6.22		0.95	0.72	0.16	0.56	[illegible]	FULLFILS QUARTERLY DEICING SAMPLE RQMT PLUS ANNUAL SAMPLE RQMT
SDS1	SDS1 121798	1999	12/17/98	2	0.11	4	0.03	0	0.02	33	NPDES	No								nonstorm
SDS1	SDS1 031299 GRA	1999	3/12/99	1	0.83	23	0.07	0	0	71	NPDES	No								quarterly deice grab sample in first 60 minutes
SDS1	SDS1 062099 GRA	1999	6/20/99	1	0.21	38	0.03	0	0	48	NPDES	No	6.66			1.56	0.025	1.54	[illegible]	foam observed below outfall
SDS1	SDS1 062099 GRA	1999	6/20/99	1	0.21	38	0.03	0	0	48	NPDES	No								FOAM OBSERVED BELOW OUTFALL
SDS2	SDS2 051095	1995	5/9/95	1	0.12	7.5			0	102	NPDES	No	7.2	3.4	0.5				440	
SDS2	SDS2 051195	1995	5/11/95	1	0.2	8			0.12		NPDES	No	7.4	1.4	0.5				760	
SDS2	SDS2 061095	1995	6/10/95	1	0.3	10			0	96	NPDES	No	7.1	1.8	0.5				1400	
SDS2	SDS2 090595	1996	9/5/95	1							NPDES	No	6.7	2.2	0.5				2600	
SDS2	SDS2 112396 GRA	1997	11/23/96	1	0.63	34.1			0	72	NPDES	Yes	6.71	0.5	0.125				23	
SDS2	SDS2 120496 GRA	1997	12/4/96	1	0.82	7.6			0.16	44	NPDES	No	6.68	0.5	0.125				8	
SDS2	SDS2 011697 GRA	1997	1/16/97	1	1.21	23			0	154	SlipAg	No	6.77	0.5	0.125				220	
SDS2	SDS2 021197 GRA	1997	2/11/97	1	0.48	18			0	205	SlipAg	No	6.76	4	0.125				11	LAST FOR STIP AG
SDS2	SDS2 111198 GRA	1999	11/11/98	1	0.98	62	0.15	0	0.05	31	NPDES	No				0.09	0.025	0.066	110	
SDS2	SDS2 050799 GRA	1999	5/6/99	1	0.25	22	0.06	0	0	79	NPDES	No	7.45			0.31	0.025	0.29	900	ANNUAL SAMPLE
SDS3	SDS3 090894	1995	9/8/94	1	0.69	22				93	NPDES	No								
SDS3	SDS3 091494	1995	9/13/94	1	0.15	9				118	NPDES	No	7.14	8.3	0.5				20	
SDS3	SDS3 101394	1995	10/13/94	1	0.32	14			0	480	NPDES	No		1.4	0.5				[illegible]	
SDS3	SDS3 111994 grab	1995	11/19/94	1	0.42	24			0.05	62	NPDES	No		0.5	0.5				2	
SDS3	SDS3 010795	1995	1/7/95	1	0.21	62			0	262	NPDES	No	7.2	0.65	0.5				[illegible]	
SDS3	SDS3 041295	1995	4/10/95	1	0.29	18			0	56	NPDES	No	7.3	0.65	0.5				[illegible]	
SDS3	SDS3 050295	1995	5/2/95	2	0.42	20				36	NPDES	No								
SDS3	SDS3 072695	1996	7/26/95	1	0.41	36			0		NPDES	No	7.7	0.65	0.5				[illegible]	
SDS3	SDS3 101695	1996	10/15/95	1	0.35	12			0		NPDES	No	7.4	1.4	0.5				[illegible]	
SDS3	SDS3 011396 GRA	1996	1/13/96	1	0.37	20			0		NPDES	No	7.4	[illegible]	0.5				[illegible]	
SDS3	SDS3 032296 grab	1996	3/22/96	1	0.21				0		SlipAg	No	7.5	0.5	0.5				13	
SDS3	SDS3 041696 GRA	1996	4/16/96	1	0.49	18			0.09		NPDES	No	7.39	1.2	0.31				[illegible]	
SDS3	SDS3 071796 GRA	1997	7/17/96	1	0.27	31			0		NPDES	No							[illegible]	fecals make up for 7/3/96 > hold time
SDS3	SDS3 080296 GRA	1997	8/2/96	1	1.01	27			0	325	NPDES	No	7.35	0.5	0.3				8	
SDS3	SDS3 080396 GRA	1997	8/3/96	1	0.29	1.2			0	76	NPDES	No	6.96	0.5	[illegible]				[illegible]	
SDS3	SDS3 102196 GRA	1997	10/21/96	1	0.68	4.1			0	64	NPDES	No	6.97	0.5	0.125				130	
SDS3	SDS3 112396 GRA	1997	11/23/96	1	0.63	34.1			0	72	SlipAg	Yes	7.29	0.5	0.125				[illegible]	
SDS3	SDS3 011697 GRA	1997	1/16/97	1	1.21	23			0	154	NPDES	No	6.87	3	0.64				30	
SDS3	SDS3 030597 GRA	1997	3/5/97	1	0.39	20			0.24	42	NPDES	No	7.22	0.5	0.125				[illegible]	
SDS3	SDS3 060397 GRA	1997	6/3/97	1	0.26	16			0	76	NPDES	No	7.49	0.5	3.7				130	
SDS3	SDS3 102897 GRA	1998	10/28/97	1	0.47	10.8			0.08	26	NPDES	No	7.13	0.5	0.125				13	
SDS3	SDS3 012998 GRA	1998	1/29/98	1	0.2	14			0	107	NPDES	No	7.26	1.1	0.125				[illegible]	
SDS3	SDS3 030198 GRA	1998	3/1/98	1	0.96	66			0.07	6	NPDES	No	7.69		0.125	0.19	0.08	0.11	[illegible]	
SDS3	SDS3 030698 GRAB	1998	3/6/98	1	0.86	27			0	132	NPDES	No			0.125	0.076	0.025	0.05	[illegible]	backup monthly sample in case 3/1/98 sample didn't qualify under new permit
SDS3	SDS3 042398 GRA	1998	4/23/98	1	0.46	20			0	264	NPDES	No	7.39		0.125	0.076	0.025	0.05	[illegible]	
SDS3	SDS3 050998 GRA	1998	5/9/98	2	0.12	8			0	360	NPDES	No	7.07		0.34	0.33	0.025	0.31	17	NON-"STORM"
SDS3	SDS3 051498 GRA	1998	5/14/98	1	0.21	8			0.01	125	NPDES	No	7.23		0.26	0.18	0.05	0.13	70	CONSIDERABLE POLLEN IN SAMPLE
SDS3	SDS3 061098 GRA	1998	6/10/98	1	0.28	10			0	288	NPDES	No	7.51		0.125	0.076	0.025	0.05	4	
SDS3	SDS3 071598 GRA	1999	7/14/98	2	0.13	16	0.04	0	0	264	NPDES	No	7.32		0.38	0.2	0.025	0.18	30	nonstorm
SDS3	SDS3 081698 GRA	1999	8/16/98	1	0.31	10	0.25	0	0	792	NPDES	No	7.76		0.125	0.19	0.025	0.17	500	thunderstorm, 0 25 in/hr
SDS3	SDS3 091698 GRA	1999	9/16/98	2	0.19	20	0.16	0	0	456	NPDES	No	7.71			0.15	0.025	0.13	300	nonstorm

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All Grab Sample Data			storm caharcteristics										concentration, mg/l							
outfall	POE ID	reported	stormdate	event	depth, in.	dur, hr	maxint, in/hr	24hrrain, in.	48hrrain, in.	dryant, hr	Obj	ground delce?	ph	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-MO	Fecals (MPN)	comments
SDS3	SDS3 082498 GRAI	1998	8/24/98	1	0.47	23	0.28	0	0	148	NPDES	No	7.14			0.21		0.19	900	
SDS3	SDS3 100398 GRAI	1998	10/3/98	1	0.4	3	0.22	0	0.07	36	NPDES	No	6.99		0.56	0.53		0.51	50	
SDS3	SDS3 102798 GRAI	1998	10/27/98	1	0.64	9	0.18	0	0	72	NPDES	No	7.34			0.07		0.048	13	
SDS3	SDS3 111198 GRAI	1998	11/11/98	1	0.98	62	0.16	0	0.05	31	NPDES	No	7.1			0.35		0.33	30	
SDS3	SDS3 121098 GRAI	1998	12/10/98	2	0.14	4	0.03	0	0	49	NPDES	No	7.27			0.065		0.065	16	nonstorm
SDS3	SDS3 121798 GRAI	1998	12/17/98	2	0.11	4	0.03	0	0.02	33	NPDES	No	7.09			0.075		0.05	24	nonstorm
SDS3	SDS3 122498 GRAI	1998	12/24/98	1	1.19	39	0.18	0	0	183	NPDES	Yes	7.62			0.47		0.45		fecals not analyzed due to holiday lab closure
SDS3	SDS3 010699 GRAI	1999	1/6/99	1	0.27	21	0.05	0	0	64	NPDES	No	7.65			0.065		0.065	16	
SDS3	SDS3 011399 grab	1999	1/13/99	1	1.07	22	0.16	0	0	95	NPDES	No	7.5			0.26		0.24	23	
SDS3	SDS3 020399 GRAI	1999	2/3/99	1	0.28	19	0.07	0	0.01	27	NPDES	No	7.44			0.065		0.065	2	
SDS3	SDS3 090999 GRAI	1999	9/9/99	1	0.28	15	0.05	0	0	98	NPDES	No	7.01			0.075		0.05	24	
SDS3	SDS3 031299 GRAI	1999	3/12/99	1	0.83	23	0.07	0	0	71	NPDES	No	7.23			0.35		0.33	800	
SDS3	SDS3 032499 GRAI	1999	3/24/99	1	0.28	19	0.08	0	0.15	40	NPDES	No	7.26			0.075		0.05	8	
SDS3	SDS3 062099 GRAI	1999	6/20/99	1	0.21	39	0.03	0	0	48	NPDES	No	7.39			0.065		0.065	220	
SDS4	SDS4 091494	1995	9/13/94	1	0.16	9				118	NPDES	No	7.14	3					132	
SDS4	SDS4 101394	1995	10/13/94	1	0.32	14			0	460	NPDES	No	7.02	1.2					70	
SDS4	SDS4 111994	1995	11/19/94	1	0.42	24			0.05	52	NPDES	No								
SDS4	SDS4 011295	1995	1/11/95	1	0.9	90			0.04	24	NPDES	No	7.8						92	
SDS4	SDS4 021695	1995	2/16/95	1	1.1	56			0	96	NPDES	Yes								
SDS4	SDS4 051295	1995	5/11/95	1	0.2	8			0.12		NPDES	No	7.5	1.8					16	
SDS4	SDS4 060795	1995	6/8/95	1	0.4	6			0		NPDES	No	7.6	2.7					16	
SDS4	SDS4 101995	1995	10/19/95	1	0.36	12			0		NPDES	No	7.7	1.7					27	
SDS4	SDS4 011496 GRAI	1996	1/13/96	1	0.37	20			0		NPDES	No	7.4						440	
SDS4	SDS4 020596	1996	2/3/96	2	1.6	8					SES	Yes								
SDS4	SDS4 041696 GRAI	1996	4/16/96	1	0.48	16			0.09		NPDES	No	7.63	2.7					350	
SDS4	SDS4 042296 GRAI	1996	4/22/96	1	2.83	8			0		StipAg	No	7.16						1600	
SDS4	SDS4 070396 GRAI	1997	7/3/96	1	0.23	12			0		NPDES	No	6.67		0.76				300[2]	Fecals exceeded 30 hour holding time, results not representative
SDS4	SDS4 071796 GRAI	1997	7/17/96	1	0.27	31			0		NPDES	No							500	fecals make up for 7/4/96 grab that exceeded holding time
SDS4	SDS4 100396 GRAI	1997	10/4/96	1	0.09	0.1			0.06	16	NPDES	No	6.74						500	
SDS4	SDS4 120496 GRAI	1997	12/4/96	1	0.82	7.5			0.16	44	NPDES	No	6.76						80	
SDS4	SDS4 011697 GRAI	1997	1/16/97	1	1.21	23			0	154	NPDES	No	7.36	4	0.26				1600	
SDS4	SDS4 012797 GRAI	1997	1/27/97	1	0.41	26			0	109	StipAg	No	7.45	3					30	
SDS4	SDS4 041997 GRAI	1997	4/19/97	1	1.19	26			0	64	NPDES	No	7.4						80	
SDS4	SDS4 062497 GRAI	1998	6/25/97	1	0.2	10.5			0.07	96	NPDES	No	7.77						70	
SDS4	SDS4 111797 GRAI	1998	11/18/97	1	0.47	12.6			0	222	NPDES	No	7.46						29	
SDS4	SDS4 012998 GRAB	1998	1/29/98	1	0.2	14			0	107	NPDES	No	7.21						4	MATCHING COMPOSITE NOT REPRESENTATIVE, NOT REPORTED
SDS4	SDS4 050998 GRAB	1998	3/8/98	1	0.88	27			0	132	NPDES	No	7.5						5	EXTRA GRAB (HAS MAKEUP COMP FOR 98QW)
SDS4	SDS4 111998 GRAI	1998	11/19/98	1	2.34	66	0.16	0	0	73	NPDES	No	7.09			0.075	0.025	0.05	300	-79% RPD in lab dupe
SDS4	SDS4 060799 GRAI	1999	6/8/99	1	0.25	22	0.08	0	0	79	NPDES	No	7.46			0.11	0.06	0.05	900	ANNUAL SAMPLE
SDW3	SDW3 051095	1995	5/9/95	1	0.12	7.5			0	102	NPDES	No	7.3						1700	
SDW3	SDW3 051195	1995	5/11/95	1	0.2	8			0.12		NPDES	No	7.4	1.1					73	
SDW3	SDW3 061095	1995	6/10/95	1	0.3	10			0	96	NPDES	No	7						1000	
SDW3	SDW3 081795	1995	8/16/95	1	1.34	12			0.01		NPDES	No	7.2	2.9	0.6				30000	
SDW3	SDW3 112396 GRA	1997	11/23/96	1	0.63	34.1			0	72	NPDES	Yes	7.41	0.8	0.26				50	composite failed
SDW3	SDW3 011697 GRA	1997	1/16/97	1	1.21	23			0	154	StipAg	No	6.7	0.8					140	
SDW3	SDW3 021197 GRA	1997	2/11/97	1	0.48	18			0	206	StipAg	No	6.76	0.8	0.126				17	grab makes up for 12/4/96 missed grab
SDW3	SDW3 022697 GRA	1997	2/26/97	1	0.24	25			0	167	StipAg	No	6.13	0.7	0.126				231	grab makes up for 1/27/97 missed grab
SDW3	SDW3 110498 GRA	1998	11/3/98	1	1.62	39	0.48	0	0.08	35	NPDES	No				3.79	0.025	3.77	500	
SDW3	SDW3 021899 GRA	1999	2/15/99	1	0.45	26	0.08	0	0	58	NPDES	No				0.14	0.025	0.12	80	1998 annual sample
SDW3	SDW3 021899 GRA	1999	2/18/99	1	0.6	32	0.08	0.01	0.35	20	NPDES	No				0.13	0.025	0.11	1600	1998 annual sample
SDW3	SDW3 031299 GRA	1999	3/12/99	1	0.83	23	0.07	0	0	71	NPDES	No				0.14	0.03	0.11	2	1999 annual sample-no comp
SDW3	SDW3 032499 GRA	1999	3/24/99	1	0.28	19	0.08	0	0.15	40	NPDES	No	7.65			0.075	0.025	0.05	1	1999 annual sample
B	B 120496 GRAB	1997	12/4/96	1	0.82	7.5			0.16	44	NPDES	No	6.51						2	
B	B 012797 GRAB	1997	1/27/97	1	0.41	26			0	109	NPDES	No	7.11						4	
B	B 041997 GRAB	1997	4/19/97	1	1.19	26			0	64	NPDES	No	6.85						30	pairs with 3/6/97 composite for 97 spring qtr
B	B 110498 GRAB	1998	11/3/98	1	1.62	39	0.48	0	0.08	35	NPDES	No	7.16			0.15	0.025	0.13	800	
B	B 111298 GRAB	1998	11/11/98	1	0.98	62	0.16	0	0.05	31	NPDES	No	7.42			0.075	0.025	0.05	220	
B	B 060799 GRAB	1999	6/8/99	1	0.25	22	0.08	0	0	79	NPDES	No	6.67			0.19	0.025	0.17	1600	ANNUAL SAMPLE

All Grab Sample Data			storm caherctaristics										concentration, mg/l							
outfall	POS ID	reported	stormdate	event	depth, in.	dur, hr	maxint, in/hr	24hrint, in.	48hrint, in.	dryint, hr	Obj	ground delce?	ph	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-MO	Fecals (MPN)	comments
D	D 120496 GRAB	1997	12/4/96	1	0.62	7.6			0.16	44	NPDES	No	6.78	1.2					70	composite for this storm not representative, equipment malfunction
D	D 011797 GRAB	1997	1/16/97	1	1.21	23			0	154	NPDES	No	6.95	3.9	0.47				350	no composite sample for this event, equipment malfunction
D	D 012797 GRAB	1997	1/27/97	1	0.41	28			0	109	NPDES	No	7.11	13					170	makeup for 96Q4 (3 unsuccessful attempts)
D	D 021197 GRAB	1997	2/11/97	1	0.48	16			0	205	NPDES	No	6.54	7.1	0.25				38	
D	D 030697 GRAB	1997	3/6/97	1	0.39	20			0.24	42	NPDES	No	7.03						2	
D	D 061797 GRAB	1997	6/16/97	1	0.36	28			0	135	NPDES	No	6.87						1600	
D	D 011399 GRAB	1999	1/13/99	1	1.07	22	0.16	0	0	85	NPDES	No								
D	D 050899 GRAB	1999	5/8/99	1	0.25	22	0.08	0	0	79	NPDES	No	7.01						500	ANNUAL SAMPLE
SDN1	SDN1 091494	1995	9/13/94	1	0.15	9				118	NPDES	No	6.56	3.3						
SDN1	SDN1 101994	1995	10/19/94	1	0.2	32				120	NPDES	No	6.83	1.8					160	
SDN1	SDN1 111994	1995	11/19/94	1	0.42	24			0.05	62	NPDES	No								
SDN1	SDN1 011295	1995	1/11/95	1	0.3	60			0.04	24	NPDES	No	7.4	2.6	6.1				1000	
SDN1	SDN1 021695	1995	2/16/95	1	1.1	56			0	86	NPDES	Yes								
SDN1	SDN1 030695	1995	3/4/95	1	0.16	24			0	158	StipAg	No								
SDN1	SDN1 030995	1995	3/8/95	1	2.16	114			0	89	StipAg	No								
SDN1	SDN1 040595	1995	4/4/95	1	0.17	4			0	270	StipAg	No								
SDN1	SDN1 040795	1995	4/6/95	1	0.61	28			0.04	60	NPDES	No	7.6						58	
SDN1	SDN1 060795	1995	6/6/95	1	0.4	8			0		NPDES	No	7.8	21	5.6				42	
SDN1	SDN1 110795	1995	11/6/95	1	3.99	48			0.09		NPDES	No	6.7	16	3.4				26	
SDN1	SDN1 020496 GRA	1996	2/3/96	1	1.6	8					NPDES	Yes	7.4	7.3	7.5				100	
SDN1	SDN1 033196 GRA	1996	3/31/96	1	0.64	0			0.01		StipAg	No	6.9	6	4.1				340	xtra NPDES/Stip Ag
SDN1	SDN1 042296 GRA	1996	4/22/96	1	2.63	8			0		NPDES	No	7.26	1	0.25				8	
SDN1	SDN1 062396 GRA	1996	6/23/96	1	0.48	10			0		StipAg	No	6.62	2	0.92				23	xtra NPDES/Stip Ag
SDN1	SDN1 070396 GRAB	1997	7/3/96	1	0.23	12			0		NPDES	No	6.17	2.6	1.6				900a	Fecals exceeded 30 hour holding time, results not representative
SDN1	SDN1 071796 grab	1997	7/17/96	1	0.27	31			0		NPDES	No							500	fecals make up for 7/4/96 grab that exceeded holding time
SDN1	SDN1 110496 GRA	1997	11/3/96	2	0.14	2			0	120	source tr	Yes	6.99	2.5	1.3				240	paired up/down sample
SDN1	SDN1 011697 GRA	1997	1/16/97	1	1.21	23			0	154	NPDES	No	6.16		3.6				161	paired up/down sample
SDN1up	SDN1up 100496 GF	1997	10/4/96	1	0.59	8.1			0.08	16	NPDES	No	7.23		0.5				500	paired up/down sample
SDN1up	SDN1up 110496 GF	1997	11/3/96	2	0.14	2			0	120	source tr	Yes	4.69		0.39				23	paired up/down sample
SDN1up	SDN1up 011697 GF	1997	1/16/97	1	1.21	23			0	154	NPDES	No	4.37		2.1				23	paired up/down sample
SDN1UP	SDN1 041397 grab	1997	4/13/97	1	0.31	12			0.04		NPDES	No	4.67		1.06				33	
SDN1up	SDN1 060397 GRA	1997	6/3/97	1	0.26	16			0	76	NPDES	No	3.49		4.3				17	
SDN1UP	SDN1 102997 grab	1998	10/28/97	1	0.47	10.8			0.06	26	NPDES	No	6.64						60	
SDN1up	SDN1 121597 GRA	1998	12/15/97	1	1	33			0	87	NPDES	No	7.34		1.5				11	
SDN1UP	SDN1 030198 GRA	1998	3/1/98	1	0.98	98			0.07	8	NPDES	No	6.33		0.49	0.68	0.03	0.65	2	
SDN1up	SDN1 030898 GRAB	1998	3/8/98	1	0.66	27			0	132	NPDES	No	6.66		0.47	0.78	0.06	0.72		backup monthly sample in case 3/1/98 sample didn't qualify under new permit
SDN1UP	SDN1 040798 GRA	1998	4/7/98	2	0.03	0.5			0.04	87	NPDES	No	6.59		0.34	0.60		0.84		NON-"STORM"
SDN1up	SDN1 041098 GRA	1998	4/9/98	2	0.09	17			0	62	NPDES	No	6.26		1.16	1.4	0.79	0.61	2	NON-"STORM"
SDN1UP	SDN1 042398 GRA	1998	4/23/98	1	0.46	20			0	264	NPDES	No	5.35		1.2	0.97		0.95	170	
SDN1up	SDN1 050998 GRA	1998	5/8/98	2	0.12	8			0	360	NPDES	No	4.94		0.6	0.65	0.06	0.49	80	NON-"STORM"
SDN1UP	SDN1 051498 GRA	1998	5/14/98	1	0.21	8			0.01	125	NPDES	No	6.21		0.56	0.41		0.39	80	CONSIDERABLE POLLEN IN SAMPLE
SDN1up	SDN1 061098 GRA	1998	6/10/98	1	0.28	10			0	286	NPDES	No	6.45		0.76	1.03		1.01	240	
SDN1UP	SDN1 071498 GRA	1998	7/14/98	2	0.13	16	0.04	0	0	264	NPDES	No	6.46		1.8	2.05	0.46	2.09	240	nonstorm
SDN1up	SDN1 081898 GRA	1998	8/18/98	1	0.31	10	0.25	0	0	782	NPDES	No	6.36			0.84		0.81	900	thunderstorm, 0.25 in/hr
SDN1UP	SDN1 081998 GRA	1998	8/19/98	2	0.18	20	0.16	0	0	456	NPDES	No	6.95			2.46		2.45	1600	nonstorm
SDN1up	SDN1 082498 GRA	1998	8/24/98	1	0.47	23	0.26	0	0	148	NPDES	No	6.73			1.82		1.8	80	
SDN1UP	SDN1 100398 GRA	1998	10/3/98	1	0.4	3	0.22	0	0.07	36	NPDES	No	6.08		2.1	1.95		1.92	170	
SDN1up	SDN1 102798 GRA	1998	10/27/98	1	0.64	9	0.19	0	0	72	NPDES	No	6.08			2.01		1.99	130	
SDN1UP	SDN1 110498 GRA	1998	11/3/98	1	1.62	39	0.48	0	0.08	36	NPDES	No	6.97			0.37		0.35	500	
SDN1up	SDN1 111198 GRA	1998	11/11/98	1	0.98	62	0.15	0	0.05	31	NPDES	No	7.06			0.96		0.94	80	
SDN1UP	SDN1 121098 GRA	1998	12/10/98	2	0.14	4	0.03	0	0	48	NPDES	No	7.4			0.91		0.89		nonstorm
SDN1up	SDN1 121798 GRA	1998	12/17/98	2	0.11	4	0.03	0	0.02	33	NPDES	No	7.23			3.16		3.14	500	nonstorm
SDN1UP	SDN1 122498 GRA	1998	12/24/98	1	1.19	39	0.16	0	0	153	NPDES	Yes	7.06			4.95		4.93		fecals not analyzed due to holiday lab closure
SDN1up	SDN1 010999 GRA	1999	1/9/99	1	0.27	21	0.05	0	0	64	NPDES	No	6.67			3.51		3.48	23	
SDN1UP	SDN1 011399 GRA	1999	1/13/99	1	1.07	22	0.16	0	0	85	NPDES	No	7.27			2.81		2.78		

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99Appe... / grabs

All Grab Sample Data			storm characteristics										concentration, mg/l							
outfall	POS ID	reported	stormdate	event	depth, in.	dur, hr	maxint, in/hr	24hrint, in.	48hrint, in.	dryint, hr	Obj	ground delce?	ph	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-MO	Fecals (MPN)	comments
SDN1up	SDN1 020999 GRA	1999	2/3/99	1	0.28	19	0.07	0	0.61	27	NPDES	No	7.32			1.4	0.025	1.38	30	
SDN1UP	SDN1 030999 GRA	1999	3/9/99	1	0.28	15	0.05	0	0	99	NPDES	No	6.59			1.04	0.025	1.02	7	
SDN1up	SDN1 031299 GRA	1999	3/12/99	1	0.83	23	0.07	0	0	71	NPDES	No	6.71			0.99	0.025	0.97	1	
SDN1UP	SDN1 032499 GRA	1999	3/24/99	1	0.28	19	0.08	0	0.15	40	NPDES	No	6.92			1.69	0.025	1.67	8	
SDN1up	SDN1 032799 GRA	1999	3/27/99	1	0.24	9	0.07	0	0.09	26	NPDES	No	6.36			0.86	0.025	0.84	2	
SDN1UP	SDN1 082099 GRA	1999	8/20/99	1	0.21	36	0.03	0	0	48	NPDES	No	6.65			4.97	0.025	4.95	1600	
SDN2	SDN2 080894	1995	8/8/94	1	0.69	22				93	NPDES	No	6.62	1.6	0.5				3	
SDN2	SDN2 101394	1995	10/13/94	1	0.32	14			0	460	NPDES	No		1.1	0.5				2	
SDN2	SDN2 111394	1995	11/11/94	1	0.26	14				46	NPDES	No		0.5	0.5				30	
SDN2	SDN2 111994	1995	11/19/94	1	0.42	24			0.05	52	NPDES	No								
SDN2	SDN2 011295	1995	1/11/95	1	0.3	60			0.04	24	NPDES	No	8	2.3	0.5				4	
SDN2	SDN2 030595	1995	3/4/95	1	0.18	24			0	156	SlpAg	No								
SDN2	SDN2 040795	1995	4/8/95	1	0.61	28			0.04	60	SlpAg	No								
SDN2	SDN2 041295	1995	4/10/95	1	0.29	16			0	56	NPDES	No	7.6	4	5.2				11	
SDN2	SDN2 060795	1995	6/6/95	1	0.4	9			0		NPDES	No	7	2.6	0.5				15	
SDN2	SDN2 101695	1995	10/15/95	1	0.35	12			0		NPDES	No	7.3	1.9	0.5				1	
SDN2	SDN2 021796 GRA	1996	2/17/96	1	1.26	12			0		NPDES	No	7.6	0.5	0.5				10	
SDN2	SDN2 032996 GRA	1996	3/29/96	2	0.13	8			0.01	120	SlpAg	No								nonstorm
SDN2	SDN2 033196 GRA	1996	3/31/96	1	0.64	0			0.01		SlpAg	No	6.7	0.5	0.5				16	xtra NPDES/Slp Ag
SDN2	SDN2 041996	1996	4/19/96	2	0.09	28			0.56	16	SlpAg	No								nonstorm (0.02" storm)
SDN2	SDN2 042296 GRA	1996	4/22/96	1	2.83	8			0		NPDES	No	7.17	0.5	0.5		0.125		50	
SDN2	SDN2 082396 GRA	1996	8/23/96	1	0.46	10			0		SlpAg	No	6.83	1	0.46				2	xtra NPDES/Slp Ag
SDN2	SDN2 071796 grab	1997	7/17/96	1	0.27	31			0		NPDES	No							4	xtra fecals analyzed
SDN2	SDN2 080396 GRA	1997	8/3/96	1	0.29	1.2			0	78	NPDES	No	7.24	1.6	0.29				900	some composite aliquots in grab
SDN2	SDN2 102196 GRA	1997	10/21/96	1	0.66	4.1			0	64	NPDES	No	6.46	0.5	0.32				2	
SDN2	SDN2 011697 GRA	1997	1/16/97	1	1.21	23			0	154	NPDES	No	7.45	4.3	0.36				11	
SDN2	SDN2 041997 GRA	1997	4/19/97	1	1.18	26			0	64	NPDES	No	6.91	0.5	0.67				4	
SDN2	SDN2 062497 GRA	1997	6/25/97	1	0.2	10.5			0.07	96	NPDES	No	7.06	1.2	0.43				500	no composite, equipment malfunction
SDN2	SDN2 110498 GRA	1998	11/3/98	1	1.62	39	0.48	0	0.08	36	NPDES	No				1.09	0.025	1.07		N. CARGO PUMP STATION BYPASS
SDN2	SDN2 112598 GRA	1998	11/25/98	2	3.45	52	0.32	0.28	0.31	8	NPDES	No				0.13	0.025	0.11		from North Cargo Pump Station bypass
SDN2	SDN2 012899 GRAB	1999	1/28/99	2	1.16	33	0.1	0	0.02	33	NPDES	No				0.17	0.025	0.15		BYPASS SAMPLE, STORM<<DESIGN, MAINT NOTIFIED (O&M IN PROGRESS)
SDN2	SDN2 062499 GRA	1999	6/24/99	1	1.12	24	0.35	0.03	0.08	10	NPDES	No				0.26	0.025	0.24		30 MIN PUMP STATION BYPASS
SDN3	SDN3 080894	1995	8/8/94	1	0.69	22				93	NPDES	No	6.4	1.1	0.5				2200	
SDN3	SDN3 102694	1995	10/25/94	1	1.98	44				114	NPDES	No		2.9	0.5				1	
SDN3	SDN3 111994	1995	11/19/94	1	0.42	24			0.05	52	NPDES	No								
SDN3	SDN3 010795	1995	1/7/95	1	0.21	62			0	252	NPDES	No	7.8	0.5	0.5				1	
SDN3	SDN3 021695	1995	2/15/95	1	1.1	56			0	96	NPDES	Yes								
SDN3	SDN3 030595	1995	3/4/95	1	0.18	24			0	156	SlpAg	No								
SDN3	SDN3 030995	1995	3/8/95	1	2.16	114			0	68	SlpAg	No								
SDN3	SDN3 040595	1995	4/4/95	1	0.17	4			0	270	SlpAg	No								
SDN3	SDN3 060495	1995	6/4/95	1	0.7	28			0	384	NPDES	No	7	2.5	0.5				40	
SDN3	SDN3 071095	1995	7/9/95	1	0.81	13			0		NPDES	No	7	3.3	0.5				800	
SDN3	SDN3 110795	1995	11/6/95	1	3.99	48			0.09		NPDES	No	7.2	2.1	0.5				4	
SDN3	SDN3 011496 GRA	1996	1/13/96	1	0.37	20			0		NPDES	No	7.2	0.5	0.5				1	
SDN3	SDN3 032996 GRA	1996	3/29/96	2	0.13	8			0.01	120	SlpAg	No								nonstorm, insuff flow to enable sampler
SDN3	SDN3 033196 GRA	1996	3/31/96	1	0.64	0			0.01		SlpAg	No	6.8	1.4	0.5					xtra NPDES/Slp Ag
SDN3	SDN3 041296 GRA	1996	4/11/96	2	0.21	40			0	110	SlpAg	No								nonstorm
SDN3	SDN3 041696 GRA	1996	4/15/96	1	0.49	16			0.09		NPDES	No	7.61	2	0.5		0.125		80	
SDN3	SDN3 041996	1996	4/19/96	2	0.09	28			0.56	16	SlpAg	No								nonstorm
SDN3	SDN3 042296 GRA	1996	4/22/96	1	2.83	8			0		SlpAg	No	7.12	0.5	0.5		0.125		110	xtra NPDES/Slp Ag
SDN3	SDN3 080396 GRA	1997	8/2/96	1	1.01	27			0	325	NPDES	No	7.41	0.5	0.5		0.3		900	delayed hydrograph, very dry antecedent
SDN3	SDN3 112396 GRA	1997	11/23/96	1	0.83	34.1			0	72	NPDES	Yes	7.32	0.5	0.5		0.125		14	insufficient sample for composite
SDN3	SDN3 120496 GRA	1997	12/4/96	1	0.82	7.6			0.16	44	NPDES	No	6.46	0.5	0.5		0.125		14	
SDN3	SDN3 122096 GRA	1997	12/19/96	1	0.36	37			0	103	NPDES	No	6.32	0.5	0.5		0.125		7	
SDN3	SDN3 011697 GRA	1997	1/16/97	1	1.21	23			0	154	NPDES	No	6.66	1.4	0.5		0.125		4	
SDN3	SDN3 030597 GRAB	1997	3/5/97	1	0.36	20			0.24	42	NPDES	No	7.19	38*	0.5		0.125			FOG result not representative, laboratory error, see letter of May 15, 1997
SDN3	SDN3 053097	1997	5/30/97	1	1.64	36			0.04	14	NPDES	No			0.5		0.125			BACKUP log/ph for March lab errors on SDN3 030597 grab

All Grab Sample Data			storm caharcteristics										concentration, mg/l								
outfall	POS ID	reported	stormdate	event	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	Obj	ground delce?	ph	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-MO	Fecals (MPN)	comments
SDN3	SDN3 062197 GRA	1997	6/21/97	1	0.27	11.8		0.01	0.02	24	NPDES	No	7.61	[illegible]	[illegible]				80	
SDN3	SDN3 102697 GRA	1996	10/26/97	1	0.47	10.8			0.08	26	NPDES	No	6.72	[illegible]	[illegible]				1600	
SDN3	SDN3 121697 GRAB	1996	12/16/97	1	1	33			0	87	NPDES	No	7.26	1.6	[illegible]				50	HAD QC DUPLICATE ALSO: GOOD DUPLICATION
SDN3	SDN3 111998 GRA	1998	11/19/98	1	2.34	66	0.18	0	0	73	NPDES	No	6.62			0.075	0.025	0.06	240	
SDN3	SDN3 012099 GRA	1999	1/20/99	1	0.42	28	0.09	0.01	0.95	22	NPDES	No				0.06	0.025	0.055	17	
SDN3	SDN3 062299 GRA	1999	6/22/99	1	0.21	36	0.03	0	0	48	NPDES	No	7.5			0.13	0.025	0.11	240	
SDN4	SDN4 060396 GRA	1997	6/3/96	1	0.29	1.2			0	76	NPDES	No	6.83	1.2	[illegible]				280	taken in 2 BOTTLES: FOG/TPH, and fecals
SDN4	SDN4 120496 GRA	1997	12/4/96	1	0.82	7.5			0.16	44	NPDES	No	6.57	[illegible]	[illegible]				17	
SDN4	SDN4 011697 GRA	1997	1/16/97	1	1.21	23			0	154	NPDES	No	7.34	1.6	[illegible]				4	
SDN4	SDN4 030597 GRA	1997	3/5/97	1	0.39	20			0.24	42	NPDES	No	6.06	[illegible]	[illegible]				[illegible]	
SDN4	SDN4 060397 GRA	1997	6/3/97	1	0.26	16			0	76	NPDES	No	9.07	[illegible]	[illegible]				13	
SDN4	SDN4 102697 GRA	1996	10/26/97	1	0.47	10.8			0.08	26	NPDES	No	6.44	[illegible]	[illegible]				7	
SDN4	SDN4 121697 GRA	1996	12/16/97	1	1	33			0	87	NPDES	No	7.61	[illegible]	[illegible]				9	
SDN4	SDN4 030196 GRA	1996	3/1/96	1	0.66	66			0.07	6	NPDES	No	7.66		[illegible]	0.06	0.025	0.055	2	
SDN4	SDN4 030696 GRAB	1996	3/6/96	1	0.66	27			0	132	NPDES	No	7.62		[illegible]	0.075	0.025	0.06	2	backup monthly sample in case 3/1/96 sample didn't qualify under new permit
SDN4	SDN4 042396 GRA	1996	4/23/96	1	0.46	20			0	264	NPDES	No	7.66		[illegible]	0.075	0.025	0.06	1	
SDN4	SDN4 052696 GRA	1996	5/24/96	1	0.66	11			0	87	NPDES	No	6.94		[illegible]	0.13	0.06	0.06	9	
SDN4	SDN4 062496 GRA	1996	6/24/96	1	0.43	4			0	288	NPDES	No	8.26		[illegible]	0.575	0.025	0.06	130	
SDN4	SDN4 091696 GRA	1996	9/16/96	1	0.31	10	0.25	0	0	792	NPDES	No	7.66		[illegible]	0.06	0.025	0.06	170	thunderstorm, 0.25 in/hr
SDN4	SDN4 092496 GRA	1996	9/24/96	1	0.47	23	0.26	0	0	148	NPDES	No	7.13		[illegible]	0.075	0.025	0.06	22[1]	FECALS EXCEED HOLDING TIME
SDN4	SDN4 100396 GRA	1996	10/3/96	1	0.4	3	0.22	0	0.07	36	NPDES	No	7.04		0.26	0.075	0.025	0.06	30	
SDN4	SDN4 102796 GRA	1996	10/27/96	1	0.64	9	0.19	0	0	72	NPDES	No	7.9		[illegible]	0.075	0.025	0.06	2	
SDN4	SDN4 110496 GRA	1996	11/3/96	1	1.62	39	0.49	0	0.08	35	NPDES	No	9.26		[illegible]	0.075	0.025	0.06	17	
SDN4	SDN4 111396 GRA	1996	11/11/96	1	0.98	62	0.15	0	0.05	31	NPDES	No	8.91		[illegible]	0.075	0.025	0.06	17	
SDN4	SDN4 121096 GRA	1996	12/10/96	2	0.14	4	0.03	0	0	49	NPDES	No	7.15		[illegible]	0.06	0.025	0.06	1600	nonstorm
SDN4	SDN4 121796 GRA	1996	12/17/96	2	0.11	4	0.03	0	0.02	33	NPDES	No	7.3		[illegible]	0.06	0.025	0.06	6	nonstorm
SDN4	SDN4 122496 GRA	1996	12/24/96	1	1.18	39	0.16	0	0	153	NPDES	Yes	7.59		[illegible]	0.075	0.025	0.06		fecals not analyzed due to holiday lab closure
SDN4	SDN4 011099 GRA	1999	1/9/99	1	0.27	21	0.05	0	0	64	NPDES	No	7.13		[illegible]	0.06	0.025	0.06	23	
SDN4	SDN4 011399 GRA	1999	1/13/99	1	1.07	22	0.16	0	0	85	NPDES	No	7.09		[illegible]	0.06	0.025	0.06	1600	
SDN4	SDN4 020399 GRA	1999	2/3/99	1	0.26	19	0.07	0	0.61	27	NPDES	No	7.18		[illegible]	0.06	0.025	0.06	[illegible]	
SDN4	SDN4 031299 GRA	1999	3/12/99	1	0.83	23	0.07	0	0	71	NPDES	No	7.26		[illegible]	0.075	0.025	0.06	[illegible]	
SDN4	SDN4 032799 GRA	1999	3/27/99	1	0.24	8	0.07	0	0.09	26	NPDES	No	7.02		[illegible]	0.075	0.025	0.06	[illegible]	
EY	EY 091494	1996	9/13/94	1	0.15	9				116	NPDES	No	6.93	2.2						
EY	EY 101394	1995	10/13/94	1	0.32	14			0	480	NPDES	No	6.96	2.1						
EY	EY 030695	1996	3/6/95	1	2.16	114			0	68	NPDES	No	6.6	[illegible]						
EY	EY 060495	1995	6/4/95	1	0.7	28			0	364	NPDES	No	6.5	6.5						
EY	EY 072695	1996	7/26/95	1	0.41	36			0		NPDES	No	5.6	4.1						
EY	EY 101695	1996	10/16/95	1	0.35	12			0		NPDES	No	6.5	[illegible]						
EY	EY 021796 GRAB	1996	2/17/96	1	1.29	12			0		NPDES	No	7.7	[illegible]						
EY	EY 042296 GRAB	1996	4/22/96	1	2.83	8			0		NPDES	No	7.19	[illegible]						
EY	EY 052296 GRAB	1996	5/21/96	1	0.31	30			0.02		StpAg	No	6.06	1						
EY	EY 062396 GRAB	1996	6/23/96	1	0.46	10			0		StpAg	No	6.15	[illegible]						
EY	EY 070396 GRAB	1997	7/3/96	1	0.23	12			0		NPDES	No	6.26	[illegible]						
EY	EY 102196 GRAB	1997	10/21/96	1	0.66	4.1			0	64	NPDES	No	5.6	[illegible]						
EY	EY 021197 GRAB	1997	2/11/97	1	0.48	16			0	206	NPDES	No	6.63	1.6						
EY	EY 030597 GRAB	1997	3/5/97	1	0.39	20			0.24	42	NPDES	No	6.11	[illegible]						
EY	EY 060397 GRAB	1997	6/3/97	1	0.26	16			0	76	NPDES	No	6.64	[illegible]						
EY	EY 110697 GRAB	1996	11/6/97	1	0.16	4.4			0.01	72	NPDES	No	6.26	[illegible]						
EY	EY 012098 GRAB	1998	1/20/98	1	0.2	14			0	107	NPDES	No	6.19	[illegible]						
EY	EY 052698 GRAB	1998	5/24/98	1	0.56	11			0	87	NPDES	No				0.2	0.025	0.16		
EY	EY 011399 GRAB	1999	1/13/99	1	1.07	22	0.16	0	0	85	NPDES	No				1.79	[illegible]	1.79		
EY	EY 062099 GRAB	1999	6/20/99	1	0.21	36	0.03	0	0	48	NPDES	No				0.76	0.025	0.76		
TY	TY 080894	1995	9/8/94	1	0.69	22				93	NPDES	No	7.91	3.9						
TY	TY 101994	1995	10/19/94	1	0.2	32				120	NPDES	No	6.52	1.3						
TY	TY 030495	1995	3/4/95	1	0.18	24			0	168	NPDES	No	6.9	6.7						
TY	TY 060495	1995	6/4/95	1	0.7	28			0	364	NPDES	No	5.5	7.6						
TY	TY 081795	1996	8/16/95	1	1.34	12			0.01		NPDES	No	6.6	2.3						
TY	TY 090595	1996	9/5/95	1							NPDES	No		1.6						

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All Grab Sample Data			storm cahercteristics									concentration, mg/l							
outfall	POS ID	reported	stormdate	event	depth, in.	dur, hr	maxint, in/hr	24hrint, in.	48hrint, in.	dryint, hr	Obj	ground delce?	ph	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-MO	Fecals (MPN)	comments
TY	TY 101695-1	1996	10/15/95	1	0.35	12			0		NPDES	No	6.7	19						
TY	TY 032296 GRAB	1996	3/22/96	1	0.21				0		StipAg	No	6.9	3.9						
TY	TY 041696 GRAB	1996	4/15/96	1	0.49	16			0.06		NPDES	No	6.06	3.7						
TY	TY 042296 GRAB	1996	4/22/96	1	2.63	8			0		NPDES	No	7.31	2						
TY	TY 070396 GRAB	1997	7/3/96	1	0.23	12			0		NPDES	No	6.15	1.4						
TY	TY 071796 grab	1997	7/17/96	1	0.27	31			0		StipAg	No	5.91	1.9						
TY	TY 080296 GRAB	1997	8/2/96	1	1.01	27			0	325	StipAg	No	6.43	1.6						
TY	TY 100496 GRAB	1997	10/4/96	1	0.59	6.1			0.06	18	NPDES	No	7.19	1.4	1.34					
TY	TY 021197 GRAB	1997	2/11/97	1	0.48	18			0	205	NPDES	No	6.72	5.1						FOG result not representative, laboratory error, see letter of May 15, 1997
TY	TY 030597 GRAB	1997	3/5/97	1	0.39	20			0.24	42	NPDES	No	5.96	181						
TY	TY 060397 GRAB	1997	6/3/97	1	0.26	16			0	76	NPDES	No	6.07	1.4						
TY	TY 111697 GRAB	1996	11/16/97	1	0.47	12.6			0	222	NPDES	No	6.67	0.6						
TY	TY 012998 GRAB	1998	1/29/98	1	0.2	14			0	107	NPDES	No	6.31	1						MATCHING COMPOSITE NOT REPRESENTATIVE, NOT REPORTED EXTRA GRAB (HAS MAKEUP COMP FOR 98QW)
TY	TY 030998 GRAB	1998	3/8/98	1	0.86	27			0	132	NPDES	No	6.83	0.6	1.2	1.41	0.09	1.32		
TY	TY 061098 GRAB	1998	6/10/98	1	0.28	10			0	288	NPDES	No			1.2	1.05	0.025	1.03		
TY	TY 020399 GRAB	1999	2/3/99	1	0.28	19	0.07	0	0.61	27	NPDES	No				4.34	0.025	4.32		
TY	TY 062099 GRAB	1999	6/20/99	1	0.21	38	0.03	0	0	48	NPDES	No				5.77	0.025	5.76		
		total from "storm"		322																
		total "nonstorm"		36																
[redacted]											All outfalls	count	293	194	202	123	123	123	268	
												max	10.7	21	10	8.7	0.8	8.8	30000	
												95th	7.9	8	4	4.3	0.1	4.3	1600	
												75th	7.4	3	1.1	1.8	0.03	1.8	373	
												median	7.0	1	0.6	0.4	0.03	0.3	50	
												25th	6.6	0.6	0.1	0.1	0.03	0.1	6	
												min	3.5	0.6	0.1	0.1	0.03	0.0	0.5	
												sd	0.8	3	2	1.5	0.1	1.5	1918.8	
												CV, %	11%	143%	149%	132%	226%	137%	407%	
												# non-detected		90	110	44	110	39	41	
												% non-detected		46%	54%	36%	89%	32%	15%	
lined-out values are outliers or non-representative data trimmed from data analysis																				
											SDE4 (982)	count	40	17	28	24	24	24	40	
												max	10.7	17	10	9	1	9	4000	
												95th	8.1	11	7.5	5.5	0.10	5	1600	
												75th	7.1	4	3.1	3.2	0.05	3.2	1600	
												median	6.8	3	2.3	2.7	0.03	2.8	300	
												25th	6.6	1.8	1.7	1.9	0.03	1.8	80	
												min	6.0	0.6	0.1	0.2	0.03	0.2	1	
												sd	0.8	4	2	1.8	0.2	1.8	825	
												CV, %	12%	106%	77%	63%	236%	65%	116%	
												# non-detected		3	2	0	20	0	1	
												% non-detected		18%	7%	0%	83%	0%	3%	
											SDS1 (983)	count	19	17	19	2	2	2	19	
												max	7.6	10	5.4	1.8	0.2	1.8	1600	
												95th	7.4	6.5	5.3	1.5	0.2	1.5	1600	
												75th	7.1	2.5	1.8	1.4	0.1	1.3	975	
												median	6.7	1.1	0.8	1.1	0.1	1.1	60	
												25th	6.2	0.6	0.6	0.9	0.1	0.8	7	
												min	5.4	0.6	0.3	0.7	0.0	0.8	1	
												sd	0.6	3	1.8	0.8	0.1	0.7	700	
												CV, %	9%	120%	111%	52%	103%	66%	149%	
												# non-detected		8	4	0	1	0	2	
												% non-detected		47%	21%	0%	50%	0%	11%	

1998-99 Grab Sample Data			storm characteristics										concentration, mg/l							
outfall	POS ID	reported	stormdate	event	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	Obj	ground delce?	ph	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-MO	Fecals (MPN)	comments
											SDS3	count	17	0	3	17	17	17	16	
											(005)	max	7.8		0.6	0.53	0.03	0.5	1600	
												95th	7.7		0.54	0.48	0.03	0.5	1075	
												75th	7.5		0.47	0.26	0.03	0.2	240	
												median	7.3		0.38	0.15	0.03	0.1	27	
												25th	7.1		0.25	0.08	0.03	0.1	12	
												min	7.0		0.13	0.07	0.03	0.0	1	
												sd	0.2		0.22	0.15	0.00	0.2	440	
												CV, %	3%		62%	76%	6%	87%	189%	
												# non-detected			1	8	17	8	2	
												% non-detected			33%	47%	100%	47%	13%	
											SDS4	count	2	0	0	2	2	2	2	
											(009)	max	7.5			0.11	0.06	0.1	900	
												95th	7.4			0.11	0.06	0.1	870	
												75th	7.4			0.10	0.05	0.1	750	
												median	7.3			0.09	0.04	0.1	600	
												25th	7.2			0.08	0.03	0.1	450	
												min	7.1			0.08	0.03	0.1	300	
												sd	0.3			0.0	0.02	0.0	424	
												CV, %	4%			27%	68%	0%	71%	
												# non-detected				1	1	2	0	
												% non-detected				50%	50%	100%	0%	
											SDW3	count	1	0	0	5	5	5	5	
											(010)	max	7.7			3.8	0.03	3.8	800	
												95th	7.7			3.1	0.03	3.0	416	
												75th	7.7			0.1	0.03	0.1	80	
												median	7.7			0.1	0.03	0.1	2	
												25th	7.7			0.1	0.03	0.1	1	
												min	7.7			0.1	0.03	0.1	1	
												sd				1.8	0.00	1.8	217	
												CV, %				192%	9%	197%	186%	
												# non-detected				1	5	1	2	
												% non-detected				20%	100%	20%	40%	
											8	count	3	0	0	3	3	3	3	
											(014)	max	7.4			0.2	0.03	0.2	1600	
												95th	7.4			0.2	0.03	0.2	1600	
												75th	7.3			0.2	0.03	0.2	1600	
												median	7.2			0.2	0.03	0.1	1600	
												25th	6.9			0.1	0.03	0.1	910	
												min	6.6			0.1	0.03	0.1	220	
												sd	0.4			0.1	0.00	0.1	797	
												CV, %	6%			42%	0%	62%	70%	
												# non-detected				1	3	1	0	
												% non-detected				33%	100%	33%	0%	

1998-99 Grab Sample Data			storm characteristics										concentration, mg/l							
outfall	POS ID	reported	stormdate	event	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	Obj	ground delce?	ph	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-MO	Fecals (MPN)	comments
											D	count	1	0	0	2	2	2	2	
											(015)	max	7.0			0.1	0.03	0.1	1600	
												95th	7.0			0.1	0.03	0.1	1545	
												75th	7.0			0.1	0.03	0.1	1325	
												median	7.0			0.1	0.03	0.1	1050	
												25th	7.0			0.1	0.03	0.1	775	
												min	7.0			0.1	0.03	0.1	500	
												sd				0.0	0.00	0.0	778	
												CV, %				5%	0%	7%	74%	
												# non-detected				2	2	2	0	
												% non-detected				100%	100%	100%	0%	
											SDN1	count	0	0	0	0	0	0	0	
											(006)	max								
							(former location downstream at SDN1-27, ends 1996)					95th								
												75th		(This station no longer sampled)						
												median								
												25th								
												min								
												sd								
												CV, %								
												# non-detected								
												% non-detected								
											SDN1up	count	19	0	3	19	19	19	18	
											(008)	max	8.1		2.1	5.0	0.46	5.0	1600	
							(upstream location at SDN1-22, begins 1997)					95th	7.9		2.1	5.0	0.07	4.9	1600	
												75th	7.3		2.0	2.7	0.03	2.6	600	
												median	6.7		1.9	1.8	0.03	1.8	150	
												25th	6.4		1.0	1.0	0.03	1.0	26	
												min	5.5		0.1	0.4	0.03	0.4	1	
												sd	0.7		1.1	1.3	0.10	1.3	646	
												CV, %	10%		79%	86%	203%	67%	128%	
												# non-detected			1	0	18	0	1	
												% non-detected			33%	0%	95%	0%	6%	
											SDN2	count	0	0	0	4	4	4	0	
											(007)	max				1.1	0.04	1.1		
							(pumped to IWS as of late 1997)					95th				1.0	0.03	0.9		
												75th				0.6	0.03	0.4		
												median				0.2	0.03	0.2		
												25th				0.2	0.03	0.1		
												min				0.1	0.03	0.1		
												sd				0.6	0.01	0.6		
												CV, %				110%	18%	116%		
												# non-detected				0	4	0		
												% non-detected				0%	100%	0%		

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1998-99 Grab Sample Data			storm characteristics										concentration, mg/l							
outfall	POS ID	reported	stormdate	event	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	Obj	ground deice?	ph	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-MO	Fecals (MPN)	comments
											SDN3	count	2	0	0	3	3	3	3	
											(008)	max	7.5			0.13	0.03	0.1	240	
												95th	7.5			0.13	0.03	0.1	240	
												75th	7.3			0.11	0.03	0.1	240	
												median	7.0			0.08	0.03	0.1	240	
												25th	6.8			0.08	0.03	0.1	121	
												min	6.5			0.08	0.03	0.1	1	
												sd	0.7			0.03	0.00	0.0	138	
												CV, %	10%			32%	0%	46%	86%	
												# non-detected				2	3	2	1	
												% non-detected				67%	100%	67%	33%	
											SDN4	count	14	0	2	14	14	14	12	
											(011)	max	9.3		0.28	0.14	0.06	0.1	1600	
												95th	9.0		0.27	0.10	0.04	0.1	1600	
												75th	7.7		0.24	0.08	0.03	0.1	65	
												median	7.2		0.20	0.06	0.03	0.1	17	
												25th	7.1		0.16	0.06	0.03	0.1	2	
												min	7.0		0.13	0.06	0.03	0.1	1	
												sd	0.7		0.1	0.0	0.01	0.0	614	
												CV, %	9%		54%	19%	29%	15%	212%	
												# non-detected			1	13	14	14	3	
												% non-detected			50%	93%	100%	100%	25%	
											EY	count	0	0	0	2	2	2	0	
											(012)	max				1.8	0.03	1.8		
												95th				1.7	0.03	1.7		
												75th				1.5	0.03	1.5		
												median				1.3	0.03	1.3		
												25th				1.0	0.03	1.0		
												min				0.8	0.03	0.8		
												sd				0.7	0.00	0.7		
												CV, %				56%	13%	56%		
												# non-detected				0	2	0		
												% non-detected				0%	100%	0%		
											TY	count	0	0	0	2	2	2	0	
											(013)	max			0.0	5.8	0.03	5.8		
												95th				5.7	0.03	5.7		
												75th				5.4	0.03	5.4		
												median				5.1	0.03	5.0		
												25th				4.7	0.03	4.7		
												min				4.3	0.03	4.3		
												sd				1.0	0.00	1.0		
												CV, %				20%	0%	20%		
												# non-detected				0	2	0		
												% non-detected				0%	100%	0%		

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Trimmed Composite Sample Data Set for Selected Outfalls

outfall	POS ID	report	month	event	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	obj	comp	ground delce?	TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
SDS3	SDS3 090694	1995	9	9/9/94	0.66	22				93	NPDES		no										
SDS3	SDS3 091494	1995	9	9/13/94	0.15	9				116	NPDES		no	4.5	5.6	8				0.041	0.004	0.031	
SDS3	SDS3 101394	1995	10	10/13/94	0.32	14			0	480	NPDES		no	6.7	12	22				0.053	0.003	0.076	
SDS3	SDS3 111994	1995	11	11/19/94	0.42	24			0.05	52	NPDES		no	2.3	4.9	18				0.027	0.004	0.108	
SDS3	SDS3 010795	1995	1	1/7/95	0.21	62			0	252	NPDES		no	2	3.7	5				0.016	0.002	0.058	
SDS3	SDS3 030695	1995	3	3/6/95	2.16	114			0	66	other		no							0.005	0.001	0.029	
SDS3	SDS3 041295	1995	4	4/10/95	0.28	18			0	56	NPDES		no		1.9	4				0.041	0.002	0.044	
SDS3	SDS3 072695	1995	7	7/26/95	0.41	36			0		NPDES		no	20	15	8				0.067	0.005	0.089	
SDS3	SDS3 101695	1995	10	10/16/95	0.35	12			0		NPDES		no	2.2	3	5				0.032	0.002	0.037	
SDS3	SDS3 011496	1996	1	1/13/96	0.37	20			0		NPDES		no	1.6	2.1	6				0.029	0.002	0.054	
SDS3	SDS3 032296	1996	3	3/22/96	0.21				0		SlipAg		no	4.1	2.9	8				0.026	0.002	0.054	
SDS3	SDS3 041696	1996	4	4/16/96	0.49	16			0.09		NPDES		no	20	6.6	6.36				0.046	0.012	0.074	
SDS3	SDS3 052296	1996	5	5/21/96	0.31	30			0.02		SES		no	2.6		14				0.035	0.001	0.036	
SDS3	SDS3 090296	1997	9	9/2/96	1.01	27			0	325	NPDES		no	19	13	9.8				0.115	0.009	0.097	
SDS3	SDS3 090396	1997	9	9/3/96	0.29	1.2			0	76	NPDES		no	33	16	11.4				0.080	0.016	0.082	
SDS3	SDS3 102196	1997	10	10/21/96	0.68	4.1			0	64	NPDES		no	4.8	4.2	8				0.025	0.003	0.022	
SDS3	SDS3 112396	1997	11	11/23/96	0.63	34.1			0	72	SlipAg		yes	16	8.2	34.2	16	10	26	0.039	0.014	0.061	Cu data entry error corrected
SDS3	SDS3 011697	1997	1	1/16/97	1.21	23			0	154	NPDES		no	5.6	0.7	9.76				0.029	0.002	0.042	
SDS3	SDS3 030597	1997	3	3/5/97	0.39	20			0.24	42	NPDES		no	3.4	2.5	6				0.018	0.002	0.037	
SDS3	SDS3 060397	1997	6	6/3/97	0.26	16			0	76	NPDES	EMC	no	10	6	2.6				0.054	0.004	0.039	
SDS3	SDS3 102897	1997	10	10/28/97	0.47	10.9			0.06	26	NPDES	EMC	no	3.6	5.3	16.9				0.028	0.003	0.037	
SDS3	SDS3 013098	1998	1	1/29/98	0.2	14			0	107	NPDES	EMC	no	3.6	5.4	13.5	5.4	4.2	9.6	0.028	0.002	0.055	
SDS3	SDS3 030198	1998	3	3/1/98	0.98	86			0.07	6	NPDES	SMC	no	21	13	8.2				0.034	0.007	0.045	backup monhtly sample in case 3/1/98
SDS3	SDS3 030998	1998	3	3/9/98	0.98	27			0	132	NPDES	SMC	no	3.2	5.2	36.3	23	8.7	31.7	0.037	0.002	0.034	sample didn't qualify under new permit
SDS3	SDS3 042398	1998	4	4/23/98	0.48	20			0	264	NPDES	SMC	no	7.3	4	9.4				0.061	0.001	0.064	
SDS3	SDS3 051498	1998	5	5/14/98	0.21	8			0.01	125	NPDES	EMC	no	14	9.5	6.32				0.076	0.003	0.116	
SDS3	SDS3 061098	1998	6	6/10/98	0.26	10			0	268	NPDES	EMC	no	8	42	8.3				0.066	0.002	0.060	
SDS3	SDS3 081798	1998	8	8/16/98	0.31	10	0.25	0	0	792	NPDES	EMC	no	511	19	10.4				0.136	0.006	0.056	thunderstorm, 0.25 in/hr
SDS3	SDS3 092698	1998	9	9/24/98	0.47	23	0.26	0	0	148	NPDES	EMC	no	1241	180	5.14		2.2	3.2	0.069	0.012	0.043	GLYCOLS MAY BE HIGH BIASED, DUPE WAS <MDL
SDS3	SDS3 100398	1998	10	10/3/98	0.4	3	0.22	0	0.07	36	NPDES	EMC	no	43	23	4.2				0.055	0.008	0.100	
SDS3	SDS3 102798	1998	10	10/27/98	0.84	9	0.19	0	0	72	NPDES	SMC	no	98	84	4.74		4.2	5.2	0.004	0.001	0.005	
SDS3	SDS3 110498	1998	11	11/3/98	1.62	39	0.48	0	0.08	35	NPDES	SMC	no	610	58	6.76	4.7		5.7	0.0629	0.0434	0.139	
SDS3	SDS3 111398	1998	11	11/11/98	0.98	62	0.15	0	0.05	31	NPDES	SMC	no	24	29	17.8	10.5		11.5	0.022	0.004	0.100	concurrent WET sample
SDS3	SDS3 122598	1998	12	12/24/98	1.18	39	0.16	0	0	153	NPDES	SMC	yes	18	15	450	31.5	81.6	113	0.047	0.002	0.134	
SDS3	SDS3 011099	1999	1	1/8/99	0.27	21	0.05	0	0	54	NPDES	EMC	no	3.7	6.2	21.9	8.4	14	22.4	0.019	0.001	0.030	
SDS3	SDS3 011499	1999	1	1/13/99	1.07	22	0.16	0	0	85	NPDES	EMC	no	22	16	7.84		10	11	0.023	0.004	0.030	concurrent WET and WER
SDS3	SDS3 020399	1999	2	2/3/99	0.28	19	0.07	0	0.61	27	NPDES	SMC	no	9.2	11	8.06		2.06	3.06	0.016	0.001	0.027	
SDS3	SDS3 021499	1999	2	2/13/99	0.28	5	0.04	0	0	102	other	EMC	yes			80				0.049	0.001	0.074	for DO study
SDS3	SDS3 030699	1999	3	3/6/99	0.26	15	0.05	0	0	98	NPDES	EMC	no	9.2	14	220	6.52	151	157.5	0.024	0.002	0.053	
SDS3	SDS3 031399	1999	3	3/12/99	0.63	23	0.07	0	0	71	NPDES	SMC	no	7.6	15	15		6.21	7.21	0.022	0.001	0.036	
SDS3	SDS3 032599	1999	3	3/24/99	0.28	19	0.08	0	0.15	40	NPDES	EMC	no	8.7	3.5	2				0.019	0.001	0.027	
SDS4	SDS4 091494	1995	9	9/13/94	0.15	9				116	NPDES		no	2.6	1.3	8				0.020	0.004	0.009	
SDS4	SDS4 101394	1995	10	10/13/94	0.32	14			0	480	NPDES		no	5.7	6.6	16				0.036	0.001	0.047	
SDS4	SDS4 111994	1995	11	11/19/94	0.42	24			0.05	52	NPDES		no			5							
SDS4	SDS4 011295	1995	1	1/11/95	0.3	60			0.04	24	NPDES		no	3.5	8.4	3				0.017	0.003	0.019	
SDS4	SDS4 021695	1995	2	2/16/95	1.1	56			0	66	NPDES		yes			96							
SDS4	SDS4 051295	1995	5	5/11/95	0.2	8			0.12		NPDES		no	7.7	5.3	4				0.008	0.001	0.010	
SDS4	SDS4 060795	1995	6	6/6/95	0.4	8			0		NPDES		no	4.2	3.7	9				0.020	0.002	0.016	
SDS4	SDS4 101695	1995	10	10/16/95	0.35	12			0		NPDES		no	6.6	4.2	5				0.023	0.001	0.022	
SDS4	SDS4 011496	1996	1	1/13/96	0.37	20			0		NPDES		no	20	6	6				0.018	0.003	0.019	
SDS4	SDS4 041696	1996	4	4/15/96	0.49	16			0.09		NPDES		no	26	14	4.64				0.041	0.005	0.031	
SDS4	SDS4 042296	1996	4	4/22/96	2.83	8			0		SlipAg		no	19	8.9	8.44				0.033	0.001	0.017	
SDS4	SDS4 052296	1996	5	5/21/96	0.31	30			0.02		SES		no	4.8		16				0.036	0.001	0.016	
SDS4	SDS4 070496	1997	7	7/3/96	0.23	12			0		NPDES		no	20	11	6				0.024	0.001	0.020	

Trimmed Composite Sample Data Set for Selected Outfalls

outfall	POS ID	report	month	event	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	obj	comp	ground deice?	TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
SDS4	SDS4 100496	1997	10	10/4/96	0.59	8.1			0.06	16	NPDES		no	4310	2650	6.04				0.16	0.0496	0.226	TSS, Turb not typical due to POS construction (34R safety fill), BMP implemented.
SDS4	SDS4 120496	1997	12	12/4/96	0.82	7.5			0.16	44	NPDES		no	11	6.5					0.023	0.002	0.032	
SDS4	SDS4 011797	1997	1	1/16/97	1.21	23			0	154	NPDES		no	17	2.2	3.92				0.031	0.002	0.024	
SDS4	SDS4 012797	1997	1	1/27/97	0.41	26			0	109	StipAg		no	12	9.1	4.3				0.017	0.001	0.020	
SDS4	SDS4 041997	1997	4	4/19/97	1.16	26			0	64	NPDES		no	42	12	4.44				0.039	0.003	0.036	
SDS4	SDS4 062497	1998	6	6/25/97	0.2	10.5			0.07	96	NPDES	EMC	no	104	95	5.38				0.032	0.004	0.044	construction related turb and TSS
SDS4	SDS4 111797	1998	11	11/16/97	0.47	12.8			0	222	NPDES	SMC	no	31	34	4.54				0.019	0.002	0.039	
SDS4	SDS4 030998	1998	3	3/8/98	0.86	27			0	132	NPDES	SMC	no	3.8	5.7					0.016	0.001	0.012	makeup comp for 98Qw non-rep comp, has extra grab
SDS4	SDS4 111998	1998	11	11/19/98	2.34	66	0.18	0	0	73	NPDES	SMC	no	2.1	2.9					0.029	0.001	0.015	
SDS4	SDS4 021399	1999	2	2/13/99	0.26	6	0.04	0	0	102	other	EMC	yes			10.5				0.006	0.001	0.036	for DO study
SDS4	SDS4 050799	1999	5	5/6/99	0.25	22	0.06	0	0	79	NPDES	EMC	no	36	12					0.023	0.001	0.006	ANNUAL SAMPLE
SDN3	SDN3 090694	1995	9	9/6/94	0.69	22				93	NPDES		no	2.1	5.1	5				0.032	0.002	0.063	
SDN3	SDN3 102694	1995	10	10/25/94	1.96	44				114	NPDES		no	9.2	8	4							
SDN3	SDN3 111994	1995	11	11/19/94	0.42	24			0.05	52	NPDES		no			4							
SDN3	SDN3 010795	1995	1	1/7/95	0.21	62			0	252	NPDES		no	0.62	1.6	2				0.003	0.001	0.052	
SDN3	SDN3 021695	1995	2	2/15/95	1.1	56			0	66	NPDES		yes			90							
SDN3	SDN3 030595	1995	3	3/4/95	0.18	24			0	158	StipAg		no		2.3	3							
SDN3	SDN3 030995	1995	3	3/8/95	2.16	114			0	66	StipAg		no		12	3							
SDN3	SDN3 040595	1995	4	4/4/95	0.17	4			0	270	StipAg		no		1.8	3							
SDN3	SDN3 060495	1995	6	6/4/95	0.7	26			0	384	NPDES		no	15	25	8				0.011	0.001	0.126	
SDN3	SDN3 071095	1995	7	7/8/95	0.81	13			0		NPDES		no	21	24	7				0.036	0.004	0.161	
SDN3	SDN3 110795	1995	11	11/8/95	3.89	48			0.09		NPDES		no	15	18	3				0.010	0.001	0.0[illegible]	
SDN3	SDN3 011496	1996	1	1/13/96	0.37	20			0		NPDES		no	3.8	4.7	5				0.010	0.002	0.0[illegible]7	
SDN3	SDN3 020496	1996	2	2/3/96	1.6	8					StipAg		yes		9.7								storm after runway deice
SDN3	SDN3 040196	1996	3	3/31/96	0.64	0			0.01		StipAg		no	11	16	5				0.015	0.002	0.101	xtra NPDES/Stip Ag
SDN3	SDN3 041896	1996	4	4/15/96	0.49	16			0.09		NPDES		no	27	22					0.018	0.003	0.121	
SDN3	SDN3 042296	1996	4	4/22/96	2.83	8			0		StipAg		no	15	9.5	6.66				0.016	0.001	0.063	xtra NPDES/Stip Ag
SDN3	SDN3 051396	1996	5	5/13/96	0.99	20			0.07	12	StipAg		no	16	16								
SDN3	SDN3 052296	1996	5	5/21/96	0.31	30			0.02		StipAg		no	16	5.2								
SDN3	SDN3 062396	1996	6	6/23/96	0.46	10			0		SES		no	7.3		5				0.004	0.0001	0.051	
SDN3	SDN3 080396	1996	8	8/2/96	1.01	27			0	325	NPDES		no	26	26					0.037	0.004	0.[illegible]	delayed hydrograph, very dry antecedent
SDN3	SDN3 120496	1997	12	12/4/96	0.82	7.5			0.16	44	NPDES		no	16	14					0.018	0.002	0.033	
SDN3	SDN3 122196	1997	12	12/19/96	0.36	37			0	103	NPDES		no	2.6	4.6					0.011	0.001	0.046	
SDN3	SDN3 011797	1997	1	1/16/97	1.21	23			0	154	NPDES		no	13	13	4.92				0.012	0.001	0.043	
SDN3	SDN3 030597	1997	3	3/6/97	0.39	20			0.24	42	NPDES		no	10	10					0.011	0.001	0.032	
SDN3	SDN3 062197	1997	6	6/21/97	0.27	11.8		0.01	0.02	24	NPDES	EMC	no	2.2	10					0.014	0.001	0.048	
SDN3	SDN3 111797	1998	11	11/16/97	0.47	12.8			0	222	NPDES	EMC	no	12	42					0.018	0.002	0.048	
SDN3	SDN3 121697	1998	12	12/15/97	1	33			0	87	NPDES	SMC	no	11	26					0.011	0.002	0.040	
SDN3	SDN3 122498	1998	12	12/24/98	1.18	39	0.16	0	0	153	NPDES	SMC	yes	12	9	222		14.2	15.2	0.017	0.001	0.089	
SDN3	SDN3 021399	1999	2	2/13/99	0.26	6	0.04	0	0	102	other	EMC	yes			17.6				0.020	0.010	0.060	for DO study
SDN4	SDN4 090396	1997	9	9/3/96	0.26	1.2			0	76	NPDES		no	6	3	14.1				0.139	0.001	0.047	first sample at SDN4, taken at daylight
SDN4	SDN4 120496	1997	12	12/4/96	0.82	7.5			0.16	44	NPDES		no	7	4.5	8.46				0.034	0.002	0.023	
SDN4	SDN4 011897	1997	1	1/16/97	1.21	23			0	154	NPDES		no	11	1.7	12.1				0.036	0.001	0.025	
SDN4	SDN4 030597	1997	3	3/5/97	0.39	20			0.24	42	NPDES		no	3.8	2.5					0.031	0.001	0.019	
SDN4	SDN4 060397	1997	6	6/3/97	0.26	16			0	76	NPDES	EMC	no	2.2	2.6	3.12				0.052	0.001	0.020	
SDN4	SDN4 102897	1998	10	10/28/97	0.47	10.8			0.06	26	NPDES	EMC	no	2.8	6	7.38				0.039	0.002	0.024	
SDN4	SDN4 121697	1998	12	12/15/97	1	33			0	87	NPDES	SMC	no	2.6	3.9	4.68				0.026	0.001	0.022	
SDN4	SDN4 030198	1998	3	3/1/98	0.98	66			0.07	6	NPDES	SMC	no	17	18					0.031	0.001	0.029	
SDN4	SDN4 030998	1998	3	3/8/98	0.86	27			0	132	NPDES	SMC	no	3.2	6.1	4.06				0.049	0.001	0.018	backup monthly sample in case 3/1/98 sample didn't qualify under new permit
SDN4	SDN4 042498	1998	4	4/23/98	0.46	20			0	264	NPDES	EMC	no	2	3.6	5.44				0.091	0.001	0.029	
SDN4	SDN4 052598	1998	5	5/24/98	0.56	11			0	87	NPDES	EMC	no	3.7	5.5	5.2				0.030	0.002	0.027	
SDN4	SDN4 062498	1998	6	6/24/98	0.43	4			0	288	NPDES	EMC	no	4	4	4.54				0.047	0.001	0.018	
SDN4	SDN4 081698	1998	8	8/16/98	0.31	10	0.25	0	0	792	NPDES	EMC	no	64	98	8				0.067	0.003	0.022	thunderstorm, 0.25 in/hr

Trimmed Composite Sample Data Set for Selected Outfalls

outfall	POS ID	report	month	event	depth, in.	dur, hr	maxint, in/hr	24hrant, in.	48hrant, in.	dryant, hr	obj	comp	ground delce?	TSS	Turb, NTU	BOD5	E-glycol	P-glycol	total glycols	Cu	Pb	Zn	comments
																							GLYCOLS MAY BE HIGH BIASED, DUPE
SDN4	SDN4 092598	1999	9	9/29/98	0.47	23	0.26	0	0	148	NPDES	EMC	no	76*	43*	6.74	1	2.2	3.2	0.043	0.001	0.016	WAS <MDL
SDN4	SDN4 100398	1999	10	10/3/98	0.4	3	0.22	0	0.07	36	NPDES	EMC	no	27	23	2	1	1	2	0.061	0.001	0.045	
SDN4	SDN4 110498	1999	11	11/3/98	1.62	39	0.48	0	0.08	35	NPDES	SMC	no	18	5.6	2	1	1	2	0.047	0.001	0.070	
SDN4	SDN4 111398	1999	11	11/11/98	0.98	62	0.15	0	0.05	31	NPDES	EMC	no	22	15	2	1	1	2	0.025	0.001	0.127	concurrent WET sample
SDN4	SDN4 122598	1999	12	12/24/98	1.19	39	0.16	0	0	153	NPDES		yes	12	12	168*	7	27.3	34.3	0.023	0.001	0.075	
SDN4	SDN4 011499	1999	1	1/13/99	1.07	22	0.16	0	0	85	NPDES	EMC	no	7	9.2	2	1	1	2	0.020	0.001	0.034	concurrent WET sample
SDN4	SDN4 020499	1999	2	2/3/99	0.28	19	0.07	0	0.61	27	NPDES	EMC	no	3.8	4.8	2	1	1	2	0.015	0.001	0.024	
SDN4	SDN4 021399	1999	2	2/13/99	0.28	5	0.04	0	0	102	other	EMC	yes			36				0.036	0.001	0.026	for DO study
SDN4	SDN4 031399	1999	3	3/12/99	0.83	23	0.07	0	0	71	NPDES	EMC	no	2.9	7	2	1	1	2	0.019	0.001	0.025	
SDN4	SDN4 032699	1999	3	3/27/99	0.24	9	0.07	0	0.09	26	NPDES	EMC	no	4.3	3.6	2	1	1	2	0.022	0.001	0.014	

All Airfield outfalls (outliers trimmed from dataset)	count	97	96	106	70	68	68	100	103	99
	max	42	42	38	32	27	34	0.091	0.016	0.134
	95th	27	26	18	10	10	20	0.069	0.009	0.109
	75th	16	13	8	3	3	5	0.039	0.003	0.056
	median	6	7	5	3	3	5	0.026	0.002	0.037
	25th	4	4	3	1	1	2	0.018	0.001	0.024
	min	1	1	2	1	1	2	0.003	0.000	0.003
	sd	9	8	7	5	4	6	0.019	0.003	0.028
	CV,%	83%	84%	95%	150%	129%	108%	61%	115%	64%
	# trimmed	9	8	6		2	2	5	2	5
	% trimmed	9%	8%	6%	0%	3%	3%	5%	2%	5%

SDS3 (outliers trimmed from dataset)	count	33	33	36	27	25	26	37	39	37
	max	33	42	38	32	14	32	0.087	0.016	0.134
	95th	23	23	25	22	10	27	0.060	0.012	0.110
	75th	16	14	14	5	4	7	0.049	0.004	0.062
	median	7	6	8	3	3	5	0.032	0.002	0.045
	25th	4	4	5	1	1	3	0.023	0.002	0.036
	min	1	1	2	1	1	2	0.004	0.001	0.003
	sd	6	9	8	7	3	8	0.021	0.004	0.027
	CV,%	88%	75%	102%	163%	80%	112%	2%	0%	2%
	# trimmed	5	4	3		2	2	3	1	2
	% trimmed	15%	12%	8%	0%	8%	8%	8%	3%	5%

SDS4 (outliers trimmed from dataset)	count	19	18	22	10	10	10	21	21	21
	max	42	34	18	3	3	5	0.041	0.005	0.047
	95th	37	17	16	3	3	5	0.039	0.004	0.044
	75th	20	11	6	3	3	5	0.032	0.002	0.032
	median	11	6	5	3	3	5	0.023	0.001	0.020
	25th	5	4	4	3	3	5	0.018	0.001	0.016
	min	2	1	2	1	1	2	0.006	0.001	0.008
	sd	12	7	4	1	1	1	0.010	0.001	0.012
	CV,%	99%	61%	52%	13%	14%	18%	1%	0%	1%
	# trimmed	2	2	1				1	1	1
	% trimmed	11%	11%	5%	0%	0%	0%	5%	5%	5%

All Deicing Event Sample Data																
outfall	POS ID	event	report	type	depth	maxint	dryant	purpose	type	ground deice?	dryant aircraft	BOD5	E-glycol	P-glycol	total glycols	comments
SDE4	SDE4 111394	11/11/94	1995	storm	0.26		46	NPDES		no		7				
SDE4	SDE4 111894	11/18/94	1995	baseflo	0			NPDES		no		26				
SDE4	SDE4 111994	11/19/94	1995	storm	0.42		52	NPDES		no		8				
SDE4	SDE4 041095	4/10/95	1995	storm	0.29		56	NPDES		no		8				
SDE4	SDE4 042895	4/28/95	1995	baseflo	0			NPDES		no						
SDE4	SDE4 050295	5/2/95	1995	nonstor	0.42		36	NPDES		no			10		10	
SDE4	SDE4 081795	8/16/95	1996	storm	1.34			NPDES		no				8	8	
SDE4	SDE4 012096 AVG	1/19/96	1996		1.8			SES	series avg	yes		72	13	11	24	20-hr avg of 6 discrete samples. 2 of 6 glycol <MDL
SDE4	SDE4 020496 AVG	2/3/96	1996		1.8			Washoff	series avg	yes		95	18	12	30	10-hr avg of 5 discrete samples. All>MDL
SDE4	SDE4 020396	2/3/96	1996	storm	1.8			NPDES	flow-wt comp	yes		74	14	12	26	
SDE4	SDE4 032296	3/22/96	1996	storm	0.21			StipAg	flow-wt comp	no		12				
SDE4	SDE4 041696	4/16/96	1996	storm	0.49			NPDES	flow-wt comp	no		7				
SDE4	SDE4 090396	9/3/96	1997	storm	0.29		76	NPDES	flow-wt comp	no	3	7				
SDE4	SDE4 112196 A99	11/20/96	1997					NPDES	series avg	yes	0		21	71	92	composite of bottles A1, A2, A3 for quarterly glycols
SDE4	SDE4 121596	12/15/96	1997	nonstor	0.11		72	NPDES	flow-wt comp	no	63	9				nonstorm: backup data in case short on data for 96 Q4
SDE4	SDE4 122196	12/19/96	1997	storm	0.36		103	NPDES	flow-wt comp	no	76	12				
SDE4	SDE4 123196 AVG	12/26/96	1997		1.12			SES	series avg	yes	256	33	3	4	6	30-hr avg of 5 time-compositesamples. most glycol and BOD<MDL
SDE4	SDE4 010797 AVG	12/26/96	1997		1.12			SES	series avg	yes	256	13	8	15	23	6-day avg of 15 time-composite samples. 12of 15 BOD<MDL, 11 of15 glycol <MDL
SDE4	SDE4 011697	1/16/97	1997	storm	1.21		154	NPDES	flow-wt comp	no	136	13				
SDE4	SDE4 012797	1/27/97	1997	storm	0.41		109	StipAg	flow-wt comp	no	145	2		49	49	
SDE4	SDE4 030697	3/5/97	1997	storm	0.39		42	NPDES	flow-wt comp	no	51	4				
SDE4	SDE4 060397	6/3/97	1997	storm	0.26		76	NPDES	flow-wt comp	no	2	6				
SDE4	SDE4 102697	10/26/97	1998	storm	0.47		26	NPDES	flow-wt comp	no	9	4				
SDE4	SDE4 121697	12/15/97	1998	storm	1		87	NPDES	flow-wt comp	no	30	2				
SDE4	SDE4 011398	1/12/98	1998	nonstor	1.13		123	NPDES	series avg	yes	457	213	6	5	11	24-HOUR TIME COMPOSITE
SDE4	SDE4 030198	3/1/98	1998	storm	0.98		6	NPDES	flow-wt comp	no	11	5				
SDE4	SDE4 030998	3/8/98	1998	storm	0.86		132	NPDES	flow-wt comp	no	154		1	1	2	taken for aircraft deicing only, GRAB FAILED (No Liquid Detected)
SDE4	SDE4 042398	4/23/98	1998	storm	0.46		264	NPDES	flow-wt comp	no	29	21				
SDE4	SDE4 051498	5/14/98	1998	storm	0.21		125	NPDES	flow-wt comp	no	15	11				
SDE4	SDE4 091898	9/18/98	1999	nonstor	0.19	0.16	456	NPDES	flow-wt comp	no	5	14				nonstorm
SDE4	SDE4 092598	9/24/98	1999	storm	0.47	0.26	148	NPDES	flow-wt comp	no	3	2				
SDE4	SDE4 100398	10/3/98	1999	storm	0.4	0.22	36	NPDES	flow-wt comp	no	2	5				
SDE4	SDE4 102798	10/27/98	1999	storm	0.64	0.19	72	NPDES	flow-wt comp	no	12	5				
SDE4	SDE4 110498	11/3/98	1999	storm	1.62	0.48	35	NPDES	non-rep comp	no	8	2				not representative, incomplete sample, flow probe error
SDE4	SDE4 111998	11/19/98	1999	storm	2.34	0.18	73	NPDES	flow-wt comp	no	44	7				concurrent WET sample
SDE4	SDE4 121798	12/17/98	1999	nonstor	0.11	0.03	33	NPDES	flow-wt comp	no	20					non-storm, suitbale for glycols only
SDE4	SDE4 122498	12/24/98	1999	storm	1.19	0.16	153	NPDES	flow-wt comp	yes	373	335	13	31	44	
SDE4	SDE4 011099	1/9/99	1999	storm	0.27	0.05	54	NPDES	non-rep comp	no	25	2	1	3	4	not representative, taken too late
SDE4	SDE4 012299	1/20/99	1999	storm	0.42	0.09	22	NPDES	flow-wt comp	no	14	6				concurrent WET sample
SDE4	SDE4 021899	2/18/99	1999	storm	0.6	0.06	20	NPDES	flow-wt comp	no	16	4				
SDE4	SDE4 022399	2/22/99	1999	storm	0.56	0.14	9	NPDES	flow-wt comp	no	15	2				concurrent WET sample
SDE4	SDE4 030899	3/8/99	1999	storm	0.28	0.05	96	NPDES	flow-wt comp	no	147	10	1	5	6	
SDE4	SDE4 031399	3/12/99	1999	storm	0.83	0.07	71	NPDES	flow-wt comp	no	53	5				
SDE4	SDE4 032499	3/24/99	1999	storm	0.28	0.08	40	NPDES	flow-wt comp	no	11	6	2			
SDE4	SDE4 032899	3/27/99	1999	storm	0.24	0.07	26	NPDES	flow-wt comp	no	7	2	1			
SDS1	SDS1 111894	11/18/94	1995	baseflo	0			NPDES		no		54	32	32		

All Deicing Event Sample Data																
outfall	POS ID	event	report	type	depth	maxint	dryant	purpose	type	ground deice?	dryant aircraft	BOD5	E-glycol	P-glycol	total glycols	comments
SDS1	SDS1 111994	11/19/94	1995	storm	0.42		52	NPDES		no		46	14		14	
SDS1	SDS1 020895	2/8/95	1995	baseflo	0			NPDES		no						
SDS1	SDS1 021395	2/13/95	1995	baseflo	0			NPDES		yes		5				
SDS1	SDS1 021695	2/16/95	1995	storm	1.1		86	NPDES		yes		92	260	15	275	
SDS1	SDS1 042895	4/28/95	1995	baseflo	0			NPDES		no						
SDS1	SDS1 050295	5/2/95	1995	nonstor	0.42		36	NPDES		no						
SDS1	SDS1 092995	9/29/95	1996	baseflo	0			NPDES		no						
SDS1	SDS1 011496	1/13/96	1996	storm	0.37			NPDES	flow-wt comp	no		18				
SDS1	SDS1 012096 AVG	1/19/96	1996		1.8			SES	series avg	yes		130	105	193	298	20-hr avg of 6 discrete samples. 5 TKN <MDL
SDS1	SDS1 020496 AVG	2/3/96	1996	storm	1.6			Washoff	series avg	yes		131	23	96	118	14-hr avg of 6 discrete samples. 1 glycol <MDL
SDS1	SDS1 041696	4/15/96	1996	storm	0.49			NPDES	flow-wt comp	no		24				
SDS1	SDS1 042296	4/22/96	1996	storm	2.83			StipAg	flow-wt comp	no		9				
SDS1	SDS1 070496	7/3/96	1997	storm	0.23			NPDES	flow-wt comp	no		11				
SDS1	SDS1 110496	11/3/96	1997	nonstor	0.14		120	NPDES	flow-wt comp	no	24	6				taken for aircraft deicing only
SDS1	SDS1 112096 A1	11/20/96	1997					SES	time-comp	yes	0	428	59	2800	2859	
SDS1	SDS1 112396	11/23/96	1997	storm	0.63		72	NPDES	non-rep comp	yes	112	258	8	190	198	not representative (<2 hrs). reference only. grab sample lost: bottle broken in transit
SDS1	SDS1 120496	12/4/96	1997	storm	0.82		44	NPDES	flow-wt comp	no	92	41		24	29	
SDS1	SDS1 011697	1/16/97	1997	storm	1.21		154	NPDES	flow-wt comp	no	136	79		33	33	
SDS1	SDS1 041397	4/13/97	1997	storm	0.31			NPDES	flow-wt comp	no	8	21				
SDS1	SDS1 061797	6/16/97	1997	storm	0.36		135	NPDES	flow-wt comp	no	3	5				
SDS1	SDS1 102897	10/28/97	1998	storm	0.47		26	NPDES	flow-wt comp	no	9	7				
SDS1	SDS1 112097	11/19/97	1998	storm	0.65		24	NPDES	flow-wt comp	no	18	2				
SDS1	SDS1 121697	12/15/97	1998	storm	1		87	NPDES	flow-wt comp	no	30	6				
SDS1	SDS1 011198	1/12/98	1998	nonstor	1.13		123	NPDES	time-comp	yes	457	18				24-hour time composite
SDS1	SDS1 030998	3/8/98	1998	storm	0.66		132	NPDES	flow-wt comp	no	154			6	7	FULFILLS ANNUAL SAMPLE RQMT
SDS1	SDS1 102798	10/27/98	1999	storm	0.64	0.19	72	NPDES	flow-wt comp	no	12	6				
SDS1	SDS1 121798	12/17/98	1999	nonstor	0.11	0.03	33	NPDES	grab	no	20					nonstorm
SDS1	SDS1 031299 GRAB	3/12/99	1999	storm	0.83	0.07	71	NPDES	grab	no	53	123	5	43	49	quarterly deice grab sample in first 60 minutes
SDS1	SDS1 062099 GRAB	6/20/99	1999	storm	0.21	0.03	48	NPDES	grab	no						FOAM OBSERVED BELOW OUTFALL
SDS1	SDS1 062099 GRAB	6/20/99	1999	storm	0.21	0.03	48	NPDES	grab	no						FOAM OBSERVED BELOW OUTFALL
SDS3	SDS3 090894	9/8/94	1995	storm	0.69		93	NPDES		no						
SDS3	SDS3 111894	11/18/94	1995	baseflo	0			NPDES		no		2				
SDS3	SDS3 111994	11/19/94	1995	storm	0.42		52	NPDES	flow-wt comp	no		18				glycols and BOD on labjob "J 014"
SDS3	SDS3 020895	2/8/95	1995	baseflo	0			NPDES		no						
SDS3	SDS3 041295	4/10/95	1995	storm	0.29		56	NPDES		no		4				
SDS3	SDS3 042895	4/28/95	1995	baseflo	0			NPDES		no						
SDS3	SDS3 050295	5/2/95	1995	nonstor	0.42		36	NPDES		no						
SDS3	SDS3 093095	9/29/95	1996	baseflo	0			NPDES		no						
SDS3	SDS3 093095 GRAB	9/29/95	1996	baseflo	0			NPDES	random grab	no						
SDS3	SDS3 011496	1/13/96	1996	storm	0.37			NPDES	flow-wt comp	no		8				
SDS3	SDS3 012296 AVG	1/19/96	1996	nonstor m	1.8			SES	series avg	yes		118	25	14	40	3.5-day avg of 8 discrete + 8 time-comp samples. 7 glycol, 4 TKN, 2 NH3 <MDL
SDS3	SDS3 020696 AVG	2/3/96	1996	nonstor m	1.6			SES	series avg	yes		162	16	13	29	2-day avg of 8 time-comp samples. 5BOD>result, 2 glycol, 1 NH3 <MDL
SDS3	SDS3 032296	3/22/96	1996	storm	0.21			StipAg	flow-wt comp	no		8				
SDS3	SDS3 041696	4/15/96	1996	storm	0.49			NPDES	flow-wt comp	no		6				
SDS3	SDS3 102196	10/21/96	1997	storm	0.68		64	NPDES	flow-wt comp	no	18	2				
SDS3	SDS3 112896 AVG	11/20/96	1997					SES	series avg	yes		75	14	15	26	9-day avg of 32 time-comp samples. 11 glycol. 28 NH3 <MDL

All Deicing Event Sample Data																
outfall	POS ID	event	report	type	depth	maxint	dryant	purpose	type	ground deice?	dryant aircraft	BOD5	E-glycol	P-glycol	total glycols	comments
SDS3	SDS3 112396	11/23/96	1997	storm	0.83		72	StipAg	flow-wt comp	yes	112	34	18	10	28	
SDS3	SDS3 010297 AVG	12/26/96	1997		1.12			SES	series avg	yes	256	252	19	44	62	7-day avg of 29 time-comp samples. 12 glycol, 8 BOD, 14 NH3 <MDL
SDS3	SDS3 011697	1/16/97	1997	storm	1.21		154	NPDES	flow-wt comp	no	136	10				
SDS3	SDS3 030597	3/5/97	1997	storm	0.39		42	NPDES	flow-wt comp	no	51	2				
SDS3	SDS3 011298	1/12/98	1998	nonstor	1.13		123	NPDES	time-comp	yes	457	17	14	5	5	24-hour time composite
SDS3	SDS3 013098	1/29/98	1998	storm	0.2		107	NPDES	flow-wt comp	no	39	14	5	4	10	
SDS3	SDS3 030198	3/1/98	1998	storm	0.98		6	NPDES	flow-wt comp	no	11	8			2	
SDS3	SDS3 030998	3/8/98	1998	storm	0.86		132	NPDES	flow-wt comp	no	154	38	23	9	32	backup monhtly sample in case 3/1/98 sample didn't qualify under new permit
SDS3	SDS3 042398	4/23/98	1998	storm	0.46		264	NPDES	flow-wt comp	no	29	9				
SDS3	SDS3 051498	5/14/98	1998	storm	0.21		125	NPDES	flow-wt comp	no	15	6				
SDS3	SDS3 091998	9/18/98	1999	nonstor m	0.19	0.16	456	NPDES	non-rep comp	no	5	12	1	1	2	not representative, extended into post-storm baseflow period
SDS3	SDS3 092598	9/24/98	1999	storm	0.47	0.26	148	NPDES	flow-wt comp	no	3	5	1	2	3	GLYCOLS MAY BE HIGH BIASED, DUPE WAS <MDL
SDS3	SDS3 100398	10/3/98	1999	storm	0.4	0.22	36	NPDES	flow-wt comp	no	2	4	1	1	2	
SDS3	SDS3 102798	10/27/98	1999	storm	0.64	0.19	72	NPDES	flow-wt comp	no	12	5	1	4	5	
SDS3	SDS3 110498	11/3/98	1999	storm	1.62	0.48	35	NPDES	flow-wt comp	no	8	7	5	1	6	
SDS3	SDS3 111398	11/11/98	1999	storm	0.98	0.15	31	NPDES	flow-wt comp	no	16	16	11	1	12	concurrent WET sample
SDS3	SDS3 121798	12/17/98	1999	nonstor	0.11	0.03	33	NPDES	flow-wt comp	no	20		11	12	13	non-storm, suitbale for glycols only
SDS3	SDS3 122598	12/24/98	1999	storm	1.19	0.16	153	NPDES	flow-wt comp	yes	373	450	32	82	113*	
SDS3	SDS3 011099	1/9/99	1999	storm	0.27	0.05	54	NPDES	flow-wt comp	no	25	22	8	14	22	
SDS3	SDS3 011499	1/13/99	1999	storm	1.07	0.16	85	NPDES	flow-wt comp	no	34	6	1	10	11	concurrent WET and WER
SDS3	SDS3 020399	2/3/99	1999	storm	0.28	0.07	27	NPDES	flow-wt comp	no	8	6	1	2	3	
SDS3	SDS3 030999	3/8/99	1999	storm	0.28	0.05	96	NPDES	flow-wt comp	no	147	220	7	151	158	
SDS3	SDS3 031399	3/12/99	1999	storm	0.83	0.07	71	NPDES	flow-wt comp	no	53	15	6	6	7	
SDS3	SDS3 032599	3/24/99	1999	storm	0.26	0.08	40	NPDES	flow-wt comp	no	11	2				
SDN1	SDN1 111994	11/19/94	1995	storm	0.42		52	NPDES		no		6				
SDN1	SDN1 010595	1/5/95	1995	baseflo	0			other		no		11				baseflow
SDN1	SDN1 020695	2/6/95	1995	baseflo	0			NPDES		no						
SDN1	SDN1 021395	2/13/95	1995	baseflo	0			NPDES		yes		5				
SDN1	SDN1 021695	2/15/95	1995	storm	1.1		88	NPDES		yes		31	6		6	
SDN1	SDN1 030595	3/4/95	1995	storm	0.18		158	StipAg		no		4				
SDN1	SDN1 030995	3/8/95	1995	storm	2.16		88	StipAg		no		6				
SDN1	SDN1 031595	3/13/95	1995	nonstor	0.23		24	StipAg	random grab	no		4				nonstorm
SDN1	SDN1 040595	4/4/95	1995	storm	0.17		270	StipAg		no		5				
SDN1	SDN1 040795	4/6/95	1995	storm	0.61		60	NPDES		no		40				
SDN1	SDN1 020496	2/3/96	1996	storm	1.6			NPDES	flow-wt comp	yes		15				
SDN1	SDN1 041296	4/11/96	1996	nonstor	0.21		110	StipAg	flow-wt comp	no	17	15				nonstorm
SDN1	SDN1 041696	4/15/96	1996	storm	0.49			StipAg	flow-wt comp	no		2				
SDN1	SDN1 042296	4/22/96	1996	storm	2.83			NPDES	flow-wt comp	no		9				
SDN1	SDN1 042596	4/25/96	1996	nonstor	0.31		18	StipAg	flow-wt comp	no	5	2				nonstorm
SDN1	SDN1 051396	5/13/96	1996	storm	0.99		12	StipAg	flow-wt comp	no	2	4				
SDN1	SDN1 052296	5/21/96	1996	storm	0.31			StipAg	flow-wt comp	no		10				xtra NPDES/Stip Ag
SDN1	SDN1 052296 GRAB	5/21/96	1996	storm	0.31			StipAg	random grab	no		12				
SDN1	SDN1 062396	6/23/96	1996	storm	0.46			StipAg	flow-wt comp	no		20				xtra NPDES/Stip Ag
SDN1	SDN1 070496	7/3/96	1997	storm	0.23			NPDES	flow-wt comp	no		11				
SDN1	SDN1 071796	7/17/96	1997	storm	0.27			StipAg	flow-wt comp	no		25				
SDN1	SDN1 080296	8/2/96	1997	storm	1.01		325	StipAg	flow-wt comp	no	1	14				
SDN1	SDN1 090396	9/3/96	1997	storm	0.29		76	StipAg	flow-wt comp	no	3	10				
SDN1	SDN1 091496	9/13/96	1997	storm	0.72		144	StipAg	flow-wt comp	no	0	10				
SDN1	SDN1 091996	9/18/96	1997	storm	0.38		28	StipAg	flow-wt comp	no	0	2	3	3	6	

All Deicing Event Sample Data

outfall	POS ID	event	report	type	depth	maxint	dryant	purpose	type	ground deice?	dryant aircraft	BOD5	E-glycol	P-glycol	total glycols	comments
SDN1	SDN1 100496	10/4/96	1997	nonstor	0.59		18	StipAg		no	2	6				insuff sample for TSS, paired up/down sample
SDN1up	SDN1 121597	12/15/97	1998	storm	1		87	NPDES	flow-wt comp	no	30	5				
SDN1up	SDN1 091898	9/18/98	1999	nonstor	0.19	0.16	456	NPDES	flow-wt comp	no	5	9				nonstorm
SDN1up	SDN1 122598	12/24/98	1999	storm	1.19	0.16	153	NPDES	flow-wt comp	yes	373	116	14	12	26	
SDN2	SDN2 111994	11/19/94	1995	storm	0.42		52	NPDES		no		10				
SDN2	SDN2 030595	3/4/95	1995	storm	0.18		158	StipAg		no		12	36		36	
SDN2	SDN2 031595	3/13/95	1995	nonstor	0.23		24	StipAg	random grab	no		5				nonstorm. questionable high ammonia
SDN2	SDN2 040795	4/6/95	1995	storm	0.61		60	StipAg		no		15				
SDN2	SDN2 041295	4/10/95	1995	storm	0.29		56	NPDES		no		30		19	19	
SDN2	SDN2 121095	12/9/95	1996	nonstor	0.62			Washoff	flow-wt comp	no						
SDN2	SDN2 012296 AVG	1/19/96	1996	nonstor m	1.8			SES	series avg	yes		21	22	24	44	4-day avg of 17 time-composite samples.8 glycol, 5NH3, and 5 BOD<MDL
SDN2	SDN2 020496 GRAB	2/3/96	1996	storm	1.6			SES	grab	yes		180	16	28	44	storm after runway deice
SDN2	SDN2 020696 AVG	2/3/96	1996	nonstor m	1.6			SES	series avg	yes		108	9	14	23	2.5-day avg of 8 time-composite samples. 3 glycol, 6 NH3 <MDL
SDN2	SDN2 021796	2/17/96	1996	storm	1.29			NPDES	flow-wt comp	no		6	6	11	17	
SDN2	SDN2 032096 GRAB	3/20/96	1996	nonstor	0.13		120	StipAg	grab	no		10				nonstorm
SDN2	SDN2 041696	4/16/96	1996	storm	0.49			StipAg	flow-wt comp	no		2				
SDN2	SDN2 041996	4/19/96	1996	nonstor	0.09		16	StipAg		no	6	2				nonstorm (0.02" storm)
SDN2	SDN2 042296	4/22/96	1996	storm	2.63			NPDES	flow-wt comp	no		7				
SDN2	SDN2 042596	4/25/96	1996	nonstor	0.31		18	StipAg	flow-wt comp	no	5	2				nonstorm
SDN2	SDN2 051396	5/13/96	1996	storm	0.99		12	StipAg	flow-wt comp	no	2	5				
SDN2	SDN2 052296	5/21/96	1996	storm	0.31			StipAg	flow-wt comp	no		5				xtra NPDES/Stip Ag
SDN2	SDN2 052296 GRAB	5/21/96	1996	storm	0.31			StipAg	random grab	no		6				
SDN2	SDN2 062396	6/23/96	1996	storm	0.46			StipAg	flow-wt comp	no		18				xtra NPDES/Stip Ag
SDN2	SDN2 070396	7/3/96	1997	storm	0.23			StipAg	non-rep comp	no		21				
SDN2	SDN2 071796	7/17/96	1997	storm	0.27			StipAg	time-comp	no		18				flow-wt comp failed, reset to 20 min time comp
SDN2	SDN2 102196	10/21/96	1997	storm	0.68		64	NPDES	flow-wt comp	no	18	5				
SDN2	SDN2 112696 AVG	11/20/96	1997	nonstor m				SES	series avg	yes	0	249	31	134	165	9-day avg of 33 time-composite samples. 2 glycol, all NH3 <MDL
SDN2	SDN2 010297 AVG	12/26/96	1997	nonstor m	1.12			SES	series avg	yes	256	54	11	27	37	2-day avg of 7 time-composite samples. 1 glycol and 3 BOD<MDL
SDN2	SDN2 123196 AVG	12/26/96	1997	nonstor m	1.12			SES	series avg	yes	256	1180	315	370	684	6-day avg of 20 time-composite samples. 1 BOD and 17 NH3 <MDL
SDN2	SDN2 011697	1/16/97	1997	storm	1.21		154	NPDES	flow-wt comp	no	136	120		51	51	
SDN2	SDN2 041997	4/19/97	1997	storm	1.16		64	NPDES	flow-wt comp	no	9	2				
SDN2	SDN2 110498 GRAB	11/3/98	1999	storm	1.62	0.48	35	NPDES	grab	no	8	2				N. CARGO PUMP STATION BYPASS
SDN2	SDN2 112598 GRAB	11/25/98	1999	nonstor	3.45	0.32	8	NPDES	grab	no	15	2				from North Cargo Pump Station bypass
SDN2	SDN2 012899 GRAB	1/28/99	1999	nonstor m	1.16	0.1	33	NPDES	grab	no			1	1	2	BYPASS SAMPLE, STORM<<DESIGN, MAINT NOTIFIED (O&M IN PROGRESS)
SDN2	SDN2 062499 GRAB	6/24/99	1999	storm	1.12	0.35	10	NPDES	grab	no						30 MIN PUMP STATION BYPASS
SDN3	SDN3 111994	11/19/94	1995	storm	0.42		52	NPDES		no		4				
SDN3	SDN3 020695	2/8/95	1995	baseflo	0			NPDES		no						
SDN3	SDN3 021395	2/13/95	1995	baseflo	0			NPDES		yes		3				
SDN3	SDN3 021695	2/15/95	1995	storm	1.1		86	NPDES		yes		60				
SDN3	SDN3 030595	3/4/95	1995	storm	0.18		158	StipAg		no		3				
SDN3	SDN3 030995	3/8/95	1995	storm	2.16		88	StipAg		no		3				
SDN3	SDN3 031595	3/13/95	1995	nonstor	0.23		24	StipAg	random grab	no		5				
SDN3	SDN3 040595	4/4/95	1995	storm	0.17		270	StipAg		no		3				
SDN3	SDN3 011496	1/13/96	1996	storm	0.37			NPDES	flow-wt comp	no		5				

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outfall	POS ID	event	report	type	depth	maxint	dryant	purpose	type	ground deice?	dryant aircraft	BOD5	E-glycol	P-glycol	total glycols	comments
SDN3	SDN3 012096 AVG	1/19/96	1996	nonstor	1.8			StlpAg	series avg	yes		30	3	3	5	36-hr avg of 4 time-composite samples. all glycol <MDL
SDN3	SDN3 020496	2/3/96	1996	storm	1.6			StlpAg	flow-wt comp	yes			3	3	5	storm after runway deice
SDN3	SDN3 033096 GRAB	3/29/96	1996	nonstor	0.13		120	StlpAg	grab	no		5	3	3	5	nonstorm, insuff flow to enable sampler
SDN3	SDN3 040196	3/31/96	1996	storm	0.64			StlpAg	flow-wt comp	no		5	3	3	5	xtra NPDES/Stlp Ag
SDN3	SDN3 041296 GRAB	4/11/96	1996	nonstor	0.21		110	StlpAg	grab	no	17	4	3	3	5	nonstorm
SDN3	SDN3 041696	4/15/96	1996	storm	0.49			NPDES	flow-wt comp	no		2	1	3	5	
SDN3	SDN3 041996	4/19/96	1996	nonstor	0.09		16	StlpAg		no	6	2	3	3	5	nonstorm
SDN3	SDN3 042296	4/22/96	1996	storm	2.83			StlpAg	flow-wt comp	no		7	3	3	5	xtra NPDES/Stlp Ag
SDN3	SDN3 042596	4/25/96	1996	nonstor	0.31		18	StlpAg	flow-wt comp	no	5	1	3	3	5	nonstorm
SDN3	SDN3 051396	5/13/96	1996	storm	0.99		12	StlpAg	flow-wt comp	no	2	2	3	3	5	
SDN3	SDN3 052296	5/21/96	1996	storm	0.31			StlpAg	flow-wt comp	no		3	3	3	5	
SDN3	SDN3 120496	12/4/96	1997	storm	0.82		44	NPDES	flow-wt comp	no	92	3	3	3	5	
SDN3	SDN3 122196	12/19/96	1997	storm	0.36		103	NPDES	flow-wt comp	no	76	4	3	3	5	
SDN3	SDN3 030597	3/5/97	1997	storm	0.39		42	NPDES	flow-wt comp	no	51	2	6	3	6	
SDN3	SDN3 121697	12/15/97	1998	storm	1		87	NPDES	flow-wt comp	no	30	2	3	3	5	HAD QC DUPLICATE: GOOD DUPLICATION
SDN3	SDN3 122498	12/24/98	1999	storm	1.19	0.16	153	NPDES	flow-wt comp	yes	373	222	11	14	15	
SDS4	SDS4 111994	11/19/94	1995	storm	0.42		52	NPDES		no		5	3	3	5	
SDS4	SDS4 021395	2/13/95	1995	baseflo	0			NPDES		yes		5	3	3	5	
SDS4	SDS4 021695	2/15/95	1995	storm	1.1		86	NPDES		yes		03	3	3	5	
SDS4	SDS4 011496	1/13/96	1996	storm	0.37			NPDES	flow-wt comp	no		6	3	3	5	
SDS4	SDS4 012096 AVG	1/19/96	1996		1.8			SES	series avg	yes		138	3	4	6	20-hr avg of 6 discrete samples. 4 glycol <MDL
SDS4	SDS4 020496 AVG	2/3/96	1996	storm	1.6			Washoff	series avg	yes		242	13	18	31	12-hr avg of 5 discrete samples. all BOD>result
SDS4	SDS4 020596	2/3/96	1996	nonstor	1.6			Washoff		yes		13	14	7	21	
SDS4	SDS4 041696	4/15/96	1996	storm	0.49			NPDES	flow-wt comp	no		6	3	3	5	
SDS4	SDS4 042296	4/22/96	1996	storm	2.83			StlpAg	flow-wt comp	no		6	3	3	5	
SDS4	SDS4 070496	7/3/96	1997	storm	0.23			NPDES	flow-wt comp	no		6	3	3	5	
SDS4	SDS4 120496	12/4/96	1997	storm	0.82		44	NPDES	flow-wt comp	no	92	2	3	3	5	
SDS4	SDS4 041997	4/19/97	1997	storm	1.16		84	NPDES	flow-wt comp	no	9	4	3	3	5	
SDS4	SDS4 011298	1/12/98	1998	nonstor	1.13		123	NPDES	time-comp	yes	457	6	2	2	2	24-hour time composite
SDS4	SDS4 030998	3/8/98	1998	storm	0.86		132	NPDES	flow-wt comp	no	154	2	1	1	2	makeup comp for 98Qw non-rep comp, has extra grab
SDS4	SDS4 111998	11/19/98	1999	storm	2.34	0.18	73	NPDES	flow-wt comp	no	44	2	1	1	2	
SDW3	SDW3 020496 AVG	2/3/96	1996	storm	1.6			SES	series avg	yes		76	6	6	12	24-hr avg of 3 time-comp samples. 2 glycol<MDL
SDN4	SDN4 120496	12/4/96	1997	storm	0.82		44	NPDES	flow-wt comp	no	92	8	3	3	5	
SDN4	SDN4 030597	3/5/97	1997	storm	0.39		42	NPDES	flow-wt comp	no	51	2	3	3	5	
SDN4	SDN4 102897	10/28/97	1998	storm	0.47		26	NPDES	flow-wt comp	no	9	7	1	1	2	
SDN4	SDN4 121697	12/15/97	1998	storm	1		87	NPDES	flow-wt comp	no	30	5	1	1	2	
SDN4	SDN4 011298	1/12/98	1998	nonstor	1.13		123	NPDES	time-comp	yes	457	120	1	1	2	24-hour time composite
SDN4	SDN4 030198	3/1/98	1998	storm	0.98		6	NPDES	flow-wt comp	no	11	2	1	1	2	
SDN4	SDN4 030998	3/8/98	1998	storm	0.86		132	NPDES	flow-wt comp	no	154	4	1	1	2	backup monhtly sample in case 3/1/98 sample didn't qualify under new permit
SDN4	SDN4 052598	5/24/98	1998	storm	0.58		87	NPDES	flow-wt comp	no	7	5	1	1	2	
SDN4	SDN4 092598	9/24/98	1999	storm	0.47	0.26	148	NPDES	flow-wt comp	no	3	7	1	2	3	GLYCOLS MAY BE HIGH BIASED, DUPE WAS <MDL
SDN4	SDN4 100398	10/3/98	1999	storm	0.4	0.22	36	NPDES	flow-wt comp	no	2	2	1	1	2	
SDN4	SDN4 102798	10/27/98	1999	storm	0.64	0.19	72	NPDES	non-rep comp	no	12	5	1	1	2	not representative, insufficient duration (~1hr)
SDN4	SDN4 110498	11/3/98	1999	storm	1.62	0.48	35	NPDES	flow-wt comp	no	8	2	1	1	2	

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All Deicing Event Sample Data

outfall	POS ID	event	report	type	depth	maxint	dryant	purpose	type	ground deice?	dryant aircraft	BOD5	E-glycol	P-glycol	total glycols	comments
SDN4	SDN4 111398	11/11/98	1999	storm	0.98	0.15	31	NPDES	flow-wt comp	no	16	2			2	concurrent WET sample
SDN4	SDN4 121798	12/17/98	1999	nonstor	0.11	0.03	33	NPDES	flow-wt comp	no	20				2	non-storm, suitbale for glycols only
SDN4	SDN4 122598	12/24/98	1999	storm	1.19	0.16	153	NPDES	flow-wt comp	yes	373	168	7	27	34	
SDN4	SDN4 011499	1/13/99	1999	storm	1.07	0.16	65	NPDES	flow-wt comp	no	34	2	2	3	27	concurrent WET sample
SDN4	SDN4 020499	2/3/99	1999	storm	0.28	0.07	27	NPDES	flow-wt comp	no	6	2	2	2	2	
SDN4	SDN4 031399	3/12/99	1999	storm	0.83	0.07	71	NPDES	flow-wt comp	no	53	2	2	2	2	
SDN4	SDN4 032899	3/27/99	1999	storm	0.24	0.07	26	NPDES	flow-wt comp	no	7	2	2	2	2	
									All outfalls	count	128	208	236	236	236	
										max	457	1180	315	2800	2859	
										95th	373	201	21	43	50	
										75th	92	19	3	3	6	
										median	18	7	3	3	5	
										25th	8.0	4.1	1.0	1.0	2.0	
										min	0.0	1.0	1.0	1.0	2.0	
										sd	117	105	28	185	193	
										CV, %	158%	273%	390%	647%	671%	
										# non-detected		39	193	184	178	
										% non-detected		19%	82%	78%	75%	
									SDE4 (002)	count	33	39	45	45	45	
										max	457	335	21	71	92	
										95th	303	107	14	28	41	
										75th	76	13	3	3	6	
										median	20	7	3	3	5	
										25th	9.0	4.6	1.0	1.0	2.0	
										min	0.0	2.0	1.0	1.0	2.0	
										sd	112	63	5	13	17	
										CV, %	151%	230%	134%	212%	173%	
										# non-detected		7	37	33	33	
										% non-detected		18%	82%	73%	73%	
									SDS1 (003)	count	15	23	31	31	31	
										max	457	428	260	2800	2859	
										95th	245	245	82	191	266	
										75th	102	86	4	11	31	
										median	24	21	3	3	5	
										25th	10.5	6.4	1.0	1.0	2.0	
										min	0.0	2.0	1.0	1.0	2.0	
										sd	117	101	50	501	513	
										CV, %	156%	153%	261%	452%	399%	
										# non-detected		1	23	22	20	
										% non-detected		4%	74%	71%	65%	

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All Deicing Event Sample Data

outfall	POS ID	event	report	type	depth	maxint	dryant	purpose	type	ground deice?	dryant aircraft	BOD5	E-glycol	P-glycol	total glycols	comments
									SDS3 (005)	count	25	33	40	40	40	
										max	457	450	32	151	158	
										95th	350	233	23	48	65	
										75th	112	22	6	9	12	
										median	25	9	3	3	5	
										25th	11.0	6.1	1.0	2.4	5.0	
										min	2.0	2.0	1.0	1.0	2.0	
										sd	119	95	8	27	31	
										CV, %	150%	201%	133%	241%	182%	
										# non-detected		4	28	25	24	
										% non-detected		12%	70%	63%	60%	
									SDN1 (006)	count	11	28	29	29	29	
										max	373	116	14	12	26	
									(includes both stations)	95th	202	37	6	3	6	
										75th	11	14	3	3	5	
										median	3	10	3	3	5	
										25th	1.5	4.9	2.5	2.5	5.0	
										min	0.0	2.0	1.0	1.0	2.0	
										sd	111	22	2	2	4	
										CV, %	278%	149%	77%	69%	73%	
										# non-detected		2	27	28	27	
										% non-detected		7%	93%	97%	93%	
									SDN2 (007)	count	11	28	31	31	31	
										max	256	1180	316	370	684	
										95th	256	225	33	93	108	
										75th	77	24	4	12	21	
										median	9	10	3	3	5	
										25th	5.5	4.8	2.5	2.5	5.0	
										min	0.0	2.0	1.0	1.0	2.0	
										sd	102	225	56	69	124	
										CV, %	158%	300%	349%	296%	316%	
										# non-detected		5	23	22	21	
										% non-detected		18%	74%	71%	68%	
									SDN3 (008)	count	9	23	25	25	25	
										max	373	222	6	14	15	
										95th	261	84	3	3	6	
										75th	76	5	3	3	5	
										median	30	3	3	3	5	
										25th	6.0	2.0	2.5	2.5	5.0	
										min	2.0	1.0	1.0	1.0	2.0	
										sd	117	48	1	2	2	
										CV, %	162%	273%	34%	82%	40%	
										# non-detected		8	24	24	23	
										% non-detected		35%	96%	96%	92%	

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All Deicing Event Sample Data																	
outfall	POS ID	event	report	type	depth	maxint	dryant	purpose	type	ground deice?	dryant aircraft	BOD5	E-glycol	P-glycol	total glycols	comments
									SDS4 (009)	count	5	15	15	15	15	
										max	457	242	14	18	31	
										95th	396	169	13	10	24	
										75th	154	10	3	3	5	
										median	92	6	3	3	5	
										25th	44.0	4.5	2.5	2.5	5.0	
										min	9.0	2.0	1.0	1.0	2.0	
										sd	179	69	4	4	8	
										CV, %	119%	195%	110%	115%	110%	
										# non-detected		3	13	12	12	
										% non-detected		20%	87%	80%	80%	
									SDN4 (011)	count	19	19	20	20	20	
										max	457	168	7	27	34	
										95th	381	125	6	7	13	
										75th	62	7	1	1	2	
										median	16	4	1	1	2	
										25th	8.0	2.0	1.0	1.0	2.0	
										min	2.0	2.0	1.0	1.0	2.0	
										sd	126	47	2	6	7	
										CV, %	180%	210%	101%	213%	166%	
										# non-detected		9	18	18	18	
										% non-detected		47%	90%	90%	90%	

1998-99 Deicing Event Sample Data															
outfall	POS ID	event	type	depth	maxint	dryant	purpose	type	ground deice?	dryant aircraft	BOD5	E-glycol	P-glycol	total glycols	comments
SDE4	SDE4 091898	9/18/98	nonstor	0.19	0.16	456	NPDES	flow-wt comp	no	5	14	1	1	2	nonstorm
SDE4	SDE4 092598	9/24/98	storm	0.47	0.26	148	NPDES	flow-wt comp	no	3	2	1	1	2	
SDE4	SDE4 100398	10/3/98	storm	0.4	0.22	36	NPDES	flow-wt comp	no	2	5	1	1	2	
SDE4	SDE4 102798	10/27/98	storm	0.64	0.19	72	NPDES	flow-wt comp	no	12	5	1	1	2	not representative, incomplete sample, flow
SDE4	SDE4 110498	11/3/98	storm	1.62	0.48	35	NPDES	non-rep comp	no	8	2	1	1	2	probe error
SDE4	SDE4 111998	11/19/98	storm	2.34	0.18	73	NPDES	flow-wt comp	no	44	7	1	1	2	concurrent WET sample
SDE4	SDE4 121798	12/17/98	nonstor	0.11	0.03	33	NPDES	flow-wt comp	no	20		1	1	2	non-storm, suitbale for glycols only
SDE4	SDE4 122498	12/24/98	storm	1.19	0.16	153	NPDES	flow-wt comp	yes	373	335	13	31	44	
SDE4	SDE4 011099	1/9/99	storm	0.27	0.05	54	NPDES	non-rep comp	no	25	2	1	3	4	not representative, taken too late
SDE4	SDE4 012299	1/20/99	storm	0.42	0.09	22	NPDES	flow-wt comp	no	14	6	1	1	2	concurrent WET sample
SDE4	SDE4 021899	2/18/99	storm	0.6	0.06	20	NPDES	flow-wt comp	no	16	4	1	1	2	
SDE4	SDE4 022399	2/22/99	storm	0.56	0.14	9	NPDES	flow-wt comp	no	15	2	1	1	2	concurrent WET sample
SDE4	SDE4 030899	3/8/99	storm	0.28	0.05	96	NPDES	flow-wt comp	no	147	10	1	5	6	
SDE4	SDE4 031399	3/12/99	storm	0.83	0.07	71	NPDES	flow-wt comp	no	53	5	1	1	2	
SDE4	SDE4 032499	3/24/99	storm	0.28	0.08	40	NPDES	flow-wt comp	no	11	6	1	1	2	
SDE4	SDE4 032899	3/27/99	storm	0.24	0.07	26	NPDES	flow-wt comp	no	7	2	1	1	2	
SDS1	SDS1 102798	10/27/98	storm	0.64	0.19	72	NPDES	flow-wt comp	no	12	6	1	1	2	
SDS1	SDS1 121798	12/17/98	nonstor	0.11	0.03	33	NPDES	grab	no	20		1	1	2	nonstorm
SDS1	SDS1 031299 GRAB	3/12/99	storm	0.83	0.07	71	NPDES	grab	no	53	123	5	43	49	quarterly deice grab sample in first 60 minutes
SDS1	SDS1 062099 grab 1	6/20/99	storm	0.21	0.03	48	NPDES	grab	no			1	1	2	FOAM OBSERVED BELOW OUTFALL
SDS1	SDS1 062099 grab 2	6/20/99	storm	0.21	0.03	48	NPDES	grab	no			1	1	2	FOAM OBSERVED BELOW OUTFALL
SDS3	SDS3 091998	9/18/98	nonstor m	0.19	0.16	456	NPDES	non-rep comp	no	5	12	1	1	2	not representative, extended into post-storm baseflow period
SDS3	SDS3 092598	9/24/98	storm	0.47	0.26	148	NPDES	flow-wt comp	no	3	5	1	2	3	GLYCOLS MAY BE HIGH BIASED, DUPE WAS <MDL
SDS3	SDS3 100398	10/3/98	storm	0.4	0.22	36	NPDES	flow-wt comp	no	2	4	1	1	2	
SDS3	SDS3 102798	10/27/98	storm	0.64	0.19	72	NPDES	flow-wt comp	no	12	5	1	4	5	
SDS3	SDS3 110498	11/3/98	storm	1.62	0.48	35	NPDES	flow-wt comp	no	8	7	5	1	6	
SDS3	SDS3 111398	11/11/98	storm	0.98	0.15	31	NPDES	flow-wt comp	no	16	18	11	1	12	concurrent WET sample
SDS3	SDS3 121798	12/17/98	nonstor	0.11	0.03	33	NPDES	flow-wt comp	no	20		1	12	13	non-storm, suitbale for glycols only
SDS3	SDS3 122598	12/24/98	storm	1.19	0.16	153	NPDES	flow-wt comp	yes	373	450	32	82	113	
SDS3	SDS3 011099	1/9/99	storm	0.27	0.05	54	NPDES	flow-wt comp	no	25	22	8	14	22	
SDS3	SDS3 011499	1/13/99	storm	1.07	0.16	85	NPDES	flow-wt comp	no	34	8	1	10	11	concurrent WET and WER
SDS3	SDS3 020399	2/3/99	storm	0.28	0.07	27	NPDES	flow-wt comp	no	8	6	1	2	3	
SDS3	SDS3 030999	3/8/99	storm	0.28	0.05	96	NPDES	flow-wt comp	no	147	220	7	151	158	
SDS3	SDS3 031399	3/12/99	storm	0.83	0.07	71	NPDES	flow-wt comp	no	53	15	1	6	7	
SDS3	SDS3 032599	3/24/99	storm	0.28	0.08	40	NPDES	flow-wt comp	no	11	2	1	1	2	
SDN1up	SDN1 091898	9/18/98	nonstor	0.19	0.16	456	NPDES	flow-wt comp	no	5	9	1	1	2	nonstorm
SDN1up	SDN1 122598	12/24/98	storm	1.19	0.16	153	NPDES	flow-wt comp	yes	373	116	14	12	26	
SDN2	SDN2 110498 GRAB	11/3/98	storm	1.62	0.48	35	NPDES	grab	no	8	12	2	1	2	N. CARGO PUMP STATION BYPASS
SDN2	SDN2 112598 GRAB	11/25/98	nonstor	3.45	0.32	8	NPDES	grab	no	15	2	1	1	2	from North Cargo Pump Station bypass
SDN2	SDN2 012899 GRAB	1/28/99	nonstor m	1.16	0.1	33	NPDES	grab	no			1	1	2	BYPASS SAMPLE, STORM<<DESIGN, MAINT NOTIFIED (O&M IN PROGRESS)
SDN2	SDN2 062499 GRAB	6/24/99	storm	1.12	0.35	10	NPDES	grab	no			1	1	2	30 MIN PUMP STATION BYPASS
SDN3	SDN3 122498	12/24/98	storm	1.19	0.16	153	NPDES	flow-wt comp	yes	373	222	1	14	15	
SDS4	SDS4 111998	11/19/98	storm	2.34	0.18	73	NPDES	flow-wt comp	no	44	2	1	1	2	
SDN4	SDN4 092598	9/24/98	storm	0.47	0.26	148	NPDES	flow-wt comp	no	3	7	1	2	3	GLYCOLS MAY BE HIGH BIASED, DUPE WAS <MDL
SDN4	SDN4 100398	10/3/98	storm	0.4	0.22	36	NPDES	flow-wt comp	no	2	2	1	1	2	
SDN4	SDN4 102798	10/27/98	storm	0.64	0.19	72	NPDES	non-rep comp	no	12	5	1	1	2	not representative, insufficient duration (~1hr)
SDN4	SDN4 110498	11/3/98	storm	1.62	0.48	35	NPDES	flow-wt comp	no	8	2	1	1	2	

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1998-99 Deicing Event Sample Data															
outfall	POS ID	event	type	depth	maxint	dryant	purpose	type	ground deice?	dryant aircraft	BOD5	E-glycol	P-glycol	total glycols	comments
SDN4	SDN4 111398	11/11/98	storm	0.98	0.15	31	NPDES	flow-wt comp	no	16	2			2	concurrent WET sample
SDN4	SDN4 121798	12/17/98	nonstor	0.11	0.03	33	NPDES	flow-wt comp	no	20					non-storm, suitbale for glycols only
SDN4	SDN4 122598	12/24/98	storm	1.19	0.16	153	NPDES	flow-wt comp	yes	373	168	7	27	34	
SDN4	SDN4 011499	1/13/99	storm	1.07	0.16	65	NPDES	flow-wt comp	no	34	2				concurrent WET sample
SDN4	SDN4 020499	2/3/99	storm	0.28	0.07	27	NPDES	flow-wt comp	no	8	2				
SDN4	SDN4 031399	3/12/99	storm	0.83	0.07	71	NPDES	flow-wt comp	no	53	2				
SDN4	SDN4 032899	3/27/99	storm	0.24	0.07	26	NPDES	flow-wt comp	no	7	2				
								All outfalls	count	50	46	54	54	54	
									max	373	450	32	151	158	
									95th	373	222	12	35	46	
									75th	42	12	1	3	6	
									median	15	5	1	1	2	
									25th	6	2	1	1	2	
									min	2	2	1	1	2	
									sd	110	94	5	24	27	
									CV, %	189%	233%	185%	281%	241%	
									# non det		16	45	40	39	
									% non det		35%	83%	74%	72%	
								SDE4	count	16	15	16	16	16	
								(002)	max	373	335	13	31	44	
									95th	204	110	4	11	15	
									75th	30	6	1	1	2	
									median	15	5	1	1	2	
									25th	7.8	2.0	1.0	1.0	2.0	
									min	2.0	2.0	1.0	1.0	2.0	
									sd	94	85	3	7	11	
									CV, %	199%	314%	175%	230%	210%	
									# non det		5	15	13	14	
									% non det		33%	94%	81%	88%	
								SDS1	count	3	2	5	5	5	
								(003)	max	53	123	5	43	49	
									95th	50	117	5	35	39	
									75th	37	94	1	1	2	
									median	20	65	1	1	2	
									25th	16	35	1	1	2	
									min	12	6	1	1	2	
									sd	22	83	2	19	21	
									CV, %	77%	128%	106%	200%	184%	
									# non det		0	4	4	4	
									% non det		0%	80%	80%	80%	

1998-99 Deicing Event Sample Data

outfall	POS ID	event	type	depth	maxint	dryant	purpose	type	ground deice?	dryant aircraft	BOD5	E-glycol	P-glycol	total glycols	comments
								SDS3 (005)	count	14	13	14	14	14	
									max	373	450	32	151	158	
									95th	226	312	18	106	129	
									75th	32	18	6	12	13	
									median	14	8	1	3	6	
									25th	8	5	1	1	3	
									min	2	2	1	1	2	
									sd	100	131	8	43	48	
									CV, %	195%	220%	164%	209%	166%	
									# non det		1	9	7	5	
									% non det		8%	64%	50%	36%	
								SDN1up (006)	count	2	2	2	2	2	
									max	373	116	14	12	26	
									95th	355	111	13	12	25	
									75th	281	89	11	9	20	
									median	189	63	7	7	14	
									25th	97	36	4	4	8	
									min	5	9	1	1	2	
									sd	260	76	9	8	17	
									CV, %	138%	121%	122%	120%	121%	
									# non det		0	1	1	1	
									% non det		0%	50%	50%	50%	
								SDN2 (007)	count	2	2	4	4	4	
									max	15	2	1	1	2	
									95th	15	2	1	1	2	
									75th	13	2	1	1	2	
									median	12	2	1	1	2	
									25th	10	2	1	1	2	
									min	8	2	1	1	2	
									sd	5	0	0	0	0	
									CV, %	43%	0%	0%	0%	0%	
									# non det		2	4	4	4	
									% non det		100%	100%	100%	100%	
								SDN3 (008)	count	1	1	1	1	1	
									max	373	222	1	14	15	
									95th	373	222	1	14	15	
									75th	373	222	1	14	15	
									median	373	222	1	14	15	
									25th	373	222	1	14	15	
									min	373	222	1	14	15	
									sd						
									CV, %						
									# non det		0	1	0	0	
									% non det		0%	100%	0%	0%	

1998-99 Deicing Event Sample Data																
outfall	POS ID	event	type	depth	maxint	dryant	purpose	type	ground deice?	dryant aircraft	BOD5	E-glycol	P-glycol	total glycols	comments
								SDS4	count	1	1	1	1	1	
								(009)	max	44	2	1	1	2	
									95th	44	2	1	1	2	
									75th	44	2	1	1	2	
									median	44	2	1	1	2	
									25th	44	2	1	1	2	
									min	44	2	1	1	2	
									sd						
									CV, %						
									# non det		1	1	1	1	
									% non det		100%	100%	100%	100%	
								SDN4	count	11	10	11	11	11	
								(011)	max	373	168	7	27	34	
									95th	213	95	4	15	19	
									75th	27	4	1	1	2	
									median	12	2	1	1	2	
									25th	7.5	2.0	1.0	1.0	2.0	
									min	2.0	2.0	1.0	1.0	2.0	
									sd	109	52	2	8	10	
									CV, %	223%	270%	117%	226%	192%	
									# non det		7	10	10	10	
									% non det		70%	91%	91%	91%	

APPENDIX D WHOLE EFFLUENT TOXICITY SAMPLE DATA SUMMARIES

1998-99 WET Testing Sample Data

SDE4	sample type	storm characteristics: depth	rep	rain	dur	maxint	48hr as dryant	pH	TSS	Turb	BOD	NH3	Surf	glycols	TRCu	TRPb	TRZn	Dcu	DPb	DZn	Hard	cond	avg rank	WET, % survival: daphnid	fathead	Comment
11/19/98	SMC	0.40		2.34	66	0	0	73	8.1	66	52	6.8	[illegible]	n/a	[illegible]	0.032	0.0314	0.163	not analyzed			16	37		90	100	
% rank										82%	88%	54%				64%	81%	58%						71%			
1/20/99	EMC	0.35		0.42	28	0	0.95	22	8.2	92	52	5.8	0.10	0.06	[illegible]	0.022	0.013	0.168	0.006	0.001	0.012	14.5	34		100	96*	1
% rank										96%	88%	41%				35%	26%	61%	0.25	0.08	0.07			58%			
2/22/99	EMC	0.55		0.56	34	0	0.04	9	7.2	53	44	[illegible]	[illegible]	n/a	[illegible]	0.015	0.022	0.108	0.004	[illegible]	0.042	10	36		95	83	
% rank										80%	81%	0%				19%	52%	22%	0.29	0.05	0.39			39%			
3/24/99	EMC	0.26		0.26	19	0	0.15	40	6.3	41	32	5.9	0.57	0.26	[illegible]	0.020	0.017	0.134	not analyzed			10	31		95	98	
% rank										32%	74%	45%				29%	39%	41%						43%			
7/2/99	EMC	0.27		0.30	6	0	0	103	6.2	45	39	6.8	1	n/a	n/a	0.026	0.013	0.141	not analyzed			14	41		100	70*	2
% rank										46%	76%	55%				47%	29%	46%						50%			
average							average result		7.1	59	44	5	0.5	0.2	[illegible]	0.023	0.019	0.143	0.005	0.001	0.027	13	36		96	87	
							average % rank			63%	81%	39%				39%	46%	46%						62%			

SDE4 Historical data (7/94-6/99)									
	count	29	28	32		31	32	33	32
	max	131	57	29		49	0.078	0.076	0.337
	min	6.6	1.5	2.0		2.0	0.003	0.001	0.003
	median	49	27	6.4		2.0	0.026	0.021	0.150

SDS3	sample type	storm characteristics: depth	rep	rain	dur	maxint	48hr as dryant	pH	TSS	Turb	BOD	NH3	Surf	glycols	TRCu	TRPb	TRZn	Dcu	DPb	DZn	Hard	cond	avg rank	WET, % survival: daphnid	fathead	Comment
11/13/98	SMC	0.52		0.98	62	0.15	0.05	31	7.5	24	29	17.6	[illegible]	n/a	11.5	0.022	0.004	0.189	0.014	0.001	0.038	24	69		90	98	
% rank										96%	96%	85%			87%	22%	68%	100%	0.61	0.25	0.20			79%			
1/13/99	EMC	0.65		1.07	22	0.16	0	65	6.6	22	16	7.8	[illegible]	n/a	11	0.023	0.004	0.030	0.013	0.001	0.012	20	52		80	95	
% rank										93%	87%	39%			83%	25%	65%	13%	0.55	0.26	0.40			58%			
average							average		7.1	23	23	13	[illegible]		11	0.023	0.004	0.110	0.013	0.001	0.025	22	61		85	97	

SDS3 Historical data (7/94-6/99)									
	count	33	33	36		25	37	39	37
	max	33	42	36		32	0.087	0.016	0.134
	min	1	1	2		2	0.004	0.001	0.003
	median	7	6	6		5	0.032	0.002	0.045

SDN1	sample type	storm characteristics: depth	rep	rain	dur	maxint	48hr as dryant	pH	TSS	Turb	BOD	NH3	Surf	glycols	TRCu	TRPb	TRZn	Dcu	DPb	DZn	Hard	cond	avg rank	WET, % survival: daphnid	fathead	Comment
11/13/98	EMC	0.61		0.98	62	0.15	0.05	31	8.0	53	46	[illegible]	0.5	n/a	n/a	0.024	0.0253	0.467	0.006	0.001	0.110	16	20		80	40	
% rank										63%	100%	0%				67%	79%	94%	0.23	0.04	0.23			67%			
1/13/99	EMC	0.65		1.07	22	0.16	0	65	7.0	78	31	[illegible]	0.5	n/a	n/a	0.024	0.048	0.182	0.005	0.001	0.033	6	22		30	78	
% rank										94%	75%	0%				61%	100%	33%	0.19	0.02	0.18			61%			
3/24/99	EMC	0.26		0.26	19	0.08	0.15	40	6.6	61	40	4.86	1	n/a	n/a	0.015	0.010	0.175	not analyzed			16	22		10	63	
% rank										69%	88%	53%				30%	44%	28%						52%			
6/11/99	EMC	0.13		0.14	10	0.08	0	50	7.1		26		0.238	0.25	n/a	0.046	0.004	0.276	0.043	0.001	0.117	14.2			16		4
% rank											63%					86%	10%	74%	0.94	0.29	0.42			58%			
7/2/99	EMC	0.30		0.30	6	0.11	0	103	6.1	69	25	4.26	0.3	n/a	n/a	0.038	0.009	0.238	not analyzed			10	21		not tested	133*	2, 3
% rank										83%	52%	36%				83%	32%	69%						59%			
average							average		6.9	65	36	3	0.6			0.025	0.023	0.271	0.005	0.001	0.072	13	21		40	60	
							average rank			77%	79%	22%				60%	64%	56%						60%			

SDN1 Historical data (1/97-6/99)									
	count	17	17	18		19	20	19	
	max	85	46	29		0.062	0.048	0.540	
	min	9.7	6.4	2		0.003	0.001	0.066	
	median	43	24	5		0.019	0.011	0.218	

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1998-99 WET Testing Sample Data

SDN4	sample type	storm characteristics: depth	rep	rain	dur	maxint	48hr as dryant	pH	TSS	Turb	BOD	NH3	Surf	glycols	TRCu	TRPb	TRZn	Dcu	DPb	DZn	Hard	cond	avg rank	WET, % survival: daphnid	fathead	Comment
11/13/98	EMC	0.80		0.98	62	0.16	0.05	31	7.5	22	16	[redacted]	1	n/a	[redacted]	0.025	0.0012	0.127	0.021	0.001	0.049	24	75		75	100	
% rank										94%	89%	0%				23%	81%	100%	0.8379	0.83	0.39			65%			
1/13/99	EMC	0.85		1.07	22	0.16	0	85	6.8	7	9.2	[redacted]		n/a	[redacted]	0.020	0.001	0.034	0.014	0.001	0.027	28	56		100	100	
% rank										57%	78%	0%				9%	27%	77%	0.7065	n/a	0.79			41%			
	average							average	7.1	15	12	2	[redacted]		[redacted]	0.023	0.001	0.081	0.018	0.001	0.038	26	66		88	100	

		count	max	min	median
SDN4	Historical data (7/94-6/99)	20	27	2	4
		20	23	2	5
		22	36	2	4
		16	34	2	2
		22	0.091	0.015	0.035
		23	0.003	0.001	0.001
		23	0.127	0.014	0.025

comments

1. SDE4 Jan 20, 1999 sample: lab error on fathead test: was 48-hr instead of 96-hr
2. July 2, 1999 samples: control failed at 72.5% survival (criterion is >90%)
3. July 2, 1999 SDN1 sample: insufficient # of organisms to start daphnid test.
4. May 11, 1999 SDN1 sample taken for source tracing (was a non-storm) only, not to explicitly satisfy permit condition S10

[redacted] shown as 1/2 MDL [redacted]
[redacted] survival and/or average criterion for survival [redacted]

notes

1. pH, ammonia, hardness, and conductivity measured at Parametrix toxicology lab
2. Dissolved metals not routinely analyzed, therefore, no summary statistics provided
3. Summary statistics for each outfall are relative trimmed data set July 1994 through June 30, 1999
4. All data for SDN1 are from "up" station located in manhole SDN1-22
5. Ammonia values <1 analyzed at Aquatic Research unless shown as shaded in table

AR 042970

APPENDIX E OTHER SAMPLE DATA

1998-99 Field Duplicates

type	date	sample ID	event	concentration, mg/l) TPH-Dx	Fecals (MI	TSS	Turb	BOD5	glycols	Cu	Pb	Zn	comments
grab	12/15/97	SDN3 121597 GRAB	NPDES		50								
grab	12/15/97	SDN3 121597 GRAB DUPE	NPDES		130								
					-160%								
comp	1/16/97	SDN3 011697 DUPE	NPDES			12	12	5.38		0.0133	[illegible]	0.042	
comp	1/16/97	SDN3 011797	NPDES			13	13	4.92		0.0119	[illegible]	0.043	
						-8%	-8%	9%		11%	0%	-2%	
comp	2/11/97	SDW3 021197	NPDES			2.2	1.9						
comp	2/11/97	SDW3 021197 DUPE	NPDES			2.4	1.5						
						-9%	21%						
comp	3/5/97	B 030697	NPDES			13	23	[illegible]		0.0066	[illegible]	0.017	
comp	3/5/97	B 030697 DUPE	NPDES			13	23	[illegible]		0.0087	[illegible]	0.019	field duplicate
						0%	0%	0%		-32%	0%	-12%	
comp	4/13/97	SDN1 041397	NPDES			34	19	17.0		0.0415	0.0128	0.433	
comp	4/13/97	SDN1 041397 dupe	NPDES			26	18	16.2		0.0436	0.0169	0.457	field duplicate
						24%	5%	5%		-5%	-32%	-6%	
comp	10/28/97	SDN1 102897	NPDES			19	28	4.0		0.0189	0.0168	0.222	
comp	10/28/97	SDN1 102897 DUPE	NPDES			19	27	4.74		0.0136	0.013	0.255	field duplicate
						0%	4%	-19%		28%	23%	-15%	
comp	12/15/97	SDN3 121697	NPDES			11	26	[illegible]	[illegible]	0.011	0.002	0.040	
comp	12/15/97	SDN3 121697 DUPE	NPDES			13	26	[illegible]	[illegible]	0.0098	0.0021	0.044	field duplicate
						-18%	0%	0%	0%	11%	-5%	-10%	
comp	4/23/98	SDN1 042398	NPDES			26	12	12.8		0.0616	0.0049	0.401	
comp	4/23/98	SDN1 042398 DUPE	NPDES			25	12	11.7		0.0258	[illegible]	0.162	field duplicate
						4%	0%	9%		58%	90%	60%	
comp	6/10/98	SDN1 061098	NPDES			34	71	9.84		0.0557	0.0086	0.360	
comp	6/10/98	SDN1 061098 DUPE	NPDES			33	66	9.10		0.0832	0.0153	0.067	field duplicate
						3%	7%	8%		-49%	-78%	81%	
comp	2/3/99	SDS3 020399	NPDES			9.2	11	6.06	3.06	0.0164	[illegible]	0.027	
comp	2/3/99	SDS3 020399 DUPE	NPDES			8.4	10	4.64	[illegible]	0.0143	[illegible]	0.039	field duplicate
						9%	9%	23%	35%	13%	0%	-44%	
comp	2/18/99	SDE4 021899	NPDES			131	54	4.26	[illegible]	0.0029	[illegible]	0.0025	
comp	2/18/99	SDE4 021899 DUPE	NPDES			126	54	4.58	[illegible]	0.0023	[illegible]	0.0025	field duplicate
						4%	0%	-8%	0%	21%	0%	0%	
comp	3/8/99	SDE4 030899	NPDES			49	31	9.72	5.76	0.0159	0.0184	0.118	
comp	3/8/99	SDE4 030899 DUPE	NPDES			69	32	8.72	5.60	0.0179	0.0230	0.132	field duplicate
						-41%	-3%	10%	3%	-13%	-25%	-12%	
comp	3/12/99	SDN4 031399	NPDES			2.9	7	[illegible]	[illegible]	0.0185	[illegible]	0.025	
comp	3/12/99	SDN4 031399 DUPE	NPDES			3.8	7	[illegible]	[illegible]	0.0179	[illegible]	0.021	field duplicate
						-31%	0%	0%	0%	3%	0%	16%	

AR 042972

1998-99 Field Blanks

type	date	sample ID	event	concentration, mg/l) TPH-Dx	Fecals (MI	TSS	Turb	BOD5	glycols	Cu	Pb	Zn	comments
rand grab	12/26/96	SDS3 FIELD BLANK 123096					0.32	<4.00	<10.0				field QC blank
rand grab	1/16/97	SDS2 011797 BLANK	NPDES		2	<0.5	0.13	<4.0	<10.0				field QC blank
rand grab	3/5/97	EY 030697 BLANK1	NPDES			<0.5							field QC blank
rand grab	10/28/97	SDS1 102897 BLANK	NPDES		13	<0.5	0.21	<4.0	<4.0	0.006	<0.001	0.016	field QC blank
rand grab	12/15/97	SDN3 121697 BLANK	NPDES		<2	1.3	0.46	<4	<4.0	0.0048	<0.001	0.013	field QC blank
rand grab	4/23/98	SDN1 042398 BLANK	NPDES	<0.15	2	<0.25	0.1	<4.00	<4.0	0.0047	<0.001	<0.005	field QC blank
rand grab	11/12/98	SDE2-46 111298 BLANK	nonstorm							<0.002	<0.002	0.013	field QC blank
rand grab	11/12/98	SDE4-42 111298	nonstorm							0.006	<0.002	0.038	field QC blank
rand grab	11/12/98	SDE4-42 111298 DUPE	nonstorm							0.0045	<0.002	0.036	field QC blank
rand grab	11/12/98	SDE4-47 111298 BLANK	nonstorm							<0.002	<0.002	0.019	field QC blank
rand grab	1/15/99	SDN1 011599 BLANK		<0.15	<2	<0.5	0.25	<4.0		<0.002	<0.002	<0.005	field QC blank
rand grab	1/15/99	SDN4 011599 BLANK		<0.15	<2	<0.5	0.27	<4.0	<4.0	<0.002	<0.002	0.006	field QC blank
rand grab	1/15/99	SDS3 011599 BLANK		<0.15	2	1.5	0.75	<4.0	<4.0	<0.002	<0.002	<0.005	field QC blank
rand grab	3/8/99	SDS3 030999 BLANK	NPDES			<0.5	0.25	<4.0	4.38	0.0082	<0.002	0.006	field QC blank
		Max		<0.15	13	1.5	0.75	0	4.38	0.008	0.000	0.038	
		count >MDL		0	4	3	n/a	0	1	6	0	8	
		total # blanks		4	7	9	9	9	8	11	11	11	

AR 042973

Non-Representative Flow-Weighted composites

				Event Charachteristics								Concentration, mg/l							
outfall	POS ID	purpose	stormdate	depth in.	dur hr	maxint in/hr	24hrant in.	48hrant in.	dryant hr	event	sample type	TSS	Turb, NTU	BOD5	total glycols	Cu	Pb	Zn	comments
SDE4	SDE4 081698	NPDES	8/16/98	0.31	10	0.25	0	0	792	NPDES	non-rep	180	64	16.7		0.1233	0.0824	0.537	not representative, insufficient duration (1/2 hr)
SDE4	SDE4 091898	NPDES	9/18/98	0.19	20	0.16	0	0	456	NPDES	comp	78	42	13.9	<4	0.0972	0.0183	0.316	nonstorm
SDE4	SDE4 110498	NPDES	11/3/98	1.62	39	0.48	0	0.08	35	NPDES	non-rep	45	26	<4	<4	0.0255	0.0207	0.347	not representative, incomplete sample, flow probe error
SDE4	SDE4 011099	NPDES	1/9/99	0.27	21	0.05	0	0	54	NPDES	non-rep	19	22	<4.0	4.2	0.0093	0.013	0.090	not representative, taken too late
SDS3	SDS3 091998	NPDES	9/18/98	0.19	20	0.16	0	0	456	nonstorm	non-rep	24	25	12.4	<4	0.1065	<0.002	0.047	not representative, extended into post-storm baseflow period
SDN1	SDN1 091898	NPDES	9/18/98	0.19	20	0.16	0	0	456	nonstorm	comp	95	58	9.12	<4	0.035	0.0067	0.407	nonstorm
SDN1	SDN1 092598	NPDES	9/24/98	0.47	23	0.26	0	0	148	NPDES	non-rep	202	21	10.2		0.0899	0.0235	0.626	not representative, incomplete sample
SDN1	SDN1 051199	SOURCE TRACE	5/11/99	0.14	10	0.08	0	0	50	nonstorm	comp		26			0.0456	0.0035	0.276	WET SOURCE TRACE (nonstorm)
SDN4	SDN4 102798	NPDES	10/27/98	0.64	9	0.19	0	0	72	NPDES	non-rep	40	32	4.64	<4	0.0118	<0.002	<0.005	not representative, insufficient duration (~1hr)

APPENDIX F SOURCE TRACING SAMPLE DATA SUMMARIES

SDE4 Data History for Fecal Coliform Data

type	event	type	ground dolce?	POS ID	Fecals (MPN)	Fecals (MF)	NH3	K+	NH3:K+	Fl	Surf	Cond	hard	ph	FOG	TPH (IR)	TPH-MO	depth	48hrant	dryant	comments
rand grab	1/5/98	rain	no	SDE4-47 010698		420	0.04	1.1	0.04	0.22		56	26.5								source tracing
rand grab	1/9/98	baseflo	no	SDE4-47 010998		[redacted]	0.03	1.1	0.02	0.7	0.05	-	49.1								source tracing
rand grab	8/14/98	baseflo	no	SDE4 081498 GRAB		70	0.02	1	0.02	1.07	0.04		31.5	6.95							
rand grab	11/12/98	rain	no	SDE4-47 111298		880	0.11	3.2	0.04	0.06	0.07	32.2	11.8	6.74							source tracing, had 36% RPD in lab dupe
rand grab	1/9/99	NPDES	no	SDE4 011099 GRAB	[redacted]		0.16	4.1	0.04	0.072	0.1	62.7	14.3	6.68			1.70	0.27	0	54	not representative, taken too late
	11/11/94	NPDES	no	SDE4 111394	1100		0.39				0.2				2.8	1.1		0.28		46	
	1/7/95	NPDES	no	SDE4 010795	45		2.3				[redacted]			7	3.6	2.8		0.21	0	252	
	4/10/95	NPDES	no	SDE4 041095	260		0.42				0.2			6.6	[redacted]	1.1		0.29	0	56	
	7/26/95	NPDES	no	SDE4 072695		[redacted]	0.44				1.5			6.9	5.7	3.8		0.41	0		
	10/25/95	NPDES	no	SDE4 102695	300		0.18				0.1			7.1	5.9	[redacted]		0.28	0.01		
FF grab	2/3/96	NPDES	YES	SDE4 020496 GRAB	22									7.9	17	8.8		1.6	0		
FF grab	3/22/96	NPDES	no	SDE4 032296 GRAB	20									7.1	2.8	3.9		0.21	0		
FF grab	4/15/96	NPDES	no	SDE4 041696 GRAB	17									6.39	2.8	3.36		0.46	0.09		
FF grab	7/17/96	NPDES	no	SDE4 071796 GRAB	220						0.34							0.27	0		foam seen downstream in DM Creek. comp failed
FF grab	9/3/96	NPDES	no	SDE4 090396 GRAB	[redacted]									7.31	3.1	2.64		0.29	0	76	
FF grab	12/15/96	rain	no	SDE4 121596 GRAB	50									6.61	2.9	1.8		0.11	0	72	backup data in case short on data for 96 Q4
FF grab	12/19/96	NPDES	no	SDE4 121896 GRAB	220									6.45	3.3	1.97		0.36	0	103	
FF grab	1/8/97	6	YES	SDE4 010697 GRAB	[redacted]						14.2	210		7.28	[redacted]	[redacted]					dry weather discharge
FF grab	1/16/97	NPDES	no	SDE4 011697 GRAB	[redacted]									7.06	9	10		1.21	0	154	
FF grab	1/27/97	NPDES	no	SDE4 012797 GRAB	50									6.17	[redacted]	5		0.41	0	109	
FF grab	3/5/97	NPDES	no	SDE4 030597 GRAB	[redacted]									6.33	103*	3.06		0.39	0.24	42	FOG result not representative, laboratory error, see letter of May 15, 1997
FF grab	8/19/97	NPDES	no	SDE4 081697 GRAB	188									6	1.6	1.48		0.36	0	135	
FF grab	10/28/97	NPDES	no	SDE4 102897 GRAB	[redacted]									6.6	[redacted]	2.09		0.47	0.08	28	
FF grab	12/15/97	NPDES	no	SDE4 121597 GRAB	80									6.59	1.8	2.3		1	0	97	
FF grab	3/1/98	NPDES	no	SDE4 030198 GRAB	500									7.15		1.5	1.54	0.99	0.07	9	fecal colliform result not representative: exceeded holding time by 9+ hours
FF grab	4/7/98	rain	no	SDE4 040798 GRAB	110									7.03		2.4	3.4	0.03	0.04	87	NON-"STORM"
FF grab	4/9/98	rain	no	SDE4 041098 GRAB	900									6.86		2.27	3.05	0.09	0	62	NON-"STORM"
FF grab	4/23/98	NPDES	no	SDE4 042398 GRAB	500									6		3.5	2.48	0.46	0	264	
FF grab	5/5/98	rain	no	SDE4 050998 GRAB	1600									7.03		1.8	2.44	0.12	0	360	NON-"STORM"
FF grab	5/14/98	NPDES	no	SDE4 051498 GRAB	80									6.93		2.6	2.94	0.21	0.01	125	
FF grab	6/24/98	NPDES	no	SDE4 062498 GRAB	300									6.94		1.9	1.93	0.43	0	286	
FF grab	7/14/98	rain	no	SDE4 071498 GRAB	[redacted]									6.72		2.9	5.64				
FF grab	8/16/98	NPDES	no	SDE4 081698 GRAB	500	1220								6.62		[redacted]	0.17				thunderstorm, 0.25 in/hr
FF grab	9/18/98	rain	no	SDE4 091898 GRAB	500	10600								7.42			2.09				
FF grab	9/24/98	NPDES	no	SDE4 092498 GRAB	[redacted]		0.95	1.6	0.64	0.33	0.48	111	37.4	6.78			1.17				Talk= 8.9 mg/l
FF grab	10/3/98	NPDES	no	SDE4 100398 GRAB	[redacted]	[redacted]								6.67		2.2	4.92				
FF grab	11/3/98	NPDES	no	SDE4 110398 GRAB	[redacted]		0.68	6.4	0.11	0.17	0.22	76.4	49.4	6.58			2.83				
FF grab	11/19/98	NPDES	no	SDE4 111998 GRAB	240		0.43	1.1	0.39	0.23	0.26	126	42.0	6			1.44				
FF grab	12/10/98	rain	no	SDE4 121098 GRAB	220		0.39	2.4	0.16	0.11	0.26	109	38.0	6.62			0.86				
FF grab	12/17/98	rain	no	SDE4 121798 GRAB	900		0.24	3.6	0.07	0.09	0.07	119	33.2	6.47			3.55				
FF grab	1/20/99	NPDES	no	SDE4 012099 GRAB	170		0.2	3.16	0.06	0.116	0.06	111	42	6.98			3.00	0.42	0.05	22	CONCURRENT WET TEST
FF grab	2/18/99	NPDES	no	SDE4 021899 GRAB	[redacted]		0.09	4.09	0.02	0.126	0.03	334	26.7	10.7			0.26	0.6	0.35	20	
FF grab	3/5/99	NPDES	no	SDE4 030599 GRAB	30		0.36	2.58	0.14	0.092	0.45	95.1	33.9	6.5			3.64	0.28	0	96	
FF grab	3/12/99	NPDES	no	SDE4 031299 GRAB	500		1.21	1.95	0.62	0.244	0.3	121	36.9	6.94			1.97	0.83	0	71	
FF grab	3/24/99	NPDES	no	SDE4 032499 GRAB	500		0.57	2.22	0.26	0.224	0.26	106	32.3	6.32			3.11	0.26	0.15	40	CONCURRENT WET TEST
FF grab	3/27/99	NPDES	no	SDE4 032799 GRAB	60		0.59	0.78	0.76	0.094	0.26	96.3		6.45			2.58	0.24	0.09	26	
FF grab	6/20/99	NPDES	no	SDE4 062099 GRAB	[redacted]		2.09	2.64	0.79	0.174	0.89	147	51.5	6.65			2.62	0.21	0	46	
avg time c	11/20/96		YES	SDE4 112196 A3	900																
avg time c	11/20/96		YES	SDE4 112196 A2	1600																
avg time c	11/20/96		YES	SDE4 112096 A1	1900																
[redacted]																					

1998-99 SDE4 Source Tracing in Multiple Upstream Manholes

ord	locat	type	purpo	POS ID	manhole	stormdate	event	end time	delivered	held	Fecals (MF)	ph	NH3	K+	NH3/K+	Fl	Surf	Cond	hard	BOD5	comments
storm																					
17	99	4	9	SDE3-91 010598	91	1/5/98	2	1/5/98 15:20	1/5/98 17:00	1:40	960		0.22	1.54	0.14	0.09		104	36.6	24	
19	99	4	9	SDE3-93 010598	93	1/5/98	2	1/5/98 16:00	1/5/98 17:00	1:00	540		0.03	0.85	0.03	0.12		40	21.8	6	
21	99	4	9	SDE4-31 010598	31	1/5/98	2	1/5/98 15:45	1/5/98 17:00	1:15	1460		0.02	0.25	0.08	0.14		33	14.1	6	
26	99	4	9	SDE4-43 010598	43	1/5/98	2	1/5/98 14:55	1/5/98 17:00	2:05	80		0.09	0.63	0.15	0.06		57	34.2	6	
27	2	4	9	SDE4-47 010598	47	1/5/98	2	1/5/98 14:20	1/5/98 17:00	2:40	420		0.04	1.08	0.04	0.22		56	26.5	6	
baseflow																					
20	99	4	9	SDE3-93 010998	93	1/9/98	3	1/9/98 12:50	1/9/98 16:40	3:50	4		0.01	2.3	0.00	0.41	0.013		71.6	2	
22	99	4	9	SDE4-31 010998	31	1/9/98	3	1/9/98 12:10	1/9/98 16:40	4:30	1		0.01	0.62	0.01	1.02	0.013		34.4	2	
28	2	4	9	SDE4-47 010998	47	1/9/98	3	1/9/98 13:10	1/9/98 16:40	3:30	1		0.03	1.1	0.02	0.7	0.053		49.1	2	
storm tail (dry before routine finished)																					
1	99	4	9	SDE1-50 110598	50	11/5/98	2	11/5/98 11:40	11/6/98 10:40	23:00	760	6.48	0.09	1.3	0.07	0.16	0.12	57.2	44.1		
3	99	4	9	SDE2-46 110598	46	11/5/98	2	11/5/98 11:51	11/6/98 10:40	22:49	80	6.39	0.02	0.86	0.03	0.09	0.051	53.7	49.4		
6	99	4	9	SDE3-23A 110598	23	11/5/98	2	11/5/98 12:20	11/6/98 10:40	22:20	152	8.46	0.02	3.7	0.01	0.11	0.069	118	54.4		
8	99	4	9	SDE3-28 110598	28	11/5/98	2	11/5/98 12:49	11/6/98 10:40	21:51	108	7.22	0.04	0.83	0.04	0.15	0.077	44.1	36.8		
9	99	4	6	SDE3-28 110598 ble	28	11/5/98	2	11/5/98 15:00	11/6/98 10:40	19:40	4		0								
12	99	4	9	SDE3-44 110598	44	11/5/98	2	11/5/98 13:19	11/6/98 10:40	21:21	320	7.32	0.08	2.75	0.03	0.2	0.076	225	111.0		
14	99	4	9	SDE3-55 110598	55	11/5/98	2	11/5/98 14:29	11/6/98 10:40	20:11	1460	7.9	0.08	3.57	0.02	0.19	0.122	459	237.0		
storm																					
2	99	4	9	SDE1-50 111298	50	11/12/98	2	11/12/98 19:20	11/13/98 12:20	17:00	5000	6.91	0.22	0.87	0.25	0.09	0.061	24.7	7.6		
4	99	4	9	SDE2-46 111298	46	11/12/98	2	11/12/98 19:15	11/13/98 12:20	17:05	4600	6.9	0.06	0.35	0.18	0.06	0.046	30.6	15.5		
5	99	4	6	SDE2-46 111298 BL	46	11/12/98	2	11/12/98 18:10	11/13/98 12:20	18:10	1	6.54	0.01	0.35	0.01	0.03	0.015	2.08	2.0		
7	99	4	9	SDE3-23A 111298	23	11/12/98	2	11/12/98 19:50	11/13/98 12:20	16:30	480	7.01	0.04	0.72	0.06	0.09	0.061	60.5	26.2		
10	99	4	9	SDE3-28 111298	28	11/12/98	2	11/12/98 20:25	11/13/98 12:20	15:55	200	6.64	0.12	0.35	0.34	0.1	0.078	24.9	9.5		
11	99	4	9	SDE3-36 111298	36	11/12/98	2	11/12/98 21:20	11/13/98 12:20	15:00	6	6.98	0	0.35	0.01	0.08	0.013	58.4	22.5		
13	99	4	9	SDE3-44 111298	44	11/12/98	2	11/12/98 21:04	11/13/98 12:20	15:16	40	6.82	0.06	0.83	0.07	0.09	0.015	65.9	28.3		
15	99	4	9	SDE3-55 111298	55	11/12/98	2	11/12/98 21:50	11/13/98 12:20	14:30	60	7.36	0.16	0.35	0.46	0.06	0.046	22.5	10.7		
16	99	4	9	SDE3-73 111298	73	11/12/98	2	11/12/98 22:30	11/13/98 12:20	13:50	4200	8.11	0.26	1.73	0.15	0.06	0.05	39.7	25.2		
18	99	4	9	SDE3-92 111298	92	11/12/98	2	11/12/98 23:00	11/13/98 12:20	13:20	1600	6.79	0.21	1.6	0.12	0.12	0.018	94.7	44.3		
23	99	4	9	SDE4-31 111298	31	11/12/98	2	11/12/98 23:30	11/13/98 12:20	12:50	4000	6.73	0.07	0.35	0.21	0.06	0.069	37.2	13.4		
24	99	4	9	SDE4-42 111298	42	11/12/98	2	11/13/98 0:20	11/13/98 12:20	12:00	2600	6.32	0.06	1.08	0.06	0.05	0.031	26.7	10.1		
25	99	4	6	SDE4-42 111298 DL	42	11/12/98	2	11/13/98 0:22	11/13/98 12:20	11:58	3600	6.45	0.08	0.35	0.22	0.03	0.026	27.2	10.3		
29	2	4	9	SDE4-47 111298	47	11/12/98	2	11/13/98 1:00	11/13/98 12:20	11:20	880	6.74	0.11	3.23	0.04	0.06	0.066	32.2	11.8		had 36% R
30	99	4	6	SDE4-47 111298 BL	47	11/12/98	2	11/13/98 1:50	11/13/98 12:20	10:30	26	7.36	0.01	0.35	0.01	0.03	0.013	2.43	2.0		

1999 SDN1 Source Tracing In Multiple Upstream Manholes

event	rain	maxIr	dryar	LF	SDN1 station	name	seq	type	pH	TR Cu	TR Pb	TR Zn	Diss Cu	Diss Pb	Diss Zn	Diss/TR ratios Cu	Diss/TR ratios Pb	Diss/TR ratios Zn	Hard	surf	NH3	turb	comment
13-Jan-99	1.07	0.16	85	13.6	16	T'plex 1/13	1	GRAB	6.83	0.006	0.001	0.044	0.005	0.001	0.021	0.68		0.48					Transiplex rooftops
13-Jan-99	1.07	0.16	85	13.6	16	T'plex 1/13	2	GRAB	7.49	0.007	0.001	0.038	0.005	0.001	0.022	0.69		0.58					Transiplex rooftops
8-Mar	0.28	0.05	96	4.8	16	T'plex 3/8		GRAB		0.011	0.001	0.040	0.005	0.001	0.012	0.44		0.30	4.29				Transiplex rooftops
24-Mar	0.28	0.08	40	3.2	16	T'plex 3/24	1	GRAB		0.017	0.001	0.046	0.012	0.001	0.046	0.68		0.96	2.98				Transiplex rooftops
24-Mar	0.28	0.08	40	3.2	16	T'plex 3/24	2	GRAB		0.017	0.001	0.046	0.014	0.001	0.036	0.81		0.78	6.53				Transiplex rooftops
8-Mar	0.28	0.05	96	4.8	19 dock	dock 3/8		GRAB		0.046	0.012	0.188	0.034	0.008	0.134	0.75	0.66	0.71	3.92				loading dock drain (Avia #2, doors E9-E13)
24-Mar	0.28	0.08	40	3.2	19 dock	dock 3/24	1	GRAB		0.121	0.023	0.400	0.111	0.019	0.320	0.92	0.84	0.80	5.6				loading dock drain (Avia #2, doors E9-E13)
24-Mar	0.28	0.08	40	3.2	19 dock	dock 3/24	2	GRAB		0.072	0.014	0.389	0.066	0.011	0.263	0.91	0.78	0.68	10.4				loading dock drain (Avia #2, doors E9-E13)
8-Mar	0.28	0.05	96	4.8	19A	Avia#1 3/8		GRAB		0.009	0.001	0.108	0.007	0.001	0.034	0.78		0.31	1.49				Avia Bldg #1 rooftop
24-Mar	0.28	0.08	40	3.2	19A	Avia#1 3/24	1	GRAB		0.030	0.003	0.133	0.013	0.001	0.122	0.42	0.29	0.92	2.24				Avia Bldg #1 rooftop
24-Mar	0.28	0.08	40	3.2	19A	Avia#1 3/24	2	GRAB		0.032	0.001	0.330	0.020	0.001	0.217	0.63		0.66	2.8				Avia Bldg #1 rooftop
8-Mar	0.28	0.05	96	4.8	20A	Avia#2 3/8		GRAB		0.008	0.001	0.083	0.005	0.001	0.033	0.65		0.40	1.31				Avia Bldg #2 rooftop
24-Mar	0.28	0.08	40	3.2	20A	Avia#2 3/24	1	GRAB		0.017	0.001	0.091	0.013	0.001	0.074	0.78		0.81	3.92				Avia Bldg #2 rooftop
24-Mar	0.28	0.08	40	3.2	20A	Avia#2 3/24	2	GRAB		0.053	0.003	0.484	0.033	0.001	0.333	0.62	0.38	0.69	4.1				Avia Bldg #2 rooftop
8-Mar	0.28	0.05	96	4.8	22-16	Road agg 3/8		GRAB		0.017	0.021	0.180	0.001	0.001	0.037	0.06	0.05	0.21	6.34				Air Cargo Rd+Transiplex+new FedEx
24-Mar	0.28	0.08	40	3.2	22-16	Road agg 3/24	1	GRAB		0.014	0.016	0.121	0.006	0.001	0.046	0.41	0.06	0.38					Air Cargo Rd+Transiplex+new FedEx
24-Mar	0.28	0.08	40	3.2	22-16	Road agg 3/24	2	GRAB		0.009	0.003	0.149	0.007	0.001	0.092	0.76	0.33	0.62	8.39				Air Cargo Rd+Transiplex+new FedEx
11-May-99	0.14	0.08	50	4	22-16	Road agg 5/11		ffgrab		0.062	0.017	0.347	0.040	0.001	0.278	0.64	0.06	0.80				2.1	Air Cargo Rd+Transiplex+new FedEx
11-May-99	0.14	0.08	50	4	22-16	Road agg 5/11 comp		comp		0.042	0.002	0.225	0.023	0.001	0.134	0.55	0.42	0.60	12.9	0.329	0.252	31	Air Cargo Rd+Transiplex+new FedEx
20-Jun-99	0.21	0.03	48	1.44	22-16	Road agg 6/20		ffgrab		0.082	0.005	0.525	0.060	0.001	0.394	0.73	0.20	0.75					Air Cargo Rd+Transiplex+new FedEx
2-Jul	0.3	0.11	103	11.3	22-16	Road agg 7/2	1	GRAB	6.44	0.032	0.001	0.200											Air Cargo Rd+Transiplex+new FedEx
2-Jul	0.3	0.11	103	11.3	22-16	Road agg 7/2	2	GRAB	6.25	0.026	0.001	0.205											Air Cargo Rd+Transiplex+new FedEx
2-Jul	0.3	0.11	103	11.3	22-16	Road agg 7/2 comp		COMP		0.035	0.009	0.209							16				Air Cargo Rd+Transiplex+new FedEx
13-Jan-99	1.07	0.16	85	13.6	22-21	Avia agg 1/13		GRAB	7.2	0.051	0.001	0.428	0.013	0.001	0.227	0.26		0.53					total Avia rooftops
8-Mar	0.28	0.05	96	4.8	22-21	Avia agg 3/8		GRAB		0.016	0.001	0.099	0.008	0.001	0.052	0.54		0.53	6.53				total Avia rooftops
24-Mar	0.28	0.08	40	3.2	22-21	Avia agg 3/24	1	GRAB		0.022	0.001	0.141	0.016	0.001	0.128	0.74		0.91	4.48				total Avia rooftops
24-Mar	0.28	0.08	40	3.2	22-21	Avia agg 3/24	2	GRAB		0.029	0.001	0.379	0.019	0.001	0.207	0.64		0.55	3.17				total Avia rooftops
11-May-99	0.14	0.08	50	4	22-21	Avia agg 5/11		ffgrab		0.022	0.001	0.649	0.016	0.001	0.210	0.70		0.32				39	total Avia rooftops
11-May-99	0.14	0.08	50	4	22-21	Avia agg 5/11 comp		comp		0.028	0.001	0.300	0.017	0.001	0.188	0.61		0.63	4.85	<0.025	0.07	2	total Avia rooftops
20-Jun-99	0.21	0.03	48	1.44	22-21	Avia agg 6/20		ffgrab		0.062	0.001	0.449	0.051	0.001	0.388	0.82		0.86					total Avia rooftops
2-Jul	0.3	0.11	103	11.3	22-21	Avia agg 7/2	1	GRAB	6.06	0.028	0.001	0.251											total Avia rooftops
2-Jul	0.3	0.11	103	11.3	22-21	Avia agg 7/2	2	GRAB	7.06	0.042	0.001	0.422											total Avia rooftops
2-Jul	0.3	0.11	103	11.3	22-21	Avia agg 7/2 comp		COMP		0.030	0.001	0.254							3.91				total Avia rooftops

APPENDIX G OUTFALL INSPECTION SUMMARY

SDE4	002	manhole SDE4-47	14-Aug	~1"	0	1	0	0	0	0			took grab sample of baseflow, slightly turbid. Analyzed at laboratory, see chain of custody
SDS1	003	outfall	14-Aug	dripping	0	0	0	0	0	0			took sample 8/10/98, took 10 minutes to fill 1 gallon (flow < 0.1 gpm)
SDS2	004	outfall	14-Aug	no flow	no discharge								pipe and ditch were dry
SDS3	005	outfall	14-Aug	1" (0.08' on weir)	0	1	0	0	0	0			insignificant discharge (too little to sample), no problems apparent
SDN1	006	drain inlet	14-Aug	no flow	no discharge								
SDN2	007	manhole	14-Aug	no flow	no discharge								water level in sump about 3' below outlet
SDN3	008	outfall	14-Aug	<0.5"	0	0	0	0	0	0			insignificant discharge (too little to sample), no problems apparent
SDS4	009	outfall	14-Aug	no flow	no discharge								
SDW3	010	outfall	14-Aug	no flow	no discharge								
SDN4	011	outfall	14-Aug	no flow	no discharge								
Eng Yard	012	drain inlet	14-Aug	no flow	no discharge								
Taxi Yard	013	drain inlet	14-Aug	no flow	no discharge								
Subbasin B	014	outfall	14-Aug	<0.5"	0	0	0	0	0	0			insignificant discharge (too little to sample), no problems apparent
Subbasin D	015	outfall	14-Aug	no flow	no discharge								

notes:
*** note presence and magnitude: 0 = absent, 5 = present to considerable degree
1. Inspected visually from surface through inlets, or by pumped sample for outfalls with monitoring points requiring confined-space entry (SDE4, SDN1, SDN2, EY, TY)
2. Monthly sampling sites visited on numerous other dates during the period, noted in remarks
3. Depths of flow are approximate, unless registered by local monitoring equipment

Other observations at non-permit locations:

S 26th St outfall	n/a	outfall											optional location not inspected
DM Creek *above* SDS1	n/a	creek	14-Aug	~ 4"	0	0	0	0	0	0			
DM Creek *Weir at Golf Course*	n/a	creek											optional location not inspected
DM Creek at SDS4	n/a	creek	14-Aug	~ 4"	0	0	0	0	0	0			
L. Reba outlet	n/a	outlet	14-Aug	1.35' on staff gage	0	0	0	0	0	0			

outfall	total number of visits Oct 98-April 99	October 3 1998	October 26 1998	October 27 1998	October 30 1998	November 4 1998	November 9 1998	November 11 1998	November 13 1998	November 17 1998	November 18 1998	November 19 1998	November 24 1998	November -
SDE4	22	S *		S *		S *			S *		M (N)	S *		
SDS1	6			S *										
SDS2	6							S *	S *					
SDS3	33	S *		S [1]		S * W			S *					
SDS4	22							S *		M (N)		S *		
B	4					S *		S *						
D	6				M (N)			S *					S *	
SDW3	8					N.A. [2]	S *							
SDN3	17											S *		
SDN4	28	S *		S *		S *		S *+W						
SDN2	11		M (N)			S *						M (N)		S *
SDN1	18	S *		S *		S *		S *	S *+W					
EY	4													
TY	3													
N.Cargo	2													

S= Sample
W + = sample plus WET
M = visited for set up or for maintenance
(N)= Information from log book
N.A. = sampled but not analyzed
B = blank taken
P = bypass occurred; no sample due to low water level
(deN)= info from de-icing notes
* = info from chain of custody

Observations:

1. 10/27/98: SDS3 - suspended solids (3) and turbidity (3), sample results TSS = 95, Turbidity = 64
2. 11/4/98: SDW3 - suspended solids (5) and turbidity (5) in grab sample

outfall	December 8 1998	December 10 1998	December 11 1998	December 13 1998	December 16 1998	December 17 1998	December 19 1998	December 201998	December 21 1998	December 22 1998	December 23 1998	December 24 1998
SDE4		S * N.A.	M (N)			S *						S *
SDS1						S *						
SDS2												
SDS3		S * N.A.	M (N)			S *	M (deN)	M (deN)	M (deN)	M (deN)	M (deN)	S *
SDS4							M (deN)	M (deN)	M (deN)	M (deN)	M (deN)	M (deN)
B												
D												
SDW3												
SDN3							M (deN)	M (deN)	M (deN)	M (deN)	M (deN)	S *
SDN4	S * N.A.	S * N.A.				S *	M (deN)	M (deN)	M (deN)	M (deN)	M (deN)	S *
SDN2				P (N)	M (N)							
SDN1		S * N.A.	M (N)			S *						S *
EY												
TY												
N.Cargo												

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Observations:
* = info from chain of custody

outfall	December 28 1998	December 28 1998	December 30 1998	January 9 1999	January 10 1999	January 14 1999	January 15 1999	January 20 1999	January 21 1999	January 28 1999	February 3 1999	February 6 1999	February 8
SDE4					S *				S * +W				
SDS1													
SDS2													
SDS3	M (deN)			S *	S * +W	S * +W.	B *				S *	M (deN)	M (deN)
SDS4	M (deN)											M (deN)	M (deN)
B													
D						S *							
SDW3													
SDN3	M (deN)							S *				M (deN)	M (deN)
SDN4	M (deN)				S * +W	S *	B *				S *	M (deN)	M (deN)
SDN2		P (N)								S N			
SDN1				S *		S * +W	B *				S *		
EY						S *							
TY						S *					S *		
N.Cargo			M (N)										

S= Sample | W + = sample plus WET | M = visited for set up or for maintenance | (N)= Information from log book

N.A. = sampled but not analyzed | B = blank taken | P = bypass occurred; no sample due to low water level | (deN)= info from de-icing notes

Observations: | * = info from chain of custody

outfall	February 9 1999	February 10 1999	February 11 1999	February 12 1999	February 13 1999	February 14 1999	February 18 1999	February 19 1999	February 22 1999	February 23 1999	March 11 1999	March 12 1999	March 15 1999
SDE4								S *	S * +W	S *		S *	M (N)
SDS1												S *	
SDS2													
SDS3	M (deN)	M (deN)	S *	M (deN)	S *	M (deN)			S *	S *		S *	
SDS4	S *	M (deN)	M (deN)	M (deN)	S *	M (deN)							
B													
D													
SDW3							S *	S *					M (N)
SDN3	M (deN)	M (deN)	S *	M (deN)	S *	M (deN)							
SDN4	M (deN)	M (deN)	S *	M (deN)	S *	M (deN)							
SDN2											P (N)		S *
SDN1												S *	
EY													
TY													
N.Cargo													M (N)

S= Sample
N.A. = sampled but not analyzed
Observations:

W + = sample plus WET
B = blank taken

M = visited for set up or for maintenance
P = bypass occurred; no sample due to low water level

(N)= Information from log book
(deN)= info from de-icing notes
* = info from chain of custody

outfall	March 25 1999	March 28 1999	May 6 1999	May 12 1999	April 1 1999	April 2 1999	April 8 1999	April 19 1999	April 26 1999	April 28 1999	May 4 1999	May 6 1999	May 6 1999
SDE4	S *	S *				M (N)	M (N)	M (N)			M (N)		
SDS1					M (N)			M (N)		M (N)			
SDS2			S *		M (N)					M (N)		S *	
SDS3	S *						M (N)						
SDS4			S *		M (N)			M (N)		M (N)	M (N)	S *	M (N)
B			S *					M (N)		M (N)		S *	
D			S *					M (N)				S *	
SDW3	S *				M (N)			M (N)					
SDN3													
SDN4		S *					M (N)						
SDN2							M (N)						
SDN1	S *	S *		W+			M (N)						
EY							M (N)	M (N)	M (N)				
TY							M (N)		M (N)				
N.Cargo													

S= Sample	W + = sample plus WET	M = visited for set up or for maintenance	*(N)*= Information from log book
N.A. = sampled but not analyzed	B = blank taken	P = bypass occurred; no sample due to low water level	*(deN)*= info from de-icing notes
Observations:			* = info from chain of custody