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Annual Stormwater Monitoring Report

for

Seattle-Tacoma International Airport

for the period July 1, 2000 through June 30, 2001

September 2001

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AR 017110

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Prepared by

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AR 017111

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1 EXECUTIVE SUMMARY

This Annual Stormwater Monitoring Report has been prepared pursuant to Special Condition S2.E of the NPDES permit for the Port of Seattle's Seattle-Tacoma International Airport (STIA). This report covers required stormwater sampling for the 14 outfalls listed in permit condition S2.B. The Port took a total of 61 grab and 59 composite stormwater samples from a total of 22 storm events in the past year, bringing the 7-year totals to over 400 samples and 168 storm events. The Port complied with all sampling and reporting requirements in the NPDES permit.

In summary, STIA stormwater quality, especially airfield runoff, continues to have constituent concentrations lower than those reported in comparable regional studies. Results continue to demonstrate that most constituent concentrations in STIA airfield outfall discharges are much lower than those from the landside outfalls. This difference is most likely due to higher vehicular use in the landside areas and a higher degree of biofiltration present in the airfield subbasins. Nonetheless, overall STIA results are generally lower than results from other studies for roadways and commercial areas.

The Port is continuing to investigate management options for the zinc in runoff associated with two cargo buildings with galvanized metal rooftops. This work is a follow up to whole effluent toxicity (WET) testing findings reported in 2000. Recent work has focused on stormwater treatment alternatives where several media have been tested in controlled laboratory experiments, including commercially available CSF® deciduous leaf compost produced by Stormwater Management (Portland OR) and specially modified soybean hulls developed by the U.S. Department of Agriculture. Both the leaf compost and the soybean hulls are agricultural waste products that can be recycled as water-treatment media.

Current implementation concepts may include deploying the media in commercially available Stormfilter™ cartridges in below-grade, pre-cast vaults; or in cartridges adapted for above-grade downspouts. These options amount to a new stormwater BMP option that appears more cost-effective than re-roofing or painting to eliminate zinc sources. Future onsite studies may include long-term performance monitoring and an evaluation of the costs for operation and maintenance.

A fecal coliform source tracing study corroborated previous work, demonstrating an absence of cross connections for sanitary sewage with STIA storm drainage. Baseflow in the several outfalls tested was often absent, and when present had low to non-detectable fecal coliforms with no indications of human sources. The study used the microbial source tracing (MST) technique developed at the University of Washington. The MST method isolates *E. coli* bacteria DNA in the samples and compares it to isolates from specific sources already characterized in the regional database and several site-specific sources characterized in the study. The Port issued a separate report for this study (Herrera, 2001).

The SDE4 discharges that formed the impetus for this study have exhibited sporadically elevated fecal coliform levels that the study indicated were associated primarily with animal wastes, principally nuisance bird populations (e.g. pigeons). This study also showed that fecal coliform sources, notably some attributable to humans, were present in runoff and baseflows upgradient from STIA (Bow Lake), even in samples with low fecal coliform concentrations. Human sources found in airport runoff were limited to isolated samples from SDE4 and SDS3 runoff, where many samples had low fecal coliform concentrations. Aircraft lavatory wastewater-specific sources were implicated in less than 10% of all SDS3 samples and none of the SDE4 samples. Because the data suggest these human sources may be associated with aircraft lavatory waste transfer operations, the Port will continue to investigate this issue.

The Port removed a potential source of glycols and other constituents in SDS1 runoff by re-routing a portion of the SDS1 drainage to the industrial waste system (IWS) in September 2000. Several samples and observations in the past year showed that glycols were at much lower concentrations than in past years. Prior to the re-routing, there were episodic indications of certain constituents (glycols and soaps) associated with aircraft and ground service equipment (GSE) servicing near the South Satellite. This BMP is a direct result of the stormwater monitoring program.

In the past year, two short periods of winter weather in February 2001 triggered runway and other ground surface deicing at STIA. Glycol and BOD₅ concentrations were similar to winter weather sampling in past years. According to the Port's SWPPP, the six to eight inches of snowfall from the second event was plowed and moved to the snow storage areas (BMPs), where snowmelt drains to the IWS.

According to the provisions of the recently issued Water Quality Certification (401 permit) for the Master Plan Update, the Port will be developing a workplan to assess and develop appropriate site-specific water quality indicators. This work will determine the appropriate monitoring locations and water quality measures that best relate airport runoff to the local receiving streams (Miller, Walker and Des Moines Creeks). The Port plans to work with Ecology in developing this plan in the near future. Also, the Port will be submitting NPDES permit renewal application materials by the end of 2001.

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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 issued June 30, 1994, and was renewed and reissued on February 27, 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.) A second major modification was issued in mid 2001, though it did not change any of the routine (non-construction) stormwater monitoring requirements. The Port will begin the next permit renewal process this year where the application is due by December 31st.

The Port conducts the required monitoring activities according to the specific guidelines and criteria of the Ecology-approved Procedure Manual for Stormwater Monitoring (POS 1999a). This report summarizes and discusses results from the seventh year of sampling conducted in the 12-month period July 2000 through June 2001, 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 six Annual Reports (POS 1995, 1996a, 1997a, 1998a, 1999b, 2000a). The Annual Stormwater Monitoring Reports and associated DMRs do not apply to construction or IWTP monitoring.

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, Special Condition S2B of the permit requires 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..." All of the information required under Special Condition S2B appears in Appendix A.

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 has expanded throughout the years to become the 18th busiest airport in the U.S. The highly urbanized cities of SeaTac, Des Moines, and Burien surround the airport.

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. Together, these 14 outfalls drain a total area of about 970 acres of which about 56% are impervious surfaces. Only 17% of this total area (165 acres) drains to Miller Creek, while the remaining area of about 800 acres drains to Des Moines Creek. An area of about 370 acres, mostly the impervious surfaces of terminal gate and ramp areas, drains to the Industrial Waste System (IWS) and the Industrial Waste Treatment Plant (IWTP.) Three large lagoons detain and equalize runoff flowing to the IWTP, which removes suspended solids and petroleum products using the dissolved air flotation process. The IWTP discharges directly to Puget Sound via a separate outfall that combines with the Midway sewage treatment plant. IWTP (and construction project) monitoring results are not included in nor required to be addressed in this report.

The Port has determined future stormwater management needs in the Comprehensive Stormwater Management plan (CSMP), which is part of the Master Plan Update (MPU). Issues addressed in this plan include retrofitting existing development to meet state and local guidelines for stormwater quantity and quality BMPs (Parametrix, 2001). The CSMP has been approved and adopted for implementation by the Port's Water Quality Certification (401 permit) for the MPU.

3.2 STIA Storm Drainage Subbasins

The NPDES permit refers to outfalls by number; however, this report refers to subbasins and their outfalls by location names (see Table 1). The Port codes STIA storm drainage subbasin names according to location, for example, "SDS1" means "storm drain south number 1". In addition, 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 were renamed and renumbered in 1999, though physical monitoring locations have not been moved. 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 1. 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. Previous reports showed that concentrations of TPH, TSS and other constituents were different for the landside and airfield categories (POS 1996a, 1997a.)

Outfalls SDS3, SDS4, SDN3, and SDN4 drain the principal subbasins of the airfield. These four outfalls drain a total of 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 (about two-thirds impervious) of "landside" areas of the airport, primarily draining public roads, parking, passenger vehicle areas and rooftops. SDE4 alone comprises

about 149 acres, or 90% of this total landside area drainage. 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 are the predominant impervious areas of SDE4.

Table 1 Nomenclature for Outfalls listed in NPDES Permit Condition S2B

Outfall #	Port Name	Category	Creek	Proximity to receiving water
002	SDE4	landside	Des Moines	Combines w/Bow Lake & City flows before daylighting in East Branch
003	SDS1	none	Des Moines	Direct outfall to East Branch
004	SDS2	none	Des Moines	Flows through swale, NW Ponds then into W. Branch
005	SDS3	airfield	Des Moines	Flows through swale, NW Ponds then into W. Branch
006	SDN1	landside	Miller	Flows through 1000'+ natural channel and Lake Reba detention Pond
007	SDN2	Drains to IWS ¹	Miller	Same as SDN1
008	SDN3	airfield	Miller	Same as SDN1
009	SDS4	airfield	Des Moines	Direct outfall near confluence of East and West Branches
010	SDS7 ²	none	Des Moines	Combines w/City streets commercial area, via swale & NW Ponds
011	SDN4	airfield	Miller	Same as SDN1
012	EY	landside	Gilliam	Via City drains to stream
013	TY	landside	Gilliam	Via City drains to stream
014	SDS6 ²	none	Des Moines	Same as SDS7
015	SDS5 ²	none	Des Moines	Same as SDS7

Table notes:

1. Two pump stations divert all runoff from the former SDN2 subbasin to the IWS. Discharges to SDN2 only occur when rainfall intensity exceeds the 0.20 inches per hour design for these pump stations. These two pump stations were constructed in 1997 as SWPPP BMPs.
2. Outfalls 010, 014 and 015 were previously named "SDW3", "B" and "D", respectively

In earlier reports, the SDS1 subbasin was included in the "terminal" category, which is no longer appropriate. Several stormwater BMPs undertaken in 1996-97, and 2000 have removed all known ramp areas from SDS1 (the only "industrial activity" in SDS1 was the total of about 2.5 acres removed from SDS1 that was associated with aircraft ramp areas near the B-Concourse and South Satellite). Other BMPs disconnected ramp areas that occasionally drained to SDS1 when intense rainfall surcharged certain structures. As a result, SDS1 now drains only three hangar rooftops (about 8 acres), employee parking (about 5 acres), and no ramp areas. The added employee parking areas for the new Northwest Airlines hangar have detention vaults for the runoff. In addition, expanded drainage from South 188th Street was added to SDS1 in 1998-99, adding about 1 acre of offsite (non-Port) area to the total SDS1 area.¹ Four other outfalls (SDS2, SDS5, SDS6 and SDS7) drain a total of about 110 acres, mostly open spaces (about 11% impervious) in the southwestern 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 in-pipe, substantially upstream from the final discharge point where the outfall actually "daylights". Runoff contributions from other, non-STIA sources that are outside the Port's jurisdiction enter these storm drains and therefore necessitate monitoring at the first location, often a manhole, upstream of the majority of offsite inputs. Table 2 lists these offsite influences. However, offsite runoff is inextricable for sampling stations for SDE4, SDS1, SDS2, and SDS3.

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 that is outside the Port's jurisdiction.

Considering that the offsite area for outfalls SDS1 and SDS2 is primarily roadways, the runoff contributed by non-Port entities is substantial and may influence the Port's monitoring results.

To remove biases from highway SR518 runoff, in 1997 the sampling location for SDN1 was moved upstream to its current location. 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 the "SDN1up" location (more-representative of Port property) for the ensuing period. Past reports have shown how the SR518 runoff biased the Port's sampling results upward (POS 2000a, 1998a).

It is important to note that because of their distance from receiving waters, certain current sampling locations do not integrate all possible factors that could influence water quality prior to discharging to the streams. Only two of STIA's current outfalls (SDS1 and SDS4) discharge directly to the receiving waters. These two outfalls are sampled at these "daylight", or end-of-pipe locations.

In contrast, because of factors in addition to those mentioned above, all other outfalls are sampled at points well removed from the biotic community (see Table 1). As a result, the sampling results do not reflect the complex interactions with chemical, physical, and biological elements that can enhance water quality prior to where STIA stormwater actually enters receiving waters.

For example, drainage from all four Miller Creek outfalls (SDN1, SDN2, SDN3, and SDN4) passes through additional piping and surface conveyance, and then passes through Lake Reba prior to entering Miller Creek. Lake Reba² is a

² Lake Reba, sometimes referred to as "little Lake Reba" is the perennial pool (with several feet of live storage) that receives runoff from the airport and other areas. The Lake Reba facility was built by the Port in 1973, is adjacent to Miller Creek and drains to this creek via an outlet control structure that was renovated in 1998. Lake Reba lies within the footprint of the larger Miller Creek Detention Facility (MCDF), which is an *instream* detention facility (built by King County

constructed stormwater detention pond that also serves a water quality function (WDOE 1997). The potential influences of these important factors are not accounted for in the current sampling scheme required by the permit. These issues should be addressed in the NPDES permit renewal.

According to the provisions of the recently issued Water Quality Certification for the Master Plan Update ("401" permit number 1996-4-0235 (amended-1) dated 9/21/01), the Port will be developing a workplan to assess and develop appropriate site-specific water quality indicators. This work will determine the appropriate monitoring locations and water quality measures that best relate airport runoff to the local receiving streams (Miller, Walker and Des Moines Creeks). The Port plans to work with Ecology in developing this plan in the near future.

3.4 Storm sampling procedures and analytes

The Port's Procedure Manual for Stormwater Monitoring (POS 1999a) 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, constituent analytes, methods, and detection limits. The Port reports data on DMRs only where results from storms and samples meet representativeness criteria of the manual. In addition to data provided in the 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 sample then a flow-weighted composite sample during rainstorms of 0.20 inches or greater that are preceded by less than 0.1inch of rainfall in the previous 24 hours.

in 1992) that does not have an associated permanent pool (no dead storage). Under high flow conditions, the backwaters formed by the live storage of the MCDF (the ultimate footprint) may inundate Lake Reba.

Table 2 Offsite Influences Affecting STIA Monitoring Locations¹

Outfall (manhole)²	Total Area (ac)	Offsite Area (ac)	Percent Offsite	Comment
SDE4 (SDE4-65)	149	0.6	<1%	Offsite area of SR99, may be greater than 0.6 acre
SDS1 (outfall)	14.4	0.85	6%	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 (SDN1-56)	24+	9.9+	>40%	Former SDN1 location includes public road runoff. Runoff from add'l 49 ac non-POS area enters below, prior to entering L. Reba
SDN1up (SDN1-41)	13.8	0	0%	Air Cargo Road is about 50% of SDN1 area.

Table notes

1. All area estimates are as of September 2001 and subject to change.
2. Though manhole number designations were changed in 1999, sampling locations remained the same as in previous years.

Table 3 Analytes, Methods and Detection Limits

Analyte	Method ^(a)	Detection limit (MDL) mg/l	Applicable Subbasins/Outfalls			
			SDE4, SDS3, SDN1, SDN4	EY, TY, SDN2	SDS1, SDN2	SDS1, SDS2, SDN3, SDS4, SDS5, SDS6, SDS7
pH ^(e)	150.1	0.1	X	X	X	X
FOG (Oil and Grease)	413.1	1.0	(f)	(f)	(f)	(f)
TPH (IR)	418.1 mod ^(b)	1.0	(f)	(f)	(f)	(f)
TPH (GC)	NWTPH-Dx	0.15	X	X	X	X
Fecal coliforms (MPN)	9221 E	2	X	n/a	n/a	X
TSS (total suspended solids)	160.2	0.5	X	X	X	X
Turbidity	180.1	0.1	X	n/a	X	X
BOD ₅	405.1	4	X	n/a	X	n/a
Total Glycols ^(c)	GC FID	4	X	n/a	X	X
Total Recoverable copper, lead, zinc ^(d)	200	Cu: 2 µg/l Pb: 2 µg/l Zn: 5 µg/l	X	n/a	n/a	n/a

(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.

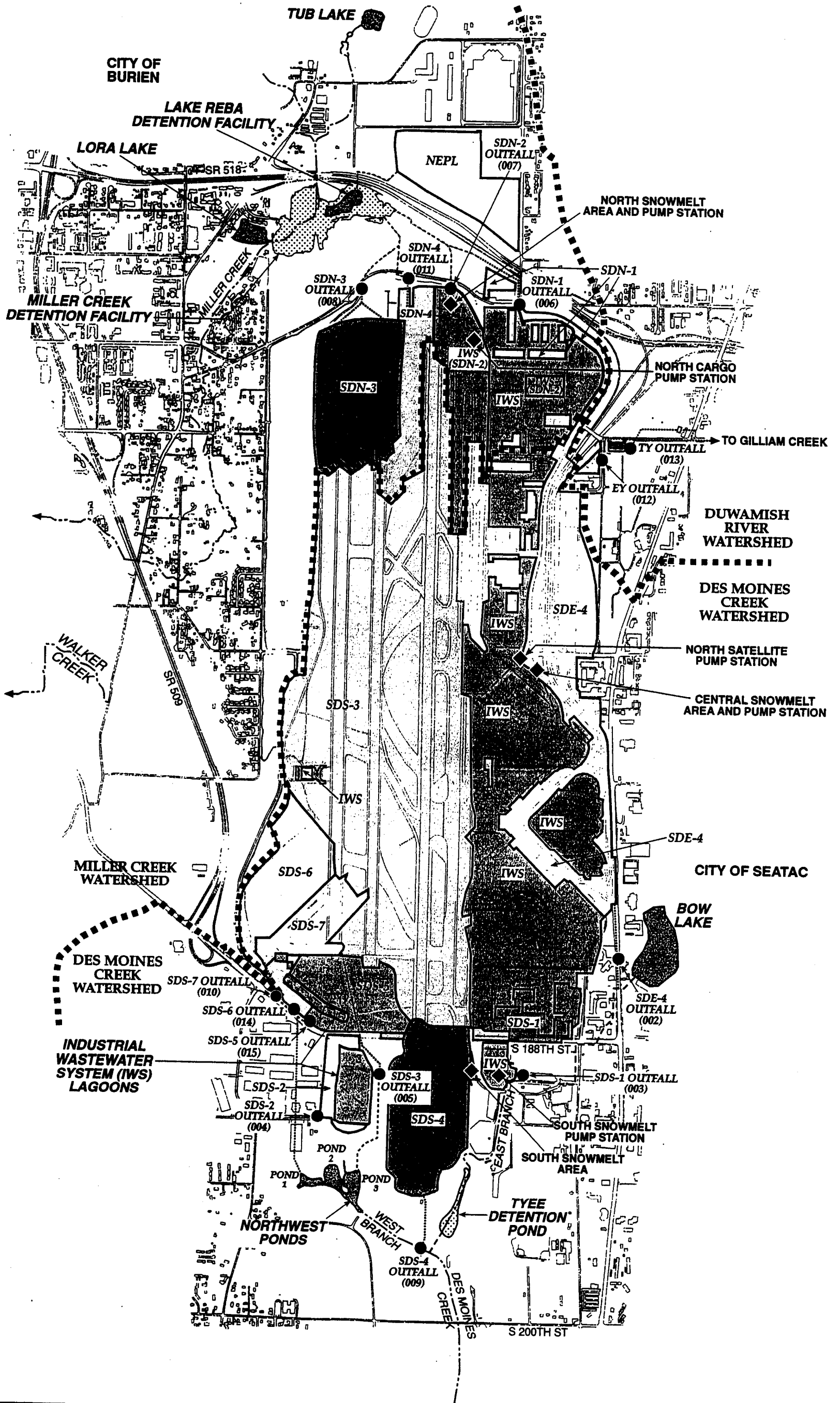
(b) Washington State Department of Ecology method WTPH-418.1 Modified.

(c) Analyzed by Gas Chromatograph, Flame Ionization Detector. MDL is 2 mg/l each for propylene and ethylene glycols.

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

(e) pH is not required by permit, but is used as a reference parameter

(f) FOG and TPH (IR) methods replaced by NWTPH-Dx March 1, 1998.



AR 017128

Sea-Tac Airport/Stormwater Management Plan/556-2912-001/01(61A) 9/01 (K)

- Sea-Tac Airport Drainage Basin Boundary
- SDS-3 SeaTac Airport Drainage Basin Name
- Stream
- - - Piped Stream
- Pipe (only connections between subbasins and outfalls shown)
- Permanent Water Features
- ▨ Live Storage Pool Area
- Watershed Divide
- - - Drainage Channel

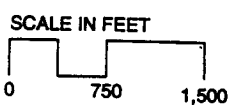


Figure 1
NPDES Drainage Subbasins,
Snowmelt Areas and Pump
Stations, and Permitted Outfalls

4 SAMPLING RESULTS

4.1 General

This chapter presents and discusses data separately for results from grab samples, composite samples, and deicing event (glycol) samples. These types of samples employ different protocols that represent different temporal periods of the particular stormwater discharge event (i.e., grab samples versus composite samples) and should be evaluated separately.

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 1999a). Appendix B tabulates and summarizes analytical results for each outfall. Data previously submitted to Ecology in the monthly DMRs represent samples collected strictly from those storms and sampling routines that fully met the criteria of the Procedure Manual. In addition to this DMR data, this report summarizes all other data collected at the storm drain outfalls covered under condition S2B of the NPDES permit (Table 1).

4.2 Data Presentation Methods

Because the NPDES permit does not specify discharge limits for stormwater, this report compares the Port's data to others' stormwater data listed as reference comparators in Table 4. Most reference comparators discussed in this report were the lowest results from two City of Bellevue studies. These comprehensive, local studies had similar sampling protocols to the Port's. However, the samples in the 1995 Bellevue study were taken at instream stations and therefore reflect stormflows in receiving waters, as opposed to direct outfall discharges.

Nonetheless, contrasting STIA *outfall* discharges to this *instream* comparator results in more conservative conclusions. This report uses the Portland NPDES data for copper because it better represents commercial and industrial outfall

discharges *before* mixing with receiving waters. Again, the reader should consider the nature of the STIA sampling locations discussed in Section 3.3.

Comparator data and outfall sampling results appear on box plots that illustrate the central tendency, spread, and skew of the stormwater data (Figures 2 through 9). 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 or anomalies, atypical of what could be expected under usual circumstances given historical data. 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 ("*"). In most cases, the boxplots show the outliers, but in some cases the scales selected prevent plotting all outliers. Outliers have also been defined as those values in a particular outfall's data set that are more than 3 standard deviations from the mean (99.7% of the data fall within this range by definition in a normal distribution). All data are tabulated in Appendix B and C.

4.3 Storm events sampled

Consistent with permit requirements, the 2000-2001 sampling season began on July 1, 2000 and ended June 30, 2001. During this 12-month period, about 25 inches of rain fell at STIA, which is about 13 inches (35%) below the 60+ year average and very different than the past two seasons, especially the 1998-99 period, influenced by the very wet La Nina weather pattern. See Figure 2.

In the 12 months ending June 2001, the Port sampled 22 rainfall events. Rainfall during these events ranged from 0.23 to 1.28 inches. Dry weather preceding these events averaged 4 days, with a minimum of about one day to a maximum of nearly one-month (8/18/00 event). Appendix A summarizes daily rainfall and storms sampled.

Table 4 Stormwater Quality Comparators*

Constituent	Units	Comparative Study Data*						STIA		WA State Standard ^(e)
		NURP 1983	BURP 1984	Metro 1982	Belleuve 1995 ^(b)	Highway Runoff ^(c) 1981	Portland NPDES ^(d) 1993	Landside (SDE4, SDN1)	Airfield (SDS3, SDS4, SDN3, SDN4)	
pH	sid units		5.2 - 7.4		7.2 - 7.8			6.7	7.3	6.5 - 8.5
TPH	mg/l				3.7		6.5	2.6 FOG 1.8 TPH 1.7 TPH-Dx	0.5 FOG 0.13 TPH 0.08 TPH-Dx	no standard
Fecal coliforms	mpn per 100 ml	1000 to 21000	980		201			110	8	50
BOD ₅	mg/l	9	6.6				20	6.7	6	no standard
TSS	mg/l	100	50		82.3	106	119	42.5	7.45	no standard
Turb	mg/l		19		29.4			22	6.2	based on background
glycols	mg/l	not analyzed in any of these studies								
Cu (TR) ^(f)	µg/l	34		20	10.4	43	20	24	27	10.3 ^(h)
Pb (TR) ^(f)	µg/l	144	170	210	26.3	466 ^(e)	25	11	1	39 ^(h)
Zn (TR) ^(f)	µg/l	160	120	110	161	638	376	171	32	72 ^(h)
statistic reported		median	mean ^(g) , median	mean	log-normal median	mean	median	7-yr median	7-yr median	na

- (a) Comparative values used in this report are in bold. Blank space means no data available, reported, or applicable.
- (b) Bellevue, 1995 data are for instream stormwater runoff samples from the "Slurtevant Creek, downstream" site.
- (c) Highway runoff from an I5 location in Seattle with 57,000 ADT, 43 to 54 storm samples in 1980-81 (Chul, Mar, and Homer, 1982). Because this study was conducted prior to the phase-out of leaded gasoline, lead results were higher than for other later studies.
- (d) City of Portland 1993 NPDES Part 2 Municipal Application. Median of 10 samples from "I2" "industrial" outfall.
- (e) Standards listed are for class AA waters, see WAC 173-201A.
- (f) Total recoverable metals. WA State acute standards expressed as total recoverable, calculated at 56 mg/l hardness using generic translators in Ecology's "TSDCALC8.XLW" spreadsheet (see Section 4.5.3). This hardness value is the median of seven instream samples collected in Miller and Des Moines Creeks in 1999.
- (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, comparable to STIA samples and data for these parameters.
- (h) STIA median data cited reflect 37 to 112 samples per parameter for landside group samples, and 90 to 153 samples per parameter for airfield group samples
- (i) About 70% of all STIA sample results for glycols have been below detection limits of 5 mg/l (to April 1997) and 2 mg/l (May 1997-current).

In the past year's sample events there was a single summer storm event (8/18/00) that produced higher than typical constituent concentrations at one outfall (copper at SDS3, see Section 4.5.3). In previous years, thunderstorms or other periods of intense rainfall after protracted dry periods of a month or more caused elevated levels of certain constituents (POS 1999b). These meteorological factors resulted in the unusual combination of a lengthy accumulation period and high scour from the intense rainfall. Patterns like these have been most evident in the late summer and early fall months, particularly in 1998. The 3 highest copper results for SDS3 were from storms sampled in the month of August (8/2/96, 8/16/98 and 8/18/00). These factors are important to take into account when considering how representative a particular sample result is given the naturally occurring, and perhaps infrequent seasonal influences.

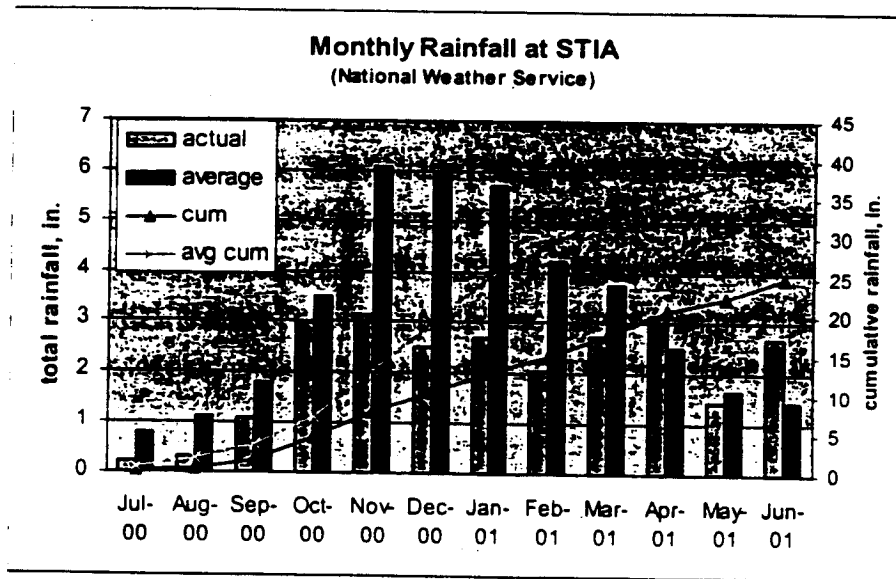


Figure 2 Rainfall Summary

4.4 Grab Sample Results

The following discussion includes results from 61 grab samples collected in the past year, bringing the 7-year total to 431 total grab samples. Grab samples are analyzed only for TPH and fecal coliform bacteria per current permit requirements. Previous versions of the permit required FOG and TPH analysis by methods now outdated (413.1 and 418.1, respectively). Both of these parameters were replaced by NWTPH-Dx by the permit revision of February, 1998, though historical data for FOG and TPH are included in Appendix B.

4.4.1 Total Petroleum Hydrocarbons (TPH)

The results from the current year presented in Figure 2 continue to demonstrate that concentrations of petroleum-type constituents in STIA stormwater are consistently less than in stormwater from other urban areas. The overall results indicate the following:

- STIA stormwater overall continues to have less petroleum-type constituents than typical urban runoff. During the past 4 years, with a median of 0.26 mg/l, more than 95 percent of the 220 STIA results were less than the Bellevue, 1995 median (instream samples) of 3.7 milligrams per liter (mg/l). Only two of 61 samples in the past year exceeded the Bellevue median. On the whole, TPH was not detected in 79 (36%) of a total of 220 samples taken since March 1998.
- Airfield stormwater (SDS3, SDS4, SDN3, and SDN4) continues to contain far less TPH than runoff from the landside subbasins (SDE4, SDN1, and TY.) To date, median airfield TPH is 0.08 mg/l compared to the 1.1 to 2.4 mg/l median levels for the landside outfalls. TPH was not detected in 63 (72%) of the 88 airfield outfall samples in the past four years. All but two TPH results from these 88 airfield outfall samples were less than 0.5 mg/l, which is one half the

detection limit of the previous TPH (IR) method of 1.0 mg/l. Current results are similar to these overall patterns.

- New maxima occurred at two airfield outfalls in the May 14, 2001 storm samples (2.75 and 1.59 at SDS3 and SDN4, respectively). See Figure 3. Interestingly, from this same event, TPH results for both landside outfall samples (SDE4 and SDN1) were non-detectable. Typically, the situation for these pairs of outfalls is opposite: landside outfall TPH >> airfield TPH, as explained above. Relative to the extensive sampling history for their respective outfalls, the results for SDS3 and SDN4 samples are anomalies, pronounced statistical outliers according to both definitions (SPSS and ± 3 Standard deviations). Instead, the SDS3 and SDN4 TPH results for the 5/14/01 event would be more typical of SDE4 and SDN1, falling well within historical interquartile ranges (middle 50% of the data) for these two landside outfalls, respectively. Chain of custody records and laboratory data were not in error, though the results suggest that the labels on the sample bottles may have been interchanged in error. There were no incidents reported on or near this sampling date that might have caused the elevated TPH in the airfield samples.
- Because most of the TPH detected in landside runoff is motor oil, it is likely attributable to lubricants from cars and trucks (there are no passenger vehicle roads in the 4 airfield subbasins). Diesel oil fractions are rarely detected while motor oil has represented the majority of the TPH at the landside outfalls (SDE4, SDN1, and TY.) Diesel fractions were not detected in current year TPH data therefore a boxplot is unnecessary.
- The IWS effectively isolates aviation-related fuel spills and drips from the storm drains. For all outfalls, measurements of diesel fractions³ are typically

³ The diesel range results for TPH by method NWTPH-Dx would represent jet fuels (e.g. JP4, JP5, etc) which have complex mixtures of C10-C16 hydrocarbons, overlapping with the C8-C24 hydrocarbon range found in diesel fuel.

below detection limits (92% of the 220 samples), with a historical maximum of 0.8 mg/l. Considering that subbasins SDE4 and SDS3 are contiguous with aircraft service (IWS) areas where fueling takes place, sample results for these two outfalls show low incidence of TPH, especially diesel fractions (consistently non-detected in SDS3 and SDE4 samples). Up to 90% of the 39 samples from SDE4 had TPH less than the 3.7 mg/l comparative value for urban areas. More than 70% of the total of 40 SDS3 samples had non-detectable TPH.

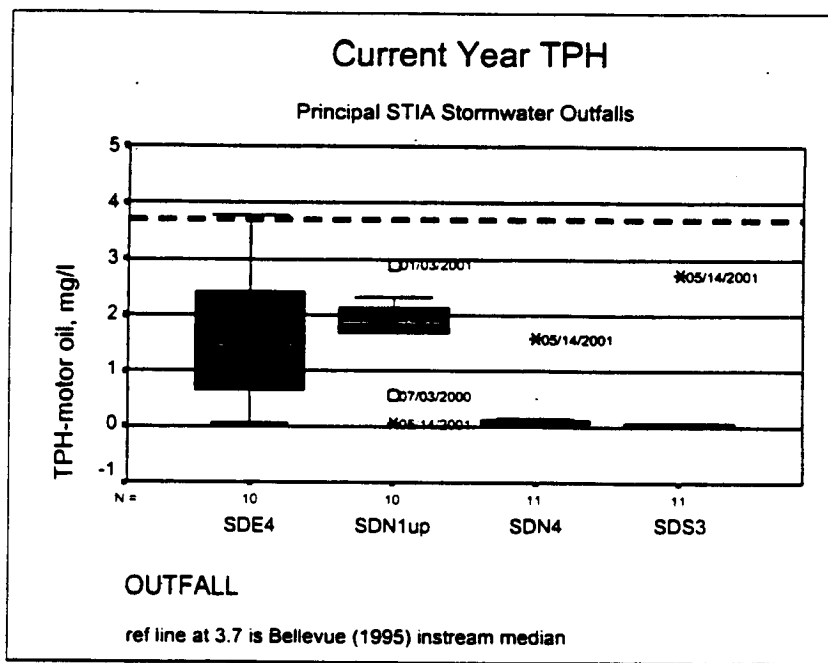


Figure 3 TPH for current year

4.4.2 Fecal Coliforms

Overall, the median value for fecal coliforms in 289 samples to date is 30 per 100 ml, with more than 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 80 percent of the 127 airfield subbasin samples taken to date showed fecal coliforms less than the Bellevue (1995) comparative value of 201 per 100 ml (see

Figure 4). Current year results from a total of 56 samples from ten outfalls continue this pattern, where 88 percent were less than the Bellevue comparative value. See Figure 4 for current year data.

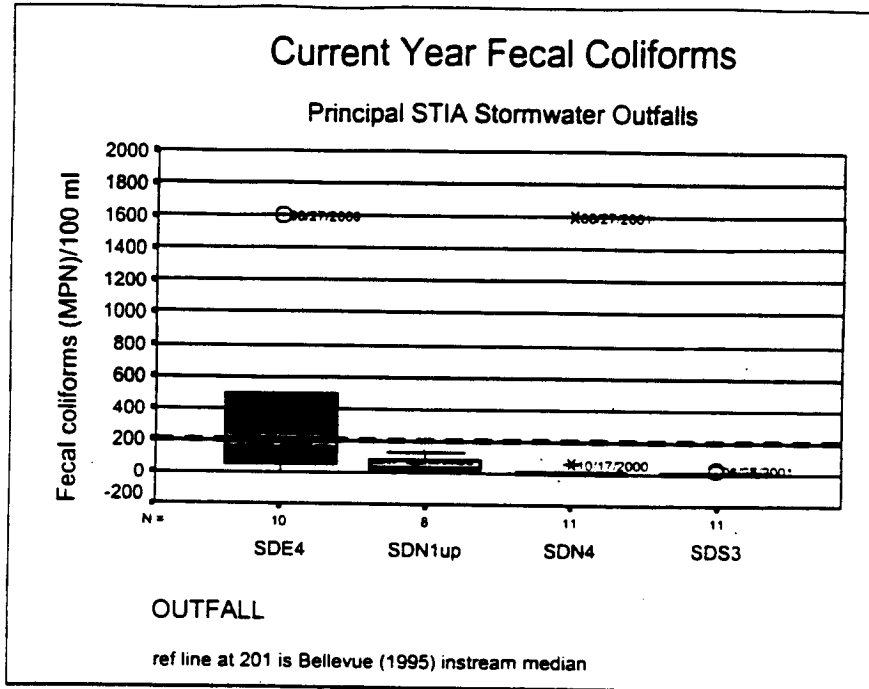


Figure 4 Fecal coliforms for current year

There are numerous sources of fecal coliforms including fecal matter from birds and mammals. Urban stormwater often contains fecal coliforms at sporadically elevated levels. Human sources, such as septage or sanitary sewage are not always implicated as contaminants. Importantly, all fecal coliform test methods often overestimate true fecal coliform concentrations, plus they are susceptible to interference from non-pathogenic coliform bacteria including *klebsiella* species (U.S. EPA, 1986). Fecal coliforms are a presumptive indicator, meaning that if present, pathogens are presumed present as well, which may not always be the case.

To remove these sources of uncertainty and to better serve public health, the U.S. EPA stated in 1986 that *E. coli* and enterococcus-based methods and standards should be used by the states (U.S. EPA, 1986) as a means of measuring the presence of pathogens. Ecology is considering these changes in the triennial review of water quality standards process (WDOE, 1998, 2000b).

A method called the Microbial Source Tracing (MST) technique matches "fingerprints" isolated from *E. coli* bacteria DNA with those previously characterized from known human and animal sources. Professor Mansour Samadpour of the University of Washington's School of Environmental Health developed this technique which has been used in a number of surface water studies in the region and nationally (Farag et al. 2000, NVRC 2000, Herrera 1999, KCDNR 1997, Trial et al 1993).

Using the MST technique, the limited sampling for the Des Moines Creek Basin Plan showed that some of the fecal contamination in the lower watershed was attributable to unsewered residential areas (septage) and that animal sources existed as well (KCDNR, 1997). Human sources were less prevalent upstream nearer the airport, where dog and avian sources together comprised up to 34% of the results. This study had limited statistical power due to the limited number of samples, plus a number of the isolates were unmatched with known sources.

The Port recently completed a study using the MST technique to identify potential fecal coliform sources in airport runoff (Herrera, 2001). This study found that more than 90% of the sample results from STIA runoff and instream samples above and below STIA were associated with animals, while humans accounted for less than 10%. Human sources were implicated only infrequently in storm runoff and not found in baseflows from STIA. The study also showed that upstream sources of fecal contamination existed, including human sources not attributable to the airport. Several sources of avian fecal matter were found at STIA, including a pigeon colony on the rooftop of Concourse A (removed during

concourse demolition in February 2001). The study indicated birds, particularly pigeons were a significant source of fecal coliforms for SDE4 and the other locations sampled. See Section 4.7.2 for more details.

In past reports, the Port showed that sporadically elevated fecal coliform counts occurred mostly in the landside subbasin SDE4. Of the ten current year fecal coliform results for SDE4, only two samples showed elevated results, while others ranged from non-detectable to 500 per 100 ml, well within the typical range for STIA and other regional stormwater (see Table 4). The Port's MST study corroborated work discussed in previous annual reports showing an absence of cross-connections with sanitary sewer lines. Baseflow samples were not contaminated (generally non-detectable fecal coliforms, and an absence of human "fingerprints") and indicated that there was no continuous source of fecal coliform bacteria, whether arising from human, animal or other sources.

Elevated fecal coliform results for SDN1 and SDN4 samples from the June 27, 2001 storm were unique. Relative to the extensive sampling history, these samples are statistical outliers according to both definitions (SPSS and ± 3 standard deviations). Typical fecal coliform concentrations for these two subbasins have been very low with many non-detectable. The MST study found only avian sources in storm samples from these two outfalls, while baseflow discharges were absent as is the usual case. Thus, the elevated results in the two SDN1 and SDN4 samples in the past year were most likely caused by avian influences, with no indications of sanitary cross connections.

4.5 Composite Sample Results

In the past year, the Port took a total of 59 flow-weighted composite samples, bringing the six-year total to 412 for all outfalls. The discussion of these composite sample results are segregated from grab samples because grab samples represent instantaneous values. Composite sample results, especially those from samples that comprise the entire hydrograph, represent an average

value or event-mean concentration (EMC) over a longer time period. All composite sample data reported below met the representativeness criteria of the Procedure Manual. Non-representative composite data not reported below are in Appendix D.

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 seven-year sampling history at STIA, more than 80 percent of the 386 TSS samples and 336 turbidity samples were below the comparative values of 50 mg/l, and 29 NTUs, respectively. As shown in Figure 5 and Figure 6, 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 seven years, 86 percent of the 146 TSS results from the airfield outfalls were less than one-half the regional comparative median value of 50 mg/l. 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, 3 samples exhibited higher than typical TSS and turbidity; two at SDN4 and 1 at the taxi yard (TY). All three TSS results (366, 331, and 660 mg/l) were new maxima for the respective outfalls (SDN4 and TY). The SDN1 turbidity results of 170 and 198 NTU were new maxima for that outfall. No other constituent maxima were associated with these SDN1 results, though lead and zinc were relatively high compared to historical data (see Section 4.5.3.2).

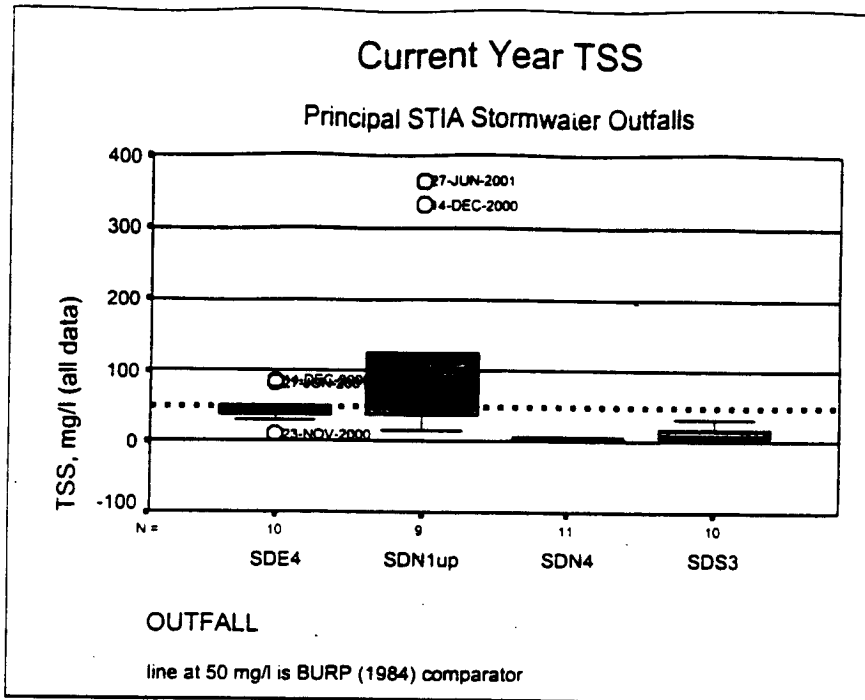


Figure 5 TSS for Current Year

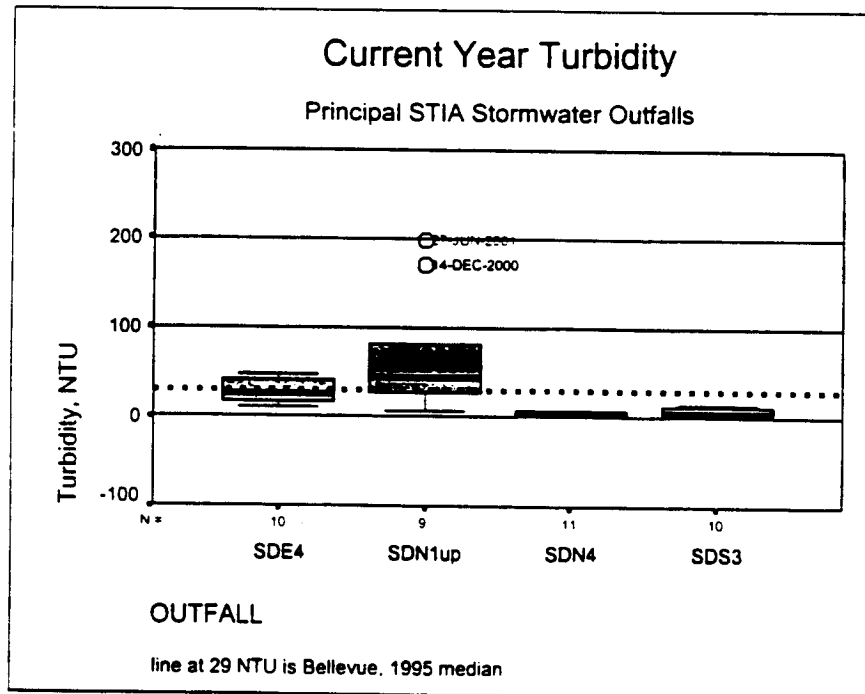


Figure 6 Turbidity for Current Year

BMPs were added in SDN1 in January 2001 (flexible catch basin inserts) after the first occurrence. Subsequent TSS and turbidity dropped in the next five SDN1 samples until the 6/27/01 sample event indicated new peaks. Visual observations suggested that the source of sediment was associated with two factors: 1) truck traffic on air cargo road, and 2) sediment mobilized by vehicle traffic turning around in a small unpaved shoulder area on the south side of S. 154th St about 100m west of the SDN1 sampling station. The embankment construction areas have a complete range of BMPs onsite to minimize tracking, including truck wheel washes and roadway sweeping.

The Port's construction erosion and sediment control program provides effective erosion and sediment controls. The stormwater batch treatment system used over the past three seasons for the third runway embankment project has been highly effective. Discharges from this system always met water quality standards for turbidity in Miller Creek, and in fact, were typically much cleaner than background conditions in the creek upstream from the project (Tobiason et al., 2000).

The elevated TSS of 660 mg/l in the 1/28/01 Taxi Yard sample may have been associated with limited construction in the area (electrical ductbank station) and/or inappropriate sediment disposal onsite. A small pile of sediment and other debris was observed near the dumpster at the taxi facility. Staff were notified and the sediment was removed shortly thereafter.

4.5.2 Biochemical Oxygen Demand (BOD₅)

Results for the past year continue to indicate overall low levels of BOD₅ in STIA stormwater. In 42 samples analyzed in the past year, the median BOD₅ was 7.7 mg/l, just above the 6.6 mg/l regional urban comparator (BURP, 1984, see Table 4). See Figure 7. Overall, 54% of the 335 samples to date were less than the

regional comparator. Elevated results have usually only been associated with major deicing periods.

Principal sources of elevated BOD₅ concentrations in the past were associated primarily with infrequent and short-lived winter weather episodes and ground surface deicing. During these events, acetate-based ground surface deicing chemicals are the primary sources of BOD₅. The Port discontinued the use of urea and glycol-based ground surface deicers in 1996. There have been only a few isolated indications of limited BOD₅ contributions to stormwater from aircraft deicing glycols. Two elevated BOD₅ results in the past year, 84.3 and 137 mg/l at SDS3 on November 23, 2000 and January 28, 2001 appeared to be associated with glycols (84.3 and 122 mg/l total glycols respectively). Direct sources of glycols have been eliminated from the storm drains through numerous BMPs (POS, 1998c). In September 2000, the Port rerouted drainage to the IWS from an SDS1 area of about 0.1 acre near the South Satellite that can receive infrequent aircraft deicing/anti-icing fluids (ADAFs) when and if applied to aircraft at gates S3 and S4. See Section 4.7.2.

In the past year, two limited periods of winter weather occurred: February 8-9, and February 16-17, 2001. In time-composites taken during these two events, BOD₅ ranged from 53 mg/l (SDE4) to 756 mg/l (SDS3). Because these samples were time-composites they do not appear on the figure below. Section 4.6 discusses these in more detail. Snowfall from the more substantial second event required plowing and storage in the three snowmelt BMP areas. During both of these events, there were no discharges from outfall SDN2, which could drain the north snowmelt BMP area in the event of an IWS pump station bypass⁴.

⁴ The entire drainage area of outfall SDN2 was re-routed to the IWS in 1997 as a result of two BMPs.

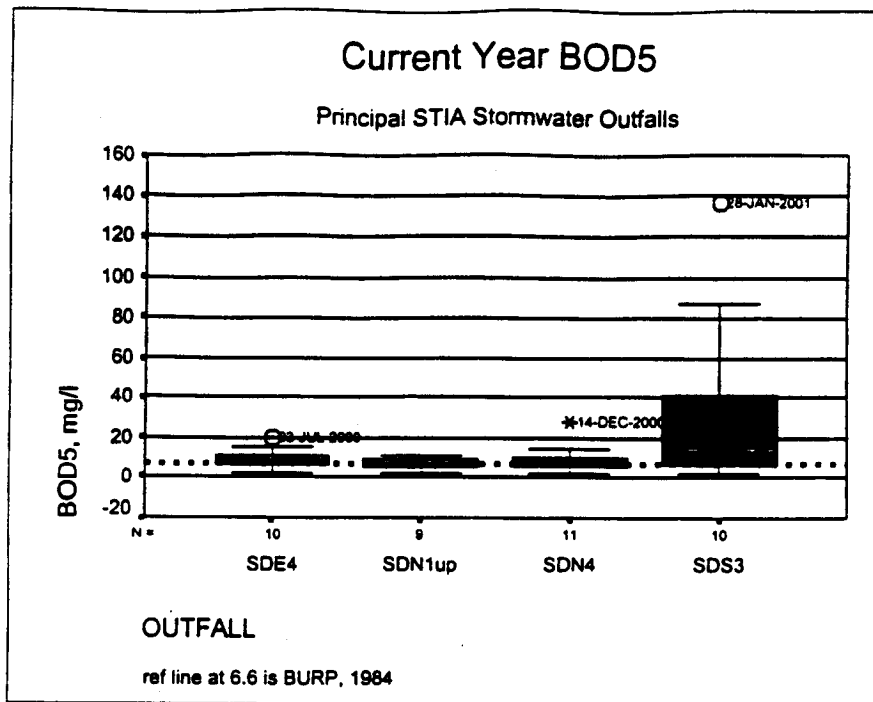


Figure 7 BOD₅ for Current Year

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. See the discussion in Section 3.3 concerning the STIA monitoring locations relative to the receiving streams.

The Washington State water quality standards for copper, lead, and zinc are based on toxicity associated with the dissolved fraction of the metal. Because of complex water chemistry, only a portion of the dissolved fraction is actually bioavailable (Hall et al., 1997). Thus, direct comparisons of dissolved metals with standards may result in "false positives" where a sample is not actually toxic. Results for dissolved copper and zinc analyzed in WET testing and source tracing studies (POS, 2000b) at the Port's principal outfalls have shown that dissolved fractions were often substantially less than the 96% to 98% ratios

applied by default in the water quality standards (Ecology's and EPA's). The comparisons offered below are based on the total recoverable metal using the non-specific ratios (partitioning coefficients) provided in the water quality standards and Ecology's TSDCALC8 workbook. The application of site-specific coefficients for these calculations would be more appropriate.

4.5.3.1 Copper

Overall, in 312 samples in the past six years, the median copper value for all outfalls sampled is 0.024 mg/l. Airfield and landside outfall data in this case are similar, with medians ranging from 0.020 to 0.031 mg/l. See Figure 8. Nearly 80% of all STIA copper data to date (312 samples) are less than the 0.040-mg/l median from the City of Portland's sampling results (City of Portland, 1993.)

These comparisons are more representative of outfall discharges than the Bellevue, 1995 median of 0.01 mg/l that was for *instream* stormwater samples. However, note that the comparators listed in Table 4 show that urban runoff typically exceeds receiving water standards for copper when compared directly and without mixing.

In samples from the minor subbasins SDS2, SDS5, SDS6, and SDS7 not associated with landside or airfield activity, median copper ranges from 0.005 to 0.013 mg/l, where all data has been substantially less than the two comparators cited here. Nearly half of the copper data for these four outfalls has been below the receiving water standard of 0.010 mg/l. Passenger vehicle roads and/or parking is very limited to non-existent in these four subbasins.

Copper results from the past year exhibited no new maxima, though an SDS3 result of 0.111 from the August 18, 2000 sample ranked third in the total of 58 samples to date. In past years, some samples associated with certain seasons and/or weather patterns have resulted in elevated copper. The top three SDS3

copper results all occurred in samples from storms in the month of August after extended dry periods of 2 weeks to 33 days (in 1996, 1998, and 2000). Though the length of the dry antecedent period may be significant in its effect on copper, there may be other important determinants such as rainfall intensity.

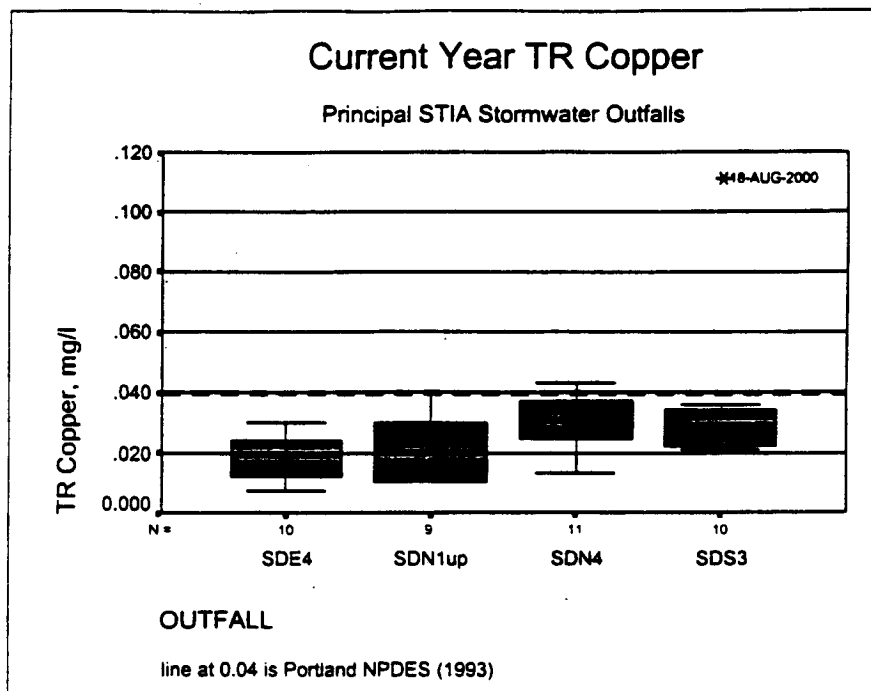


Figure 8 Total Recoverable Copper for Current Year

4.5.3.2 Lead and zinc

Samples from airfield outfalls continue to contain less lead and zinc concentrations than typical urban sources. In the seven-year permit sampling history, the vast majority of the 312 results for lead and zinc in all STIA outfalls were below the median for comparable regional data for commercial areas. For the four airfield outfalls, which comprise more than 65% of the total SDS, nearly all (more than 97%) of the 145 sample results to date for lead and zinc were less than the comparators.

These comparisons have added significance given that the commercial/industrial comparators cited (see Table 4) are very conservative data. Plus, these Bellevue (1995) lead and zinc comparators reflect *instream* sample concentrations after outfall discharges were mixed with receiving waters. Thus, metals in the vast majority of STIA stormwater, especially airfield runoff, are generally far lower than those measured in other local and regional studies. 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. All but one of 145 lead results in the past seven years are below the standard of 0.039 mg/l calculated at a hardness of 56 mg/l (Table 4.) In fact, lead was not detected in 50% of these 145 total samples. Airfield zinc was similar in that more than 85% of the 145 results are less than the standard of 0.072 mg/l at 56 mg/l hardness⁵. See Figure 9 and Figure 10.

Importantly, lead and zinc concentrations measured in airfield outfall samples were far lower than those in the landside outfall samples were. The overall median lead and zinc values for principal airfield outfalls SDS3 and SDN4 (0.041 and 0.021 mg/l respectively) were three to ten times less than for the landside outfalls SDE4 and SDN1 (0.134 and 0.192 mg/l, respectively). See Figure 9 and Figure 10. This difference is likely associated with a higher degree of passenger and service vehicle usage in the landside areas.

The lead result of 0.035 mg/l from the SDN1 sample of 12/14/00 was associated with elevated TSS and turbidity in the sample. These TSS and turbidity results were new maxima for SDN1, representing outliers most likely associated with truck traffic. See Section 4.5.1. Though not an overall outlier, this lead result ranked third overall in the 37-sample history for SDN1, and was near the

⁵ 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.

historical maximum of 0.048 mg/l of January 13, 1999. Though not unusual, the zinc result in this sample was in the 78th percentile for all SDN1 data.

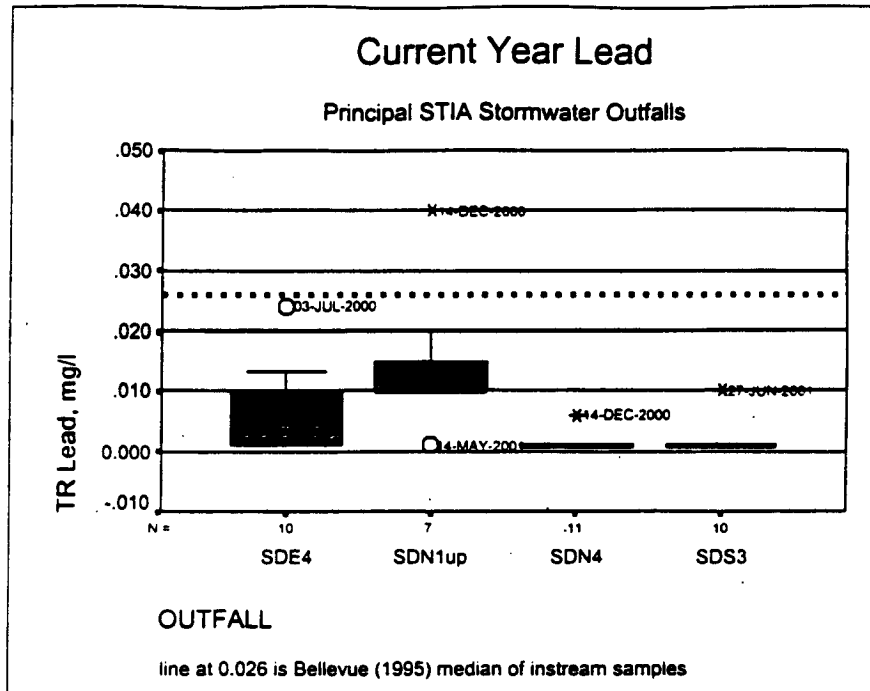


Figure 9 Total Recoverable Lead for Current Year

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. The lower results for the airfield outfall samples are most likely attributable to the fact that airfield runoff flows through grass areas prior to draining to the piping system. Certain portions of landside subbasins SDE4 and SDN1 will be assessed for appropriate BMP retrofits, such as biofiltration, according to the recent CSMP (Parametrix 2001).

Zinc associated with runoff from galvanized roofing material appears to effect only outfall SDN1. Unlike SDE4, where several metal-roofed cargo buildings make up a few percent of the total impervious area in the subbasin, three similar

cargo buildings comprise nearly 30% of the total impervious area drained by SDN1 (at the sampling station). Five WET tests in 1998-99 did not indicate toxicity in the SDE4 samples, while significant toxicity was found in multiple SDN1 samples. Source-tracing indicated that the SDN1 toxicity was attributable to zinc (POS 2000b; Tobiason and Logan 2000). However, the SDN1 sampling point tested is more than ½ mile upgradient from Lake Reba (a detention facility) and its outfall to Miller Creek. Several instream samples below the Lake Reba outfall have shown much less zinc than the SDN1 data and have not indicated toxicity (POS, 1997c, Parametrix 1999).

Despite the benefits provided by the Reba detention facility, the Port has been collaborating with other researchers in investigating several options for mitigating the zinc in the SDN1 (rooftop) runoff. Because re-roofing or painting costs appear high, runoff treatment by media filtration appears as a potential cost effective solution. According to the manufacturer of the roofing material, painting it would cause product warranty problems. Therefore, there are more issues to consider than cost alone.

Stormwater treatment media tested recently in controlled laboratory experiments include commercially available CSF® deciduous leaf compost produced by Stormwater Management Inc. (Portland, Ore.) and specially-modified soybean hulls developed by the U.S. Department of Agriculture Agricultural Research Service Southern Regional Research Center (New Orleans, La.). Both the leaf compost and the soybean hulls are agricultural waste products that can be recycled as water-treatment media. Other media tested proved less suitable or even generated some degree of toxicity.

Implementation concepts include deploying the media in commercially available Stormfilter™ cartridges in below-grade, pre-cast vaults; or in cartridges adapted for above-grade downspouts. These options amount to a new stormwater BMP option that appears much more cost-effective than re-roofing or painting to

eliminate zinc sources. Further studies will characterize the long-term performance and operations and maintenance costs for these options for dealing with metal rooftop runoff. In addition, in the coming year, the Port will begin evaluating other rooftop runoff according to the provisions of the CSMP (Parametrix 2001).

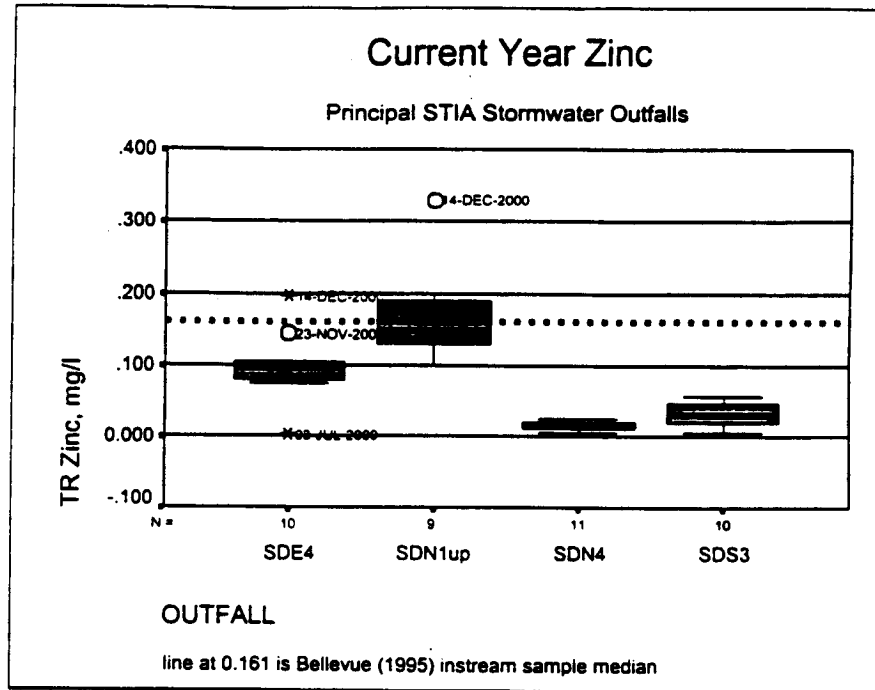


Figure 10 Total Recoverable Zinc for Current Year

4.6 Deicing Event Samples

The permit requires sampling and analysis for glycols during "deicing events". The Port conducts this sampling according to the Ecology-approved 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. Some of the data are from grab samples as required for outfalls SDS1 and SDN2. The two major deicing events

of 2001 (February 8 and 16th) were sampled on a time-composite basis because the weather and associated deicing activities persisted for several days.

4.6.1 Background.

In 1995-1997, as recommended by the SWPPP, the Port implemented seven BMPs that rerouted drainage to the IWS from certain areas in four SDS subbasins: SDE4, SDS1, SDS3, and SDN2 (POS 1998c). Several limited areas within these subbasins were subject to aircraft servicing, including periodic ADAF (glycol) application. Two of these BMPs use multiple pump stations that have performed as intended over the past four-plus years.

Two of these pump stations divert runoff to the IWS from the entire SDN2 subbasin. In the past year, there were only three storms that resulted in bypasses from these pump stations to the SDN2 outfall (October 9, 2000, January 4, 2001 and June 11, 2001). Two of these were sampled according to permit requirements and no unusual results were found. All bypasses were of very short duration compared to the length of the rainfall event and the period flows were pumped to the IWS. As intended in the station design, these bypasses to SDN2 represented only a fraction of the peak flows of the hydrograph. None of these bypasses occurred during a major deicing period or when snowmelt was present.

The Port's Annual Glycol Reports (POS, 2001, 2000c, 1999c, 1998b, 1997b, 1996b) detail ADAF (glycol) application at STIA. 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 specially formulated 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). Importantly, to ensure public safety, aircraft pilots make the ultimate decision on whether to apply glycols or not.

During the winters of 1998-99 and 1999-2000, the Port investigated the possible effects of ground deicing chemicals (acetates) on receiving-water dissolved oxygen (DO). As indicated by conductivity and/or tracer constituents of the potassium acetate, sodium acetate and calcium-magnesium acetate chemicals, these two studies showed that the deicing materials travel rapidly through the streams (Cosmopolitan Engineering, 1999; POS, 2000d). Though extended detention periods for the affected runoff occurred in Northwest Ponds, and Lake Reba to a lesser degree, it was not possible to attribute oxygen depletion to the chemicals. The studies documented very dynamic and often extreme DO fluctuations existed in background conditions for the ponds, weeks and months before any ground deicing chemicals were used.

Prior to these ground-deicing events, runoff glycol concentrations attributable to aircraft deicing were either absent or at low levels insufficient to have caused any of the observed oxygen deficits observed in the ponds. Runoff data during these major deicing events indicated BOD₅ attributable to glycols was a small fraction of the total given the acetate-based chemicals used concurrently. Moreover, the data indicated that the IWS effectively captures the majority of the total volume of glycols applied to aircraft.

4.6.2 Current Results

Glycols have been present infrequently, usually limited to the rare, one to two day winter weather episodes, amounting to just a few days annually. In the past year, glycols were analyzed in a total of 58 samples from five outfalls⁶. The majority of samples were collected at the regular sampling locations (SDE4,

⁶ Multiple time-composites were taken at SDE4, SDS3 and SDN4 during the 4-day deicing period of February 16-19, 2001. Results in Appendix C include each of these time-series samples plus an overall single sample comprised of equal volume aliquots from each time-series composite. Thus, the overall time-composite of up to 6 sub-samples is considered to represent the entire event. BOD₅ and glycol concentrations in the overall composite used in the data summaries closely agree with mathematical averages of the individual time-series samples.

SDS3, and SDN4.) A total of 18 of these samples were time-composite series taken during the 4-day period of February 16-19, 2001. Total glycol concentrations ranged from non-detectable to a maximum of 548 mg/l in an SDS3 sample. Fourteen of the 27 samples representing individual events were below the detection limit of 2 mg/l. Glycols were typically detected only during periods of winter weather and considerable aircraft deicing activity.

The total number of aircraft deiced in the dry period before sampling events ranged from 1 to 414, with a median of 148. Data appear in Figure 11 and are summarized in tabular form in Appendix C. These results continue to indicate that glycols are typically absent in STIA stormwater discharges except during periods of major winter weather.

In the past year, two limited periods of winter weather occurred: February 8-9, and February 16-19, 2000. During the first event, the minor snowfall of 2 to 3 inches did not require plowing because it melted rapidly with the ensuing rainfall. The second event had up to 8 inches of snow that was plowed from the airfield and moved to the three snow storage areas. There were no discharges from outfall SDN2 during either of these events⁷. In both events, deicing/anti-icing chemicals were applied to ground surfaces during periods of a few hours.

These were the only periods in the winter of 2000-2001 when the Port applied chemicals to ground surfaces (primarily runways and taxiways.) Storms following both events were sampled at various outfalls. Glycols and BOD were generally higher during the first event. Note that the BOD measured in these samples aggregates multiple constituents (acetate-based ground-surface deicing agents, plus lesser contributions from glycols and other potential sources). In composite samples from the first event, glycols were 41 mg/l at SDE4, 7 mg/l at SDS1, 426 mg/l at SDS3 and 144 mg/l at SDN4. Glycols in time-composites during the

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

second event⁸ ranged from 6 to 48 mg/l at SDE4, 12 to 167 mg/l at SDS3, and <4 to 33 mg/l at SDN4.

The 1999 Annual Report identified a clogged IWS drain inlet that may have overflowed to SDS3. Because of the proximity to certain gates of the C-Concourse, these overflows could have been a potential source of glycols found sporadically in past SDS3 samples. The Port corrected this problem last year and the IWS drain inlet now functions properly.

Drainage reroutes in September 2000 near the South Satellite appear to be effective in abating glycols in SDS1 discharges. Compared to past years' samples, glycols in 5 SDS1 samples in the past year were much lower, ranging from 5 to 49 mg/l. Prior to this BMP, an elevated glycol result of 801 mg/l in the SDS1 sample of January 12, 2000 was associated with substantial aircraft deicing that took place at the South Satellite.

Several small area drains under the South Satellite roof overhang near gates S3 and S4 receive limited runoff from a small area between the nearby IWS flush gutters and the building. Only the forward sections of larger aircraft may overhang this area, resulting in the potential for ADAFs to enter the associated drains. See Section 4.7.2. These drains were reconnected from SDS1 to the IWS during the Northwest hangar and North Ductbank construction projects in September 2000. The SDS1 sampling this past year coincided with one to six aircraft deiced by the airline that is most likely to have used the affected area during or just prior to the sampling events⁹.

⁸ Most time-composites in the series sampled for the February 16-19 event represented periods of about 12-hours of discharge. Glycols and BOD₅ in the overall composites for these series closely approximated averages of the individual samples.

⁹ According to Port records (POS, 2001), Northwest Airlines deiced a total of 58 aircraft in the winter sampling period coinciding with this report. A total of at least 16 aircraft of these aircraft were deiced on or the day before SDS1 was sampled. See Appendix C.

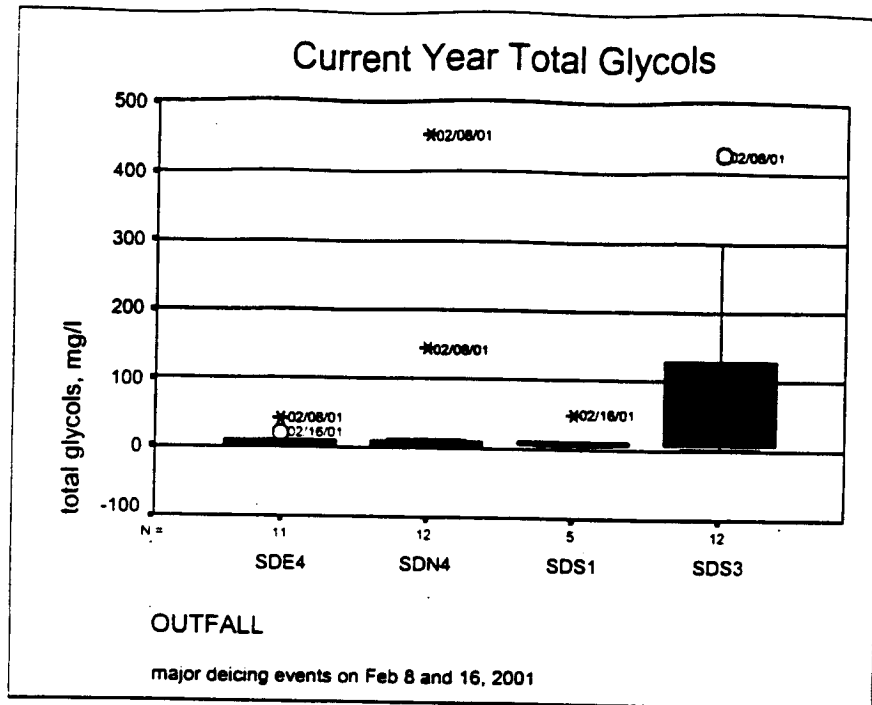


Figure 11 Glycol results for Current Year

The Port has exceeded minimum sampling requirements of Special Condition S2B4 for deicing events at outfalls SDS1 (003) and SDN2 (007). This permit condition was added when the current permit became effective on March 1, 1998. Previous annual reports have discussed how the data signify that the BMPs have been effective and the intent of this monitoring requirement is satisfied. As allowed for in Special Condition S2B4, the Port has requested Ecology's approval to cease this monitoring (POS, 1999d, POS, 2000e). The SDS1 samples discussed above were taken to further demonstrate BMP effectiveness.

4.7 Other Results

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

4.7.1 Field Quality Control Samples

The Port routinely collects duplicate and equipment blank samples during NPDES sampling events according to the Procedure Manual. Appendix D summarizes these results. The field equipment blanks taken in the past year indicate that sampling techniques and equipment do not contribute a high bias to sample results reported, notably for metals. These results support the efficacy of the Port's "clean" sampling methods that were developed for stormwater monitoring, in particular for the WET testing source tracing (POS, 1999e).

4.7.2 Source Tracing Studies

Because some sampling results have indicated elevated levels for certain constituents, the Port has conducted source-tracing studies aimed at identifying and characterizing potential inappropriate sources. Through past efforts, the Port has already discovered and eliminated several other sources of stormwater contamination in subbasins SDE4, SDN1, and SDS4 that are discussed in previous Annual Reports¹⁰.

As discussed in the metals section above, the Port investigated and found the likely source of toxicity exhibited in SDN1 samples. These results from SDN1 were included in last year's report (in Appendix D) and were elaborated further in the final WET characterization report submitted to Ecology in May 2000 (POS, 2000b). Other source tracing investigations are summarized below.

4.7.2.1 *SDE4 Source Tracing*

The Port began studying fecal coliforms in SDE4 discharges in 1998 and completed the series of investigations in early 2001 (Herrera, 2001). This work used several special forensic techniques aimed to identify potential sources of

¹⁰ See POS 1997, 1998. Inappropriate connections to the stormdrains were found and eliminated in subbasins SDE4, SDN1, and SDS4.

the sporadic elevated results. Past Annual Report's have discussed findings that corroborate the most recent and final portion of this investigation. Multiple data over several years using state of the art techniques have demonstrated an absence of sanitary sewer cross connections. The most recent work found that animals, primarily birds accounted for more than 90% of the fecal coliforms in samples from several outfalls.

4.7.2.1.1 Fecal coliform history

To date, the median of the 47 NPDES storm event grab samples from SDE4 is 220 per 100 ml, which is about 100 to 200 units higher than median values at other STIA outfalls. See Appendix B. Results to date for SDS3 and other outfalls show very low counts, which are consistent with the 7-years' sampling summarized in Section 4.4.2. Baseflow samples at SDS3 have shown non-detectable fecal coliforms.

Many other studies have shown that fecal coliforms in stormwater can be highly variable with frequent highly elevated numbers. The BURP (1984) study found a fecal coliform median of 980 per 100 ml in 326 *instream* stormwater samples. Fecal coliforms had a mean concentration of 4,500 MPN/100 mL in the 200 stormwater samples for 11 stations in suburban catchments during the comprehensive Bellevue (1995) study, which concluded that the high concentrations were probably due to animal wastes.

Work in 1998-99 showed that concentrations of certain chemical constituents in SDE4 storm and baseflow samples (e.g. ammonia, surfactants, fluoride, potassium) have been below levels that might indicate cross connections with sanitary wastewater (POS, 1999b, 2000a). These particular indicators have shown an absence of wastewater that might be linked with the sporadically high fecal coliforms, demonstrating an absence of direct cross connections with sanitary sewage.

4.7.2.1.2 Microbial source tracing (MST) technique

The Port conducted multiple storm and baseflow rounds of microbial source tracing (MST) sampling routines in 2000. This MST technique uses a special method of RNA fingerprinting developed by Professor Mansour Samadpour of the University of Washington's School of Environmental Health. Several other local and regional studies used this technique and have been able to attribute fecal contamination in surface waters to multiple specific sources, including domestic animals and septage (Trial et al. 1993, King County 1995, Herrera 1999). Ecology recognizes the MST method as "...an excellent method for determining some of the sources of fecal contamination in a watershed" (Sargeant, 1999.)

Using the MST technique, King County (1997) attributed up to 64% of the results in the lower Des Moines Creek basin to unsewered residential areas (leaking septic tanks). In upstream samples taken nearer the airport, human sources comprised 10% or less of the results, while avian and dog sources together represented up to 34%. However, the two rounds of MST analysis in this King County study provided limited statistical power and resulted in 36% to 59% unmatched results, which may also be due to the limited number of "fingerprints" available in the database at that time. Nonetheless, the study indicated that human sources were prevalent in lower basin areas (City of Des Moines) suggesting that aging septic systems should be addressed.

4.7.2.1.3 Summary of Port's (2001) MST Study Results

The following are excerpts from the Port's MST study report (Herrera 2001):

- During storm flow, mean fecal coliform bacteria concentrations increased downstream within the SDE4 subbasin (165, 538, and 945 organisms/100 mL at the upstream, midstream and outfall locations, respectively), and were

higher at the SDE4 outfall than at the other STIA outfalls (range from 3 to 83 organisms/100 mL). These results are similar to the six-year NPDES monitoring results and further suggest that fecal sources were most concentrated in the vicinity of the main terminal area located in the southeast portion of STIA.

- Base flow was rarely present at the STIA outfalls and exhibited low mean fecal coliform bacteria concentrations (ranged from 3 to 4 organisms/100 mL) when present. These findings corroborate previous STIA studies and indicate that drainage from STIA was not contaminated during dry conditions by sanitary sewer cross-connections or leaks.
- Overall, the vast majority (92 percent) of the fecal coliform bacteria found in the stormwater and stream samples originated from non-human sources (58 percent birds and 34 percent non-human mammals for all samples). Birds were the most prevalent source observed during both storm flow (57 percent) and base flow (67 percent). Source percentages did not vary substantially among the stormwater and stream stations.
- A large quantity (approximately 1 cubic yard) of pigeon feces was found on the roof of Concourse A (located in the main terminal area) and was removed during concourse demolition in February 2001. Substantial accumulations of bird feces were not present on the many other rooftops that were inspected. The removal of pigeon feces from Concourse A may reduce fecal coliform bacteria concentrations at the SDE4 outfall in the future. Construction practices at STIA should minimize the amount of potential bird habitat to reduce stormwater contamination (and increase aircraft safety).
- Bacteria from human sources accounted for less than 10 percent of the total isolates obtained from each monitoring station during storm flow. Human sources accounted for 9 percent at the SDE4 outfall, 6 percent at the SDS3

outfall, 9 percent at the Bow Lake outlet (upstream) station, and 6 percent at the Des Moines Creek (downstream) station during storm flow. Human sources were not consistently observed at any station, and were rarely observed at both upstream and downstream stations during a single storm event. These results suggest that human sources were a small contribution to the fecal coliform bacteria present at the stormwater and stream stations, and there was no continuous source of bacteria from human sources during the monitored storm events.

- Human sources were not detected at the SDE4 upstream station, SDN1 outfall, SDN4 outfall, and the Northwest Ponds inlet (upstream) station during storm or base flow. Thus, human sources were not observed in the northernmost subbasins of STIA that drain to Miller Creek, or in the residential/commercial area west of STIA that drains to the west fork of Des Moines Creek.
- During base flow, human sources were not observed at the STIA outfalls and were only observed at the Bow Lake outlet (upstream) station (20 percent of base flow isolates) and the Des Moines Creek (downstream) station (7 percent of base flow isolates). These results suggest that human sources of bacteria present in Des Moines Creek during dry periods likely originated from Bow Lake and not STIA outfalls.
- Only three of the 49 *E. coli* isolates that originated from a human source were unique matches to isolates obtained from aircraft wastewater samples. These three isolates were observed at the airfield outfall (SDS3) and downstream in Des Moines Creek during one storm event (May 9, 2000). These findings suggest that aircraft wastewater transfer operations may be a source of the minor and infrequent human fecal contamination in runoff from the airfield. Aircraft wastewater transfer operations should be reviewed on a

regular basis to determine if existing practices are adequately preventing the potential contamination of runoff from STIA.

- Deposits of human feces were observed on the banks of Des Moines Creek in the Tyee Golf Course. This observation suggests that unsanitary toilet practices may have contributed to the minor human fecal contamination observed in drainage from within and outside STIA.
- This study also collected samples of local municipal sanitary wastewater (MWW) generated by STIA, and aircraft lavatory wastewater (AWW), known as "biffy" waste. *E. coli* from these samples were genetically typed to augment the database with local human sources. Samples of MWW and AWW taken during the study have shown very high fecal coliform counts ranging from 39,000 to 48,000,000 per 100 ml (membrane filter method; APHA, 1995). Importantly, the presence of high counts in the AWW samples indicated that the toilet chemical added by the airlines has limited sanitizing effects. This aspect should be considered in spill response.

4.7.2.1.4 Measures of contamination

Another part of the MST study examines the potential relationships among several indicators of bacterial contamination. Most fecal coliform bacteria are not pathogenic, but are used to indicate potential contamination from mammalian, avian, and human fecal waste products. Washington state water quality standards (WAC 173-201A) are based on fecal coliforms. Importantly, this metric does not distinguish actual sources, whether human, animal, or interference (false positives) from other non-pathogenic coliform bacteria such as *Klebsiella* species. For example, recent studies in Colorado showed that *Klebsiella* significantly interfered with fecal coliform results, causing the potential for false exceedances of permit criteria for a WWTP and implying higher than necessary disinfectant usage (Elmund et al., 1999).

For many years, various proponents, including EPA, have suggested that other metrics which correlate better with actual measures of disease are more appropriate (U.S. EPA, 1986). In 1986, the U.S. EPA stated that *E. coli* and enterococci-based standards would serve public health better than fecal coliforms and that states should change standards, effluent limits and test methods accordingly (U.S. EPA, 1986). The U.S. EPA issued an implementation guidance document this year (U.S. EPA, 2000). Ecology's triennial review of water quality standards, currently in progress, generally concurs with EPA, and as of May 2000 Ecology is considering *E. coli* and *Enterococcus* as alternative standards (WDOE, 1998, 2000).

The Port's MST study found that 62 percent (1,420) of the 2,305 total fecal coliform bacteria colonies isolated tested positive for *E. coli*. The highest percentage of *E. coli* (77 percent) was observed in samples from Des Moines Creek. As mentioned above, *E. coli* concentrations are typically less than fecal coliform bacteria concentrations because of the presence of other bacteria (e.g., *Klebsiella*, *Enterobacter*, and *Serratia*) that also test positive for fecal coliform bacteria. *Enterococcus* analyses in one round of sampling done in May, 2000, were similar to fecal coliform counts. Some of these samples correlated well, but notably, the samples from the routine SDE4 monitoring location had much lower enterococcus numbers than fecal coliforms (POS 2000a).

4.8 Outfall Inspections

Appendix E summarizes the visual observations made at outfalls during the past year. The number of instances exceeds the minimum of 3 wet season inspections required by the permit and reflected in the SWPPP (POS 1998c.) Most outfalls were visited more than 10 times and the four principal outfalls were visited more than 30 times in the past year during routine monitoring equipment deployment and maintenance. Visual indications of potential sediment problems were limited primarily to outfalls SDN1, SDE4 where TSS and turbidity results

have been discussed earlier in this report. Several observations of limited amounts of foam at the SDS3 outfall did not appear to be associated with the presence of soaps and/or glycols¹¹. The annual dry-weather inspection was conducted during September 2000. Visual observations recorded during these inspections did not indicate problems associated with baseflows or other dry-weather flow.

¹¹ Foam was present at outfall during SDS3 grab sample collection for 11/8/00 storm event. In this sample, pH=7.4, TPH<0.11mg/l, fecal coliforms=2/100ml, surfactants<0.025 mg/l, TDP = 0.179 mg/l, SRP = 0.163 mg/l, and BOD₅ = 14.1. None of these results appeared to indicate the presence of soaps and/or washwater.

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5 CONCLUSIONS

Storm sample results from the past year continue to support the conclusions reached in previous annual 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 implemented various BMPs to address specific findings of the stormwater monitoring program. The data generally indicate that these BMPs have been effective. Still, the Port continues to investigate other issues to resolve problems indicated by the data.

Sampling locations for certain outfalls are in-pipe or are well above the final discharge point to receiving waters. Because these locations do not account for the influence of other factors prior to discharge, namely detention, it is not appropriate to compare the STIA data to water quality standards.

In addition to completing all required routine stormwater sampling, the Port accomplished the following pro-active measures in the past year.

1. Completed fecal coliform source-tracing in SDE4 and other areas. This MST study report indicated fecal coliforms were attributable to animals, mainly birds, and that cross-connections with sewers were absent.
2. Continuing to investigate toxicity (zinc) abatement for metal rooftop runoff in SDN1. These investigations have used state of the science techniques to evaluate emerging BMPs as potential solutions. More rooftop runoff evaluations are expected in the coming year.
3. Confirmed that drainage re-routes from SDS1 to IWS reduced glycol concentrations in SDS1 discharges.
4. Adopted the Ecology-approved Comprehensive Stormwater Management Plan (CSMP) for the STIA Master Plan Update.

The past year's monitoring efforts lead to these suggestions:

1. Investigate the potential for links between surface drainage (sheet flow) in the IWS and SDS3 drainage areas near the main terminal. The GSE "drivelanes" in this vicinity may be within the apparent SDS3 boundary. The areas just to the east of these drivelanes (ramps for Concourses B and C) are drained by the IWS, and are contiguous with SDS3. This effort should determine if there is a potential for significant flows from associated IWS areas to enter the SDS3 system.
2. Continue to evaluate stormwater treatment technologies (media filtration) to determine if they are a technically and cost effective BMP to consider for managing metals in roof runoff.

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APPENDICES

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Current Estimate (2001)

Diversion Name	Diversion (cfs)	Imperv (acres)	Total (acres)
Miller Creek SDS			
SDS 1 (to Lake Monnet point)	3.3	10.2	13.5
SDS 1 (to Lake Monnet pt.)	0.4	5.0	5.4
SDS 1 (to Lake Monnet pt.)	33.9	12.1	45.9
SDS 2	0.0	0.0	0.0
SDS 3	42.9	27.0	69.9
SDS 4	22.6	7.7	30.2
Des Moines Creek SDS	103.0	62.0	165.0
SDS 1	51.7	97.4	149.1
SDS 2	1.5	14.4	15.9
SDS 3	12.2	1.0	13.2
SDS 4	238.1	224.3	462.3
SDS 5	42.6	20.8	63.4
SDS 7 (SDE4)	7.0	7.0	14.0
SDS 9 (B)	48.2	1.4	49.6
SDS 9 (D)	30.7	3.2	33.9
Other SDS	432.0	369.4	801.4
East End	0.0	0.8	0.8
Empire Dam Pond	0.3	1.2	1.5

Note: "airfield" category includes 17 acres of taxiway in SDE4

Diversion Name	Diversion (cfs)	Imperv (acres)	Total (acres)
IWS			
Priority drainage	6.3	285.7	292.0
North Smeadell PS (SDN2)	6.4	0.2	6.6
Central Smeadell PS (SDE4)	0.1	0.7	0.8
South Smeadell PS	0.0	0.3	0.3
North Camp Arrol PS (SDN2)	6.5	33.3	39.8
North Salsbille PS (SDE4)	0.3	13.4	13.8
IWS 340 Diversion (SDS1)	0.4	16.1	16.5
Delta Highflow Drain	0.0	-6.0	-6.0
South Salsbille diversion (SDS1)	0.0	2.5	2.5
SUMMARY	total diversions	74.2	74.2

Diversion Name	Diversion (cfs)	Imperv (acres)	Total (acres)
Miller Creek SDS	103.0	62.0	165.0
% of SDS	19%	14%	17%
% of total	19%	8%	12%
Des Moines Creek SDS	432.0	369.4	801.4
% of SDS	81%	85%	83%
% of total	78%	47%	60%
Other SDS	0.3	2.0	2.3
total airfield	346.1	296.8	642.9
% of SDS	65%	68%	66%
% of total	53%	43%	56%
IWS	19.9	346.3	366.2
% of total	4%	44%	27%
Total drainage	555.2	779.6	1334.8

APPENDIX A STORM EVENT HYDROLOGIC AND HYDRAULIC DATA

Table 1

Monthly Summary of Daily Rainfall at STIA
source: NWS rain gage at STIA

day	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00	Jan-01	Feb-01	Mar-01	Apr-01	May-01	Jun-01
1	0.04	0	0	0.02	0	0.04	0	0.06	0.23	0.19	0.01	0.18
2	0.06	0	0.04	0	0	0.18	0	0.29	0	0.29	0	0.48
3	0.02	0	0.02	0	0	0	0.36	0.16	0	0	0	0.01
4	0	0	0	0	0.15	0.03	0.6	0.38	0	0	0.08	0
5	0	0	0	0	0.04	0	0.21	0	0	0.2	0.01	0.05
6	0	0	0.01	0	0.14	0	0	0.01	0	0.06	0	0.02
7	0	0	0.07	0	0	0	0	0	0.07	0	0	0
8	0	0	0.07	0	0.85	0.02	0.05	0.27	0.13	0	0	0.1
9	0	0	0.17	0.45	0.1	0.06	0.03	0	0.04	0	0	0.04
10	0	0	0.26	0.01	0	0	0	0	0	0.78	0	0.09
11	0	0	0.01	0	0	0	0	0	0	0	0	0.87
12	0	0	0	0	0	0	0	0	0	0.06	0.01	0.06
13	0	0	0	0.06	0	0	0.06	0	0.13	0	0.05	0
14	0	0	0	0	0	0.26	0.01	0	0	0	0.54	0
15	0	0	0	0	0	0	0	0.17	0.32	0	0.56	0
16	0	0	0	0.62	0	0.74	0	0.44	0	0.24	0.01	0
17	0	0	0	0.32	0	0	0.08	0.06	0.01	0.23	0	0
18	0	0.28	0.01	0	0	0	0.16	0.07	0.58	0.1	0	0
19	0	0	0.04	0.49	0	0	0.04	0	0.01	0	0	0
20	0	0	0.04	0.79	0	0.06	0.01	0	0	0	0	0
21	0	0	0	0	0	0.08	0.76	0.13	0	0	0	0
22	0.11	0	0	0	0	0.27	0	0	0	0.05	0	0
23	0	0	0	0	0.38	0.24	0	0	0	0.03	0.04	0
24	0	0	0	0	0.01	0	0.07	0	0.2	0	0	0.16
25	0	0.01	0	0	0.17	0.04	0	0	0.26	0	0	0
26	0	0.01	0	0	0.99	0.06	0	0	0.16	0	0	0.01
27	0	0	0	0.13	0	0.01	0	0	0.41	0.03	0	0.61
28	0	0	0	0.07	0	0	0.16	0	0.02	0.13	0.12	0
29	0	0.03	0.08	0	0.25	0.1	0.09	0	0.18	0	0	0
30	0	0	0.26	0	0.05	0.06	0.01	0	0.07	0.57	0	0
31	0	0	0	0.01	0	0.28	0	0	0.09	0	0	0
total	0.23	0.33	1.08	2.97	3.13	2.53	2.7	2.04	2.73	3.14	1.43	2.68
NWS	0.79	1.1	1.79	3.48	6.05	5.92	5.7	4.21	3.75	2.51	1.66	1.44
actual	0.23	0.56	1.64	4.61	7.74	10.27	12.97	15.01	17.74	20.88	22.21	24.99
avg d	0.79	1.89	3.68	7.16	13.24	19.13	24.83	29.04	32.79	35.3	36.96	38.4

12-month total 24.99
12-month NWS avg 38.4
departure 35%



Summary of Storms Sampled 7/1/00 - 6/30/01

Storm Date	Depth, In.	Dur, hr	Max Int, In/hr	24hrant, In	48hrant, In	Dryant, hr	Dryant, Days	Load Factor	Event Type	Comment
6/27/01	0.52	20	0.23	0	0	58	2.4	13.3	NPDES Storm	
6/11/01	1.26	22	0.26	0.01	0.09	22	0.9	5.7	NPDES Storm	IWS pump station bypass to SDN2
5/14/01	0.48	16	0.08	0.01	0.02	24	1.0	1.9	NPDES Storm	
4/5/01	0.23	9	0.05	0	0.01	32	1.3	1.6	NPDES Storm	
3/27/01	0.39	8	0.1	0.01	0.19	19	0.8	1.9	NPDES Storm	
3/15/01	0.32	14	0.05	0	0.11	43	1.8	2.2	NPDES Storm	
3/1/01	0.27	6	0.11	0	0	127	5.3	14.0	NPDES Storm	
12/21/00	0.09	4	0.05	0.01	0.05	22	0.9	1.1	NPDES Storm	
12/14/00	0.29	7	0.08	0	0	123	5.1	9.8	NPDES Storm	
2/16/01	0.46	96	0.14	0.04	0.04	29	1.2	4.1	Unknown	
2/8/01	0.3	7	0.14	0	0	55	2.3	7.7	NPDES Storm	coincided with major (runway) deicing event
2/1/01	0.29	13	0.09	0	0	62	2.6	5.6	NPDES Storm	coincided with major (runway) deicing event
1/28/01	0.26	8	0.09	0	0	101	4.2	9.1	NPDES Storm	
1/3/01	0.44	15	0.13	0	0	77	3.2	10.0	NPDES Storm	
11/29/00	0.29	26	0.06	0	0	54	2.3	3.2	NPDES Storm	
11/23/00	0.37	9	0.1	0	0	330	13.8	33.0	NPDES Storm	
11/8/00	0.77	9	0.18	0	0	54	2.3	9.7	NPDES Storm	
10/19/00	1.21	26	0.19	0	0.36	41	1.7	7.8	NPDES Storm	
10/17/00	0.36	4	0.12	0	0.51	27	1.1	3.2	NPDES Storm	
10/9/00	0.37	8	0.29	0	0	196	8.2	56.8	NPDES Storm	
8/18/00	0.27	11	0.08	0	0	631	26.3	50.5	NPDES Storm	IWS pump station bypass to SDN2
7/3/00	0.29	12	0.13	0	0.02	30	1.3	3.9	NPDES Storm	
Count	22	22	22	22	22	22	22	22		
Median	0.34	10	0.11	0	0	54	2.3	6.7		
Average	0.43	16	0.13	0.00	0.06	98	4.1	11.6		

load factor = maxint (in/hr)*dryant(hrs)
 Event Type defined in Procedure Manual for Stormwater Monitoring
 "dur" = 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 in.) rainfall



9/28/01 2:30:26 PM

Estimated Peak Runoff Rates (gpm) for Storm Events Monitored 7/1/00 - 6/30/01

Storm Date	Peak RI, In./hr	002 SDE-4	003 SDS-1	004 SDS-2	005 SDS-3	006 SDN-1	007 SDN-2	008 SDN-3	009 SDS-4	010 SDS-7	011 SDN-4	012 EY	013 TY	014 SDS-6	015 SDS-5
6/27/01	0.23	10,440	900	410	27,200	1,040	3,650	3,060	840	1,300	120	73	73	1,376	1,100
6/11/01	0.26	11,800	1,020	460	30,700	1,180	4,120	3,450	950	1,470	136	83	83	1,555	1,240
5/14/01	0.08	3,630	310	140	9,400	360	1,270	1,060	290	450	42	25	25	478	380
4/5/01	0.05	2,270	200	89	5,900	230	790	660	180	280	26	16	16	299	240
3/27/01	0.1	4,540	390	180	11,800	450	1,590	1,330	360	560	52	32	32	598	480
3/15/01	0.05	2,270	200	89	5,900	230	790	660	180	280	26	16	16	299	240
3/1/01	0.11	4,990	430	200	13,000	500	1,740	1,460	400	620	57	35	35	658	520
2/16/01	0.14	6,350	550	250	16,500	630	2,220	1,860	510	790	73	44	44	837	670
2/8/01	0.14	6,350	550	250	16,500	630	2,220	1,860	510	790	73	44	44	837	670
2/1/01	0.09	4,080	350	160	10,600	410	1,430	1,200	330	510	47	29	29	538	430
1/28/01	0.09	4,080	350	160	10,600	410	1,430	1,200	330	510	47	29	29	538	430
1/3/01	0.13	5,900	510	230	15,400	590	2,060	1,730	470	730	68	41	41	777	620
12/21/00	0.05	2,270	200	89	5,900	230	790	660	180	280	26	16	16	299	240
12/14/00	0.08	3,630	310	140	9,400	360	1,270	1,060	290	450	42	25	25	478	380
11/29/00	0.06	2,720	230	110	7,100	270	950	800	220	340	31	19	19	359	290
11/23/00	0.1	4,540	390	180	11,800	450	1,590	1,330	360	560	52	32	32	598	480
11/8/00	0.18	8,170	700	320	21,300	810	2,850	2,390	660	1,020	94	57	57	1,077	860
10/19/00	0.19	8,620	740	340	22,400	860	3,010	2,520	690	1,070	99	60	60	1,136	910
10/17/00	0.12	5,440	470	210	14,200	540	1,900	1,590	440	680	63	38	38	718	570
10/9/00	0.29	13,160	1,140	520	34,300	1,310	4,600	3,850	1,060	1,640	152	92	92	1,734	1,380
8/18/00	0.08	3,630	310	140	9,400	360	1,270	1,060	290	450	42	25	25	478	380
7/3/00	0.13	5,900	510	230	15,400	590	2,060	1,730	470	730	68	41	41	777	620
A = total Basin Area, ac		149.0	10.7	13.2	462.0	13.5	70.0	63.4	14.0	30.2	1.5	0.8	0.8	49.6	33.9
Ai = impervious area, ac		97.0	9.2	1.0	224.0	10.2	27.0	20.8	7.0	7.6	1.2	0.8	0.8	1.3	3.2
Ap = pervious area, ac		52.0	1.5	12.2	238.0	3.3	43.0	42.6	7.0	22.6	0.3	0.0	0.0	48.2	30.7
Cr = (0.90(Ai)+0.25(Ap))/A		0.67	0.81	0.30	0.57	0.74	0.50	0.46	0.58	0.41	0.77	0.90	0.90	0.27	0.31

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=C/A.

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2001AppendixA Peak Runoff

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Estimated Runoff Volumes (gal) for Storm Events Monitored 7/1/00 - 6/30/01

Storm Date	Depth, In.	002 SDE-4	003 SDS-1	004 SDS-2	005 SDS-3	006 SDN-1	007 SDN-2	008 SDN-3	009 SDS-4	010 SDS-7	011 SDN-4	012 EY	013 TY	014 SDS-6	015 SDS-5
6/27/01	0.52	1,327,000	39,000	56,000	2,676,000	161,000	203,000	313,000	114,000	177,000	17,000	10,000	187,000	150,000	
6/11/01	1.28	3,647,000	116,000	138,000	8,234,000	439,000	943,000	1,070,000	280,000	435,000	41,000	25,000	460,000	367,000	
5/14/01	0.48	1,107,000	34,000	52,000	2,403,000	134,000	209,000	253,000	105,000	163,000	16,000	10,000	173,000	138,000	
4/5/01	0.23	182,000	6,000	25,000	394,000	22,000	35,000	40,000	51,000	79,000	8,000	5,000	83,000	66,000	
3/27/01	0.39	687,000	21,000	42,000	1,490,000	83,000	129,000	156,000	86,000	133,000	13,000	8,000	140,000	112,000	
3/15/01	0.32	428,000	13,000	35,000	928,000	52,000	81,000	96,000	70,000	109,000	11,000	7,000	115,000	92,000	
3/1/01	0.27	279,000	9,000	29,000	605,000	34,000	53,000	62,000	60,000	92,000	9,000	6,000	97,000	78,000	
2/16/01	0.46	1,005,000	31,000	50,000	2,182,000	122,000	189,000	230,000	101,000	157,000	15,000	9,000	166,000	132,000	
2/8/01	0.3	365,000	11,000	33,000	791,000	44,000	69,000	82,000	66,000	102,000	10,000	6,000	108,000	86,000	
2/1/01	0.29	335,000	11,000	32,000	726,000	41,000	63,000	75,000	64,000	99,000	10,000	6,000	105,000	84,000	
1/28/01	0.26	253,000	8,000	28,000	548,000	31,000	48,000	56,000	57,000	89,000	9,000	5,000	94,000	75,000	
1/3/01	0.44	908,000	28,000	48,000	1,971,000	110,000	171,000	207,000	97,000	150,000	14,000	9,000	158,000	127,000	
12/21/00	0.09	0	0	0	0	0	0	0	0	0	0	0	0	0	
12/14/00	0.29	335,000	11,000	32,000	726,000	41,000	63,000	75,000	64,000	99,000	10,000	6,000	105,000	84,000	
11/29/00	0.29	335,000	11,000	32,000	726,000	41,000	63,000	75,000	64,000	99,000	10,000	6,000	105,000	84,000	
11/23/00	0.37	607,000	19,000	40,000	1,316,000	74,000	114,000	138,000	81,000	126,000	12,000	8,000	133,000	107,000	
11/8/00	0.77	2,040,000	62,000	83,000	4,289,000	247,000	388,000	522,000	169,000	262,000	25,000	15,000	277,000	221,000	
10/19/00	1.21	3,414,000	108,000	130,000	7,641,000	411,000	852,000	985,000	265,000	411,000	38,000	24,000	435,000	347,000	
10/17/00	0.36	569,000	17,000	39,000	1,233,000	69,000	107,000	129,000	79,000	123,000	12,000	7,000	130,000	104,000	
10/9/00	0.37	607,000	19,000	40,000	1,316,000	74,000	114,000	138,000	81,000	126,000	12,000	8,000	133,000	107,000	
8/18/00	0.27	279,000	9,000	29,000	605,000	34,000	53,000	62,000	60,000	92,000	9,000	6,000	97,000	78,000	
7/3/00	0.29	335,000	11,000	32,000	726,000	41,000	63,000	75,000	64,000	99,000	10,000	6,000	105,000	84,000	
A = total Basin Area, ac		149.0	10.7	13.2	462.0	13.5	70.0	63.4	14.0	30.2	1.5	0.8	49.6	33.9	
AI = impervious area, ac		97.0	9.2	1.0	224.0	10.2	27.0	20.8	7.0	7.6	1.2	0.8	1.3	3.2	
Ap = pervious area, ac		52.0	1.5	12.2	238.0	3.3	43.0	42.6	7.0	22.6	0.3	0.0	48.2	30.7	
Cf = (0.90(AI)+0.25(Ap))/A		0.67	0.81	0.30	0.57	0.74	0.50	0.46	0.58	0.41	0.77	0.90	0.27	0.31	
Max runoff, gal/in		4,045,708	290,531	358,412	12,544,409	366,557	1,900,668	1,721,462	380,134	820,002	40,729	21,179	1,346,759	920,466	
Ct Est runoff, gal/in		2,723,386	235,004	107,252	7,089,492	271,660	951,692	797,466	218,577	339,133	31,361	19,061	358,955	286,594	

Only certain outfalls sampled during a particular event
 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".

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APPENDIX B TABULAR NPDES SAMPLE DATA SUMMARIES

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9/27/01 10:33:01 AM

NPDES Grab Sample Data 9/1/94 - 6/30/01

STORM CHARACTERISTICS

SAMPLE DATA

Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	MaxInt in/hr	24hrant in	48hrantDyrant in	Pur- pose	Event	Ground Deice?	pH	FOG	TPH (IR)	TPH- Dx	TPH- D	TPH- MO	Facals (MFPN)	Facals (MF)	Comments
1	SDE4	SDE4 111384 grab	1995	11/1/94	0.28	14			48	NPDES	1	No		2.8	1.1				1100		
2	SDE4	SDE4 010795 grab	1995	1/7/95	0.21	82		0	252	NPDES	1	No	7	3.6	2.8				45		
3	SDE4	SDE4 041095 grab	1995	4/10/95	0.29	18		0	56	NPDES	1	No	6.6	< 1.1	1.1				280		
4	SDE4	SDE4 072695 grab	1996	7/26/95	0.41	36		0		NPDES	1	No	6.9	5.7	3.6				> 4000		
5	SDE4	SDE4 102695 grab	1996	10/25/95	0.28	8		0.01		NPDES	1	No	7.1	5.9	< 1.0				300		
6	SDE4	SDE4 020496 GRAB	1996	2/3/96	1.6	6				NPDES	1	Yes	7.9	1.7	8.8				22		
7	SDE4	SDE4 032296 GRAB	1996	3/22/96	0.21			0		Slip Ag	1	No	7.1	2.8	3.9				20		
8	SDE4	SDE4 041696 GRAB	1996	4/15/96	0.49	16		0.09		NPDES	1	No	6.39	2.8	3.35				17		
9	SDE4	SDE4 071796 GRAB	1997	7/17/96	0.27	31		0		NPDES	1	No							220		
10	SDE4	SDE4 080396 GRAB	1997	9/3/96	0.29	12		0	78	NPDES	1	No	7.31	3.1	2.64				> 1600		backup data in case short on data for 96 Q4
11	SDE4	SDE4 121596 GRAB	1997	12/15/96	0.11	4		0	72	NPDES	2	No	6.61	2.9	1.80				50		
12	SDE4	SDE4 121996 GRAB	1997	12/19/96	0.36	37		0	103	NPDES	1	No	6.45	3.3	1.97				220		
13	SDE4	SDE4 011697 GRAB	1997	1/16/97	1.21	23		0	154	NPDES	1	No	7.08	9	10				> 1600		
14	SDE4	SDE4 012797 GRAB	1997	1/27/97	0.41	26		0	109	Slip Ag	1	No	6.17	< 1.0	5.0				50		FOG result not representative, laboratory error, see letter of May 15, 1997
15	SDE4	SDE4 030597 GRAB	1997	3/5/97	0.39	20		0.24	42	NPDES	1	No	6.33	103 R	3.08				> 1600		
16	SDE4	SDE4 053097	1997	5/30/97	1.64	36		0.04	14	NPDES	1	No		1.1	1.2						backup FOG/TPH for March 1997 Lab errors (SDE4 030597 grab)
17	SDE4	SDE4 061697 GRAB	1997	6/16/97	0.36	28		0	135	NPDES	1	No	6	1.6	1.48				188		
18	SDE4	SDE4 102697 GRAB	1998	10/26/97	0.47	10.8		0.08	26	NPDES	1	No	6.5	< 1.0	2.09				> 1600		
19	SDE4	SDE4 121597 GRAB	1998	12/15/97	1	33		0	67	NPDES	1	No	6.59	1.8	2.3				60		fecal coliform result not representative: exceeded holding time by 9+ hours
20	SDE4	SDE4 030198 GRAB	1998	3/1/98	0.98	86		0.07	6	NPDES	1	No	7.15		1.58	< 0.09	1.54		500 R		
21	SDE4	SDE4 040798 GRAB	1998	4/7/98	0.03	0.5		0.04	67	NPDES	2	No	7.03		2.4	3.4	< 0.05	3.4	110		
22	SDE4	SDE4 041098 GRAB	1998	4/9/98	0.09	17		0	62	NPDES	2	No	6.86		2.27	3.1	< 0.10	3.05	900		
23	SDE4	SDE4 042398 GRAB	1998	4/23/98	0.46	20		0	264	NPDES	1	No	6		3.5	2.5	< 0.05	2.48	500		
24	SDE4	SDE4 050898 GRAB	1998	5/9/98	0.12	8		0	360	NPDES	2	No	7.03		1.8	2.53	0.09	2.44	1600		
25	SDE4	SDE4 051498 GRAB	1998	5/14/98	0.21	8		0.01	125	NPDES	1	No	6.93		2.6	3.04	0.1	2.94	80		
26	SDE4	SDE4 062498 GRAB	1998	6/24/98	0.43	4		0	268	NPDES	1	No	6.94		1.9	2.77	0.84	1.93	300		
27	SDE4	SDE4 071498 GRAB	1999	7/14/98	0.13	16	0.04	0	264	NPDES	1	No	6.72		2.8	5.56	< 0.05	5.54	> 1600		
28	SDE4	SDE4 081698 GRAB	1999	8/16/98	0.31	10	0.25	0	792	NPDES	1	No	6.82		< 0.25	0.21	< 0.08	0.17	500	1220	thunderstorm, 0.25 in/hr

Full Data Set (No Values Trimmed)

R=Rejected Non-Representative Data - Refer to line comment for detail
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9/27/01 10:33:03 AM

NPDES Grab Sample Data 9/1/94 - 6/30/01

SAMPLE DATA			STORM CHARACTERISTICS										CONCENTRATION, mg/L								
Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Maxint hr/hr	24hrant in	48hrant in	Dryant in	Pur- pose	Event	Ground Deice?	pH	FOG	TPH (IR)	TPH- Dk	TPH- MO	TPH- MFN	Fecals (MF)	Comments
29	SDE4	SDE4 091808 GRAB	1999	9/18/98	0.19	20	0.16	0	0	456	NPDES	2	No	7.42		2.11	< 0.05	2.09	500	10600	
30	SDE4	SDE4 092498 GRAB	1999	9/24/98	0.47	23	0.26	0	0	148	NPDES	1	No	6.79		1.19	< 0.05	1.17	> 1600		
31	SDE4	SDE4 100398 GRAB	1999	10/3/98	0.4	3	0.22	0	0.07	36	NPDES	1	No	6.67		4.94	< 0.05	4.92	> 1600	> 186000	
32	SDE4	SDE4 110398 GRAB	1999	11/3/98	1.62	39	0.48	0	0.08	35	NPDES	1	No	6.58		2.85	< 0.05	2.83	> 1600		concurrent WET sample
33	SDE4	SDE4 111998 GRAB	1999	11/19/98	2.34	66	0.18	0	0	73	NPDES	1	No	9		1.48	< 0.05	1.44	240		
34	SDE4	SDE4 121098 GRAB	1999	12/10/98	0.14	4	0.03	0	0	49	NPDES	2	No	6.62		0.88	< 0.05	0.86	220		
35	SDE4	SDE4 121798 GRAB	1999	12/17/98	0.11	4	0.03	0	0.02	33	NPDES	2	No	6.47		3.57	< 0.05	3.55	900		fecals not analyzed due to holiday lab closure
36	SDE4	SDE4 122498 GRAB	1999	12/24/98	1.19	39	0.16	0	0	153	NPDES	1	Yes	7.76		8.66	< 0.05	8.64			concurrent WET lest
37	SDE4	SDE4 012098 GRAB	1999	1/20/99	0.42	28	0.09	0.01	0.95	22	NPDES	1	No	6.98		3.03	< 0.06	3.00	170		concurrent WET sample
38	SDE4	SDE4 021898 GRAB	1999	2/18/99	0.6	32	0.06	0.01	0.35	20	NPDES	1	No	10.7		0.27	< 0.05	0.25	< 2		
39	SDE4	SDE4 030698 GRAB	1999	3/6/99	0.28	15	0.05	0	0	96	NPDES	1	No	6.5		3.68	< 0.05	3.64	30		
40	SDE4	SDE4 031298 GRAB	1999	3/12/99	0.63	23	0.07	0	0	71	NPDES	1	No	6.94		1.99	< 0.05	1.97	500		
41	SDE4	SDE4 032498 GRAB	1999	3/24/99	0.28	19	0.06	0	0.15	40	NPDES	1	No	6.32		3.17	0.06	3.11	500		
42	SDE4	SDE4 032798 GRAB	1999	3/27/99	0.24	9	0.07	0	0.09	28	NPDES	1	No	6.45		2.63	0.05	2.58	50		
43	SDE4	SDE4 062098 GRAB	1999	6/20/99	0.21	38	0.03	0	0	48	NPDES	1	No	6.65		2.64	< 0.05	2.62	> 1600		
44	SDE4	SDE4 070298 grab	2000	7/2/99	0.3	6	0.11	0	0	103	NPDES	1	No	6.58		1.47	< 0.05	1.47	900		
45	SDE4	SDE4 111698 GRAB	2000	11/16/99	0.6	15	0.07	0.01	0.08	23	NPDES	1	No	6.25		0.89	< 0.05	0.97	> 1600		
46	SDE4	SDE4 112498 GRAB	2000	11/24/99	0.33	16	0.05	0	0.15	28	NPDES	1	No	6.85		1.73	< 0.10	1.68	21		
47	SDE4	SDE4 120498 grab	2000	12/4/99	0.24	10	0.1	0	0	60	NPDES	1	No	6.77		0.97	< 0.08	0.93	50		
48	SDE4	SDE4 031300 grab	2000	3/13/00	0.47	9	0.13	0	0	49	NPDES	1	No	6.67		1.88	< 0.05	1.84	170		
49	SDE4	SDE4 041300 GRAB	2000	4/13/00	0.34	12	0.08	0	0	74	NPDES	1	No	6.69		0.31	< 0.05	0.29	130		
50	SDE4	SDE4 070200 grab	2001	7/3/00	0.29	12	0.13	0	0.02	30	NPDES	1	No	6.45		0.43	< 0.05	0.41	< 2		
51	SDE4	SDE4 101700 grab	2001	10/17/00	0.36	4	0.12	0	0.51	27	NPDES	1	No	7.62		3.33	< 0.05	3.3	1600		
52	SDE4	SDE4 110600 grab	2001	11/6/00	0.77	9	0.18	0	0	54	NPDES	1	No	7.58		1.22	< 0.08	1.18	300		
53	SDE4	SDE4 112300 grab	2001	11/23/00	0.37	9	0.1	0	0	330	NPDES	1	No	7.04		0.69	< 0.05	0.67	50		
54	SDE4	SDE4 121400 GRAB	2001	12/14/00	0.29	7	0.08	0	0	123	NPDES	1	No	7.96		2.45	< 0.05	2.43	30		
55	SDE4	SDE4 010301 grab	2001	1/3/01	0.44	15	0.13	0	0	77	NPDES	1	No	6.28		3.82	< 0.05	3.80	110		
56	SDE4	SDE4 031501 GRAB	2001	3/15/01	0.32	14	0.05	0	0.11	43	NPDES	1	No	6.4		1.76	< 0.05	1.74	50		
57	SDE4	SDE4 032701 GRAB	2001	3/27/01	0.39	8	0.1	0.01	0.19	19	NPDES	1	No	7.57		1.44	< 0.06	1.41	500		
58	SDE4	SDE4 051401 GRAB	2001	5/14/01	0.48	16	0.08	0.01	0.02	24	NPDES	1	No	7.66		< 0.15	< 0.05	< 0.10	300		
59	SDE4	SDE4 062701-GRAB	2001	6/27/01	0.52	20	0.23	0	0	58	NPDES	1	No	6.59		1.87	< 0.05	1.65	1600		
60	SDS1	SDS1 101994 grab	1995	10/19/94	0.2	32			120		NPDES	1	No	5.76	1.1	< 1				10	

Full Data Set (No Values Trimmed)
R=Rejected Non-Representative Data - Refer to line comment for detail
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NPDES Grab Sample Data 9/1/94 - 6/30/01

STORM CHARACTERISTICS

SAMPLE DATA

Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Maxint in/hr	24hrant in	48hrant in	Dryant in	Pur- pose	Event	Delce?	Ground	pH	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-MO	Fecals (MPN)	Fecals (MF)	Comments
61	SDS1	SDS1 021695 grab	1995	2/15/95	1.1	56		0	0	86	NPDES	1	Yes	No	6.6	3.4	5.3					< 8	
62	SDS1	SDS1 051195 grab	1995	5/11/95	0.2	8		0.12			NPDES	1	No	No	7.4	10	< 1					80	
63	SDS1	SDS1 060495 grab	1995	6/4/95	0.7	28		0	384		NPDES	1	No	No	6.4	5.6	5.4					4	
64	SDS1	SDS1 080795 grab	1996	8/6/95	0.4	8		0			NPDES	1	No	No	7.2	3.3	< 1.0					200	
65	SDS1	SDS1 101695 grab	1996	10/15/95	0.35	12		0			NPDES	1	No	No	7.1	1.2	< 1.0					< 1	
66	SDS1	SDS1 011396 GRAB	1996	1/13/96	0.37	20		0			NPDES	1	No	No	7.1	< 1.0	1.6					4	
67	SDS1	SDS1 041696 GRAB	1996	4/15/96	0.48	16		0.08			NPDES	1	No	No	6.65	2.5	0.32					23	
68	SDS1	SDS1 042296 GRAB	1996	4/22/96	2.83	8		0			Slip Ag	1	No	No	7.54	1.9	0.58					2 R	
69	SDS1	SDS1 070396 GRAB	1997	7/3/96	0.23	12		0			NPDES	1	No	No	5.88	< 1.0	0.35						Fecals exceeded 30 hour holding time, results not representative
70	SDS1	SDS1 071796 GRAB	1997	7/17/96	0.27	31		0			NPDES	1	No	No									Fecals make up for 7/3/96
71	SDS1	SDS1 080296 GRAB	1997	8/2/96	1.01	27		0	325		Slip Ag	1	No	No	5.38	< 1.0	0.42					> 1600	
72	SDS1	SDS1 120496 GRAB	1997	12/4/96	0.82	7.5		0.16	44		NPDES	1	No	No	6.81	2.4	0.35					130	
73	SDS1	SDS1 011697 GRAB	1997	1/16/97	1.21	23		0	154		NPDES	1	No	No	6.62	< 1.0	2.9					1900	
74	SDS1	SDS1 041397 GRAB	1997	4/13/97	0.31	12		0.04			NPDES	1	No	No	7.13	< 1.0	2.8					350	
75	SDS1	SDS1 061797 GRAB	1997	6/16/97	0.36	26		0	135		NPDES	1	No	No	7	< 1.0	0.95					23	
76	SDS1	SDS1 102697 GRAB	1996	10/26/97	0.47	10.8		0.08	26		NPDES	1	No	No	5.86	< 1.0	0.64					> 1600	
77	SDS1	SDS1 111997 GRAB	1998	11/19/97	0.65	39		0.12	24		NPDES	1	No	No								80	
78	SDS1	SDS1 121597 GRAB	1998	12/15/97	1	33		0	87		NPDES	1	No	No	6.09	< 1.0	1.3					1800	
79	SDS1	SDS1 030898 GRAB	1998	3/8/98	0.66	27		0	132		NPDES	1	No	No	6.22		0.95					23	
80	SDS1	SDS1 062099 GRAB 1	1999	6/20/99	0.21	36	0.03	0	0	46	NPDES	1	No	No	6.66			1.56	< 0.05	1.54		> 1600	
81	SDS1	SDS1 070299 GRAB 1	2000	7/2/99	0.3	6	0.11	0	0	103	NPDES	1	No	No	6.82			0.76	< 0.05	0.76		900	
82	SDS1	SDS1 070299 GRAB 2	2000	7/2/99	0.3	6	0.11	0	0	103	Slip Trace	1	No	No	6.85								
83	SDS1	SDS1 012801 GRAB	2001	1/28/01	0.26	8	0.09	0	0	101	NPDES	1	No	No	7.75			0.72	< 0.05	0.7		< 2	
84	SDS1	SDS1 030101 GRAB	2001	3/1/01	0.27	6	0.11	0	0	127	NPDES	1	No	No	7.40			0.61	< 0.05	0.59		< 2	
85	SDS2	SDS2 051095 grab	1995	5/9/95	0.12	7.5		0	102		NPDES	1	No	No	7.2	3.4	< 1					440	
86	SDS2	SDS2 051195 grab	1995	5/11/95	0.2	8		0.12			NPDES	1	No	No	7.4	1.4	< 1					760	
87	SDS2	SDS2 061095 grab	1995	6/10/95	0.3	10		0	96		NPDES	1	No	No	7.1	1.8	< 1					1400	
88	SDS2	SDS2 060595 grab	1996	6/5/95							NPDES	1	No	No	6.7	2.2	< 1.0					2600	
89	SDS2	SDS2 112396 GRAB	1997	11/23/96	0.63	34.1		0	72		NPDES	1	Yes	No	6.71	< 1.0	< 0.25					23	

Full Data Set (No Values Trimmed)

R=Rejected Non-Representative Data - Refer to line comment for detail
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NPDES Grab Sample Data 9/1/94 - 6/30/01

SAMPLE DATA			STORM CHARACTERISTICS										CONCENTRATION, mg/L									
Seq	Out fail	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Maxhit in/hr	24hrant in	48hrantDryant in	Pur. pose	Event	Deice?	pH	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-MO	Fecals (MPN)	Fecals (MF)	Comments	
90	SDS2	SDS2 120496 GRAB	1997	12/4/96	0.82	7.5	0.16	44		NPDES	1	No	6.66	<10	<0.25				8			
91	SDS2	SDS2 011697 GRAB	1997	1/16/97	1.21	23	0	154		Slip Ag	1	No	6.77	<10	<0.25			220			last for slip ag	
92	SDS2	SDS2 021197 GRAB	1997	2/11/97	0.48	18	0	205		Slip Ag	1	No	6.76	4	<0.25			11				
93	SDS2	SDS2 111198 GRAB	1999	11/1/98	0.98	62	0.15	0	0.05	NPDES	1	No	7.45			<0.16	<0.05	<0.11	110		annual sample	
94	SDS2	SDS2 050799 GRAB	1999	5/8/99	0.25	22	0.06	0	0	NPDES	1	No	7.45			0.31	<0.05	0.29	900			
95	SDS2	SDS2 070300 GRAB	2001	7/3/00	0.28	12	0.13	0	0.02	NPDES	1	No	7.88			<0.25	<0.05	<0.2	17			
96	SDS3	SDS3 081494 grab	1995	9/13/94	0.15	9		118		NPDES	1	No	7.14	83	<1					20		
97	SDS3	SDS3 101394 grab	1995	10/13/94	0.32	14		400		NPDES	1	No		14	<1					<2		
98	SDS3	SDS3 111894 grab	1995	11/18/94	0.42	24		0.05	52	NPDES	1	No		<1	<1				2			
99	SDS3	SDS3 010795 grab	1995	1/7/95	0.21	62		0	252	NPDES	1	No	7.2	<13	<1				<2			
100	SDS3	SDS3 041295 grab	1995	4/10/95	0.28	18		0	56	NPDES	1	No	7.3	<11	<1				<2			
101	SDS3	SDS3 072895 grab	1996	7/28/95	0.41	36		0		NPDES	1	No	7.7	<13	<1.0				<3			
102	SDS3	SDS3 101895 grab	1997	10/15/95	0.35	12		0		NPDES	1	No	7.4	14	<1.0				<2			
103	SDS3	SDS3 011396 GRAB	1996	1/13/96	0.37	20		0		NPDES	1	No	7.4	<10	<1.0				13			
104	SDS3	SDS3 032296 grab	1996	3/22/96	0.21			0		Slip Ag	1	No	7.5	<10	<1.0				<2		fecals make up for 7/3/98 > hold time	
105	SDS3	SDS3 041698 GRAB	1996	4/15/96	0.49	16		0.09		NPDES	1	No	7.38	12	0.31				<2			
106	SDS3	SDS3 071798 GRAB	1997	7/17/98	0.27	31		0		NPDES	1	No							<2			
107	SDS3	SDS3 080298 GRAB	1997	8/2/98	1.01	27		0	325	NPDES	1	No	7.35	<10	0.30				8			
108	SDS3	SDS3 090398 GRAB	1997	9/3/98	0.28	12		0	76	NPDES	1	No	6.96	<10	<0.25				> 1600			
109	SDS3	SDS3 102198 GRAB	1997	10/21/98	0.68	41		0	64	NPDES	1	No	6.97	<10	<0.25				130			
110	SDS3	SDS3 112398 GRAB	1997	11/23/98	0.63	34.1		0	72	Slip Ag	1	Yes	7.29	<10	<0.25				<2			
111	SDS3	SDS3 011697 GRAB	1997	1/16/97	1.21	23		0	154	NPDES	1	No	6.87	3.0	0.54				30			
112	SDS3	SDS3 030597 GRAB	1997	3/5/97	0.39	20		0.24	42	NPDES	1	No	7.22	<10	<0.25				<2			
113	SDS3	SDS3 060397 GRAB	1997	6/3/97	0.26	16		0	76	NPDES	1	No	7.49	<10	0.37				130			
114	SDS3	SDS3 102697 GRAB	1998	10/26/97	0.47	10.6		0.08	26	NPDES	1	No	7.13	<10	<0.25				13			
115	SDS3	SDS3 012998 GRAB	1998	1/29/98	0.2	14		0	107	NPDES	1	No	7.28	11	<0.25				<2			
116	SDS3	SDS3 030198 GRAB	1998	3/1/98	0.98	66		0.07	6	NPDES	1	No	7.69			0.08	0.11	0.11	<2		back-up monthly sample in case 3/1/98 sample didn't qualify under new permit	
117	SDS3	SDS3 030898 GRAB	1998	3/8/98	0.66	27		0	132	NPDES	1	No				<0.25	<0.15	<0.10	<2			
118	SDS3	SDS3 042398 GRAB	1998	4/23/98	0.46	20		0	284	NPDES	1	No	7.39	<0.25	<0.15				<0.10			
119	SDS3	SDS3 050898 GRAB	1998	5/9/98	0.12	6		0	360	NPDES	2	No	7.07	0.34	0.33				0.31			
120	SDS3	SDS3 051498 GRAB	1998	5/14/98	0.21	6		0.01	125	NPDES	1	No	7.23	0.26	0.18				0.13	70		considerable pollen in sample

Full Data Set (No Values Trimmed)
 R-Rejected Non-Representative Data - Refer to line comment for detail
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9/27/01 10:33:05 AM

NPDES Grab Sample Data 9/1/94 - 6/30/01

STORM CHARACTERISTICS

SAMPLE DATA

Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Max Intensity in/hr	24hrant 48hrantDryant in in in	Pur- pose	Event	Ground Deice?	pH	FOG	TPH (IR)	TPH- Dx	TPH- D	TPH- MO	Fecals (MPN)	Fecals (MF)	Comments
121	SDS3	SDS3 081098 GRAB	1998	8/10/98	0.28	10	0	0	288	NPDES	1	No	7.51	< 0.25	< 0.15	< 0.05	< 0.10	4		
122	SDS3	SDS3 071598 GRAB	1999	7/14/98	0.13	16	0.04	0	264	NPDES	2	No	7.32	0.38	0.2	< 0.05	0.18	30		
123	SDS3	SDS3 081698 GRAB	1999	8/16/98	0.31	10	0.25	0	782	NPDES	1	No	7.75	< 0.25	0.19	< 0.05	0.17	500		thunderstorm, 0.25 in/hr
124	SDS3	SDS3 091898 GRAB	1999	9/18/98	0.19	20	0.16	0	456	NPDES	2	No	7.71	0.15	0.15	< 0.05	0.13	300	360	
125	SDS3	SDS3 082498 GRAB	1999	8/24/98	0.47	23	0.28	0	148	NPDES	1	No	7.14	0.56	0.21	< 0.05	0.19	900	660	
126	SDS3	SDS3 100398 GRAB	1999	10/3/98	0.4	3	0.22	0	36	NPDES	1	No	6.99	0.15	0.53	< 0.05	0.51	50		
127	SDS3	SDS3 102798 GRAB	1999	10/27/98	0.64	9	0.19	0	72	NPDES	1	No	7.34	< 0.14	< 0.14	< 0.05	< 0.09	13		
128	SDS3	SDS3 111198 GRAB	1999	11/11/98	0.98	62	0.15	0	31	NPDES	1	No	7.1	0.35	0.35	< 0.05	0.33	30		concurrent WET sample
129	SDS3	SDS3 121098 GRAB	1999	12/10/98	0.14	4	0.03	0	49	NPDES	2	No	7.27	< 0.17	< 0.17	< 0.08	< 0.11	16		
130	SDS3	SDS3 121798 GRAB	1999	12/17/98	0.11	4	0.03	0	33	NPDES	2	No	7.09	< 0.15	< 0.15	< 0.05	< 0.10	24		fecals not analyzed due to holiday lab closure
131	SDS3	SDS3 122498 GRAB	1999	12/24/98	1.19	39	0.16	0	153	NPDES	1	Yes	7.62	0.47	0.47	< 0.05	0.45			
132	SDS3	SDS3 010999 GRAB	1999	1/9/99	0.27	21	0.05	0	54	NPDES	1	No	7.65	< 0.17	< 0.17	< 0.08	< 0.11	< 2		
133	SDS3	SDS3 011399 grab	1999	1/13/99	1.07	22	0.16	0	85	NPDES	1	No	7.5	0.28	0.28	< 0.05	0.24	23		concurrent WET sample
134	SDS3	SDS3 020399 GRAB	1999	2/3/99	0.28	19	0.07	0	27	NPDES	1	No	7.44	< 0.16	< 0.16	< 0.05	< 0.11	2		
135	SDS3	SDS3 030899 GRAB	1999	3/8/99	0.28	15	0.05	0	96	NPDES	1	No	7.01	< 0.15	< 0.15	< 0.05	< 0.10	< 2		
136	SDS3	SDS3 031299 GRAB	1999	3/12/99	0.83	23	0.07	0	71	NPDES	1	No	7.23	0.35	0.35	< 0.05	0.33	> 1000		
137	SDS3	SDS3 032499 GRAB	1999	3/24/99	0.28	19	0.08	0	40	NPDES	1	No	7.26	< 0.15	< 0.15	< 0.05	< 0.10	8		
138	SDS3	SDS3 062099 GRAB	1999	6/20/99	0.21	38	0.03	0	48	NPDES	1	No	7.36	< 0.16	< 0.16	< 0.05	< 0.11	220		
139	SDS3	SDS3 070299 GRAB	2000	7/2/99	0.3	6	0.11	0	103	NPDES	1	No	7.16	< 0.15	< 0.15	< 0.05	< 0.10	23		
140	SDS3	SDS3 110599 GRAB	2000	11/5/99	0.68	12	0.11	0	44	NPDES	1	No	7.53	< 0.15	< 0.15	< 0.05	< 0.10	16		
141	SDS3	SDS3 111699 GRAB	2000	11/16/99	0.6	15	0.07	0.01	23	NPDES	1	No	7.59	< 0.15	< 0.15	< 0.05	< 0.10	13		
142	SDS3	sd3 120499 GRAB	2000	12/4/99	0.24	10	0.1	0	60	NPDES	1	No	7.17	< 0.15	< 0.15	< 0.05	< 0.10	< 2		
143	SDS3	SDS3 120899 GRAB	2000	12/8/99	0.49	27	0.09	0	40	NPDES	1	No	7.38	< 0.15	< 0.15	< 0.05	< 0.10	< 2		
144	SDS3	SDS3 031300 grab	2000	3/13/00	0.47	9	0.13	0	49	NPDES	1	No	7.35	< 0.15	< 0.15	< 0.05	< 0.1	4		
145	SDS3	SDS3 041300 GRAB	2000	4/13/00	0.34	12	0.08	0	74	NPDES	1	No	7.69	< 0.15	< 0.15	< 0.05	< 0.10	6		
146	SDS3	SDS3 081800 grab	2001	8/18/00	0.27	11	0.08	0	631	NPDES	1	No	7.64	< 0.15	< 0.15	< 0.05	< 0.1	< 2		
147	SDS3	SDS3 101700 grab	2001	10/17/00	0.36	4	0.12	0	51	NPDES	1	No	7.33	< 0.15	< 0.15	< 0.05	< 0.1	13		
148	SDS3	SDS3 110800 grab	2001	11/8/00	0.77	9	0.18	0	54	NPDES	1	No	7.40	< 0.16	< 0.16	< 0.05	< 0.11	2		
149	SDS3	SDS3 112300 grab	2001	11/23/00	0.37	9	0.1	0	330	NPDES	1	No	7.30	< 0.16	< 0.16	< 0.05	< 0.11	8		
150	SDS3	SDS3 010301 grab	2001	1/3/01	0.44	15	0.13	0	77	NPDES	1	No	7.28	< 0.15	< 0.15	< 0.05	< 0.10	2		
151	SDS3	SDS3 012801 GRAB	2001	1/28/01	0.26	8	0.09	0	101	NPDES	1	No	7.18	< 0.15	< 0.15	< 0.05	< 0.1	28		
152	SDS3	SDS3 020101 GRAB	2001	2/1/01	0.26	13	0.09	0	82	NPDES	1	No	7.29	< 0.15	< 0.15	< 0.05	< 0.1	< 2		

Full Data Set (No Values Trimmed)
 R=Rejected Non-Representative Data - Refer to line comment for detail
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NPDES Grab Sample Data 9/1/94 - 6/30/01

SAMPLE DATA				STORM CHARACTERISTICS										CONCENTRATION, mg/L							
Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Measht in/hr	24hrant in	4hrantDryant in	Pur- pose	Event	Disca?	pH	FOG	TPH (IR)	TPH- D _x	TPH- MO	TPH- (MF)	Fecals (MPN)	Fecals (MF)	Comments
153	SDS3	SDS3 031501 GRAB	2001	3/15/01	0.32	14	0.05	0	0.11	43	NPDES	1	No	7.15	< 0.16	< 0.05	< 0.11	< 2			
154	SDS3	SDS3 032701 GRAB	2001	3/27/01	0.39	8	0.1	0.01	0.19	19	NPDES	1	No	7.24	< 0.15	< 0.05	< 0.10	< 2			
155	SDS3	SDS3 051401 GRAB	2001	5/14/01	0.48	16	0.08	0.01	0.02	24	NPDES	1	No	7.39	2.75	< 0.05	2.73	2			MO result is an anomaly. TPH result is an anomaly
156	SDS3	SDS3 082701-GRAB	2001	8/27/01	0.52	20	0.23	0	0	58	NPDES	1	No	7.01	< 0.15	< 0.05	< 0.10	30			
157	SDS4	SDS4 091494 grab	1995	9/13/94	0.15	9			118	NPDES	1	No	7.14	3	< 1			132			
158	SDS4	SDS4 101394 grab	1995	10/13/94	0.32	14		0	480	NPDES	1	No	7.02	12	< 1			70			
159	SDS4	SDS4 011295 grab	1995	1/11/95	0.3	60		0.04	24	NPDES	1	No	7.8	< 1	< 1			92			
160	SDS4	SDS4 051295 grab	1995	5/11/95	0.2	8		0.12		NPDES	1	No	7.5	1.8	< 1			16			
161	SDS4	SDS4 080795 grab	1998	8/6/95	0.4	8		0		NPDES	1	No	7.8	27	< 1.0			16			
162	SDS4	SDS4 101895 grab	1998	10/15/95	0.35	12		0		NPDES	1	No	7.7	17	< 1.0			< 55			
163	SDS4	SDS4 011498 GRAB	1999	1/13/98	0.37	20		0		NPDES	1	No	7.4	< 1.0	< 1.0			440			
164	SDS4	SDS4 041698 GRAB	1998	4/15/98	0.49	16		0.09		NPDES	1	No	7.83	27	< 0.25			350			
165	SDS4	SDS4 042298 GRAB	1998	4/22/98	2.83	8		0		Slp Ag	1	No	7.15	< 1.0	< 0.25			1800			
166	SDS4	SDS4 070398 GRAB	1997	7/3/98	0.23	12		0		NPDES	1	No	6.87	< 1.0	0.76			300 R			
167	SDS4	SDS4 071798 GRAB	1997	7/17/98	0.27	31		0		NPDES	1	No						500			
168	SDS4	SDS4 100398 GRAB	1997	10/4/98	0.59	8.1		0.08	18	NPDES	1	No	6.74	< 1.0	< 0.25			500			
169	SDS4	SDS4 120498 GRAB	1997	12/4/98	0.82	7.5		0.16	44	NPDES	1	No	6.78	< 1.0	< 0.25			80			
170	SDS4	SDS4 011897 GRAB	1997	1/16/97	1.21	23		0	154	NPDES	1	No	7.38	4.0	0.28			> 16000			
171	SDS4	SDS4 012797 GRAB	1997	1/27/97	0.41	28		0	108	Slp Ag	1	No	7.45	3.0	< 0.25			30			
172	SDS4	SDS4 041997 GRAB	1997	4/19/97	1.16	28		0	64	NPDES	1	No	7.4	< 1.0	< 1.0			50			
173	SDS4	SDS4 082497 GRAB	1996	8/25/97	0.2	10.5		0.07	96	NPDES	1	No	7.77	< 1.0	< 0.25			70			
174	SDS4	SDS4 111797 GRAB	1998	11/16/97	0.47	12.6		0	222	NPDES	1	No	7.48	< 1.0	< 0.25			29			
175	SDS4	SDS4 012898 GRAB	1998	1/28/98	0.2	14		0	107	NPDES	1	No	7.21	< 1.0	< 0.25			4			
176	SDS4	SDS4 030998 GRAB	1998	3/8/98	0.86	27		0	132	NPDES	1	No	7.5	< 1.0	< 0.25			< 2			
177	SDS4	SDS4 111998 GRAB	1998	11/19/98	2.34	66	0.18	0	73	NPDES	1	No	7.09					300			
178	SDS4	SDS4 050799 GRAB	1999	5/8/99	0.25	22	0.08	0	79	NPDES	1	No	7.48					900			
179	SDS4	SDS4 010301 grab	2001	1/30/01	0.44	15	0.13	0	77	NPDES	1	No	6.82					4			
180	SDS4	SDS4 032701 GRAB	2001	3/27/01	0.39	8	0.1	0.01	0.19	19	NPDES	1	No	7.38				11			

Fecals exceeded 30 hour holding time, results not representative

Fecals make up for 7/17/98 grab that exceeded holding time

matching composite not representative, not reported

extra grab (has makeup comp for 96qw)

78% RPD in lab dupe annual sample



9/27/01 10:33:07 AM

NPDES Grab Sample Data 9/1/94 - 6/30/01

STORM CHARACTERISTICS

SAMPLE DATA

CONCENTRATION, mg/L

Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Maxint in/hr	24hrant in	48hrant in	Dryant hr	Pur. pose	Event	Ground Deice?	pH	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-MO	Fecals (MPN)	Fecals (MF)	Comments	
181	SDS7	SDW3 051095 grab	1995	5/9/95	0.12	7.5	0	102			NPDES 1	No	No	7.3	<1	<1				1700			
182	SDS7	SDW3 051195 grab	1995	5/11/95	0.2	8	0.12				NPDES 1	No	No	7.4	1.1	<1				73			
183	SDS7	SDW3 061095 grab	1995	6/10/95	0.3	10	0	96			NPDES 1	No	No	7	<1.2	<1				1000			
184	SDS7	SDW3 061795 grab	1996	8/18/95	1.34	12	0.01				NPDES 1	No	No	7.2	2.9	6.6				30000			
185	SDS7up	SDW3 112398 GRAB	1997	11/23/98	0.63	34.1	0	72			NPDES 1	Yes	Yes	7.41	<1.0	0.28				50			
186	SDS7up	SDW3 011897 GRAB	1997	1/16/97	1.21	23	0	154			Slip Ag 1	No	No	6.7	<1.0					148			
187	SDS7up	SDW3 021197 GRAB	1997	2/11/97	0.46	18	0	205			Slip Ag 1	No	No	6.75	<1.0	<0.25				17		grab makes up for 12/4/98 missed grab	
188	SDS7up	SDW3 022697 GRAB	1997	2/26/97	0.24	25	0	187			Slip Ag 1	No	No	6.13	9.7	<0.25				<2		grab makes up for 1/27/97 missed grab	
189	SDS7up	SDW3 110498 GRAB	1999	11/3/98	1.62	39	0.48	0	0.08	35	NPDES 1	No	No			3.79	<0.05	3.77	500				
190	SDS7up	SDW3 021899 GRAB	1999	2/15/99	0.45	28	0.08	0	0	59	NPDES 1	No	No			0.14	<0.05	0.12	80		1998 annual sample		
191	SDS7up	SDW3 021899 GRAB	1999	2/16/99	0.6	32	0.06	0.01	0.35	20	NPDES 1	No	No			0.13	<0.05	0.11	<2		1998 annual sample		
192	SDS7up	SDW3 031299 GRAB	1999	3/12/99	0.83	23	0.07	0	0	71	NPDES 1	No	No			0.14	<0.08	0.11	2		1999 annual sample-no comp		
193	SDS7up	SDW3 032499 GRAB	1999	3/24/99	0.28	19	0.08	0	0.15	40	NPDES 1	No	No			<0.15	<0.05	<0.10	<2		1999 annual sample		
194	SDS7up	SDS7 121500 GRAB	2001	12/14/00	0.29	7	0.08	0	0	123	NPDES 1	No	No			0.14	<0.05	0.12	<2				
195	SDS7up	SDS7 031501 GRAB	2001	3/15/01	0.32	14	0.05	0	0.11	43	NPDES 1	No	No			<0.15	<0.05	<0.10	<2				
196	SDS6	B 120498 GRAB	1997	12/4/96	0.82	7.5		0.16	44		NPDES 1	No	No	6.51	<1.0	<0.25				2		pairs with 3/6/97 composite for 97 spring quarter	
197	SDS6	B 012797 GRAB	1997	1/27/97	0.41	26		0	109		NPDES 1	No	No	7.11	<1.0	<0.25				4			
198	SDS6	B 041997 GRAB	1997	4/19/97	1.16	26		0	64		NPDES 1	No	No	6.85	<1.0	<1.0				30			
199	SDS6	B 110498 GRAB	1999	11/3/98	1.62	39	0.48	0	0.08	35	NPDES 1	No	No	7.16						0.15	<0.05	0.13	>1600
200	SDS6	B 111298 GRAB	1999	11/11/98	0.98	62	0.15	0	0.05	31	NPDES 1	No	No	7.42						<0.15	<0.05	<0.05	220
201	SDS6	B 050799 GRAB	1999	5/6/99	0.25	22	0.06	0	0	79	NPDES 1	No	No	6.57						0.19	<0.05	0.17	>1600
202	SDS6	SDS6 101900 grab	2001	10/19/00	1.21	26	0.19	0	0.38	41	NPDES 1	No	No	7.44						<0.3	<0.1	<0.2	30
203	SDS5	D 120496 GRAB	1997	12/4/96	0.82	7.5		0.16	44		NPDES 1	No	No	6.78	1.2	<0.25				70			
204	SDS5	D 011797 GRAB	1997	1/16/97	1.21	23		0	154		NPDES 1	No	No	6.95	3.9	0.47				350			
205	SDS5	D 012797 GRAB	1997	1/27/97	0.41	26		0	109		NPDES 1	No	No	7.11	1.3	<0.25				170		makeup for 96Q4	
206	SDS5	D 021197 GRAB	1997	2/11/97	0.48	18		0	205		NPDES 1	No	No	6.54	7.1	0.25				36			

Full Data Set (No Values Trimmed)

R=Rejected Non-Representative Data - Refer to line comment for detail

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AR 017188

NPDES Grab Sample Data 9/1/94 - 6/30/01

SAMPLE DATA				STORM CHARACTERISTICS										CONCENTRATION, mg/L									
Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Maxint in/hr	24hrant in	48hrantDyant in	Pur. pose	Event	Deicat?	pH	FOG	TPH (IR)	TPH-Dt	TPH-D	TPH-MO	Fecals (MPN)	Fecals (MF)	Comments		
207	SDS5	D.030587 GRAB	1997	3/5/97	0.36	20		0.24	42	NPDES	1	No	7.03	<1.0	<0.25				2				
208	SDS5	D.061797 GRAB	1997	6/16/97	0.36	28		0	135	NPDES	1	No	6.87	<1.0	<0.25				1600				
209	SDS5	D.011399 GRAB	1999	1/13/99	1.07	22	0.16	0	85	NPDES	1	No			<0.18	<0.05	<0.11	>1600			annual sample		
210	SDS5	D.050689 GRAB	1999	5/6/99	0.25	22	0.06	0	79	NPDES	1	No	7.01		<0.15	<0.05	<0.10	500					
211	SDS5	SDS5 122100 GRAB	2001	12/21/00	0.09	4	0.05	0.01	0.05	NPDES	1	No	6.26		<0.15	<0.05	<0.1						
212	SDS5	SDS5.010301 grab	2001	1/3/01	0.44	15	0.13	0	77	NPDES	1	No	6.83		<0.15	<0.05	<0.10	<2					
213	SDS5	SDS5.031501 GRAB	2001	3/15/01	0.32	14	0.05	0	11	NPDES	1	No	7.73		<0.15	<0.05	<0.10	30					
214	SDN1	SDN1 091494 grab	1995	9/13/94	0.15	9			116	NPDES	1	No	6.56	3.3	<1				>4000				
215	SDN1	SDN1 101994 grab	1995	10/19/94	0.2	32			120	NPDES	1	No	6.83	1.6	<1				180				
216	SDN1	SDN1 011295 grab	1995	1/11/95	0.3	60		0.04	24	NPDES	1	No	7.4	2.8	5.1				1000				
217	SDN1	SDN1 040795 grab	1995	4/6/95	0.61	28		0.04	60	NPDES	1	No	7.6	<1.2	<1				58				
218	SDN1	SDN1 080795 grab	1996	6/6/95	0.4	6		0		NPDES	1	No	7.8	2.1	5.6				42				
219	SDN1	SDN1 110795 grab	1996	11/6/95	3.89	48		0.09		NPDES	1	No	6.7	1.6	3.4				25				
220	SDN1	SDN1 020496 GRAB	1996	2/3/96	1.6	8				NPDES	1	Yes	7.4	7.3	7.5				100		extra NPDES/Slip Ag		
221	SDN1	SDN1 033196 GRAB	1996	3/31/96	0.64	0		0.01		Slip Ag	1	No	6.9	8.0	4.1				340				
222	SDN1	SDN1 042296 GRAB	1996	4/22/96	2.83	6		0		NPDES	1	No	7.26	1.0	0.25				6		extra NPDES/Slip Ag		
223	SDN1	SDN1 062396 GRAB	1996	6/23/96	0.46	10		0		Slip Ag	1	No	5.52	2.0	0.92				23		Fecals exceeded 30 hour holding time, results not representative		
224	SDN1	SDN1 070396 GRAB	1997	7/3/96	0.23	12		0		NPDES	1	No	6.17	2.8	1.8				900 R				
225	SDN1	SDN1 071796 GRAB	1997	7/17/96	0.27	31		0		NPDES	1	No							500		fecals make up for 7/1/96 grab that exceeded holding time		
226	SDN1	SDN1 100496	1997	10/4/96	0.59	8.1		0.06	18	Slip Ag	2	No		3.8	3.0						paired up/down sample		
227	SDN1	SDN1 110496 GRAB	1997	11/3/96	0.14	2		0	120	SrcTrace	2	Yes	5.98	2.5	1.30				240		paired up/down sample		
228	SDN1	SDN1 011697 GRAB	1997	1/16/97	1.21	23		0	154	NPDES	1	No	5.16	0 R	3.6				161		paired up/down sample, FOG Sample Bottle Broken		
229	SDN1	SDN1 041397 grab	1997	4/13/97	0.31	12		0.04		NPDES	1	No	4.57	<1.0	1.08				33				
230	SDN1up	SDN1up 100496 GRAB	1997	10/4/96	0.59	8.1		0.06	18	NPDES	1	No	7.23	<1.0	0.50				500		paired up/down sample		
231	SDN1up	SDN1up 110496 GRAB	1997	11/3/96	0.14	2		0	120	SrcTrace	2	Yes	4.59	<1.0	0.39				23		paired up/down sample		
232	SDN1up	SDN1up 011697 GRAB	1997	1/16/97	1.21	23		0	154	NPDES	1	No	4.37	<1.0	2.1				23		paired up/down sample		
233	SDN1up	SDN1 060397 GRAB	1997	6/3/97	0.26	16		0	76	NPDES	1	No	3.49	<1.0	4.3				17				
234	SDN1up	SDN1 102897 grab	1998	10/28/97	0.47	10.8		0.08	28	NPDES	1	No	6.54	<1.0	<0.25				50				

Full Data Set (No Values Trimmed)
R=Rejected Non-Representative Data - Refer to line comment for detail
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9/27/01 10:33:08 AM

NPDES Grab Sample Data 9/1/94 - 6/30/01

CONCENTRATION, mg/L

STORM CHARACTERISTICS

SAMPLE DATA

Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dir	Maxint	24hrant	48hrant	Dryant	Pur- pose	Event	Ground Deice?	pH	FOG	TPH (IR)	TPH- Dx	TPH- MO	TPH- MO	Fecals (MFPN)	Fecals (MF)	Comments
235	SDN1up	SDN1 121597 GRAB	1998	12/15/97	1	33	0	87			NPDES	1	No	7.34	<1.0	1.5				11		
236	SDN1up	SDN1 030198 GRAB	1998	3/1/98	0.98	86	0.07	6			NPDES	1	No	6.33		0.48	0.68	<0.06	0.65	2		backup monthly sample in case 3/1/98 sample didn't qualify under new permit
237	SDN1up	SDN1 030998 GRAB	1998	3/8/98	0.86	27	0	132			NPDES	1	No	6.68		0.47	0.76	0.06	0.72	<2		
238	SDN1up	SDN1 040798 GRAB	1998	4/7/98	0.03	0.5	0.04	87			NPDES	2	No	5.56		0.34	0.89	<0.10	0.84	<2		
239	SDN1up	SDN1 041098 GRAB	1998	4/9/98	0.09	17	0	82			NPDES	2	No	6.28		1.16	1.4	0.79	0.61	2		
240	SDN1up	SDN1 042398 GRAB	1998	4/23/98	0.46	20	0	264			NPDES	1	No	5.35		1.2	0.97	<0.05	0.95	170		
241	SDN1up	SDN1 050998 GRAB	1998	5/9/98	0.12	8	0	360			NPDES	2	No	4.94		0.60	0.55	0.06	0.49	80		considerable pollen in sample
242	SDN1up	SDN1 051498 GRAB	1998	5/14/98	0.21	8	0.01	125			NPDES	1	No	6.21		0.56	0.41	<0.05	0.39	50		
243	SDN1up	SDN1 061098 GRAB	1998	6/10/98	0.26	10	0	288			NPDES	1	No	6.45		0.76	1.03	<0.05	1.01	240		
244	SDN1up	SDN1 071498 GRAB	1999	7/14/98	0.13	16	0.04	0	264		NPDES	2	No	5.46		1.9	2.55	0.46	2.09	240		
245	SDN1up	SDN1 081698 GRAB	1999	8/16/98	0.31	10	0.25	0	792		NPDES	1	No	6.36		<0.25	0.84	<0.06	0.61	900		thunderstorm, 0.25 in/hr
246	SDN1up	SDN1 091698 GRAB	1999	9/16/98	0.19	20	0.16	0	456		NPDES	2	No	6.95			2.46	<0.05	2.45	1600		
247	SDN1up	SDN1 092498 GRAB	1999	9/24/98	0.47	23	0.26	0	148		NPDES	1	No	6.73			1.82	<0.05	1.6	80		
248	SDN1up	SDN1 100398 GRAB	1999	10/3/98	0.4	3	0.22	0	36		NPDES	1	No	6.06		2.1	1.95	<0.06	1.92	170		
249	SDN1up	SDN1 102798 GRAB	1999	10/27/98	0.64	9	0.19	0	72		NPDES	1	No	6.06			2.01	<0.05	1.99	130		
250	SDN1up	SDN1 110498 GRAB	1999	11/3/98	1.62	39	0.46	0	35		NPDES	1	No	5.97			0.37	<0.05	0.35	500		
251	SDN1up	SDN1 111198 GRAB	1999	11/11/98	0.96	62	0.15	0	31		NPDES	1	No	7.06			0.96	<0.05	0.94	80		concurrent WET sample
252	SDN1up	SDN1 121098 GRAB	1999	12/10/98	0.14	4	0.03	0	49		NPDES	2	No	7.4			0.91	<0.05	0.89	>1600		
253	SDN1up	SDN1 121798 GRAB	1999	12/17/98	0.11	4	0.03	0	33		NPDES	2	No	7.23			3.16	<0.05	3.14	500		fecals not analyzed due to holiday lab closure
254	SDN1up	SDN1 122498 GRAB	1999	12/24/98	1.19	39	0.16	0	153		NPDES	1	Yes	7.86			4.95	<0.05	4.93			
255	SDN1up	SDN1 010999 GRAB	1999	1/9/99	0.27	21	0.05	0	54		NPDES	1	No	6.07			3.51	<0.06	3.48	23		
256	SDN1up	SDN1 011399 GRAB	1999	1/13/99	1.07	22	0.16	0	85		NPDES	1	No	7.27			2.61	<0.06	2.76	>1600		concurrent WET sample
257	SDN1up	SDN1 020399 GRAB	1999	2/3/99	0.28	19	0.07	0	27		NPDES	1	No	7.32			1.4	<0.05	1.36	30		
258	SDN1up	SDN1 030899 GRAB	1999	3/8/99	0.28	15	0.05	0	96		NPDES	1	No	6.56			1.04	<0.05	1.02	7		
259	SDN1up	SDN1 031299 GRAB	1999	3/12/99	0.83	23	0.07	0	71		NPDES	1	No	6.71			0.99	<0.05	0.97	<2		concurrent WET sample
260	SDN1up	SDN1 032499 GRAB	1999	3/24/99	0.28	19	0.08	0	15		NPDES	1	No	6.92			1.69	<0.05	1.67	6		
261	SDN1up	SDN1 032799 GRAB	1999	3/27/99	0.24	9	0.07	0	28		NPDES	1	No	6.36			0.86	<0.05	0.84	2		
262	SDN1up	SDN1 062099 GRAB	1999	6/20/99	0.21	38	0.03	0	48		NPDES	1	No	5.65			4.97	<0.05	4.95	1600		
263	SDN1up	SDN1 070299 GRAB	2000	7/2/99	0.3	6	0.11	0	103		NPDES	1	No	7.33			0.6	<0.05	0.58	50		
264	SDN1up	SDN1 110599 GRAB	2000	11/5/99	0.68	12	0.11	0	44		NPDES	1	No	6.61			1.17	<0.05	1.15	42		
265	SDN1up	SDN1 111699 GRAB	2000	11/16/99	0.6	15	0.07	0.01	0.08	23	NPDES	1	No	7.62			2.59	<0.05	2.57	>1600		

Full Data Set (No Values Trimmed)
 R=Rejected Non-Representative Data - Refer to line comment for detail
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NPDES Grab Sample Data 9/1/94 - 6/30/01

SAMPLE DATA				STORM CHARACTERISTICS										CONCENTRATION, mg/L									
Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dir in/hr	Measht in/hr	24hrant in	48hrant in	Dryant in	Pur- pose	Event	Deice?	pH	FOG	TPH (IR)	TPH- D _x	TPH- MO	TPH- (MPN)	Fecals (MF)	Comments		
266	SDN1up	SDN1 120499 grab	2000	12/4/99	0.24	10	0.1	0	0	60	NPDES	1	No	6.21		1.53	<0.09	1.49	4				
267	SDN1up	SDN1 121799 grab	2000	12/17/99	0.34	11	0.08	0	1.15	26	NPDES	1	No	7.54		0.87	<0.05	0.85	900				
268	SDN1up	SDN1 031300 grab	2000	3/13/00	0.47	9	0.13	0	0	48	NPDES	1	No	6.2		0.12	<0.05	0.1	<2				
269	SDN1up	SDN1 032200 grab	2000	3/22/00	0.43	8	0.14	0	0	66	NPDES	1	No	5.06		0.31	<0.05	0.29	<2				
270	SDN1up	SDN1 041300 GRAB	2000	4/13/00	0.34	12	0.08	0	0	74	NPDES	1	No	5.94		0.23	0.1	0.13	<2				
271	SDN1up	SDN1 070300 grab	2001	7/3/00	0.29	12	0.13	0	0.02	30	NPDES	1	No	6.18		0.58	<0.05	0.56	21				
272	SDN1up	SDN1 101700 grab	2001	10/17/00	0.36	4	0.12	0	0.51	27	NPDES	1	No	7.52		1.74	<0.05	1.72	50				
273	SDN1up	SDN1 112300 grab	2001	11/23/00	0.37	9	0.1	0	0	330	NPDES	1	No	7.62		1.86	<0.05	1.84	2				
274	SDN1up	SDN1 121400 GRAB	2001	12/14/00	0.29	7	0.08	0	0	123	NPDES	1	No	7.70		2.15	<0.05	2.13	130				
275	SDN1up	SDN1 010301 grab	2001	1/3/01	0.44	15	0.13	0	0	77	NPDES	1	No	6.33		2.95	<0.10	2.90	23				
276	SDN1up	SDN1 012801 GRAB	2001	1/28/01	0.26	8	0.09	0	0	101	NPDES	1	No	7.44		2.33	<0.05	2.31	22				
277	SDN1up	SDN1 030101 GRAB	2001	3/1/01	0.27	6	0.11	0	0	127	NPDES	1	No	5.79		1.86	<0.05	1.84	<2				
278	SDN1up	SDN1 031501 GRAB	2001	3/15/01	0.32	14	0.05	0	0.11	43	NPDES	1	No	5.98		1.76	<0.05	1.74	130				
279	SDN1up	SDN1 051401 GRAB	2001	5/14/01	0.48	16	0.08	0.01	0.02	24	NPDES	1	No	5.80		<0.15	<0.05	<0.10	30				
280	SDN1up	SDN1 062701-GRAB	2001	6/27/01	0.52	20	0.23	0	0	58	NPDES	1	No	6.45		1.7	<0.05	1.68	>1600				
281	SDN2	SDN2 060694 grab	1995	9/6/94	0.89	22				93	NPDES	1	No	6.82	1.8					3			
282	SDN2	SDN2 101394 grab	1995	10/13/94	0.32	14				480	NPDES	1	No		1.1					2			
283	SDN2	SDN2 111394 grab	1995	11/1/94	0.28	14				48	NPDES	1	No		<1					30			
284	SDN2	SDN2 011295 grab	1995	1/1/95	0.3	60		0.04		24	NPDES	1	No	6	2.3					4			
285	SDN2	SDN2 041295 grab	1995	4/10/95	0.29	16				56	NPDES	1	No	7.6	4					<2			
286	SDN2	SDN2 060795 grab	1996	6/6/95	0.4	8				0	NPDES	1	No	7	2.6					15			
287	SDN2	SDN2 101695 grab	1996	10/15/95	0.35	12				0	NPDES	1	No	7.3	1.9					<2			
288	SDN2	SDN2 020496 GRAB	1996	2/3/96	1.6	8				0	R/W W/O	1	Yes	7.5								storm after runway deice	
289	SDN2	SDN2 021796 GRAB	1996	2/17/96	1.29	12				0	NPDES	1	No	7.8	<1.0					10			
290	SDN2	SDN2 033196 GRAB	1996	3/31/96	0.64	0		0.01			Slip Ag	1	No	6.7	<1.0					16		xtra NPDES/Slip Ag	
291	SDN2	SDN2 042296 GRAB	1996	4/22/96	2.83	8				0	NPDES	1	No	7.17	<1.0					50		xtra NPDES/Slip Ag	
292	SDN2	SDN2 062396 GRAB	1996	6/23/96	0.46	10				0	Slip Ag	1	No	6.83	1.0					2		xtra fecals analyzed	
293	SDN2	SDN2 071796 GRAB	1997	7/17/96	0.27	31				0	NPDES	1	No							4		some composite aliquots in grab	
294	SDN2	SDN2 060396 GRAB	1997	9/3/96	0.29	12				0	NPDES	1	No	7.24	1.6					900			
295	SDN2	SDN2 102196 GRAB	1997	10/21/96	0.66	4.1				0	NPDES	1	No	6.45	<1.0					2			
296	SDN2	SDN2 011697 GRAB	1997	1/16/97	1.21	23				0	NPDES	1	No	7.45	4.3					11			
297	SDN2	SDN2 041997 GRAB	1997	4/19/97	1.16	28				0	NPDES	1	No	6.91	<1.0					4			

Full Data Set (No Values Trimmed)
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9/27/01 10:33:10 AM

NPDES Grab Sample Data 9/1/94 - 6/30/01

STORM CHARACTERISTICS

SAMPLE DATA

Seq	Out fail	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Maxint in/hr	24hrant		Pur. pose	Event	Ground Delce?	pH	FOG	TPH (IR)	TPH-Dk	TPH-D	TPH-MO	Fecals (MPN)	Fecals (MF)	Comments	
								in	in													
298	SDN2	SDN2 082497 GRAB	1998	8/25/97	0.2	10.5		0.07	96	NPDES	1	No	7.08	1.2	0.43					500		N. cargo (W/S) pump station bypass
299	SDN2	SDN2 110498 GRAB	1999	11/3/98	1.62	39	0.46	0	35	NPDES	1	No			1.09	<0.07						N. cargo (W/S) pump station bypass
300	SDN2	SDN2 112598 GRAB	1999	11/25/98	3.45	52	0.32	0.28	0.31	NPDES	2	No			0.13	<0.05		0.11				N. cargo (W/S) pump station bypass
301	SDN2	SDN2 012699 GRAB	1999	1/28/99	1.16	33	0.1	0	0.02	NPDES	2	No			0.17	<0.05		0.15				N. cargo (W/S) pump station bypass, storm<<design, maint notified (o&m in progress)
302	SDN2	SDN2 062499 GRAB	1999	6/24/99	1.12	24	0.35	0.03	0.06	NPDES	1	No			0.26	<0.05		0.24				N. cargo (W/S) pump station bypass (30 min)
303	SDN2	SDN2 121599 grab	2000	12/15/99	1.26	13	0.32	0.15	0.32	NPDES	2	No			<0.15	<0.05		<0.10				N. cargo (W/S) pump station bypass
304	SDN2	SDN2 100900 grab	2001	10/9/00	0.37	6	0.29	0	0	NPDES	1	No			0.29	<0.05		0.27				N. cargo (W/S) pump station bypass
305	SDN2	SDN2 061101-GRAB	2001	6/11/01	1.28	22	0.28	0.01	0.09	NPDES	1	No			<0.15	<0.05		<0.10				N. cargo (W/S) pump station bypass

Seq	Out fail	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Maxint in/hr	24hrant in	24hrant in	Pur. pose	Event	Ground Delce?	pH	FOG	TPH (IR)	TPH-Dk	TPH-D	TPH-MO	Fecals (MPN)	Fecals (MF)	Comments	
306	SDN3	SDN3 090694 grab	1995	9/6/94	0.69	22		83		NPDES	1	No	6.4	11	<1					2200		
307	SDN3	SDN3 102694 grab	1995	10/25/94	1.96	44		114		NPDES	1	No		29	<1					<4		
308	SDN3	SDN3 010795 grab	1995	1/7/95	0.21	62		0	252	NPDES	1	No	7.8	<11	<1					<2		
309	SDN3	SDN3 060495 grab	1995	6/4/95	0.7	28		0	384	NPDES	1	No	7	2.5	<1					40		
310	SDN3	SDN3 071095 grab	1996	7/9/95	0.61	13		0		NPDES	1	No	7	3.3	<10					800		
311	SDN3	SDN3 110795 grab	1996	11/6/95	3.89	48		0.09		NPDES	1	No	7.2	2.1	<10					4		
312	SDN3	SDN3 011496 GRAB	1996	1/13/96	0.37	20		0		NPDES	1	No	7.2	<10	<10					<2		
313	SDN3	SDN3 033196 GRAB	1996	3/31/96	0.64	0		0.01		Slip Ag	1	No	6.8	14	<10					<2		
314	SDN3	SDN3 041696 GRAB	1996	4/15/96	0.49	16		0.09		NPDES	1	No	7.81	20	<0.25					50		
315	SDN3	SDN3 042296 GRAB	1996	4/22/96	2.83	8		0		Slip Ag	1	No	7.12	<10	<0.25					110		
316	SDN3	SDN3 080396 GRAB	1997	8/2/96	1.01	27		0	325	NPDES	1	No	7.41	<10	0.30					900		
317	SDN3	SDN3 112396 GRAB	1997	11/23/96	0.63	34.1		0	72	NPDES	1	Yes	7.32	<10	<0.25					14		
318	SDN3	SDN3 120496 GRAB	1997	12/4/96	0.82	7.5		0.16	44	NPDES	1	No	6.46	<10	<0.25					14		
319	SDN3	SDN3 122096 GRAB	1997	12/19/96	0.36	37		0	103	NPDES	1	No	6.32	<10	<0.25					7		
320	SDN3	SDN3 011697 GRAB	1997	1/16/97	1.21	23		0	154	NPDES	1	No	6.88	1.4	<0.25					4		
321	SDN3	SDN3 030597 GRAB	1997	3/5/97	0.39	20		0.24	42	NPDES	1	No	7.18	36 R	<0.25					<2		

Full Data Set (No Values Trimmed)
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NPDES Grab Sample Data 9/1/94 - 6/30/01

SAMPLE DATA			STORM CHARACTERISTICS										CONCENTRATION, mg/L						Comments			
Seq	Outfall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Maxint in/hr	24hrant in	48hrant in	Dryant hr	Pur- pose	Event	Ground Deice?	pH	FOG	TPH (IR)	TPH Dk	TPH- D	TPH- MO	Fecals (MPN)	Fecals (MF)	
322	SDN3	SDN3 053087	1997	5/30/97	1.64	36	0.04	14			NPDES	1	No		< 1.0	< 0.25						BACKUP log/iph for March lab errors on SDN3 030597 grab
323	SDN3	SDN3 082197 GRAB	1997	6/21/97	0.27	118	0.01	0.02	24		NPDES	1	No	7.51	< 0.25					80		
324	SDN3	SDN3 102897 GRAB	1998	10/28/97	0.47	108	0.08	0.08	26		NPDES	1	No	6.72	< 0.25					1600		
325	SDN3	SDN3 121597 GRAB	1998	12/15/97	1	33	0	0	87		NPDES	1	No	7.28	< 0.25					50		
326	SDN3	SDN3 111998 GRAB	1999	11/19/98	2.34	66	0.16	0	73		NPDES	1	No	6.52						240		
327	SDN3	SDN3 012099 GRAB	1999	1/20/99	0.42	28	0.09	0.01	95	22	NPDES	1	No							< 2		
328	SDN3	SDN3 062299 GRAB	1999	6/20/99	0.21	38	0.03	0	48		NPDES	1	No	7.5						240		
329	SDN3	SDN3 071899 GRAB	2000	7/18/99	0.7	34	0.11	0	300		NPDES	1	No	7.07						2		
330	SDN3	SDN3 120899 GRAB	2000	12/8/99	0.49	27	0.09	0	36	40	NPDES	1	No	7.87						< 2		
331	SDN3	SDN3 101900 GRAB	2001	10/19/00	1.21	26	0.19	0	36	41	NPDES	1	No	7.88						2		
332	SDN3	SDN3 040501 GRAB	2001	4/5/01	0.23	9	0.05	0	0.01	32	NPDES	1	No	7.28						< 2		
333	SDN4	SDN4 080388 GRAB	1997	9/3/98	0.28	1.2		0	78		NPDES	1	No	6.83	< 0.25					280		taken in 2 BOTTLES. FOG/TPH, and fecals
334	SDN4	SDN4 120498 GRAB	1997	12/4/98	0.82	7.5		0.16	44		NPDES	1	No	6.57	< 0.25					< 2		
335	SDN4	SDN4 011697 GRAB	1997	1/16/97	1.21	23		0	154		NPDES	1	No	7.34	< 0.25					4		
336	SDN4	SDN4 030597 GRAB	1997	3/5/97	0.39	20		0.24	42		NPDES	1	No	6.08	< 0.25					< 2		
337	SDN4	SDN4 080397 GRAB	1997	6/3/97	0.26	16		0	76		NPDES	1	No	9.07	< 0.25					13		
338	SDN4	SDN4 102897 GRAB	1998	10/28/97	0.47	108		0.08	28		NPDES	1	No	8.44	< 0.25					7		
339	SDN4	SDN4 121597 GRAB	1998	12/15/97	1	33		0	87		NPDES	1	No	7.81	< 0.25					8		
340	SDN4	SDN4 030198 GRAB	1998	3/1/98	0.98	86		0.07	6		NPDES	1	No	7.88	< 0.25					< 2		backup monthly sample in case 3/1/98 sample didn't quality under new permit
341	SDN4	SDN4 030998 GRAB	1998	3/8/98	0.86	27		0	132		NPDES	1	No	7.82	< 0.25					< 2		
342	SDN4	SDN4 042398 GRAB	1998	4/23/98	0.46	20		0	264		NPDES	1	No	7.86	< 0.25					< 2		
343	SDN4	SDN4 052598 GRAB	1998	5/24/98	0.58	11		0	87		NPDES	1	No	6.94	< 0.25					9		
344	SDN4	SDN4 082498 GRAB	1998	8/24/98	0.43	4		0	288		NPDES	1	No	8.26	< 0.25					130		
345	SDN4	SDN4 081898 GRAB	1999	8/18/98	0.31	10	0.25	0	792		NPDES	1	No	7.88	< 0.25					170		thunderstorm, 0.25 in/hr
346	SDN4	SDN4 082498 GRAB	1999	8/24/98	0.47	23	0.26	0	148		NPDES	1	No	7.13	< 0.25					22 R		fecals exceed holding time
347	SDN4	SDN4 100398 GRAB	1999	10/3/98	0.4	3	0.22	0	36		NPDES	1	No	7.04	0.28					30		
348	SDN4	SDN4 102798 GRAB	1999	10/27/98	0.64	9	0.19	0	72		NPDES	1	No	7.9	< 0.25					2		
349	SDN4	SDN4 110498 GRAB	1999	11/3/98	1.82	39	0.48	0	35		NPDES	1	No	9.28	< 0.25					17		
350	SDN4	SDN4 111388 GRAB	1999	11/11/98	0.88	62	0.15	0	0.05	31	NPDES	1	No	8.91	< 0.25					17		concurrent WET sample

Full Data Set (No Values Trimmed)
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9/27/01 10:33:11 AM

NPDES Grab Sample Data 9/1/94 - 6/30/01

SAMPLE DATA				STORM CHARACTERISTICS										CONCENTRATION, mg/L									
Seq	Out fall	Sample ID	Reported	Storm Date	Depth in	Dur hr	Maxint in/hr	24hrant in	48hrant in	Dryant hr	Pur- pose	Event	Ground Deice?	pH	FOG	TPH (IR)	TPH- Dx	TPH- D	TPH- MO	Fecals (MPN)	Fecals (MF)	Comments	
351	SDN4	SDN4 121098 GRAB	1999	12/10/98	0.14	4	0.03	0	0	49	NPDES	2	No	7.15		<0.16	<0.05	<0.11	<0.11	>1800			
352	SDN4	SDN4 121798 GRAB	1999	12/17/98	0.11	4	0.03	0	0.02	33	NPDES	2	No	7.3		<0.16	<0.05	<0.11	<0.11	8		fecals not analyzed due to holiday lab closure	
353	SDN4	SDN4 122498 GRAB	1999	12/24/98	1.19	39	0.16	0	0	153	NPDES	1	Yes	7.59		<0.15	<0.05	<0.10	<0.10				
354	SDN4	SDN4 011098 GRAB	1999	1/9/99	0.27	21	0.05	0	0	54	NPDES	1	No	7.13		<0.16	<0.05	<0.11	<0.11	23			
355	SDN4	SDN4 011399 GRAB	1999	1/13/99	1.07	22	0.16	0	0	85	NPDES	1	No	7.09		<0.17	<0.06	<0.11	<0.11	1600		concurrent WET sample	
356	SDN4	SDN4 020399 GRAB	1999	2/3/99	0.28	19	0.07	0	0.61	27	NPDES	1	No	7.18		<0.16	<0.05	<0.11	<0.11	<2			
357	SDN4	SDN4 031299 GRAB	1999	3/12/99	0.83	23	0.07	0	0	71	NPDES	1	No	7.28		<0.15	<0.05	<0.10	<0.10	<2			
358	SDN4	SDN4 032799 GRAB	1999	3/27/99	0.24	9	0.07	0	0.09	28	NPDES	1	No	7.02		<0.15	<0.05	<0.10	<0.10	<2			
359	SDN4	SDN4 071699 grab	2000	7/16/99	0.7	34	0.11	0	0	300	NPDES	1	No	6.98		0.29	<0.05	0.27	0.27	6			
360	SDN4	SDN4 110599 GRAB	2000	11/5/99	0.68	12	0.11	0	0.05	44	NPDES	1	No	7.73		0.18	<0.05	0.16	0.16	30			
361	SDN4	SDN4 111699 GRAB	2000	11/16/99	0.6	15	0.07	0.01	0.08	23	NPDES	1	No	7.63		<0.16	<0.05	<0.11	<0.11	300			
362	SDN4	SDN4 120899 GRAB	2000	12/8/99	0.49	27	0.09	0	0.38	40	NPDES	1	No	7.45		<0.15	<0.05	<0.10	<0.10	<2			
363	SDN4	SDN4 121799 grab	2000	12/17/99	0.34	11	0.08	0	1.15	26	NPDES	1	No	7.67		<0.15	<0.05	<0.10	<0.10	<2			
364	SDN4	SDN4 013100 grab	2000	1/31/00	1.76	29	0.15	0.07	0.07	9	NPDES	1	No	6.67		<0.15	<0.05	<0.10	<0.10	4			
365	SDN4	SDN4 031300 grab	2000	3/13/00	0.47	9	0.13	0	0	49	NPDES	1	No	7.48		0.21	<0.05	0.19	0.19	4			
366	SDN4	SDN4 041300 GRAB	2000	4/13/00	0.34	12	0.08	0	0	74	NPDES	1	No	7.39		0.52	0.17	0.35	0.35	33			
367	SDN4	SDN4 081600 grab	2001	8/18/00	0.27	11	0.08	0	0	631	NPDES	1	No	7.38		<0.15	<0.05	<0.10	<0.10	<2			
368	SDN4	SDN4 101700 grab	2001	10/17/00	0.36	4	0.12	0	0.51	27	NPDES	1	No	7.29		<0.15	<0.05	<0.10	<0.10	60			
369	SDN4	SDN4 110800 grab	2001	11/8/00	0.77	9	0.18	0	0	54	NPDES	1	No	7.57		<0.16	<0.05	<0.11	<0.11	7			
370	SDN4	SDN4 112300 grab	2001	11/23/00	0.37	9	0.1	0	0	330	NPDES	1	No	8.21		0.15	<0.05	0.13	0.13	2			
371	SDN4	SDN4 112900 grab	2001	11/29/00	0.29	28	0.06	0	0	54	NPDES	1	No	7.45		0.18	<0.05	0.16	0.16	2			
372	SDN4	SDN4 121400 GRAB	2001	12/14/00	0.29	7	0.08	0	0	123	NPDES	1	No	8.32		0.13	<0.05	0.11	0.11	<2			
373	SDN4	SDN4 030101 GRAB	2001	3/1/01	0.27	6	0.11	0	0	127	NPDES	1	No	7.61		<0.16	<0.05	<0.11	<0.11	<2			
374	SDN4	SDN4 031501 GRAB	2001	3/15/01	0.32	14	0.05	0	0.11	43	NPDES	1	No	7.24		<0.15	<0.05	<0.10	<0.10	<2			
375	SDN4	SDN4 040501 GRAB	2001	4/5/01	0.23	9	0.05	0	0.01	32	NPDES	1	No	7.33		<0.15	<0.05	<0.10	<0.10	<2			
376	SDN4	SDN4 051401 GRAB	2001	5/14/01	0.48	16	0.08	0.01	0.02	24	NPDES	1	No	7.91		1.59	<0.05	1.57	1.57	<2		MO result is an anomaly. TPH result is an anomaly	
377	SDN4	SDN4 062701-GRAB	2001	6/27/01	0.52	20	0.23	0	0	58	NPDES	1	No	7.5		<0.15	<0.05	<0.10	<0.10	>1800			
378	EY	EY 091484 grab	1995	9/13/94	0.15	9				116	NPDES	1	No	6.93	2.2								
379	EY	EY 101394 grab	1995	10/13/94	0.32	14				480	NPDES	1	No	6.88	2.1								
380	EY	EY 030995 grab	1995	3/6/95	2.16	114				88	NPDES	1	No	6.6	<1								
381	EY	EY 060485 grab	1995	6/4/95	0.7	28				384	NPDES	1	No	5.5	6.5								

Full Data Set (No Values Trimmed)
 R=Rejected Non-Representative Data - Refer to line comment for detail
 c:ENV-apps\EMIS\POS\DEVE\EMISMain.mdb\rip\SWNPDESGrabOnly

NPDES Grab Sample Data 9/1/94 - 6/30/01

SAMPLE DATA			STORM CHARACTERISTICS										CONCENTRATION, mg/L									
Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Maxint in/hr	24hrant in	48hrant in	Dryant in	Pur- pose	Event	Ground Decks?	pH	FOG	TPH (IR)	TPH- Dx	TPH- D	TPH- MO	Fecals (MPN)	Fecals (MF)	Comments
382	EY	EY 072895 grab	1998	7/26/95	0.41	36		0			NPDES	1	No	5.8	4.1							
383	EY	EY 101885 grab	1996	10/15/95	0.35	12		0			NPDES	1	No	6.5	<1.1							
384	EY	EY 021796 GRAB	1996	2/17/96	1.28	12		0			NPDES	1	No	7.7	<1.0							
385	EY	EY 042296 GRAB	1995	4/22/96	2.83	6		0			NPDES	1	No	7.18	<1.0							
386	EY	EY 052296 GRAB	1996	5/21/96	0.31	30		0.02			Slip Ag	1	No	6.06	1.0							
387	EY	EY 062396 GRAB	1996	6/23/96	0.46	10		0			Slip Ag	1	No	6.15	<1.0							
388	EY	EY 070396 GRAB	1997	7/3/96	0.23	12		0			NPDES	1	No	6.26	<1.0							
389	EY	EY 102196 GRAB	1997	10/21/96	0.66	4.1		0	64		NPDES	1	No	5.8	<1.0							
390	EY	EY 021197 GRAB	1997	2/11/97	0.48	16		0	205		NPDES	1	No	5.83	1.8							
391	EY	EY 030597 GRAB	1997	3/5/97	0.39	20		0.24	42		NPDES	1	No	5.11	<1.0							
392	EY	EY 060397 GRAB	1997	6/3/97	0.26	16		0	76		NPDES	1	No	5.54	<1.0							
393	EY	EY 110697 GRAB	1996	11/6/97	0.16	4.4		0.01	72		NPDES	1	No	6.26	<1.0							
394	EY	EY 012998 GRAB	1996	1/29/98	0.2	14		0	107		NPDES	1	No	6.19	<1.0							
395	EY	EY 052598 GRAB	1996	5/24/98	0.58	11		0	67		NPDES	1	No									
396	EY	EY 011399 GRAB	1996	1/13/99	1.07	22	0.16	0	65		NPDES	1	No									
397	EY	EY 062099 GRAB	1999	6/20/99	0.21	36	0.03	0	46		NPDES	1	No									
398	EY	EY 013100 grab	2000	1/31/00	1.76	28	0.15	0.07	9		NPDES	1	No									
399	EY	EY 081800 grab	2001	8/18/00	0.27	11	0.08	0	631		NPDES	1	No	7.72								
400	EY	EY 010301 grab	2001	1/3/01	0.44	15	0.13	0	77		NPDES	1	No									
401	EY	EY 062701-GRAB	2001	6/27/01	0.52	20	0.23	0	56		NPDES	1	No									
402	TY	TY 060804 grab	1995	6/6/94	0.69	22		93			NPDES	1	No	7.91	3.9							
403	TY	TY 101994 grab	1995	10/19/94	0.2	32		120			NPDES	1	No	6.52	1.3							
404	TY	TY 030495 grab	1995	3/4/95	0.16	24		0	158		NPDES	1	No	6.9	5.7							
405	TY	TY 060495 grab	1995	6/4/95	0.7	26		0	384		NPDES	1	No	5.5	7.6							
406	TY	TY 081795 grab	1998	8/16/95	1.34	12		0.01			NPDES	1	No	6.6	2.3							
407	TY	TY 090595	1998	9/5/95							NPDES	1	No		1.6							
408	TY	TY 101695-1 grab	1998	10/15/95	0.35	12		0			NPDES	1	No	6.7	1.8							
409	TY	TY 101695-2 grab	1998	10/15/95	0.35	12		0			NPDES	1	No		2.2							
410	TY	TY 032296 GRAB	1996	3/22/96	0.21						Slip Ag	1	No	6.9	3.9							
411	TY	TY 041696 GRAB	1996	4/15/96	0.49	16		0.09			NPDES	1	No	6.06	3.7							
412	TY	TY 042296 GRAB	1996	4/22/96	2.83	6		0			NPDES	1	No	7.31	2.0							
413	TY	TY 070396 GRAB	1997	7/3/96	0.23	12		0			NPDES	1	No	6.15	1.4							

duplicate sample

Full Data Set (No Values Trimmed)
R=Rejected Non-Representative Data - Refer to line comment for detail
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9/27/01 10:33:13 AM

NPDES Grab Sample Data 9/1/94 - 6/30/01

SAMPLE DATA			STORM CHARACTERISTICS										CONCENTRATION, mg/L										
Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Max Int in/hr	24hrant in	48hrant in	Dyant in	Pur- pose	Event	Ground Deice?	pH	FOG	TPH (IR)	TPH- Dk	TPH- D	TPH- MO	Fecals (MPN)	Fecals (MF)	Comments	
414	TY	TY 071798 grab	1997	7/17/96	0.27	31	0	0	0	0	Slip Ag	1	No	5.91	1.9								
415	TY	TY 080296 GRAB	1997	8/2/96	1.01	27	0	325	0	0	Slip Ag	1	No	6.43	1.6								
416	TY	TY 100498 GRAB	1997	10/4/96	0.59	8.1	0.08	18	0	0	NPDES	1	No	7.18	1.4	1.34							
417	TY	TY 021197 GRAB	1997	2/11/97	0.48	18	0	205	0	0	NPDES	1	No	5.72	5.1								FOG result not representative, laboratory error, see letter of May 15, 1997
418	TY	TY 030597 GRAB	1997	3/5/97	0.39	20	0.24	42	0	0	NPDES	1	No	5.98	18 R								
419	TY	TY 060397 GRAB	1997	6/3/97	0.28	16	0	76	0	0	NPDES	1	No	6.07	1.4								
420	TY	TY 111697 GRAB	1998	11/16/97	0.47	12.6	0	222	0	0	NPDES	1	No	6.67	<1.0								
421	TY	TY 012898 GRAB	1998	1/29/98	0.2	14	0	107	0	0	NPDES	1	No	6.31	1.0								Matching Comp not representative, not reported
422	TY	TY 030998 GRAB	1998	3/8/98	0.66	27	0	132	0	0	NPDES	1	No	6.63	<1.0	1.2	1.41	0.08	1.32				Extra Grab (has makeup Comp for 98QW)
423	TY	TY 061098 GRAB	1998	6/10/98	0.28	10	0	286	0	0	NPDES	1	No			1.2	1.05	<0.05	1.03				
424	TY	TY 020399 GRAB	1999	2/3/99	0.28	19	0.07	0	0.61	0	NPDES	1	No				4.34	<0.05	4.32				
425	TY	TY 062099 GRAB	1999	6/20/99	0.21	38	0.03	0	0	0	NPDES	1	No				5.77	<0.05	5.75				
426	TY	TY 070299 GRAB	2000	7/2/99	0.3	6	0.11	0	0	0	NPDES	1	No				1.25	<0.05	1.23				
427	TY	TY 022100 grab	2000	2/21/00	0.28	36	0.08	0	0	0	NPDES	1	No				1.03	<0.05	1.01				
428	TY	TY 022500 grab	2000	2/25/00	0.28	6	0.09	0	0	0	NPDES	1	No				2.92	<0.05	2.9				
429	TY	TY 031300 grab	2000	3/13/00	0.47	9	0.13	0	0	0	NPDES	1	No				2.42	<0.05	2.4				
430	TY	TY 020101 GRAB	2001	2/1/01	0.29	13	0.09	0	0	0	NPDES	1	No				6.26	<0.05	6.24				

Full Data Set (No Values Trimmed)
 R=Rejected Non-Representative Data - Refer to line comment for detail
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AR 017197



NPDES Grab Statistics:ics 9/1/94 - 6/30/01

CONCENTRATION, mg/L

	pH	FOG	TPH (IR)	TPH Dk	TPH-D	TPH-MC	Fecals (MPN)	Fecals (MF)	
All Outfalls	Count	384	203	222	222	222	299	69	
	Max	10.7	10.00	8.66	8.64	8.64	1600	160000	
	95th	7.9	4.26	3.57	3.55	3.55	1600	7660	
	75th	7.4	2.7	1.16	1.55	1.53	240	440	
	Median	7.1	1.1	0.50	0.26	0.03	30	40	
	25th	6.6	0.5	0.13	0.06	0.03	3	3	
	Min	3.5	0.5	0.13	0.07	0.03	1	1	
	SD	0.7	3.4	1.58	1.41	1.40	523	23310	
	CV%	10%	148%	148%	139%	206%	144%	177%	530%
	#NonDetects	0	80	109	79	204	81	56	17
%NonDetects	0%	46%	54%	38%	92%	36%	19%	25%	
SDE4 (002)	Count	58	17	28	40	40	50	9	
	Max	10.7	17.0	10.00	8.66	8.64	1600	160000	
	95th	8.0	10.6	7.47	4.97	4.95	1600	115640	
	75th	7.1	3.6	3.13	3.06	3.01	1425	4000	
	Median	6.6	2.8	2.28	2.05	1.95	270	1100	
	25th	6.6	1.6	1.73	1.21	1.16	58	260	
	Min	6.0	0.5	0.13	0.08	0.03	1	22	
	SD	0.7	4.0	2.15	1.64	1.64	641	61383	
	CV%	11%	106%	77%	71%	241%	73%	108%	271%
	#NonDetects	0	3	2	1	35	1	2	0
%NonDetects	0%	16%	7%	3%	88%	3%	4%	0%	
SDS1 (003)	Count	23	17	19	5	5	16	6	
	Max	7.6	10.0	5.40	1.56	0.16	154	200	
	95th	7.5	6.5	5.31	1.40	0.13	138	165	
	75th	7.1	2.5	1.55	0.78	0.03	78	48	
	Median	6.8	1.1	0.83	0.72	0.03	70	105	
	25th	6.3	0.5	0.50	0.72	0.03	59	18	
	Min	5.4	0.5	0.32	0.61	0.03	56	1	
	SD	0.8	2.5	1.57	0.39	0.06	41	734	
	CV%	9%	120%	111%	44%	116%	49%	123%	169%
	#NonDetects	0	8	4	0	4	0	3	2
%NonDetects	0%	47%	21%	0%	80%	0%	19%	33%	

Full Data Set (No Values Trimmed)
 Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.
 c:\ENV-apps\EMIS\POSEVE\MISMain.mdb\rpt\SWNPDESGrabStats

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NPDES Grab Statistics 9/1/94 - 6/30/01

CONCENTRATION, mg/L

	pH	FOG	TPH	TPH-Dx	TPH-D	TPH-MO	Fecals (MPN)	Fecals (MF)
SDS2 (004)	Count	10	8	3	3	3	7	4
	Max	7.9	4.0	0.50	0.31	0.03	0.28	2800
	95th	7.7	3.8	0.50	0.29	0.03	0.27	2420
	75th	7.3	2.5	0.50	0.22	0.03	0.18	1700
	Median	6.9	1.8	0.31	0.13	0.03	0.10	1090
	25th	6.7	0.5	0.13	0.10	0.03	0.08	895
	Min	6.7	0.5	0.13	0.08	0.03	0.05	440
	SD	0.4	1.4	0.20	0.12	0.00	0.12	325
	CV%	6%	78%	64%	71%	0%	84%	177%
	#NonDetects	0	3	8	2	3	2	0
%NonDetects	0%	30%	100%	67%	100%	67%	0%	
SDS3 (005)	Count	57	19	26	41	41	41	52
	Max	7.8	8.3	3.70	2.75	0.08	2.73	1800
	95th	7.7	3.5	0.55	0.47	0.03	0.45	880
	75th	7.4	1.1	0.50	0.19	0.03	0.13	30
	Median	7.3	0.5	0.32	0.06	0.03	0.05	11
	25th	7.2	0.5	0.13	0.06	0.03	0.05	1
	Min	6.9	0.5	0.13	0.07	0.03	0.05	1
	SD	0.2	1.8	0.66	0.42	0.01	0.43	334
	CV%	3%	149%	151%	209%	34%	241%	295%
	#NonDetects	0	13	20	28	39	28	18
%NonDetects	0%	68%	71%	68%	95%	68%	31%	
SDS4 (009)	Count	23	19	19	4	4	4	7
	Max	7.8	4.0	0.76	0.17	0.06	0.15	1800
	95th	7.8	3.1	0.53	0.16	0.05	0.14	1800
	75th	7.5	2.3	0.50	0.13	0.03	0.08	500
	Median	7.4	0.5	0.28	0.09	0.03	0.05	75
	25th	7.1	0.5	0.13	0.08	0.03	0.05	25
	Min	6.7	0.5	0.13	0.08	0.03	0.05	1
	SD	0.3	1.2	0.21	0.04	0.02	0.05	541
	CV%	4%	86%	65%	42%	52%	67%	144%
	#NonDetects	0	11	17	2	3	3	1
%NonDetects	0%	58%	89%	50%	75%	75%	14%	

Full Data Set (No Values Trimmed)
 Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.

c:\ENV-apps\EMIS\POS\DEVE\MISMain.mdb\rpt\SWNPDESGrabStats



NPDES Grab Statistics 9/1/94 - 6/30/01

CONCENTRATION, mg/L

	pH	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-MO	Fecals (MFN)	Fecals (MFP)
SDS7 (010)	Count	4	4	4	4	4	4	4
	Max	7.4	2.9	6.60			30000	
	95th	7.4	2.6	5.88			25755	
	75th	7.3	1.5	2.03			6775	
	Median	7.3	0.9	0.50			1350	
	25th	7.2	0.6	0.50			768	
	Min	7.0	0.5	0.50			73	
	SD	0.2	1.1	3.05			14553	
	CV%	2%	87%	151%			176%	
	#NonDetects	0	2	3			0	
	%NonDetects	0%	50%	75%			0%	
SDS7up (010)	Count	7	4	3	7	7	7	11
	Max	7.9	9.7	0.28	3.79	0.03	3.77	500
	95th	7.8	8.3	0.25	2.69	0.03	2.87	324
	75th	7.7	2.8	0.19	0.14	0.03	0.12	85
	Median	7.4	0.5	0.13	0.14	0.03	0.11	2
	25th	6.7	0.5	0.13	0.10	0.03	0.08	1
	Min	6.1	0.5	0.13	0.08	0.03	0.05	1
	SD	0.7	4.6	0.08	1.39	0.00	1.39	149
	CV%	9%	164%	46%	217%	7%	225%	205%
	#NonDetects	0	3	2	2	7	2	5
	%NonDetects	0%	75%	67%	29%	100%	29%	45%
SDS6 (014)	Count	7	3	3	4	4	4	8
	Max	7.4	0.5	0.50	0.19	0.05	0.17	1600
	95th	7.4	0.5	0.46	0.18	0.05	0.16	1600
	75th	7.3	0.5	0.31	0.16	0.03	0.14	585
	Median	7.1	0.5	0.13	0.15	0.03	0.11	30
	25th	6.7	0.5	0.13	0.13	0.03	0.08	24
	Min	6.5	0.5	0.13	0.08	0.03	0.03	2
	SD	0.4	0.0	0.22	0.05	0.01	0.08	720
	CV%	5%	0%	87%	34%	40%	58%	164%
	#NonDetects	0	3	3	2	4	2	0
	%NonDetects	0%	100%	100%	50%	100%	50%	0%

Former location downstream, ends 10/1996

Upstream location, begins 11/1996

Formerly SB B

Full Data Set (No Values Trimmed)
 Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.
 c:\ENV-apps\EMIS\POS\DEVE\EMISMain.mdb\rp\ISWNPDESGrabStats

87

NPDES Grab Statistics 9/1/94 - 6/30/01

CONCENTRATION, mg/L

	pH	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-MO	Fecals (MPN)	Fecals (MF)
SDS5 (015)	Count	10	6	5	5	5	10	
	Max	7.7	130	0.47	0.08	0.03	0.05	1600
	95th	7.5	11.5	0.41	0.08	0.03	0.05	1600
	75th	7.0	6.3	0.22	0.08	0.03	0.05	463
	Median	6.9	2.8	0.13	0.08	0.03	0.05	120
	25th	6.8	0.7	0.13	0.08	0.03	0.05	32
	Min	6.3	0.5	0.13	0.08	0.03	0.05	1
	SD	0.4	4.9	0.14	0.00	0.00	0.00	635
	CV%	6%	113%	69%	3%	0%	4%	146%
	#NonDetects	0	2	4	5	5	5	1
%NonDetects	0%	33%	67%	100%	100%	100%	10%	
SDN1 (006)	Count	14	14	15			7	7
	Max	7.8	210	7.50			500	4000
	95th	7.7	17.8	6.17			452	3100
	75th	7.4	6.4	3.85			290	590
	Median	6.8	2.7	1.80			161	100
	25th	6.0	1.9	0.71			28	50
	Min	4.6	0.5	0.25			6	25
	SD	1.0	6.1	2.23			186	1485
	CV%	15%	117%	65%			100%	190%
	#NonDetects	0	2	3			0	0
%NonDetects	0%	14%	20%			0%	0%	
SDN1up (006)	Count	52	6	17	45	45	45	4
	Max	8.4	0.5	4.30	4.97	0.79	4.95	1600
	95th	7.8	0.5	2.54	3.44	0.09	3.41	1600
	75th	7.3	0.5	1.50	2.01	0.03	1.99	223
	Median	6.6	0.5	0.60	1.40	0.03	1.15	46
	25th	6.0	0.5	0.47	0.78	0.03	0.65	7
	Min	3.5	0.5	0.13	0.08	0.03	0.05	1
	SD	1.0	0.0	1.06	1.13	0.13	1.14	528
	CV%	15%	0%	96%	73%	227%	78%	177%
	#NonDetects	0	6	2	1	40	1	7
%NonDetects	0%	100%	12%	2%	89%	2%	14%	

Formerly SB D

Former location downstream at SDN1-27, ends 1996.

Upstream location at SDN1-22, begins 1997.

Full Data Set (No Values Trimmed)
Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.

c:\ENV-apps\EMIS\POSDEVEMIS\Main.mdb\rpt\SWNPDESGrabStats

AR 017201



NPDES Grab Statist.cs 9/1/94 - 6/30/01

CONCENTRATION, mg/L

	pH	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-D	TPH-MO	Fecals (MPN)	Fecals (MF)
SDN2 (007)	Count	15	16	7	7	7	7	9	8
	Max	8.0	4.3	5.20	1.08	0.04	1.07	900	30
	95th	7.7	4.1	1.95	0.85	0.03	0.83	740	25
	75th	7.5	2.0	0.50	0.28	0.03	0.25	50	11
	Median	7.2	1.2	0.50	0.17	0.03	0.15	11	4
	25th	6.9	0.5	0.42	0.10	0.03	0.08	4	2
	Min	6.4	0.5	0.13	0.08	0.03	0.05	2	1
	SD	0.4	1.2	1.19	0.36	0.00	0.36	318	10
	CV%	6%	79%	158%	120%	14%	130%	193%	122%
	#NonDetects	0	6	9	2	7	2	0	2
%NonDetects	0%	38%	56%	29%	100%	28%	0%	25%	
SDN3 (008)	Count	24	19	20	7	7	7	20	7
	Max	7.6	3.3	0.50	0.20	0.07	0.13	1800	2200
	95th	7.7	2.9	0.50	0.18	0.08	0.12	935	1780
	75th	7.4	1.8	0.50	0.10	0.03	0.08	88	420
	Median	7.2	0.8	0.13	0.08	0.03	0.05	11	4
	25th	6.6	0.5	0.13	0.08	0.03	0.05	2	2
	Min	6.3	0.5	0.13	0.08	0.03	0.05	1	1
	SD	0.4	0.9	0.19	0.05	0.02	0.03	395	832
	CV%	6%	76%	65%	47%	54%	48%	238%	191%
	#NonDetects	0	10	19	5	6	5	5	3
%NonDetects	0%	53%	95%	71%	86%	71%	25%	43%	
SDN4 (011)	Count	45	7	14	38	38	38	43	3
	Max	9.3	1.6	0.28	1.59	0.17	1.57	1600	20
	95th	8.6	1.5	0.18	0.32	0.08	0.28	1470	19
	75th	7.9	0.9	0.13	0.12	0.03	0.05	27	11
	Median	7.5	0.5	0.13	0.08	0.03	0.05	4	1
	25th	7.2	0.5	0.13	0.08	0.03	0.05	1	1
	Min	6.6	0.5	0.13	0.08	0.03	0.05	1	1
	SD	0.6	0.5	0.04	0.25	0.03	0.25	410	11
	CV%	8%	80%	30%	170%	81%	211%	295%	150%
	#NonDetects	0	5	13	29	36	30	16	2
%NonDetects	0%	71%	93%	76%	95%	79%	37%	67%	

Pumped to IWS as of late 1997.

Full Data Set (No Values Trimmed)
 Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.
 c:\ENV-apps\EMIS\IPOS\DEVAEMISMain.mdb\p1SWNPDESGrabStats



NPDES Grab Statistics 9/1/94 - 6/30/01

CONCENTRATION, mg/L

	pH	FOG	TPH (IR)	TPH-Dx	TPH-D	TPH-D	TPH-IMO	Fecals (MPN)	Fecals (MF)
EY (012)	Count	18	17	7	7	7	7	7	
	Max	7.7	6.5	1.79	0.03	1.76			
	95th	7.7	4.6	1.65	0.03	1.63			
	75th	6.8	1.9	1.28	0.03	1.28			
	Median	6.2	0.5	1.11	0.03	1.09			
	25th	5.8	0.5	0.49	0.03	0.47			
	Min	5.1	0.5	0.13	0.03	0.11			
	SD	0.7	1.7	0.61	0.00	0.61			
	CV%	12%	120%	85%	7%	66%			
	#NonDetects	0	11	0	7	0			
%NonDetects	0%	65%	0%	100%	0%				
TY (013)	Count	19	20	3	9	9	9	9	
	Max	7.9	2.20	1.34	6.26	0.09	6.24		
	95th	7.4	1.91	1.33	7.26	0.06	7.24		
	75th	6.9	4.2	1.27	4.34	0.03	4.32		
	Median	6.5	2.0	1.20	2.42	0.03	2.40		
	25th	6.1	1.4	1.20	1.25	0.03	1.23		
	Min	5.5	0.5	1.20	1.03	0.03	1.01		
	SD	0.8	5.8	0.08	2.51	0.02	2.52		
	CV%	9%	133%	6%	79%	67%	60%		
	#NonDetects	0	2	0	0	8	0		
%NonDetects	0%	10%	0%	0%	89%	0%			
Airfield (SDS3,SDS4,SDN3,SDN4)	Count	149	63	61	89	90	90	131	27
	Max	9.3	6.3	3.70	2.75	0.17	2.73	1600	2200
	95th	8.0	3.0	0.50	0.42	0.06	0.34	1600	758
	75th	7.6	1.5	0.50	0.14	0.03	0.11	50	81
	Median	7.3	0.5	0.13	0.08	0.03	0.05	8	16
	25th	7.1	0.5	0.13	0.06	0.03	0.05	1	1
	Min	6.3	0.5	0.13	0.06	0.03	0.05	1	1
	#NonDetects	0	38	69	63	84	66	38	12
	%NonDetects	0%	60%	85%	71%	93%	73%	28%	44%

AR 017203

Full Data Set (No Values Trimmed)
 Values qualified as non-detected (<) calculated at 1/2 the reported detection limit.
 c:\ENV-apps\EMIS\POSDEV\EMISMain.mdb\tpi\SWNPDESGrabStats

AD



9/27/01 10:32:10 AM

NPDES Composite Sample Data 9/1/94 - 6/30/01

STORM CHARACTERISTICS

SAMPLE DATA

CONCENTRATION, mg/L

Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Maximl in/hr	24hrant in	48hrant in	Dryant in	Pur- pose	Ground Type	Deice?	TSS	Turb, NTU	BOO5	E- Glycol	P- Glycol	Total Glycol	Cu	Pb	Zn	Comments
1	SDE4	SDE4 111394	1995	11/11/94	0.28	14			46		NPDES	No	No	56	48	7	< 5	< 5	< 10	0.021	0.008	0.195	
2	SDE4	SDE4 111864	1995	11/19/94	0.42	24		0.05	52		NPDES	No	No	18	27	8	< 5	< 5	< 10	0.031	0.014	0.337	
3	SDE4	SDE4 010785	1995	1/7/95	0.21	82		0	252		NPDES	No	No	16	27	26			0.013	0.004	0.132		
4	SDE4	SDE4 030985	1995	3/8/95	2.16	114		0	68		Other	No	No	16	19	8	< 5	< 5	< 10	0.028	0.011	0.263	
5	SDE4	SDE4 041085	1995	4/10/95	0.29	18		0	56		NPDES	No	No	41	30	29			0.121	0.023	0.779	Zn result is outlier, Suspect Lab Error	
6	SDE4	SDE4 072695	1996	7/26/95	0.41	36		0			NPDES	No	No										
7	SDE4	SDE4 081795	1996	8/16/95	1.34	12		0.01			NPDES	No	No				< 50	7.9	7.9				
8	SDE4	SDE4 102895	1996	10/25/95	0.28	6		0.01			NPDES	No	No	14	27	27			0.033	0.021	0.204		
9	SDE4	SDE4 020396	1996	2/3/96	1.6	6					NPDES	Yes	Yes	210	180	74	14	28	0.054	0.104	0.279	TSS from deice sand	
10	SDE4	SDE4 032296	1996	3/22/96	0.21			0			Slip Ag	No	No	44	19	12	< 50	< 10.0	0.057	0.028	0.361		
11	SDE4	SDE4 041696	1996	4/15/96	0.49	16		0.09			NPDES	No	No	53	11	6.54	< 50	< 10.0	0.078	0.098	0.320		
12	SDE4	SDE4 051796	1996	5/17/96	0.24	15		0			SES	No	No						0.027	0.011	0.110	has metals results only	
13	SDE4	SDE4 052296	1996	5/21/96	0.31	30		0.02			SES	No	No	6.6		22			0.045	0.018	0.243		
14	SDE4	SDE4 090396	1997	9/3/96	0.29	12		0	76		NPDES	No	No	40	15	7.06	< 50	< 10.0	0.053	0.025	0.138		
15	SDE4	SDE4 122196	1997	12/19/96	0.36	37		0	103		NPDES	No	No	42	24	11.7	< 50	< 10.0	0.030	0.029	0.171		
16	SDE4	SDE4 011997	1997	1/16/97	1.21	23		0	154		NPDES	No	No	140	1.5	12.8	< 50	< 10.0	0.042	0.076	0.190		
17	SDE4	SDE4 012797	1997	1/27/97	0.41	26		0	109		Slip Ag	No	No	49	20	< 4.00	< 50	< 10.0	0.031	0.049	0.146		
18	SDE4	SDE4 030697	1997	3/5/97	0.39	20		0.24	42		NPDES	No	No	30	14	4.36	< 50	< 10.0	0.023	0.023	0.096		
19	SDE4	SDE4 060397	1997	6/3/97	0.26	16		0	78		NPDES	EMC	EMC	79	19	6.24	< 20	< 4.0	0.035	0.033	0.122		
20	SDE4	SDE4 102897	1998	10/28/97	0.47	10.8		0.08	28		NPDES	EMC	EMC	34	41	4.02	< 20	< 4.0	0.208	0.016	0.106	TSS Suspect deice sand	
21	SDE4	SDE4 121697	1998	12/15/97	1	33		0	67		NPDES	SMC	SMC	86	30	< 4.0	< 20	< 4.0	0.024	0.031	0.162		
22	SDE4	SDE4 030198	1998	3/1/98	0.98	86		0.07	6		NPDES	SMC	SMC	253	75	5.4	< 20	< 4.0	0.003	0.005	0.186	taken for aircraft deicing only	
23	SDE4	SDE4 030998	1998	3/8/98	0.86	27		0	132		NPDES	SMC	SMC				< 20	< 4.0					
24	SDE4	SDE4 042398	1998	4/23/98	0.46	20		0	264		NPDES	SMC	SMC	64	27	20.6	< 20	< 4.0	0.075	0.042	0.312		
25	SDE4	SDE4 051498	1998	5/14/98	0.21	8		0.01	125		NPDES	EMC	EMC	80	21	11.1	< 20	< 4.0	0.082	0.036	0.299		
26	SDE4	SDE4 062498	1998	6/24/98	0.43	4		0	266		NPDES	EMC	EMC	33	25	4.96			0.024	0.013	0.065		
27	SDE4	SDE4 092598	1999	9/24/98	0.47	23	0.26	0	146		NPDES	EMC	EMC	54	79	< 4.00	< 2	< 4	0.037	0.029	0.094		
28	SDE4	SDE4 100398	1999	10/3/98	0.4	3	0.22	0	36		NPDES	EMC	EMC	67	20	5.46	< 2	< 4	0.046	0.039	0.276		
29	SDE4	SDE4 102798	1999	10/27/98	0.64	9	0.19	0	72		NPDES	SMC	SMC	45	26	4.76	< 2	< 4	0.006	< 0.002	0.041		
30	SDE4	SDE4 111998	1999	11/19/98	2.34	66	0.18	0	73		NPDES	SMC	SMC	66	52	6.8	< 2	< 4	0.032	0.031	0.163	concurrent WET sample	
31	SDE4	SDE4 122498	1999	12/24/98	1.19	39	0.16	0	153		NPDES	SMC	SMC	250	145	3.95	13.4	80.9	0.005	0.006	0.151	Suspect deice sand	

Full Data Set (No Values Trimmed)

R=Rejected Non-Representative Data - Refer to line comment for detail

c:\ENV-apps\EMIS\POSE\EMISMain.mdb\rpt\ISWNPDESCompositesOnly

AR 017204

NPDES Composite Sample Data 9/1/94 - 6/30/01
CONCENTRATION, mg/L

Seq	Out	Sample	Reported	Storm	Dpth	Dr	Maxlin	Zkhrant	48hr	Dryant	Pur-	Ground	TSS	Turb.	BOOS	E-	P-	Total	Cu	Pb	Zn	Comments	
fall	ID		Date	in	hr	in/hr	in	in	in	hr	pose	Type	Device?	NTU	Chyd	Chyd	Chyd	Chyd	Cu	Pb	Zn		
32	SDE4	SDE4 012239	1999	1/20/99	0.42	28	0.09	0.01	0.95	22	NPDES	EMC	No	92	52	5.82	< 2.0	< 2.0	< 4.0	0.022	0.013	0.186	Concurrent WET sample
33	SDE4	SDE4 021899	1999	2/18/99	0.6	32	0.06	0.01	0.35	20	NPDES	SMC	No	131	54	4.26	< 2.0	< 2.0	< 4.0	0.003	< 0.002	< 0.005	Concurrent WET sample
34	SDE4	SDE4 022399	1999	2/22/99	0.56	34	0.14	0.02	0.04	9	NPDES	EMC	No	53	44	< 4.0	< 2.0	< 4.0	0.015	0.022	0.106	Concurrent WET sample	
35	SDE4	SDE4 030899	1999	3/8/99	0.28	15	0.05	0	0	86	NPDES	EMC	No	49	31	9.72	< 2.0	4.76	5.76	0.016	0.018	0.118	
36	SDE4	SDE4 031399	1999	3/12/99	0.63	23	0.07	0	0	71	NPDES	EMC	No	52	57	5.16	< 2.0	< 2.0	< 4.0	0.018	0.023	0.113	
37	SDE4	SDE4 032499	1999	3/24/99	0.28	19	0.08	0	0.15	40	NPDES	EMC	No	41	32	5.88	< 2.0	< 2.0	< 4.0	0.020	0.017	0.134	Concurrent WET sample
38	SDE4	SDE4 032899	1999	3/27/99	0.24	9	0.07	0	0.09	26	NPDES	EMC	No	9.5	7.9	< 4.0	< 2.0	< 2.0	0.012	< 0.002	0.106		
39	SDE4	SDE4 070299	2000	7/2/99	0.3	6	0.11	0	0	103	NPDES	EMC	No	45	39	6.84	< 2.0	< 2.0	< 4.0	0.026	0.013	0.141	
40	SDE4	SDE4 110699	2000	11/5/99	0.66	12	0.11	0	0.05	44	NPDES	SMC	No	22	16	< 4	< 2	< 2	0.013	0.006	0.082		
41	SDE4	SDE4 111799	2000	11/16/99	0.6	15	0.07	0.01	0.06	23	NPDES	EMC	No	17	25	< 4	< 2	< 2	0.011	0.005	0.077		
42	SDE4	SDE4 120599	2000	12/4/99	0.24	10	0.1	0	0	60	NPDES	EMC	No	16	9.4	7.54	< 2	< 2	0.014	0.013	0.084		
43	SDE4	SDE4 011300	2000	1/12/00	0.37	46	0.04	0.07	0.31	10	NPDES	SMC	Yes				4.5	7.47	12				runway device
44	SDE4	SDE4 031300	2000	3/13/00	0.47	9	0.13	0	0	48	NPDES	SMC	No	76	14	5.62	< 2	< 2	< 4	0.003	< 0.002	0.015	
45	SDE4	SDE4 041300	2000	4/13/00	0.34	12	0.08	0	0	74	NPDES	SMC	No	59	22	6.86	< 2	< 2	< 4	0.018	< 0.002	0.139	
46	SDE4	SDE4 070200	2001	7/3/00	0.29	12	0.13	0	0.02	30	NPDES	EMC	No	37	11	19.6	< 2	< 2	< 4	0.03	0.024	< 0.005	
47	SDE4	SDE4 101700	2001	10/17/00	0.36	4	0.12	0	0.51	27	NPDES	EMC	No	42	17	6.1	< 2	< 2	< 4	0.021	< 0.002	0.104	
48	SDE4	SDE4 110600	2001	11/18/00	0.77	9	0.18	0	0	54	NPDES	SMC	No	30	16	< 4	6.6	< 2	7.6	0.007	< 0.002	0.074	
49	SDE4	SDE4 112300	2001	11/23/00	0.37	9	0.1	0	0	330	NPDES	EMC	No	9.6	20	9.12	< 2	< 2	< 4	0.024	0.010	0.144	
50	SDE4	SDE4 121400	2001	12/14/00	0.29	7	0.08	0	0	123	NPDES	SMC	No	86	40	15.2	3.96	5.66	9.62	0.022	0.013	0.197	
51	SDE4	SDE4 010401	2001	1/30/01	0.44	15	0.13	0	0	77	NPDES	EMC	No	51	46	5.76	< 2.00	< 2.00	< 4.00	0.012	0.003	0.069	
52	SDE4	SDE4 031501	2001	3/15/01	0.32	14	0.05	0	0.11	43	NPDES	EMC	No	42	30	10.6	< 2.00	< 2.00	< 4.00	0.017	0.010	0.1	
53	SDE4	SDE4 032701	2001	3/27/01	0.39	8	0.1	0.01	0.19	19	NPDES	EMC	No	45	24	6.24	< 2.00	< 2.00	< 4.00	0.010	0.004	0.061	
54	SDE4	SDE4 051401	2001	5/14/01	0.48	16	0.08	0.01	0.02	24	NPDES	EMC	No	39	29	6.1	< 2.00	< 2.00	< 4.00	0.016	< 0.002	0.093	
55	SDE4	SDE4 062701	2001	6/27/01	0.52	20	0.23	0	0	56	NPDES	EMC	No	83	47	7.62			0.025	< 0.002	0.106		
56	SDS1	SDS1 101994	1995	10/19/94	0.2	32				120	NPDES		No	2.5	11	12			0.084	0.006	0.234		
57	SDS1	SDS1 111994	1995	11/19/94	0.42	24				52	NPDES		No			46	14		0.016	0.006	0.125		
58	SDS1	SDS1 021695	1995	2/15/95	1.1	56				66	NPDES	Yes	No	6.7	40	> 92	260	< 5	275	0.118	0.045	0.304	
59	SDS1	SDS1 051195	1995	5/11/95	0.2	8				0.12	NPDES		No	34	25	2			0.115	0.017	0.29		
60	SDS1	SDS1 060495	1995	6/4/95	0.7	26				364	NPDES		No	14	36	15			0.115	0.017	0.29		
61	SDS1	SDS1 080795	1996	8/6/95	0.4	6				0	NPDES		No	26	6.9	13			0.089	0.019	0.211		

Full Data Set (No Values Trimmed)
 R-Rejected Non-Representative Data - Refer to line comment for detail
 c:\ENV-apps\EMIS\POSDEV\EMISMain.mdb\rpt\SNPDESCompositesOnly Page 2 of 14
 2001 Appendix B all comps

AR 017205



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NPDES Composite Sample Data 9/1/94 - 6/30/01

SAMPLE DATA

STORM CHARACTERISTICS

CONCENTRATION, mg/L

Seq	Outfall	Sample ID	Reported	Storm Date	Depth in	Dur hr	Max in/hr	24hr in	48hr in	Dryant hr	Pur. purpose	Type	Device?	TSS	Turb. NTU	BOD5	E-Glycol	P-Glycol	Total Glycol	Cu	Pb	Zn	Comments
62	SDS1	SDS1 101695	1996	10/15/95	0.35	12		0			NPDES	No	No	8.6	3.6	5	<5.0	<5.0	<10.0	0.042	0.005	0.116	
63	SDS1	SDS1 011496	1996	1/13/96	0.37	20		0			NPDES	No	No	3.2	4	18	<5.0	<5.0	<10.0	0.019	0.006	0.104	
64	SDS1	SDS1 041696	1996	4/15/96	0.49	16		0.09			NPDES	No	No	7.4	16	23.9	<5.0	<5.0	<10.0	0.117	0.086	0.255	
65	SDS1	SDS1 042296	1996	4/22/96	2.83	8		0			Slip Ag	No	No	17	6.3	9.28	<5.0	<5.0	<10.0	0.012	0.006	0.062	
66	SDS1	SDS1 052296	1996	5/21/96	0.31	30		0.02			SES	No	No	7.8	7.8	29	<5.0	<5.0	<10.0	0.035	0.010	0.106	
67	SDS1	SDS1 070496	1997	7/3/96	0.23	12		0			NPDES	No	No	17	6	11.2	<5.0	<5.0	<10.0	0.038	0.013	0.186	
68	SDS1	SDS1 080296	1997	8/2/96	1.01	27		0	325		Slip Ag	No	No	15	7.2	12.5	<5.0	<5.0	<10.0	0.102	0.015	0.209	
69	SDS1	SDS1 120496	1997	12/4/96	0.82	7.5		0.16	44		NPDES	No	No	22	21	40.5	<5.0	<5.0	<10.0	0.028	0.001	0.086	
70	SDS1	SDS1 011697	1997	1/16/97	1.21	23		0	154		NPDES	No	No	37	17	79	<5.0	<5.0	<10.0	0.041	0.027	0.112	
71	SDS1	SDS1 041397	1997	4/13/97	0.31	12		0.04			NPDES	No	No	49	27	21.2	<5.0	<5.0	<10.0	0.071	0.041	0.253	
72	SDS1	SDS1 061797	1997	6/16/97	0.36	28		0	135		NPDES EMC	No	No	25	15	4.5	<2.0	<2.0	<4.0	0.038	0.027	0.119	
73	SDS1	SDS1 102897	1998	10/28/97	0.47	10.8		0.08	26		NPDES EMC	No	No	12	46	7.18	<2.0	<2.0	<4.0	0.030	0.011	0.152	
74	SDS1	SDS1 112097	1998	11/18/97	0.65	39		0.12	24		NPDES EMC	No	No			<4.0	<2.0	<2.0	<4.0	0.013	0.004	0.062	
75	SDS1	SDS1 121697	1998	12/15/97	1	33		0	87		NPDES EMC	No	No	1.8	6.2	6.44	<2.0	<2.0	<4.0	0.013	0.003	0.080	
76	SDS1	SDS1 030698	1998	3/8/98	0.66	27		0	132		NPDES SMC	No	No	6.0	12		<2.0	<2.0	<4.0	0.022	0.005	0.075	fulfills annual sample reqmt
77	SDS1	SDS1 102798	1998	10/27/98	0.64	9	0.19	0	72		NPDES SMC	No	No	11	13	6.3	<2	<2	<4	0.028	<0.002	0.116	
78	SDS1	SDS1 070299	2000	7/2/99	0.3	6	0.11	0	103		NPDES EMC	No	No	13	13	7.66	<2	<2	<4	0.368	0.009	0.206	
79	SDS1	SDS1 012901	2001	1/28/01	0.26	8	0.09	0	101		NPDES EMC	No	No	93	34		3	4.53	7.53	0.022	0.005	0.1	
80	SDS1	SDS1 030101	2001	3/1/01	0.27	6	0.11	0	127		NPDES EMC	No	No	73	72				0.025	0.003	0.129		
81	SDS2	SDS2 051095	1995	5/9/95	0.12	7.5		0	102		NPDES	No	No	15	15	11							
82	SDS2	SDS2 051195	1995	5/11/95	0.2	8		0.12			NPDES	No	No	7.8	6.1	4							
83	SDS2	SDS2 061095	1995	6/10/95	0.3	10		0	98		NPDES	No	No	16	6.2	6							
84	SDS2	SDS2 090595	1996	9/5/95							NPDES	No	No	52	28	5							
85	SDS2	SDS2 120496	1997	12/4/96	0.82	7.5		0.16	44		NPDES	No	No	37	29	<4.00							
86	SDS2	SDS2 011797	1997	1/16/97	1.21	23		0	154		Slip Ag	No	No	16	19	<4.0							
87	SDS2	SDS2 021197	1997	2/11/97	0.48	18		0	205		Slip Ag	No	No	32	39	<6.0							
88	SDS2	SDS2 111396	1999	11/11/98	0.98	62	0.15	0	31		NPDES SMC	No	No	20	31	<4				0.009	0.006	0.213	last for slip ag
89	SDS2	SDS2 050799	1999	5/6/99	0.25	22	0.06	0	79		NPDES EMC	No	No	65	20					0.007	<0.002	0.064	annual sample
90	SDS2	SDS2 070300	2001	7/3/00	0.29	12	0.13	0	30		NPDES SMC	No	No	20	7.3	5.82				0.010	<0.002	0.006	
91	SDS3	SDS3 090894	1995	9/8/94	0.69	22			83		NPDES	No	No				<5	<5	<10				
92	SDS3	SDS3 091494	1995	9/13/94	0.15	9			118		NPDES	No	No	4.5	5.8	6				0.041	0.004	0.031	
93	SDS3	SDS3 101394	1995	10/13/94	0.32	14		0	460		NPDES	No	No	6.7	12	22				0.053	0.003	0.076	

Full Data Set (No Values Trimmed)

R=Rejected Non-Representative Data - Refer to line comment for detail

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NPDES Composite Sample Data 9/1/94 - 6/30/01

SAMPLE DATA

STORM CHARACTERISTICS

CONCENTRATION, mg/L

Seq	Oil fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	MaxInt in/hr	Zdrant in	Abrant in	Dysent in	Pur- pose	Type	Ground Detector?	TSS	Turb. NTU	BOO5	E- Glycol	P- Glycol	Total Glycol	Cu	Pb	Zn	Comments
94	SDS3	SDS3 111994	1995	11/19/94	0.42	24				0.05	52	NPDES	No	2.3	4.9	18	< 5	< 5	< 10	0.027	0.004	0.108	glycols and BOO on lab'd "J 014"
95	SDS3	SDS3 010795	1995	1/7/95	0.21	62				0	262	NPDES	No	2	3.7	5				0.016	0.002	0.058	
96	SDS3	SDS3 030685	1995	3/6/95	2.16	114				0	66	Other	No							0.005	0.001	0.029	
97	SDS3	SDS3 041295	1995	4/10/95	0.29	18				0	56	NPDES	No	< 2	1.9	4	< 5	< 5	< 10	0.041	0.002	0.044	
98	SDS3	SDS3 072895	1996	7/26/95	0.41	36				0		NPDES	No	20	15	6				0.087	0.005	0.089	
99	SDS3	SDS3 101695	1996	10/15/95	0.35	12				0		NPDES	No	2.2	3	5				0.032	0.002	0.037	
100	SDS3	SDS3 011496	1996	1/13/96	0.37	20				0		NPDES	No	1.6	2.1	6	< 5.0	< 5.0	< 10.0	0.029	0.002	0.054	
101	SDS3	sd43 032296	1996	3/22/96	0.21					0		Slip Ag	No	4.1	2.9	8	< 5.0	< 5.0	< 10.0	0.028	0.002	0.054	
102	SDS3	SDS3 041696	1996	4/15/96	0.49	16				0.09		NPDES	No	20	6.6	6.38	< 5.0	< 5.0	< 10.0	0.046	0.012	0.074	
103	SDS3	SDS3 052296	1996	5/21/96	0.31	30				0.02		SES	No	2.6		14				0.035	0.001	0.036	
104	SDS3	SDS3 080296	1997	8/2/96	1.01	27				0	325	NPDES	No	19	13	0.80				0.115	0.009	0.097	
105	SDS3	SDS3 090396	1997	8/3/96	0.29	12				0	76	NPDES	No	33	16	11.4				0.080	0.016	0.062	
106	SDS3	SDS3 102196	1997	10/21/96	0.66	4.1				0	64	NPDES	No	4.6	4.2	< 4.00	< 5.0	< 10.0	0.025	0.003	0.022		
107	SDS3	SDS3 112396	1997	11/23/96	0.63	34.1				0	72	Slip Ag	Yes	16	9.2	34.2	18	10	26	0.039	0.014	0.061	
108	SDS3	SDS3 011697	1997	1/16/97	1.21	23				0	154	NPDES	No	5.6	0.7	9.76	< 5.0	< 5.0	< 10.0	0.029	0.002	0.042	
109	SDS3	SDS3 030597	1997	3/5/97	0.39	20				0.24	42	NPDES	No	3.4	2.5	< 4.0	< 5.0	< 10.0	0.018	0.002	0.037		
110	SDS3	SDS3 080397	1997	8/3/97	0.26	16				0	76	NPDES	No	10	6	2.5				0.054	0.004	0.039	
111	SDS3	SDS3 102897	1998	10/26/97	0.47	10.8				0.08	26	NPDES	No	3.6	5.3	15.9				0.028	0.003	0.037	
112	SDS3	SDS3 013098	1998	1/29/98	0.2	14				0	107	NPDES	No	3.6	5.4	13.5	5.4	4.2	9.6	0.028	0.002	0.055	
113	SDS3	SDS3 030198	1998	3/1/98	0.96	86				0.07	6	NPDES	No	21	13	6.2	< 2.0	< 2.0	< 4.0	0.034	0.007	0.045	
114	SDS3	SDS3 030698	1998	3/6/98	0.66	27				0	132	NPDES	No	3.2	5.2	36.3	23.0	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
115	SDS3	SDS3 042398	1998	4/23/98	0.46	20				0	284	NPDES	No	7.3	4	9.4	< 2.0	< 2.0	< 4.0	0.061	0.001	0.064	
116	SDS3	SDS3 051498	1998	5/14/98	0.21	8				0.01	125	NPDES	No	14	9.5	6.32	< 2.0	< 2.0	< 4.0	0.076	0.003	0.116	
117	SDS3	SDS3 061098	1998	6/10/98	0.28	10				0	288	NPDES	No	6.0	4.2	8.30				0.068	0.002	0.060	
118	SDS3	SDS3 061798	1999	6/16/98	0.31	10	0.25	0	0	0	792	NPDES	No	51	19	10.4				0.136	0.006	0.056	thunderstorm, 0.25 in/hr glycols may be high based, dupe was <MDL
119	SDS3	SDS3 082598	1999	9/24/98	0.47	23	0.26	0	0	0	146	NPDES	No	224	166	514	< 2	2.2	3.2	0.068	0.012	0.043	
120	SDS3	SDS3 100398	1999	10/3/98	0.4	3	0.22	0	0.07	0	36	NPDES	EMC	43	23	4.2	< 2	< 2	< 4	0.055	0.006	0.184	
121	SDS3	SDS3 102798	1999	10/27/98	0.64	9	0.19	0	0	0	72	NPDES	SMC	95	64	4.74	< 2	4.2	5.2	0.004	< 0.002	< 0.005	
122	SDS3	SDS3 110498	1999	11/3/98	1.62	39	0.48	0	0.08	0	35	NPDES	SMC	310	85	6.76	4.7	5.7	0.063	0.043	0.149		

Full Data Set (No Values Trimmed)
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NPDES Composite Sample Data 9/1/94 - 6/30/01

SAMPLE DATA				STORM CHARACTERISTICS										CONCENTRATION, mg/L										Comments
Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Maxint in/hr	24hrant in	40hrant in	in/hr	Pur- pose	Type	Ground Deice?	TSS	Turb. NTU	BO05	E- Glycol	P- Glycol	Total Glycol	Cu	Pb	Zn		
123	SDS3	SDS3 111386	1999	11/11/98	0.98	62	0.15	0	0.05	31	NPDES	SMC	No	24	29	17.6	10.5	<2	11.5	0.022	0.004	0.186	concurrent WET sample	
124	SDS3	SDS3 122598	1999	12/24/98	1.19	39	0.16	0	0	153	NPDES	SMC	Yes	18	15	450	31.5	81.6	113	0.047	0.002	0.134		
125	SDS3	SDS3 011099	1999	1/9/99	0.27	21	0.05	0	0	54	NPDES	SMC	No	3.7	6.2	21.9	6.4	14	22.4	0.019	<0.002	0.030		
126	SDS3	SDS3 011499	1999	1/13/99	1.07	22	0.16	0	0	85	NPDES	EMC	No	22	18	7.64	<2.0	10.0	11	0.023	0.004	0.030		concurrent WET and WER
127	SDS3	SDS3 020399	1999	2/3/99	0.28	19	0.07	0	0.61	27	NPDES	SMC	No	9.2	11	6.06	<2.0	2.08	3.08	0.016	<0.002	0.027	for DO study	
128	SDS3	SDS3 021499	1999	2/13/99	0.28	5	0.04	0	0	102	Other	EMC	Yes			60.0				0.049	<0.002	0.074		
129	SDS3	SDS3 030999	1999	3/8/99	0.28	15	0.05	0	0	96	NPDES	EMC	No	9.2	14	220	6.52	151	157.5	0.024	0.002	0.053		
130	SDS3	SDS3 031399	1999	3/12/99	0.83	23	0.07	0	0	71	NPDES	SMC	No	7.6	15	15	<2.0	6.21	7.21	0.022	<0.002	0.036		
131	SDS3	SDS3 032599	1999	3/24/99	0.28	19	0.08	0	0.15	40	NPDES	EMC	No	8.7	3.5	<4.0	<2.0	<2.0	<4.0	0.019	<0.002	0.027	concurrent WET and WER	
132	SDS3	SDS3 070299	2000	7/2/99	0.3	6	0.11	0	0	103	NPDES	EMC	No	11	14	4.7	<2	<2	<4	0.025	<0.002	0.028		
133	SDS3	SDS3 110699	2000	11/5/99	0.68	12	0.11	0	0.05	44	NPDES	SMC	No	21	26	15.2	<2	<2	<4	0.025	<0.002	0.031		
134	SDS3	SDS3 110699 COMP 2	2000	11/5/99	0.68	12	0.11	0	0.05	44	StrTrace	SMC	No	38	42	11.1	<2	<2	<4	0.021	<0.002	0.025		
135	SDS3	SDS3 111899	2000	11/16/99	0.6	15	0.07	0.01	0.08	23	NPDES	SMC	No	10	15	12.3	<2	6.09	7.1	0.023	<0.002	0.023	runway deice	
136	SDS3	SDS3 120599	2000	12/4/99	0.24	10	0.1	0	0	60	NPDES	EMC	No	6.4	6.3	48.4	3.0	18.0	21.0	0.013	<0.002	0.031		
137	SDS3	SDS3 120699	2000	12/8/99	0.49	27	0.09	0	0.36	40	NPDES	EMC	No	5.0	9	25.8	<2	22.6	23.6	0.012	<0.002	0.023		
138	SDS3	SDS3 011300	2000	1/12/00	0.37	48	0.04	0.07	0.31	10	NPDES	SMC	Yes			646	9.47	355	384		<0.002	0.008		
139	SDS3	SDS3 031300	2000	3/13/00	0.47	9	0.13	0	0	49	NPDES	SMC	No	11	5.5	15.5	<2	9.05	10.05	0.009	<0.002	0.029	runway deice	
140	SDS3	SDS3 041400	2000	4/13/00	0.34	12	0.08	0	0	74	NPDES	SMC	No	15	7.2	18.1	<2	<2	<4	0.024	<0.002	0.047		
141	SDS3	SDS3 061800	2001	8/18/00	0.27	11	0.08	0	0	631	NPDES	EMC	No	18	15	21.4				0.111	<0.002	0.047		
142	SDS3	SDS3 101800	2001	10/17/00	0.38	4	0.12	0	0.51	27	NPDES	EMC	No	18	15	4.82	<2.00	<2.00	<4.00	0.036	<0.002	0.017		
143	SDS3	SDS3 112300	2001	11/23/00	0.37	9	0.1	0	0	330	NPDES	EMC	No	32	8	87	4.89	79.4	84.3	0.033	<0.002	0.047	runway deice	
144	SDS3	SDS3 010401	2001	1/30/01	0.44	15	0.13	0	0	77	NPDES	SMC	No	2.8	4.0	5.74	<2.00	<2.00	<4.00	0.022	<0.002	0.020		
145	SDS3	SDS3 012901	2001	1/28/01	0.26	8	0.09	0	0	101	NPDES	EMC	No	7.2	5.6	137	4.8	117	122	0.032	<0.002	0.057		
146	SDS3	SDS3 020201	2001	2/1/01	0.29	13	0.09	0	0	62	NPDES	SMC	No	6	4.4	19.8	<2	13.1	14.1	0.032	<0.002	0.045		
147	SDS3	SDS3 031501	2001	3/15/01	0.32	14	0.05	0	0.11	43	NPDES	EMC	No	5.5	6	41.2	<2.00	25	26.0	0.034	<0.002	0.036	runway deice	
148	SDS3	SDS3 032701	2001	3/27/01	0.39	8	0.1	0.01	0.19	19	NPDES	EMC	No	5.0	4.8	13.5	<2.00	9.10	10.10	0.021	<0.002	0.029		
149	SDS3	SDS3 051501	2001	5/14/01	0.48	16	0.08	0.01	0.02	24	NPDES	EMC	No	5.5	3.9	14	<2.00	<2.00	<4.00	0.026	<0.002	0.021		
150	SDS3	SDS3 062801- COMP	2001	6/27/01	0.52	20	0.23	0	0	58	NPDES	EMC	No	10	12	<4.00				0.022	0.010	0.008		
151	SDS4	SDS4 091494	1995	9/13/94	0.15	9				116	NPDES		No	2.8	1.3	6				0.02	0.004	0.009		

Full Data Set (No Values Trimmed)
 R=Reflected Non-Representative Data - Refer to line comment for detail
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9/27/01 10:32:16 AM

SAMPLE DATA

STORM CHARACTERISTICS

NPDES Composite Sample Data 9/1/94 - 6/30/01

CONCENTRATION, mg/L

Seq	Out fall	Sample ID	Reported	Storm Date	Depth in	Dur in	Max Int in	24hr in	48hr in	Dryant in	Pur-pose	Ground Debit?	TSS	Turb. NTU	BO05	E-Glycol	P-Glycol	Total Glycol	Cu	Pb	Zn	Comments
152	SDS4	SDS4 101394	1995	10/13/94	0.32	14		0	480		NPDES	No	57	5.6	16	< 5	< 5	< 10	0.036	0.001	0.047	
153	SDS4	SDS4 111994	1995	11/19/94	0.42	24		0.05	52		NPDES	No			5	< 5	< 5	< 10				
154	SDS4	SDS4 011295	1995	1/11/95	0.3	60		0.04	24		NPDES	No	3.5	6.4	3	< 5	< 5	< 10	0.017	0.003	0.019	
155	SDS4	SDS4 021695	1995	2/15/95	1.1	56		0	86		NPDES	Yes			> 83	< 5	< 5	< 10				
156	SDS4	SDS4 051295	1995	5/11/95	0.2	6		0.12			NPDES	No	7.7	5.3	4	< 5	< 5	< 10	0.006	< 0.001	0.01	
157	SDS4	SDS4 060795	1996	6/6/95	0.4	6		0			NPDES	No	4.2	3.7	9	< 5	< 5	< 10	0.02	0.002	0.016	
158	SDS4	SDS4 101695	1996	10/15/95	0.35	12		0			NPDES	No	6.6	4.2	5	< 5	< 5	< 10	0.023	0.001	0.022	
159	SDS4	SDS4 011496	1996	1/13/96	0.37	20		0			NPDES	No	20	6	6	< 5	< 5	< 10	0.018	< 0.001	0.019	
160	SDS4	SDS4 041696	1996	4/15/96	0.49	16		0.09			NPDES	No	26	14	4.64	< 5.0	< 5.0	< 10.0	0.041	0.005	0.031	
161	SDS4	SDS4 042296	1996	4/22/96	2.63	6		0			Slip Aq	No	19	8.9	6.44	< 5.0	< 5.0	< 10.0	0.033	< 0.001	0.017	
162	SDS4	SDS4 052296	1996	5/21/96	0.31	30		0.02			SES	No	4.6		1.6	< 5.0	< 5.0	< 10.0	0.036	0.001	0.016	
163	SDS4	SDS4 070496	1997	7/3/96	0.23	12		0			NPDES	No	20	11	6.0	< 5.0	< 5.0	< 10.0	0.024	0.001	0.020	
164	SDS4	SDS4 100496	1997	10/4/96	0.59	6.1		0.06	18		NPDES	No	4310	2650	6.04	< 5.0	< 5.0	< 10.0	0.180	0.047	0.228	TSS - Turb not typical. High turbidity from POS construction site (34R safety fill)

AR 017209

165	SDS4	SDS4 120496	1997	12/4/96	0.82	7.5		0.16	44		NPDES	No	11	6.5	< 4.00	< 5.0	< 5.0	< 10.0	0.023	0.002	0.032	makeup comp for 96QW non-req comp
166	SDS4	SDS4 011797	1997	1/16/97	1.21	23		0	154		NPDES	No	17	2.2	3.92	< 5.0	< 5.0	< 10.0	0.031	0.002	0.024	
167	SDS4	SDS4 012797	1997	1/27/97	0.41	26		0	109		Slip Aq	No	12	9.1	4.3	< 5.0	< 5.0	< 10.0	0.017	0.001	0.02	
168	SDS4	SDS4 041997	1997	4/19/97	1.16	26		0	64		NPDES	No	42	12	4.44	< 5.0	< 5.0	< 10.0	0.039	0.003	0.036	
169	SDS4	SDS4 082497	1998	8/25/97	0.2	10.5		0.07	96		NPDES	No	104	85	5.36	< 5.0	< 5.0	< 10.0	0.032	0.004	0.044	
170	SDS4	SDS4 111797	1998	11/16/97	0.47	12.6		0	222		NPDES	No	31	34	4.54	< 5.0	< 5.0	< 10.0	0.019	0.002	0.039	
171	SDS4	SDS4 030998	1998	3/8/98	0.66	27		0	132		NPDES	No	3.8	5.7	< 4.0	< 2.0	< 4.0	< 4.0	0.016	< 0.001	0.012	
172	SDS4	SDS4 111998	1999	11/19/98	2.34	66	0.18	0	73		NPDES	SMC	2.1	2.9	< 4	< 2	< 4	< 4	0.029	< 0.002	0.015	
173	SDS4	SDS4 021399	1999	2/13/99	0.26	5	0.04	0	102		Other	EMC			10.5				0.006	< 0.002	0.036	for DO study
174	SDS4	SDS4 050799	1999	5/6/99	0.25	22	0.06	0	79		NPDES	EMC	36	12					0.023	< 0.002	0.006	annual sample
175	SDS4	SDS4 032601	2001	3/27/01	0.39	6	0.1	0.01	0.19	19	NPDES	EMC	6.0	5.5					0.021	< 0.002	0.014	

176	SDS7	SDW3 051095	1995	5/9/95	0.12	7.5		0	102		NPDES	No	66	310	15							grab missed
177	SDS7	SDW3 051195	1995	5/11/95	0.2	8		0.12			NPDES	No	20	25	4							
178	SDS7	SDW3 061095	1995	6/10/95	0.3	10		0	96		NPDES	No	57	23	5							
179	SDS7	SDW3 061795	1996	6/16/95	1.34	12		0.01			NPDES	No	56	20	6							
180	SDS7up	SDW3 120496	1997	12/4/96	0.82	7.5		0.16	44		NPDES	No	7.2	2.6	< 4.00							

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NPDES Composite Sample Data 9/1/94 - 6/30/01

CONCENTRATION, mg/L

SAMPLE DATA

STORM CHARACTERISTICS

Seq	Cul fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Maxint in/hr	24hrant in	48hrant in	Dryant in	Pur- pose	Type	Ground Deice?	TSS	Turb. NTU	BOO5	E. Glycol	P. Glycol	Total Glycol	Cu	Pb	Zn	Comments
181	SDS7up	SDW3 011897	1997	1/18/97	1.21	23		0	154		Slip Ag	No	No	7.1	1	4.18							no grab sample taken
182	SDS7up	SDW3 012797	1997	1/27/97	0.41	28		0	109		Slip Ag	No	No	3.2	3.2	6.7							
183	SDS7up	SDW3 021197	1997	2/11/97	0.48	18		0	205		Slip Ag	No	No	2.2	1.9	<4.0							
184	SDS7up	SDW3 021999	1999	2/18/99	0.6	32	0.06	0.01	0.35	20	NPDES	EMC	No	8.6	13					<0.002	<0.002	<0.005	1998 annual sample
185	SDS7up	SDW3 032599	1999	3/24/99	0.28	19	0.08	0	0.15	40	NPDES	EMC	No	12	7.3					0.008	<0.002	0.010	1999 annual sample
186	SDS7up	SDS7 121500	2001	12/14/00	0.29	7	0.08	0	0	123	NPDES	EMC	No	2.8	4.1					0.004	<0.002	0.006	
187	SDS7up	SDS7 031501	2001	3/15/01	0.32	14	0.05	0	0.11	43	NPDES	EMC	No	4.5	6.5					0.028	<0.002	0.009	
188	SDS6 B	120486	1997	12/4/98	0.82	7.5		0.16	44		NPDES	No	No	91	110	<4.00				0.028	0.006	0.041	
189	SDS6 B	011797	1997	1/16/97	1.21	23		0	154		NPDES	No	No	37	40	5.68				0.018	0.002	0.034	
180	SDS6 B	012897	1997	1/27/97	0.41	26		0	109		NPDES	No	No	23	35	3.28				0.015	0.002	0.028	
181	SDS6 B	030697	1997	3/5/97	0.39	20		0.24	42		NPDES	No	No	13	23	<4.0				0.007	<0.001	0.017	had QC dupe no grab sample (no liquid detected). pairs with 4/19/97 grab

192	SDS6 B	111398	1999	11/11/98	0.98	62	0.15	0	0.05	31	NPDES	EMC	No	20	128	<4				0.013	0.007	0.124	
193	SDS6 B	050799	1999	5/6/99	0.25	22	0.06	0	0	79	NPDES	EMC	No	8.6	14					0.006	<0.002	0.006	annual sample
194	SDS6	SDS6 102000	2001	10/19/00	1.21	26	0.19	0	0.38	41	NPDES	EMC	No	7.1	16					0.008	<0.002	0.029	
195	SDS5	D 012897	1997	1/27/97	0.41	26		0	108		NPDES	No	No	38	35	11.3				0.016	0.004	0.023	makeup for 86Q4 (3 unsuccessful attempts)
196	SDS5	D 021297	1997	2/11/97	0.48	16		0	205		NPDES	No	No	36	49	<6.0				0.008	<0.001	<0.005	
197	SDS5	D 030597	1997	3/5/97	0.39	20		0.24	42		NPDES	No	No	34	25	<4.0				0.021	0.006	0.022	
198	SDS5	D 011499	1999	1/13/99	1.07	22	0.16	0	0	85	NPDES	SMC	No	51	40	<4.0				0.014	0.003	0.129	
199	SDS5	D 050799	1999	5/6/99	0.25	22	0.06	0	0	79	NPDES	EMC	No	58	14					0.005	<0.002	0.006	annual sample
200	SDS5	SDS5 102000	2001	10/19/00	1.21	26	0.19	0	0.38	41	NPDES	SMC	No	7.2	11					0.011	<0.002	0.020	
201	SDS5	SDS5 010401	2001	1/30/01	0.44	15	0.13	0	0	77	NPDES	EMC	No	4.4	2.9					0.013	<0.002	0.006	
202	SDS5	SDS5 031501	2001	3/15/01	0.32	14	0.05	0	0.11	43	NPDES	EMC	No	3	3.4					0.005	<0.002	0.022	
203	SDN1	SDN1 091494	1995	9/13/94	0.15	9			118		NPDES	No	No	21.5	6.4	194				0.064	0.006	1.03	
204	SDN1	SDN1 101994	1995	10/19/94	0.2	32			120		NPDES	No	No	13	10	6				0.034	0.006	0.416	
205	SDN1	SDN1 111994	1995	11/19/94	0.42	24		0.05	52		NPDES	No	No			6	<5	<10					
206	SDN1	SDN1 011295	1995	1/11/95	0.3	60		0.04	24		NPDES	No	No	22	30	4				0.02	0.016	0.265	
207	SDN1	SDN1 021895	1995	2/15/95	1.1	58		0	86		NPDES	Yes	Yes			31	6.1	<5	6.1				
208	SDN1	SDN1 030595	1995	3/4/95	0.18	24		0	158		Slip Ag	No	No	<2	3.5	4	<5	<5	<10				
209	SDN1	SDN1 030995	1995	3/8/95	2.16	114		0	86		Slip Ag	No	No	14	17	6	<5	<5	<10				

Full Data Set (No Values Trimmed)
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AR 017210

SAMPLE DATA

STORM CHARACTERISTICS

CONCENTRATION, mg/L

NPDES Composite Sample Data 9/1/94 - 6/30/01

Seq	Out	Sample	Reported	Storm	Dpth	Dur	MaxVel	Zdrant	48hrant	MDyrant	Pur-	Ground	TSS	Turb,	BOD5	E-	P-	Total	Cu	Pb	Zn	Comments
Id	Sample	ID	Reported	Date	In	hr	In/hr	In	In	hr	pose	Type	Detector?	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
210	SDN1	SDN1 040595	1995	4/4/95	0.17	4		0	270		Sip Ag	No	6	7.6	5	< 5	< 5	< 10	0.008	0.001	0.266	
211	SDN1	SDN1 040785	1995	4/6/95	0.61	26		0.04	60		NPDES	No	18	6.2	40	< 5	< 5	< 10	0.009	0.001	0.266	
212	SDN1	SDN1 080785	1996	8/6/95	0.4	6		0			NPDES	No	58	16	27				0.035	0.009	0.464	
213	SDN1	SDN1 110785	1996	11/6/95	3.89	46		0.09			NPDES	No	15	14	8				0.023	0.013	0.375	
214	SDN1	SDN1 020466	1996	2/3/96	1.6	6		0.09			NPDES	Yes	130	150	15	< 5.0	< 5.0	< 10.0	0.019	0.021	0.266	
215	SDN1	SDN1 041666	1996	4/15/96	0.48	16		0.09			Sip Ag	No	47	7.1	< 4	< 5.0	< 5.0	< 10.0				
216	SDN1	SDN1 042286	1996	4/22/96	2.63	8		0			NPDES	No	31	9.5	8.00	< 5.0	< 5.0	< 10.0	0.016	0.011	0.160	
217	SDN1	SDN1 051366	1996	5/13/96	0.99	20		0.07	12		Sip Ag	No	14	15	4.22	< 5.0	< 5.0	< 10.0				
218	SDN1	SDN1 052286	1996	5/21/96	0.31	30		0.02			Sip Ag	No	11	7.3	10.2	< 5.0	< 5.0	< 10.0	0.027	0.007	0.299	xtra NPDES/Sip Ag
219	SDN1	SDN1 062396 A	1996	6/23/96	0.46	10		0			SES	No	22		16				0.061	0.010	0.508	
220	SDN1	SDN1 062396	1996	6/23/96	0.46	10		0			Sip Ag	No	36	8.3	20	< 5.0	< 5.0	< 10.0	0.080	0.013	0.588	xtra NPDES/Sip Ag
221	SDN1	SDN1 070496	1997	7/3/96	0.23	12		0			NPDES	No	51	16	10.7	< 5.0	< 5.0	< 10.0	0.046	0.019	0.355	
222	SDN1	SDN1 071796	1997	7/17/96	0.27	31		0			Sip Ag	No	19	2.1	25.1	< 5.0	< 5.0	< 10.0				
223	SDN1	SDN1 080286	1997	8/2/96	1.01	27		0	325		Sip Ag	No	35	20	14.2	< 5.0	< 5.0	< 10.0				
224	SDN1	SDN1 080396	1997	8/3/96	0.29	12		0	76		Sip Ag	No	49.3	15	9.86	< 5.0	< 5.0	< 10.0				
225	SDN1	SDN1 081466	1997	8/13/96	0.72	48		0	144		Sip Ag	No	50	22	10.3	< 5.0	< 5.0	< 10.0				
226	SDN1	SDN1 081996	1997	8/18/96	0.36	20		0.02	28		Sip Ag	No	3.6	7	< 4.00	< 5.0	< 5.0	< 10.0				
227	SDN1	SDN1 011697	1997	1/16/97	1.21	23		0	154		NPDES	No	66	30	23.6				0.039	0.039	0.343	paired up/down sample
228	SDN1	SDN1 041397	1997	4/13/97	0.31	12		0.04			NPDES	No	34	19	17.0				0.042	0.013	0.433	downstream location at SDN1-27
228	SDN1up	SDN1up 100496	1997	10/4/96	0.59	8.1		0.08	18		NPDES	No	21	6.7	< 4.00				0.025	0.016	0.219	paired up/down sample
230	SDN1up	SDN1up 011697	1997	1/16/97	1.21	23		0	154		NPDES	No	62	28	9.94				0.030	0.040	0.391	paired up/down sample
231	SDN1up	SDN1 060397	1997	6/3/97	0.26	16		0	76		NPDES	EMC	77	30	17.9				0.036	0.027	0.211	
232	SDN1up	SDN1 102897	1998	10/28/97	0.47	10.8		0.08	26		NPDES	EMC	19	28	4.0				0.019	0.017	0.222	
233	SDN1up	SDN1 121597	1998	12/15/97	1	33		0	87		NPDES	SMC	22	21	4.88	< 2.0	< 2.0	< 4.0	0.017	0.013	0.191	
234	SDN1up	SDN1 030198	1998	3/1/98	0.96	66		0.07	6		NPDES	SMC	104	39	4.82				0.010	0.007	0.064	
235	SDN1up	SDN1 042398	1998	4/23/98	0.46	20		0	264		NPDES	SMC	26	12	12.6				0.062	0.005	0.401	
236	SDN1up	SDN1 051498	1998	5/14/98	0.21	9		0.01	125		NPDES	EMC	43	21	6.6				0.053	0.010	0.540	
237	SDN1up	SDN1 061098	1998	6/10/98	0.26	10		0	266		NPDES	EMC	34	71	9.94				0.056	0.009	0.360	
238	SDN1up	SDN1 081698	1999	8/16/98	0.31	10		0	792		NPDES	EMC	182	63	26.9				0.063	0.030	0.569	thunderstorm, 0.25 in/hr
239	SDN1up	SDN1 100398	1999	10/3/98	0.4	3		0.022	0	0.007	NPDES	EMC	67	21	4.22				0.018	0.017	0.247	
240	SDN1up	SDN1 102798	1999	10/27/98	0.64	9		0	0.19	0	NPDES	SMC	95	44	6.82				0.006	< 0.002	0.066	

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AR 017211



9/27/01 10:32:18 AM

NPDES Composite Sample Data 9/1/94 - 6/30/01

SAMPLE DATA

STORM CHARACTERISTICS

CONCENTRATION, mg/L

Seq	Out fall	Sample ID	Reported	Storm Date	Depth in	Dur hr	Maxint in/hr	24hrant in	48hrant in	Dryant hr	Pur- pose	Type	Ground Deica?	TSS	Turb, NTU	BOD5	E- Glycol	P- Glycol	Total Glycol	Cu	Pb	Zn	Comments
241	SDN1up	SDN1 110498	1999	11/3/98	1.62	39	0.48	0	0.08	35	NPDES	SMC	No	32	17	< 4			0.014	0.011	0.127		
242	SDN1up	SDN1 111396	1999	11/11/98	0.96	62	0.15	0	0.05	31	NPDES	SMC	No	53	46	< 4			0.024	0.025	0.487	concurrent WET sample	
243	SDN1up	SDN1 122586	1999	12/24/98	1.19	39	0.16	0	0	153	NPDES	SMC	Yes	156	95	116	13.8	12.3	0.003	0.004	0.122		
244	SDN1up	SDN1 011499	1999	1/13/99	1.07	22	0.16	0	0	85	NPDES	SMC	No	78	31	< 4.0			0.024	0.048	0.182	concurrent WET sample	
245	SDN1up	SDN1 020499	1999	2/3/99	0.28	19	0.07	0	0.61	27	NPDES	EMC	No	45	22	5.84			0.020	0.006	0.233		
246	SDN1up	SDN1 030699	1999	3/6/99	0.28	15	0.05	0	0	86	NPDES	EMC	No	40	24				0.015	0.009	0.170		
247	SDN1up	SDN1 032498	1999	3/24/99	0.26	19	0.08	0	0.15	40	NPDES	EMC	No	61	40	4.86			0.015	0.010	0.175	concurrent WET sample	
248	SDN1up	SDN1 032899	1999	3/27/99	0.24	9	0.07	0	0.08	26	NPDES	EMC	No	9.7	6.4	< 4.0			0.012	< 0.002	0.218		
249	SDN1up	SDN1 070299	2000	7/2/99	0.3	6	0.11	0	0	103	NPDES	EMC	No	69	25	4.28			0.038	0.009	0.238		
250	SDN1up	SDN1 110699	2000	11/5/99	0.68	12	0.11	0	0.05	44	NPDES	SMC	No	26	20	4.14			0.011	0.009	0.120		
251	SDN1up	SDN1 111699	2000	11/16/99	0.6	15	0.07	0.01	0.08	23	NPDES	SMC	No	39	41	4.98	< 2	< 2	0.011	0.007	0.108		
252	SDN1up	SDN1 120599	2000	12/4/99	0.24	10	0.1	0	0	60	NPDES	EMC	No	16	6.4	16			0.010	0.005	0.151		
253	SDN1up	SDN1 121799	2000	12/17/99	0.34	11	0.08	0	1.15	26	NPDES	EMC	No	25	16	5.54			0.013	0.005	0.122		
254	SDN1up	SDN1 031300	2000	3/13/00	0.47	9	0.13	0	0	49	NPDES	SMC	No	13	3.1	5.66			0.034	< 0.002	0.613		
255	SDN1up	SDN1 032200	2000	3/22/00	0.43	8	0.14	0	0	86	NPDES	SMC	No	1.9	0.83	< 4			0.028	< 0.002	0.203		
256	SDN1up	SDN1 041300	2000	4/13/00	0.34	12	0.08	0	0	74	NPDES	EMC	No	46	15	6.54	< 2	< 2	0.035	< 0.002	0.41	glycols not reqd	
257	SDN1up	SDN1 070300	2001	7/3/00	0.29	12	0.13	0	0.02	30	NPDES	EMC	No	16	6.1	< 4			0.028	0.004	0.182		
258	SDN1up	SDN1 101700	2001	10/17/00	0.36	4	0.12	0	0.51	27	NPDES	EMC	No	92	32	5.14			0.033	0.021	0.15		
259	SDN1up	SDN1 121400	2001	12/14/00	0.29	7	0.08	0	0	123	NPDES	EMC	No	331	170	10.4			0.042	0.035	0.33		
260	SDN1up	SDN1 010401	2001	1/30/01	0.44	15	0.13	0	0	77	NPDES	EMC	No	103	60	4.00			0.014	0.003	0.099		
261	SDN1up	SDN1 012901	2001	1/28/01	0.28	8	0.09	0	0	101	NPDES	SMC	No	118	44	5.16			0.013	0.006	0.153		
262	SDN1up	SDN1 030101	2001	3/1/01	0.27	6	0.11	0	0	127	NPDES	EMC	No	127	71	10.4			0.040	0.010	0.195		
263	SDN1up	SDN1 031501	2001	3/15/01	0.32	14	0.05	0	0.11	43	NPDES	EMC	No	37	27	5.5	< 2.00	< 2.00	0.017	0.006	0.135	glycols not reqd	
264	SDN1up	SDN1 051401	2001	5/14/01	0.48	16	0.08	0.01	0.02	24	NPDES	EMC	No	18	9.2	5.32			0.014	< 0.002	0.128		
265	SDN1up	SDN1 062701-	2001	6/27/01	0.52	20	0.23	0	0	58	NPDES	EMC	No	366	198	9.00			0.022	0.01	0.085		
266	SDN2	SDN2 060894	1995	9/8/94	0.69	22				93	NPDES	No	No	3.2	4.1	11			0.028	0.007	0.022		
267	SDN2	SDN2 101394	1995	10/13/94	0.32	14		0	480		NPDES	No	No	6.5	8.1	86			0.059	0.005	0.067		
268	SDN2	SDN2 111394	1995	11/1/94	0.28	14			46		NPDES	No	No	2	5.4	7			0.013	0.004	0.03		
269	SDN2	SDN2 111994	1995	11/19/94	0.42	24		0.05	52		NPDES	No	No			10	< 5	< 5					
270	SDN2	SDN2 011295	1995	1/1/95	0.3	60		0.04	24		NPDES	No	No	7.5	14	4			0.035	0.022	0.076		
271	SDN2	SDN2 030595	1995	3/4/95	0.16	24		0	158		Slip Ag	No	No	2.4	2.1	> 12	36	< 5					

Full Data Set (No Values Trimmed)

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9/27/01 10:32:19 AM

NPDES Composite Sample Data 9/1/94 - 6/30/01

SAMPLE DATA

STORM CHARACTERISTICS

CONCENTRATION, mg/L

Seq	Outfall	Sample ID	Reported	Storm Date	Dpth In	Dur Hr	Max In/hr	24hr In	48hr In	Dry In	Pur-pose	Type	Ground Detect?	TSS	Turb, NTU	BOD5	E-Glycol	P-Glycol	Total Glycol	Cu	Pb	Zn	Comments	
272	SDN2	SDN2 030895	1995	3/6/95	2.16	114			0	86	Other		No											
273	SDN2	SDN2 040795	1995	4/6/95	0.81	28			0.04	60	Sip Ag		No	7.2	4.8	15	<5	<5	<10	0.012	0.003	0.026		
274	SDN2	SDN2 041295	1995	4/10/95	0.29	18				56	NPDES		No	5.6	4.9	30	<5	19	19	0.025	0.003	0.086		
275	SDN2	SDN2 080795	1996	8/6/95	0.4	8					NPDES		No	8.9	5.1	6			0.028	0.01	0.046			
276	SDN2	SDN2 101895	1996	10/15/95	0.35	12					NPDES		No	1.25	1.8	5			0.016	0.002	0.024			
277	SDN2	SDN2 021796	1996	2/17/96	1.29	12					NPDES		No	<2.0	2	6	6.3	11	17.3	0.009	0.005	0.027		
278	SDN2	SDN2 041896	1996	4/15/96	0.49	18			0.09		Sip Ag		No	15	11	<4	<5.0	<5.0	<10.0					
279	SDN2	SDN2 042296	1996	4/22/96	2.83	8					NPDES		No	5.3	2.5	6.64	<5.0	<5.0	<10.0	0.013	0.003	0.017		
280	SDN2	SDN2 051396	1996	5/13/96	0.99	20			0.07	12	Sip Ag		No	10	2	5.08	<5.0	<5.0	<10.0	0.014	0.002	0.076	extra NPDES/sip Ag	
281	SDN2	SDN2 052296	1996	5/21/96	0.31	30			0.02		Sip Ag		No	4.8	7.5	18.3	<5.0	<5.0	<10.0	0.014	0.022	0.136	extra NPDES/sip Ag	
282	SDN2	SDN2 082396 A	1996	8/23/96	0.46	10					SES		No	33	10	12.3	<5.0	<5.0	<10.0	0.076	0.022	0.136	extra NPDES/sip Ag	
283	SDN2	SDN2 082396	1996	8/23/96	0.46	10					Sip Ag		No	10	10	12.3	<5.0	<5.0	<10.0	0.055	0.012	0.076	extra NPDES/sip Ag	
284	SDN2	SDN2 080396	1997	8/3/96	0.29	12				76	NPDES		No	4.2	2.9	4.50	<5.0	<5.0	<10.0	0.033	0.006	0.042		
285	SDN2	SDN2 102196	1997	10/21/96	0.66	41				64	NPDES		No	8.6	1.5	1.20	<5.0	50.9	50.9	0.018	0.011	0.046		
286	SDN2	SDN2 011697	1997	1/16/97	1.21	23				154	NPDES		No	17	6.5	<4.0	<5.0	<5.0	<10.0	0.042	0.019	0.063		
287	SDN2	SDN2 041997	1997	4/19/97	1.16	26				64	NPDES		No											
288	SDN2	SDN2 082499	1999	8/24/99	1.12	24	0.35	0.03	0.08	10	NPDES	EMC	No	48										N cargo (IWS) pump station bypass (30 min)
289	SDN2	SDN2 100900	2001	10/9/00	0.37	8	0.29	0	0	196	NPDES	EMC	No	43										N cargo (IWS) pump station bypass
290	SDN2	SDN2 061101-Comp	2001	6/11/01	1.28	22	0.28	0.01	0.09	22	NPDES	SMC	No											N cargo (IWS) pump station bypass
291	SDN3	SDN3 090894	1995	9/8/94	0.69	22				93	NPDES		No	2.1	5.1	5				0.032	0.002	0.063		
292	SDN3	SDN3 102894	1995	10/25/94	1.96	44				114	NPDES		No	9.2	6	4								
293	SDN3	SDN3 111994	1995	11/19/94	0.42	24			0.05	52	NPDES		No			4	<5	<5	<10					
294	SDN3	SDN3 010795	1995	1/7/95	0.21	62				252	NPDES		No	0.62	1.6	2				0.003	0.001	0.052		
295	SDN3	SDN3 021695	1995	2/15/95	1.1	56				86	NPDES		Yes			> 90	<5	<5	<10					
296	SDN3	SDN3 030595	1995	3/4/95	0.16	24				158	Sip Ag		No	<2	2.3	3	<5	<5	<10					
297	SDN3	SDN3 030995	1995	3/6/95	2.16	114				88	Sip Ag		No	<10	12	3	<5	<5	<10					
298	SDN3	SDN3 040595	1995	4/4/95	0.17	4				270	Sip Ag		No	<2	1.6	3	<5	<5	<10					
299	SDN3	SDN3 060495	1995	6/4/95	0.7	28				364	NPDES		No	15	25	8	<5	<5	<10	0.011	0.001	0.128		
300	SDN3	SDN3 071095	1996	7/9/95	0.81	13					NPDES		No	21	24	7				0.036	0.004	0.16		
301	SDN3	SDN3 110795	1996	11/6/95	3.89	48			0.09		NPDES		No	15	16	3				0.010	0.001	0.066		

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9/27/01 10:32:20 AM

NPDES Composite Sample Data 9/1/94 - 6/30/01

CONCENTRATION, mg/L

SAMPLE DATA				STORM CHARACTERISTICS										CONCENTRATION, mg/L									
Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Main Int in/hr	24hrant in	48hrant in	Dryant in	Pur- pose	Ground Type	Dece?	FSS	Turb. NTU	BOD5	E-Glycol	P-Glycol	Total Glycol	Cu	Pb	Zn	Comments
302	SDN3	SDN3 011486	1996	1/13/96	0.37	20			0		NPDES	No	No	3.8	4.7	5	<5.0	<10.0	0.010	0.002	0.047		
303	SDN3	SDN3 020486	1996	2/3/96	1.6	8					Slip Ag	Yes			9.7		<5.0	<10.0					storm after runway delce xtra NPDES/Slip Ag
304	SDN3	SDN3 040196	1996	3/31/96	0.84	0		0.01			Slip Ag	No	No	11	16	5	<5.0	<10.0	0.015	0.002	0.101		
305	SDN3	SDN3 041696	1996	4/15/96	0.49	16		0.09			NPDES	No	No	27	22	<4	<5.0	<10.0	0.018	0.003	0.121		
306	SDN3	SDN3 042296	1996	4/22/96	2.83	8		0			Slip Ag	No	No	15	9.5	6.56	<5.0	<10.0	0.016	0.001	0.063		xtra NPDES/Slip Ag
307	SDN3	SDN3 051396	1996	5/13/96	0.99	20		0.07	12		Slip Ag	No	No	16	18	<4	<5.0	<10.0					
308	SDN3	SDN3 052296	1996	5/21/96	0.31	30		0.02			Slip Ag	No	No	16	5.2	<4	<5.0	<10.0					
309	SDN3	SDN3 062396 A	1996	6/23/96	0.46	10		0			SES	No	No	7.3		5	<5.0	<10.0	0.004	<0.001	0.051		delayed hydrograph, very dry antecedent
310	SDN3	SDN3 060396	1997	8/2/96	1.01	27		0	325		NPDES	No	No	26	26	<4.00			0.037	0.004	0.156		
311	SDN3	SDN3 120496	1997	12/4/96	0.82	7.5		0.16	44		NPDES	No	No	16	14	<4.00	<5.0	<10.0	0.016	0.002	0.033		
312	SDN3	SDN3 122196	1997	12/19/96	0.36	37		0	103		NPDES	No	No	2.0	4.5	<8.00	<5.0	<10.0	0.011	<0.001	0.045		
313	SDN3	SDN3 011797	1997	1/16/97	1.21	23		0	154		NPDES	No	No	13	13	4.92			0.012	<0.001	0.043		
314	SDN3	SDN3 030597	1997	3/5/97	0.39	20		0.24	42		NPDES	No	No	10	10	<4.0	6.2	<5.0	0.011	<0.001	0.032		
315	SDN3	SDN3 062197	1997	6/21/97	0.27	11.8		0.01	0.02	24	NPDES EMC	No	No	2.2	10	<4.0			0.014	<0.001	0.046		
316	SDN3	SDN3 111797	1998	11/16/97	0.47	12.6		0	222		NPDES EMC	No	No	12	42	<4.0			0.018	0.002	0.049		
317	SDN3	SDN3 121697	1998	12/15/97	1	33		0	67		NPDES SMC	No	No	11	26	<4.0	<2.0	<4.0	0.011	0.002	0.040		
318	SDN3	SDN3 122486	1999	12/24/98	1.19	39	0.16	0	153		NPDES SMC	No	Yes	12	9	222	<2.0	14.2	0.017	<0.002	0.069		for DO study
319	SDN3	SDN3 021399	1999	2/13/99	0.26	5	0.04	0	102		Other EMC	Yes	Yes			17.8			0.020	0.010	0.060		
320	SDN3	SDN3 120999	2000	12/8/99	0.49	27	0.09	0	36	40	NPDES EMC	No	No	2.6	4.9				0.006	<0.002	0.02		
321	SDN3	SDN3 101900	2001	10/19/00	1.21	26	0.19	0	36	41	NPDES SMC	No	No	8	11				0.010	<0.002	0.032		
322	SDN3	SDN3 040601	2001	4/5/01	0.23	9	0.05	0	0.01	32	NPDES EMC	No	No	2.5	4.1	<4.0			0.006	<0.002	0.033		
323	SDN4	SDN4 090396	1997	9/3/96	0.29	1.2		0	76		NPDES	No	No	6.0	3	14.1			0.136	<0.001	0.047		preliminary and only sample taken at SDN4 daylight outfall
324	SDN4	SDN4 120496	1997	12/4/96	0.82	7.5		0.16	44		NPDES	No	No	7.0	4.5	8.48	<5.0	<10.0	0.034	0.002	0.023		
325	SDN4	SDN4 011697	1997	1/16/97	1.21	23		0	154		NPDES	No	No	11	17	12.1			0.036	<0.001	0.025		
326	SDN4	SDN4 030597	1997	3/5/97	0.39	20		0.24	42		NPDES	No	No	3.8	2.5	<4.0	<5.0	<10.0	0.031	<0.001	0.019		
327	SDN4	SDN4 060397	1997	6/3/97	0.26	16		0	76		NPDES EMC	No	No	2.2	2.6	3.12			0.032	0.001	0.020		
328	SDN4	SDN4 102697	1998	10/26/97	0.47	10.8		0.06	26		NPDES EMC	No	No	2.6	6	7.36	<2.0	<4.0	0.039	0.002	0.024		
329	SDN4	SDN4 121697	1998	12/15/97	1	33		0	67		NPDES SMC	No	No	2.6	3.9	4.66	<2.0	<4.0	0.026	0.001	0.022		
330	SDN4	SDN4 030198	1998	3/1/98	0.98	86		0.07	6		NPDES SMC	No	No	17	18	<4.0	<2.0	<4.0	0.031	0.001	0.026		

Full Data Set (No Values Trimmed)
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SAMPLE DATA

STORM CHARACTERISTICS

CONCENTRATION, mg/L

NPDES Composite Sample Data 9/1/94 - 6/30/01

Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Maxht in/hr	24hrant in	48hrant in	84hrant in	Pur- pose	Ground Type	Device?	TSS	Turb. NTU	BOD5	E- Glycol	P- Glycol	Total Glycol	Cu	Pb	Zn	Comments	
331	SDN4	SDN4 030696	1999	3/8/99	0.86	27		0	132	NPDES	SMC	No		3.2	6.1	4.08	< 2.0	< 2.0	< 4.0	0.046	< 0.001	0.018	backup monthly sample in case 3/1/99 sample didn't qualify under new permit	
332	SDN4	SDN4 042498	1999	4/23/99	0.46	20		0	264	NPDES	EMC	No		2.0	3.5	5.44	< 2	< 2	< 4	0.091	< 0.001	0.029		
333	SDN4	SDN4 052598	1999	5/24/99	0.58	11		0	67	NPDES	EMC	No		3.7	5.5	5.2	< 2.0	< 2.0	< 4.0	0.030	< 0.001	0.027		
334	SDN4	SDN4 062499	1999	6/24/99	0.43	4		0	286	NPDES	EMC	No		4.0	4	4.54	< 2	< 2	< 4	0.047	< 0.002	0.016		
335	SDN4	SDN4 081699	1999	8/16/99	0.31	10	0.25	0	792	NPDES	EMC	No		94	98	8.0	< 2	< 2	< 4	0.087	0.003	0.022	thunderstorm, 0.25 hr/hr glycols may be high based, dupa was <mdl	
336	SDN4	SDN4 082599	1999	8/24/99	0.47	23	0.28	0	146	NPDES	EMC	No		76	43	8.74	< 2	< 2	< 4	0.043	< 0.002	0.016		
337	SDN4	SDN4 100399	1999	10/3/99	0.4	3	0.22	0	36	NPDES	EMC	No		27	23	< 4	< 2	< 2	< 4	0.061	< 0.002	0.045		
338	SDN4	SDN4 110499	1999	11/3/99	1.62	39	0.46	0	35	NPDES	SMC	No		18	5.6	< 4	< 2	< 2	< 4	0.047	< 0.002	0.07		
339	SDN4	SDN4 111399	1999	11/11/99	0.96	62	0.15	0	31	NPDES	EMC	No		22	15	< 4	< 2	< 2	< 4	0.025	0.001	0.127	concurrent WET sample	
340	SDN4	SDN4 122599	1999	12/24/99	1.19	39	0.16	0	153	NPDES	SMC	Yes		12	12	166	7.0	27.3	34.3	0.023	< 0.002	0.075	concurrent WET sample	
341	SDN4	SDN4 011499	1999	1/13/99	1.07	22	0.16	0	85	NPDES	EMC	No		7.0	9.2	< 4.0	< 2.0	< 4.0	0.020	< 0.002	0.034			
342	SDN4	SDN4 020499	1999	2/3/99	0.26	19	0.07	0	61	NPDES	EMC	No		3.6	4.6	< 4.0	< 2.0	< 4.0	0.015	< 0.002	0.024			
343	SDN4	SDN4 021399	1999	2/13/99	0.26	5	0.04	0	102	Other	EMC	Yes				36.0				0.036	< 0.002	0.026	for DO study	
344	SDN4	SDN4 031399	1999	3/12/99	0.63	23	0.07	0	71	NPDES	EMC	No		2.9	7	< 4.0	< 2.0	< 4.0	0.019	< 0.002	0.025			
345	SDN4	SDN4 032899	1999	3/27/99	0.24	9	0.07	0	26	NPDES	EMC	No		4.3	3.6	< 4.0	< 2.0	< 4.0	0.022	< 0.002	0.014			
346	SDN4	SDN4 071799	2000	7/16/99	0.7	34	0.11	0	300	NPDES	EMC	No		186	320	12.5				0.062	0.004	0.017		
347	SDN4	SDN4 110699	2000	11/5/99	0.68	12	0.11	0	44	NPDES	SMC	No		12	17	6.94	< 2	< 2	< 4	0.017	< 0.002	0.023		
348	SDN4	SDN4 111699	2000	11/16/99	0.6	15	0.07	0.01	23	NPDES	SMC	No		5.3	7.2	4.06	< 2	< 2	< 4	0.026	< 0.002	0.033		
349	SDN4	SDN4 120999	2000	12/8/99	0.49	27	0.09	0	36	NPDES	SMC	No		2.6	6.2	5.4	< 2	< 2	< 4	0.018	< 0.002	0.031		
350	SDN4	SDN4 121799	2000	12/17/99	0.34	11	0.08	0	115	NPDES	EMC	No		4.2	6.1	< 4	< 2	< 2	< 4	0.020	< 0.002	0.015		
351	SDN4	SDN4 013100	2000	1/31/00	1.76	29	0.15	0.07	9	NPDES	SMC	No		6.2	5.1	< 4	< 2	< 2	< 4	0.013	< 0.002	0.017		
352	SDN4	SDN4 031400	2000	3/13/00	0.47	9	0.13	0	49	NPDES	EMC	No		14	8	4.04	< 2	< 2	< 4	0.030	< 0.002	< 0.005		
353	SDN4	SDN4 041300	2000	4/13/00	0.34	12	0.08	0	74	NPDES	SMC	No		4.7	4.5	5.62	< 2	< 2	< 4	0.044	< 0.002	0.016		
354	SDN4	SDN4 081800	2001	8/18/00	0.27	11	0.08	0	631	NPDES	EMC	No		4	2.5	14.2	< 2	< 2	< 4	0.039	< 0.002	0.014		
355	SDN4	SDN4 101800	2001	10/17/00	0.36	4	0.12	0	27	NPDES	EMC	No		4.8	3.1	6.94	< 2	< 2	< 4	0.032	< 0.002	0.01		
356	SDN4	SDN4 110800	2001	11/8/00	0.77	9	0.18	0	54	NPDES	SMC	No		2	4.7	4.36	5	< 2	< 2	6	0.013	< 0.002	0.009	
357	SDN4	SDN4 112300	2001	11/23/00	0.37	9	0.1	0	330	NPDES	EMC	No		3.2	3.4	9.42	< 2	< 2	< 4	0.027	< 0.002	0.015		
358	SDN4	SDN4 113000	2001	11/29/00	0.29	28	0.06	0	54	NPDES	EMC	No		1.6	3	5.34	< 2	< 2	< 4	0.024	< 0.002	0.014		
359	SDN4	SDN4 121400	2001	12/14/00	0.29	7	0.06	0	123	NPDES	EMC	No		3.6	6.1	27.7	2.62	10.5	13.3	0.021	0.006	0.019		
360	SDN4	SDN4 030201	2001	3/1/01	0.27	6	0.11	0	127	NPDES	EMC	No		2.7	5.6	6.24	< 2.00	< 2.00	< 4.00	0.039	< 0.002	0.021		

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9/27/01 10:32:22 AM

NPDES Composite Sample Data 9/1/94 - 6/30/01

SAMPLE DATA										STORM CHARACTERISTICS										CONCENTRATION, mg/L									
Seq	Out fall	Sample ID	Reported	Storm Date	Dpth in	Dur hr	Maxini in/hr	24hrant in	48hrantDyeml in	Pur- pose	Type	Ground Deicat?	TSS	Turb, NTU	BOO5	E- Glycol	P- Glycol	Total Glycol	Cu	Pb	Zn	Comments							
361	SDN4	SDN4 031601	2001	3/15/01	0.32	14	0.05	0	0.11	43	NPDES	EMC	No	27	4.7	10.5	< 2.00	2.2	3.20	0.043	< 0.002	0.021							
362	SDN4	SDN4 040601	2001	4/5/01	0.23	9	0.05	0	0.01	32	NPDES	EMC	No	25	5.9	< 4.00	< 2.00	< 4.00	0.025	< 0.002	0.024								
363	SDN4	SDN4 051401	2001	5/14/01	0.46	16	0.08	0.01	0.02	24	NPDES	EMC	No	3.25	2.3	7.78	< 2.00	< 2.00	< 4.00	0.036	< 0.002	0.016							
364	SDN4	SDN4 062801-	2001	6/27/01	0.52	20	0.23	0	0	56	NPDES	EMC	No	4.5	5.6	4.70			0.031	< 0.002	0.006								
365	EY	EY 091494	1995	9/13/94	0.15	9				116	NPDES	No		24.9															
366	EY	EY 101364	1995	10/13/94	0.32	14		0	480	NPDES	No		25																
367	EY	EY 030995	1995	3/6/95	2.16	114		0	88	NPDES	No		3.2																
368	EY	EY 060485	1995	6/4/95	0.7	28		0	384	NPDES	No		25																
369	EY	EY 072695	1996	7/26/95	0.41	36		0	56	NPDES	No		56																
370	EY	EY 101695	1996	10/15/95	0.35	12		0	12	NPDES	No		12																
371	EY	EY 021796	1996	2/17/96	1.29	12		0	24	NPDES	No		24																
372	EY	EY 042296	1996	4/22/96	2.83	8		0	39	NPDES	No		39																
373	EY	EY 052296	1996	5/21/96	0.31	30		0.02	28	Slip Ag	No		28																
374	EY	EY 062396	1996	6/23/96	0.46	10		0	262	Slip Ag	No		262																
375	EY	EY 070496	1997	7/3/96	0.23	12		0	16	NPDES	No		16																
376	EY	EY 102196	1997	10/21/96	0.68	4.1		0	64	NPDES	No		12	4.3															
377	EY	EY 021297	1997	2/11/97	0.46	16		0	205	NPDES	No		8.6																
378	EY	EY 030597	1997	3/5/97	0.39	20		0.24	42	NPDES	No		17																
379	EY	EY 061797	1997	6/16/97	0.36	26		0	135	NPDES	EMC	No	72																
380	EY	EY 110697	1998	11/6/97	0.16	4.4		0.01	72	NPDES	EMC	No	10																
381	EY	EY 013098	1998	1/26/98	0.2	14		0	107	NPDES	EMC	No	12																
382	EY	EY 052598	1998	5/24/98	0.56	11		0	87	NPDES	EMC	No	26																
383	EY	EY 011499	1999	1/13/99	1.07	22	0.16	0	65	NPDES	EMC	No	76																
384	EY	EY 062499	1999	6/24/99	1.12	24	0.35	0.03	10	NPDES	EMC	No	128																
385	EY	EY 013100	2000	1/31/00	1.76	29	0.15	0.07	9	NPDES	SMC	No	100	82	24.1	< 2	< 2	< 4	0.020	0.026	0.179	glycol and metals data not reqd. analyzed for dupe only							
386	EY	EY 081600	2001	8/16/00	0.27	11	0.08	0	631	NPDES	EMC	No	35																
387	EY	EY 102000	2001	10/19/00	1.21	26	0.19	0	36	NPDES	SMC	No	42																
388	EY	EY 010401	2001	1/30/01	0.44	15	0.13	0	77	NPDES	EMC	No	19																

Full Data Set (No Values Trimmed)
 R=Rejected Non-Representative Data - Refer to line comment for detail
 c:\ENV-apps\EMIS\POSDEV\EMISMain.mdb\rpIS\NPDESCompositesOnly



9/27/01 10:32:22 AM

SAMPLE DATA

STORM CHARACTERISTICS

CONCENTRATION, mg/L

NPDES Composite Sample Data 9/1/94 - 6/30/01

Seq	Out	Sample	Reported	Storm	Dphn	Dur	Maximl	Zh	48hr	Dry	Pur-	Ground	TSS	Turb.	BO05	E-	P-	Total	Cu	Pb	Zn	Comments
Id	fall	Id	Date	Date	In	hr	in/hr	In	In	In	pose	Device?		NTU	Glycol	Glycol	Glycol					
389	EY	EY 062701- COMP	2001	6/27/01	0.52	20	0.23	0	0	58	NPDES	EMC	No	68								
390	TV	TV 080894	1995	6/6/94	0.69	22				93	NPDES	No	4									
391	TV	TV 101994	1995	10/19/94	0.2	32				120	NPDES	No	10									
392	TV	TV 030495	1995	3/4/95	0.18	24				0	NPDES	No	18			< 5	< 5	< 10				glycol data not reqd
393	TV	TV 080495	1995	6/4/95	0.7	28				0	NPDES	No	22									
394	TV	TV 081795	1996	8/16/95	1.34	12				0.01	NPDES	No	20									
395	TV	TV 101695-1	1996	10/15/95	0.35	12				0	NPDES	No	460									
396	TV	TV 032296	1996	3/22/96	0.21					0	NPDES	No										
397	TV	TV 041696	1996	4/15/96	0.48	16				0.09	NPDES	No	30									
398	TV	TV 042296	1996	4/22/96	2.63	8				0	NPDES	No	23									
399	TV	TV 070496	1997	7/3/96	0.23	12				0	NPDES	No	26									
400	TV	TV 071696	1997	7/17/96	0.27	31				0	Sip Ag	No	13									
401	TV	TV 080296	1997	8/2/96	1.01	27				0	Sip Ag	No	33									
402	TV	TV 100496	1997	10/4/96	0.59	8.1				0.08	NPDES	No	17									
403	TV	TV 021297	1997	2/11/97	0.48	18				0	NPDES	No	29									
404	TV	TV 030697	1997	3/5/97	0.39	20				0.24	NPDES	No	188									
possible insert (BWP) failure indicated by elevated FOG and TSS																						
405	TV	TV 060397	1997	6/3/97	0.26	16				0	NPDES	SMC	No	73								
406	TV	TV 111797	1998	11/16/97	0.47	12.6				0	NPDES	SMC	No	26								
407	TV	TV 030898	1998	3/8/98	0.66	27				0	NPDES	SMC	No	15								Makeup Comp for 98QW, has extra Grab
408	TV	TV 061098	1998	6/10/98	0.28	10				0	NPDES	EMC	No	20								
409	TV	TV 020399	1999	2/3/99	0.28	19	0.07			0	NPDES	SMC	No	26								
410	TV	TV 070299	2000	7/2/99	0.3	6	0.11			0	NPDES	EMC	No	24								
411	TV	TV 020800	2000	2/7/00	1.16	25	0.12			0	NPDES	EMC	No	17								
412	TV	TV 031300	2000	3/13/00	0.47	9	0.13			0	NPDES	SMC	No	45								
413	TV	TV 012801	2001	1/28/01	0.26	8	0.09			0	NPDES	EMC	No	660								

Full Data Set (No Values Trimmed)
R-Rejected Non-Representative Data - Refer to line comment for detail
c:\ENV-APP\EMIS\POS\DEV\EMISMain.mdb\PRIS\WNPDESCompositesOnly

AR 017217



NPDES Composite Statistics 9/1/94 - 6/30/01

CONCENTRATION, mg/L

	TSS	Turb. NTU	BOD5	E-Glycol	P-Glycol	Total Glycol	Cu	Pb	Zn
All Outfalls	Count	387	334	202	202	204	312	312	312
	Max	4310	648	280	355	364	0.366	0.104	1.030
	95th	124	79	9.4	25.0	34.2	0.093	0.034	0.360
	75th	41	25	12	2.5	5.0	0.037	0.010	0.148
	Median	17	12	8.27	2.5	5	0.024	0.003	0.064
	25th	7	6	4	1.0	2.0	0.015	0.001	0.026
	Min	0.62	0.63	2	1	2	0.001	0.001	0.002
	SD	226	146	53	16.6	29.6	0.033	0.014	0.131
	CV%	486%	467%	291%	454%	378%	306%	101%	117%
	#NonDetects	6	0	63	174	152	1	103	6
%NonDetects	2%	0%	19%	86%	78%	0%	33%	2%	
SDE4 (002)	Count	49	50	45	45	46	51	51	51
	Max	253	190	335	14	49.4	0.208	0.104	0.779
	95th	182	78	28	6.2	11.2	0.077	0.062	0.328
	75th	66	42	11	2.5	5.0	0.034	0.026	0.195
	Median	45	26.5	6.82	1	2	0.024	0.013	0.134
	25th	34	19	5	1.0	2.0	0.015	0.005	0.098
	Min	8.8	1.5	2	1	2	0.003	0.001	0.002
	SD	53	33	47	2.8	8.5	0.033	0.022	0.122
	CV%	88%	95%	287%	126%	225%	105%	110%	75%
	#NonDetects	0	0	6	40	38	0	9	2
%NonDetects	0%	0%	16%	89%	84%	0%	18%	4%	
SDS1 (003)	Count	23	22	17	17	17	24	24	24
	Max	93	72	92	260	33.4	0.366	0.088	0.304
	95th	74	46	77	63.2	25.9	0.119	0.044	0.285
	75th	31	27	23	2.5	4.5	0.085	0.016	0.210
	Median	15	14	12.25	2.5	2.5	0.036	0.009	0.122
	25th	6	6	7	1.0	1.0	0.022	0.005	0.103
	Min	1.8	3.6	2	1	2	0.012	0.001	0.062
	SD	25	17	24	62.5	9.3	0.074	0.019	0.073
	CV%	101%	84%	114%	352%	152%	120%	124%	47%
	#NonDetects	0	0	1	14	12	11	0	1
%NonDetects	0%	0%	5%	82%	71%	85%	4%	0%	

Full Data Set (No Values Trimmed)
 Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.
 c:\ENV-apps\EMIS\POS\DEVE\EMISMain.mdb\ri\SWNPDESCompStats

NPDES Composite Statistics 9/1/94 - 6/30/01

CONCENTRATION, mg/L

	TSS	Turb. NTU	BOD5	E- Glycol	P- Glycol	Total Glycol	Cu	Pb	Zn
SDS2 (004)	Count	10	9				3	3	3
	Max	65	39	11			0.010	0.008	0.213
	95th	59	35	10			0.010	0.005	0.198
	75th	38	26	6			0.009	0.003	0.138
	Median	20	19.5	4			0.008	0.001	0.064
	25th	17	10	2			0.008	0.001	0.035
	Min	7.6	6.1	2			0.007	0.001	0.006
	SD	18	11	3			0.002	0.003	0.107
	CV%	84%	56%	85%			18%	108%	113%
	#NonDetects	0	0	4			0	2	0
%NonDetects	0%	0%	44%			0%	87%	0%	
SDS3 (005)	Count	56	55	58	43	43	56	56	56
	Max	310	168	648	315	355	384	0.138	0.043
	95th	62	49	149	173	113.5	121.1	0.091	0.012
	75th	19	15	19	38	10.0	17.5	0.047	0.004
	Median	8.95	8	10.75	1	2.5	5	0.029	0.002
	25th	5	5	6	1.0	1.0	2.5	0.022	0.001
	Min	1	0.7	2	1	1	2	0.004	0.001
	SD	51	26	105	6.2	60.8	62.9	0.028	0.008
	CV%	223%	182%	287%	154%	266%	233%	71%	163%
	#NonDetects	1	0	4	31	22	20	0	23
%NonDetects	2%	0%	7%	72%	51%	47%	0%	40%	
SDS4 (009)	Count	22	21	23	10	10	23	23	23
	Max	4310	2650	93	25	25	5	0.180	0.047
	95th	101	95	18	25	25	5.0	0.041	0.005
	75th	25	12	7	25	25	5.0	0.033	0.003
	Median	11.5	6.5	5	25	25	5	0.023	0.001
	25th	5	5	4	25	25	5.0	0.018	0.001
	Min	2.1	1.3	2	1	1	2	0.008	0.001
	SD	915	576	19	0.6	0.6	1.3	0.034	0.010
	CV%	429%	417%	186%	29%	28%	29%	109%	258%
	#NonDetects	0	0	3	10	10	10	0	8
%NonDetects	0%	0%	13%	100%	100%	100%	0%	35%	

AR 017219

Full Data Set (No Values Trimmed)

Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.

c:\ENV-apps\EMIS\POSDEV\EMISMain.mdb\reports\NPDESCompStats



NPDES Composite Statistics 9/1/94 - 6/30/01

CONCENTRATION, mg/L

	TSS	Turb. NTU	BOD5	E-Glycol	P-Glycol	Total Glycol	Cu	Pb	Zn	Former location downstream, ends 10/1996		Upstream location, begins 11/1996		Formerly SB B	
										Count	Max	Count	Max	Count	Max
SDS7 (010)	4	4	4												
Count	4	4	4												
Max	68	310	15												
95th	83	287	14												
75th	64	96	8												
Median	38	22.5	5.5												
25th	16	16	5												
Min	5.7	2.3	4												
SD	37	147	5												
CV%	87%	165%	68%												
#NonDetects	0	0	0												
%NonDetects	0%	0%	0%												
SDS7up (010)	8	8	4				4	4	4						
Count	8	8	4				4	4	4						
Max	12	13	6.7				0.028	0.001	0.010						
95th	11	11	6				0.025	0.001	0.010						
75th	8	7	5				0.012	0.001	0.009						
Median	5.8	3.65	3.09				0.005	0.001	0.007						
25th	3	2	2				0.003	0.001	0.005						
Min	2.2	1	2				0.001	0.001	0.002						
SD	3	4	2				0.012	0.000	0.003						
CV%	57%	79%	60%				127%	0%	49%						
#NonDetects	0	0	2				1	4	1						
%NonDetects	0%	0%	50%				25%	100%	25%						
SDS6 (014)	7	7	5				7	7	7						
Count	7	7	5				7	7	7						
Max	91	126	5.66				0.028	0.007	0.124						
95th	75	121	5				0.025	0.007	0.098						
75th	33	75	3				0.016	0.004	0.036						
Median	23	35	2				0.013	0.002	0.028						
25th	11	20	2				0.007	0.001	0.023						
Min	7.1	14	2				0.006	0.001	0.006						
SD	29	46	2				0.008	0.003	0.036						
CV%	98%	89%	53%				60%	94%	97%						
#NonDetects	0	0	3				0	3	0						
%NonDetects	0%	0%	60%				0%	43%	0%						

Full Data Set (No Values Trimmed)
 Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.

c:\ENV-apps\EMIS\POSDEV\EMISMain.mdb\rpt\SWNPDESCompStats

NPDES Composite Statistics 9/1/94 - 6/30/01

CONCENTRATION, mg/L

	TSS	Turb. NTU	BOD5	E- Glycol	P- Glycol	Total Glycol	Cu	Pb	Zn	Formerly SB D	
SDS5 (015)	Count	6	4				6	6	6	6	6
	Max	56	11.3				0.021	0.008	0.126	0.008	0.126
	95th	56	10				0.019	0.005	0.092	0.005	0.092
	75th	41	5				0.015	0.003	0.022	0.003	0.022
	Median	36	2.5				0.012	0.001	0.021	0.001	0.021
	25th	7	2				0.007	0.001	0.008	0.001	0.008
	Min	3	2				0.005	0.001	0.002	0.001	0.002
	SD	22	5				0.006	0.002	0.041	0.002	0.041
	CV%	74%	99%				48%	90%	140%	90%	140%
	#NonDetects	0	3				0	5	1	5	1
	%NonDetects	0%	75%				0%	63%	13%	63%	13%
SDN1 (006)	Count	24	26	18	18	18	14	14	14	14	14
	Max	130	194	61	2.5	6.1	0.061	0.039	1.030	0.039	1.030
	95th	65	38	3.0	2.5	5.2	0.060	0.027	0.730	0.027	0.730
	75th	48	19	2.5	2.5	5.0	0.045	0.015	0.456	0.015	0.456
	Median	22	14	2.5	2.5	5	0.035	0.012	0.365	0.012	0.365
	25th	14	7	2.5	2.5	5.0	0.021	0.008	0.291	0.008	0.291
	Min	1	2	2.5	2.5	5	0.009	0.001	0.160	0.001	0.160
	SD	28	37	0.8	0.0	0.3	0.023	0.009	0.208	0.009	0.208
	CV%	66%	183%	31%	0%	5%	60%	67%	50%	67%	50%
	#NonDetects	1	2	17	18	17	0	0	0	0	0
	%NonDetects	4%	6%	94%	100%	94%	0%	0%	0%	0%	0%
SDN1up (006)	Count	37	36	5	5	5	37	37	37	37	37
	Max	366	116	13.8	12.3	26.1	0.083	0.048	0.613	0.048	0.613
	95th	220	21	11.2	10.0	21.3	0.057	0.036	0.550	0.036	0.550
	75th	85	9	1.0	1.0	2.0	0.034	0.016	0.247	0.016	0.247
	Median	45	5.25	1	1	2	0.020	0.009	0.192	0.009	0.192
	25th	25	4	1.0	1.0	2.0	0.014	0.005	0.127	0.005	0.127
	Min	1.9	0.63	1	1	2	0.003	0.001	0.066	0.001	0.066
	SD	60	42	19	5.1	10.8	0.017	0.012	0.144	0.012	0.144
	CV%	110%	194%	161%	155%	150%	67%	97%	62%	97%	62%
	#NonDetects	0	8	4	4	4	0	6	0	6	0
	%NonDetects	0%	22%	80%	80%	80%	0%	16%	0%	16%	0%

Former location downstream at SDN1-27, ends 1996.

Upstream location at SDN1-22, begins 1997.

AR 017221

Full Data Set (No Values Trimmed)

Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.

c:\ENVV-apps\EMIS\POS\DE\EMISMain.mdb\rpt\SWNPDESCompStats



NPDES Composite Statistics 9/1/94 - 6/30/01

CONCENTRATION, mg/L

	TSS	Turb. NTU	BOD5	E. Coly	P. Coly	Total Coly	Cu	Pb	Zn
SDN2 (007)	Count	23	19	21	13	13	17	17	17
	Max	48	14	120	36	50.9	0.076	0.022	0.136
	95th	46	11	86	18.2	31.8	0.062	0.022	0.106
	75th	16	8	15	2.5	17.3	0.035	0.011	0.076
	Median	7.5	4.9	7	2.5	2.5	0.025	0.005	0.048
	25th	5	2	5	2.5	2.5	0.013	0.003	0.026
	Min	1	1.5	2	2.5	2.5	0.006	0.002	0.017
	SD	15	4	29	9.3	13.8	0.020	0.007	0.034
	CV%	108%	65%	150%	173%	189%	66%	65%	62%
	#NonDetects	1	0	2	11	10	9	0	0
%NonDetects	4%	0%	10%	85%	77%	69%	0%	0%	
SDN3 (008)	Count	26	26	29	17	17	23	23	23
	Max	27	42	222	62	142	0.037	0.010	0.160
	95th	24	26	61	32	4.8	0.036	0.004	0.153
	75th	15	17	5	2.5	2.5	0.018	0.002	0.079
	Median	10.5	10	3	2.5	2.5	0.012	0.001	0.051
	25th	3	5	2	2.5	2.5	0.010	0.001	0.042
	Min	0.62	1.6	2	1	1	0.003	0.001	0.020
	SD	7	9	43	11	2.9	0.009	0.002	0.042
	CV%	73%	75%	286%	42%	93%	48%	60%	108%
	#NonDetects	3	0	11	16	16	15	0	0
%NonDetects	11%	0%	38%	94%	94%	66%	0%	0%	
SDN4 (011)	Count	41	41	42	32	32	42	42	42
	Max	188	320	168	7	273	0.139	0.006	0.127
	95th	76	43	27	3.8	7.9	0.067	0.003	0.069
	75th	11	7	6	1.0	1.3	0.043	0.001	0.027
	Median	4.2	5.6	5.27	1	1	0.031	0.001	0.021
	25th	3	4	2	1.0	1.0	0.023	0.001	0.016
	Min	1.6	1.7	2	1	1	0.013	0.001	0.002
	SD	33	51	26	1.3	4.9	0.022	0.001	0.021
	CV%	224%	298%	241%	69%	198%	152%	61%	81%
	#NonDetects	0	0	12	29	26	26	33	1
%NonDetects	0%	0%	29%	91%	81%	79%	78%	2%	

Pumped to IWS as of late 1997.

Full Data Set (No Values Trimmed)
 Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.
 c:\ENV-apps\EMIS\POS\DEVE\MISMain.mdb\rp\SWNPDESCompStats

AR 017222



POS
EMIS

9/27/01 10:32:49 AM

NPDES Composite Statistics 9/1/94 - 6/30/01

CONCENTRATION, mg/L

	TSS	Turb. NTU	BOD5	E. Gycol	P. Gycol	Total Gycol	Cu	Pb	Zn
EY (012)	Count	24	3	1	1	1	1	1	1
	Max	282	82	24.1	1	1	0.020	0.028	0.179
	95th	124	78	4	3.6	3.6	3.600	3.600	3.600
	75th	59	62	4	3.6	3.6	3.600	3.600	3.600
	Median	25	42	24.1	1	1	0.020	0.028	0.179
	25th	15	23	4	3.6	3.6	3.600	3.600	3.600
	Min	3.2	4.3	24.1	1	1	0.020	0.028	0.179
	SD	56	39	0	0.0	0.0	0.000	0.000	0.000
	CV%	122%	91%	0%	0%	0%	0%	0%	0%
	#NonDetects	0	0	0	1	1	1	0	0
%NonDetects	0%	0%	0%	100%	100%	100%	0%	0%	
TY (013)	Count	23	2	1	1	1	1	1	1
	Max	660	12	25	25	5	5	5	5
	95th	451	12	23.1	23.1	23.1	23.1	23.1	23.1
	75th	32	10	23.1	23.1	23.1	23.1	23.1	23.1
	Median	24	8	25	25	5	5	5	5
	25th	18	6	23.1	23.1	23.1	23.1	23.1	23.1
	Min	4	4	25	25	5	5	5	5
	SD	161	6	0.0	0.0	0.0	0.0	0.0	0.0
	CV%	204%	71%	0%	0%	0%	0%	0%	0%
	#NonDetects	0	0	1	1	1	1	1	1
%NonDetects	0%	0%	100%	100%	100%	100%	100%	100%	
Airfield (SDS3,SDS4,SDN3,SDN4)	Count	146	145	152	101	101	103	148	145
	Max	4310	2650	648	315	355	364	0.180	0.047
	95th	70	43	88	8.4	27.3	34.0	0.082	0.010
	75th	17	14	12	2.5	2.5	5.4	0.039	0.002
	Median	7.6	6.2	6	1	2.5	5	0.027	0.001
	25th	4	5	4	1.0	1.0	2.0	0.016	0.001
	Min	1	0.7	2	1	1	2	0.003	0.001
	#NonDetects	4	0	30	85	73	71	0	72
	%NonDetects	3%	0%	20%	84%	72%	69%	0%	50%
									1%

AR 017223

Full Data Set (No Values Trimmed)

Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.

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APPENDIX C TABULAR DEICING EVENT SAMPLE DATA SUMMARIES

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AR 017225



9/27/01 10:31:26 AM

Deicing Event Sample Data 9/1/94 - 6/30/01

SAMPLE DATA				STORM CHARACTERISTICS										CONCENTRATION, mg/L			
Seq	Out fall	Sample ID	Reported	Storm Date	Type	Dpth in	Maxint in/hr	Dryant hr	Purpose	Type	Ground Deice? Aircraft	BO05	E. Glycol	P. Glycol	Total Glycol	Comments	
1	SDE4	SDE4 111394	1995	11/11/94	NPDES Storm	0.28		46	NPDES		No	7	< 5	< 5	< 10		
2	SDE4	SDE4 111894	1995	11/16/94	baseflow	0			NPDES		No	28	< 5	< 5	< 10		
3	SDE4	SDE4 111994	1995	11/19/94	NPDES Storm	0.42		52	NPDES		No	8	< 5	< 5	< 10		
4	SDE4	SDE4 041095	1995	4/10/95	NPDES Storm	0.29		56	NPDES		No	8	< 5	< 5	< 10		
5	SDE4	SDE4 042895	1995	4/28/95	baseflow	0			NPDES		No		< 5	< 5	< 10		
6	SDE4	SDE4 050295	1995	5/2/95	Other Storm	0.42		36	NPDES		No		10	< 5	10		
7	SDE4	SDE4 061795	1996	8/16/95	NPDES Storm	1.34			NPDES		No		< 5	6	6		
8	SDE4	SDE4 012096	1996	1/19/96	Other	1.8			RAW W/O	avg of time comp	Yes	72	13	10	24	20-hr avg of 6 discrete samples 2 of 6 glycol <MDL	
9	SDE4	SDE4 020396	1996	2/3/96	NPDES Storm	1.6			NPDES	flow-wt comp	Yes	74	14	12	28		
10	SDE4	SDE4 020496	1996	2/3/96	Other	1.6			SES	avg of time comp	Yes	85	16	12	30	10-hr avg of 5 discrete samples All >MDL	
11	SDE4	SDE4 032296	1996	3/22/96	NPDES Storm	0.21			Slip Ag	flow-wt comp	No	12	< 5	< 5	< 10		
12	SDE4	SDE4 041896	1996	4/15/96	NPDES Storm	0.49			NPDES	flow-wt comp	No	7	< 5	< 5	< 10		
13	SDE4	SDE4 090396	1997	9/3/96	NPDES Storm	0.29		76	NPDES	flow-wt comp	No	7	< 5	< 5	< 10		
14	SDE4	SDE4 112196	1997	11/20/96	Other	0.45	0.07	16	NPDES	avg of time comp	Yes	260	21	71	92	composite of bottles A1, A2, A3 for quarterly glycols	
15	SDE4	SDE4 121596	1997	12/15/96	Other Storm	0.11		72	NPDES	flow-wt comp	No	9	< 5	< 5	< 10	backup data in case short on data for 96 Q4	
16	SDE4	SDE4 122196	1997	12/19/96	NPDES Storm	0.36		103	NPDES	flow-wt comp	No	12	< 5	< 5	< 10		
17	SDE4	SDE4 123196	1997	12/26/96	Other	1.12			RAW W/O	avg of time comp	Yes	33	2	4	6	30-hr avg of 5 time-composite samples, most glycol and BOD <MDL	
18	SDE4	SDE4 010797	1997	12/26/96	Other	1.12			RAW W/O	avg of time comp	Yes	13	6	15	23	6-day avg of 15 time-composite samples 12 of 15 BOD <MDL, 11 of 15 glycol <MDL	
19	SDE4	SDE4 011897	1997	1/16/97	NPDES Storm	1.21		154	NPDES	flow-wt comp	No	13	< 5	< 5	< 10		
20	SDE4	SDE4 012797	1997	1/27/97	NPDES Storm	0.41		109	Slip Ag	flow-wt comp	No	< 4	< 5	49	49		
21	SDE4	SDE4 030697	1997	3/5/97	NPDES Storm	0.39		42	NPDES	flow-wt comp	No	4	< 5	< 5	< 10		
22	SDE4	SDE4 060397	1997	6/3/97	NPDES Storm	0.26		78	NPDES	flow-wt comp	No	2	< 2	< 2	< 4		
23	SDE4	SDE4 102897	1996	10/28/97	NPDES Storm	0.47		26	NPDES	flow-wt comp	No	4	< 2	< 2	< 4		
24	SDE4	SDE4 121897	1996	12/15/97	NPDES Storm	1		87	NPDES	flow-wt comp	No	< 4	< 2	< 2	< 4		
25	SDE4	SDE4 011398	1996	1/12/98	Other Storm	1.13		123	NPDES	avg of time comp	Yes	213	6	5	11	24-hour time composite	
26	SDE4	SDE4 030198	1996	3/1/98	NPDES Storm	0.98		6	NPDES	flow-wt comp	No	5	< 2	< 2	< 4		
27	SDE4	SDE4 030998	1996	3/8/98	NPDES Storm	0.86		132	NPDES	flow-wt comp	No	154	< 2	< 2	< 4	taken for aircraft deicing only	
28	SDE4	SDE4 042398	1998	4/23/98	NPDES Storm	0.46		264	NPDES	flow-wt comp	No	21	< 2	< 2	< 4		
29	SDE4	SDE4 051498	1998	5/14/98	NPDES Storm	0.21		125	NPDES	flow-wt comp	No	11	< 2	< 2	< 4		

Full Data Set (No Values Trimmed)
 R=Rejected Non-Representative Data - Refer to line comment for detail
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Deicing Event Sample Data 9/1/94 - 6/30/01

CONCENTRATION, mg/L

STORM CHARACTERISTICS

SAMPLE DATA

Seq	Out fail	Sample ID	Reported	Storm Date	Type	Dpth in	Maxint in/hr	Dryant hr	Purpose	Type	Ground Deicer?	Dryant Aircraft	BOD5	E-Glycol	P-Glycol	Total Glycol	Comments
30	SDE4	SDE4 091898	1999	8/18/98	Other Storm	0.19	0.16	456	NPDES	flow-wt comp	No	5	14	<2	<2	<4	
31	SDE4	SDE4 092598	1999	9/24/98	NPDES Storm	0.47	0.28	148	NPDES	flow-wt comp	No	3	<4	<2	<2	<4	
32	SDE4	SDE4 100398	1999	10/3/98	NPDES Storm	0.4	0.22	36	NPDES	flow-wt comp	No	3	5	<2	<2	<4	
33	SDE4	SDE4 102798	1999	10/27/98	NPDES Storm	0.64	0.19	72	NPDES	flow-wt comp	No	16	5	<2	<2	<4	not representative, incomplete sample, flow probe error
34	SDE4	SDE4 110498	1999	11/3/98	NPDES Storm	1.62	0.46	35	NPDES	failed comp	No	11	<4	<2	<2	<4	concurrent WET sample
35	SDE4	SDE4 111898	1999	11/18/98	NPDES Storm	2.34	0.18	73	NPDES	flow-wt comp	No	52	7	<2	<2	<4	concurrent WET sample
36	SDE4	SDE4 121798	1999	12/17/98	Other Storm	0.11	0.03	33	NPDES	flow-wt comp	No	33	<2	<2	<2	<4	
37	SDE4	SDE4 122498	1999	12/24/98	NPDES Storm	1.19	0.16	153	NPDES	flow-wt comp	Yes	373	335	13	31	44	
38	SDE4	SDE4 011099	1999	1/9/99	NPDES Storm	0.27	0.05	54	NPDES	failed comp	No	39	<4	<2	3	4	not representative, too late on hydrograph
39	SDE4	SDE4 012299	1999	1/20/99	NPDES Storm	0.42	0.09	22	NPDES	flow-wt comp	No	31	6	<2	<2	<4	concurrent WET sample
40	SDE4	SDE4 021899	1999	2/18/99	NPDES Storm	0.6	0.06	20	NPDES	flow-wt comp	No	26	4	<2	<2	<4	
41	SDE4	SDE4 022399	1999	2/22/99	NPDES Storm	0.56	0.14	9	NPDES	flow-wt comp	No	15	<4	<2	<2	<4	concurrent WET sample
42	SDE4	SDE4 030699	1999	3/6/99	NPDES Storm	0.28	0.05	96	NPDES	flow-wt comp	No	171	10	<2	5	8	
43	SDE4	SDE4 031399	1999	3/12/99	NPDES Storm	0.63	0.07	71	NPDES	flow-wt comp	No	69	5	<2	<2	<4	
44	SDE4	SDE4 032499	1999	3/24/99	NPDES Storm	0.28	0.06	40	NPDES	flow-wt comp	No	16	6	<2	<2	<4	concurrent WET sample
45	SDE4	SDE4 032699	1999	3/27/99	NPDES Storm	0.24	0.07	26	NPDES	flow-wt comp	No	17	<4	<2	<2	<4	
46	SDE4	SDE4 110699	2000	11/5/99	NPDES Storm	0.66	0.11	44	NPDES	flow-wt comp	No	22	<4	<2	<2	<4	
47	SDE4	SDE4 111799	2000	11/16/99	NPDES Storm	0.6	0.07	23	NPDES	flow-wt comp	No	10	<4	<2	<2	<4	
48	SDE4	SDE4 120599	2000	12/4/99	NPDES Storm	0.24	0.1	60	NPDES	flow-wt comp	No	34	8	<2	<2	<4	
49	SDE4	SDE4 011300	2000	1/12/00	NPDES Storm	0.37	0.04	10	NPDES	flow-wt comp	Yes	261		4	7	12	runway deice
50	SDE4	SDE4 031300	2000	3/13/00	NPDES Storm	0.47	0.13	49	NPDES	flow-wt comp	No	44	6	<2	<2	<4	
51	SDE4	SDE4 041300	2000	4/13/00	NPDES Storm	0.34	0.06	74	NPDES	flow-wt comp	No	16	9	<2	<2	<4	
52	SDE4	SDE4 101700	2001	10/17/00	NPDES Storm	0.36	0.12	27	NPDES	flow-wt comp	No	4	6	<2	<2	<4	
53	SDE4	SDE4 110800	2001	11/8/00	NPDES Storm	0.77	0.18	54	NPDES	flow-wt comp	No	21	<4	7	<2	8	
54	SDE4	SDE4 112300	2001	11/23/00	NPDES Storm	0.37	0.1	330	NPDES	flow-wt comp	No	292	9	<2	<2	<4	
55	SDE4	SDE4 121400	2001	12/14/00	NPDES Storm	0.28	0.06	123	NPDES	flow-wt comp	No	245	15	4	6	10	
56	SDE4	SDE4 010401	2001	1/3/01	NPDES Storm	0.44	0.13	77	NPDES	flow-wt comp	No	22	6	<2	<2	<4	
57	SDE4	SDE4 020601-1	2001	2/6/01	NPDES Storm	0.3	0.14	55	NPDES	lime-comp	Yes	301	131	5	36	41	24-hr lime composite, bottle 1 of 2. Coincided with major deicing event (runway)
58	SDE4	SDE4 020601-2	2001	2/6/01	NPDES Storm	0.3	0.14	55	NPDES	lime-comp	Yes	301	<4	<2	<2	<4	24-hr lime composite, bottle 2 of 2. Coincided with major deicing event (runway)
59	SDE4	SDE4 021801-81	2001	2/18/01	NPDES Storm	0.46	0.14	29	NPDES	lime-comp	Yes	336	69	<2	<2	<4	14-hr lime comp, bottle 1 of 5. Coincided with major deicing event (runway)

Full Data Set (No Values Trimmed)

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Deicing Event Sample Data 9/1/94 - 6/30/01

SAMPLE DATA				STORM CHARACTERISTICS				CONCENTRATION, mg/L									
Seq	Out fall	Sample ID	Reported	Storm Date	Type	Dpth in	Maxint in/hr	Dryant hr	Purpose	Type	Ground Dryant Deicer? Aircraft	BOD5 Glycol	E. Glycol	P. Glycol	Total Glycol	Comments	
60	SDE4	SDE4.021701-B2	2001	2/16/01	NPDES Storm	0.46	0.14	29	NPDES	time-comp	Yes	336	154	< 2	46	49	14-hr lime comp, bottle 2 of 5. Coincided with major deicing event (runway)
61	SDE4	SDE4.021701-B3	2001	2/16/01	NPDES Storm	0.46	0.14	29	NPDES	time-comp	Yes	336	34	< 2	12	13	14-hr lime comp, bottle 3 of 5. Coincided with major deicing event (runway)
62	SDE4	SDE4.021801-B4	2001	2/16/01	NPDES Storm	0.46	0.14	29	NPDES	time-comp	Yes	336	16	< 2	5	6	14-hr lime comp, bottle 4 of 5. Coincided with major deicing event (runway)
63	SDE4	SDE4.021801-B5	2001	2/16/01	NPDES Storm	0.46	0.14	29	NPDES	time-comp	Yes	336	10	< 2	7	8	9-hr lime comp, bottle 5 of 5. Coincided with major deicing event (runway)
64	SDE4	SDE4.021801	2001	2/16/01	NPDES Storm	0.46	0.14	29	NPDES	time-comp	Yes	336	53	< 2	19	20	overall event time comp (65-hr) of bottles 1 to 5. Coincided with major deicing event (runway)
65	SDE4	SDE4.031501	2001	3/15/01	NPDES Storm	0.32	0.05	43	NPDES	flow-wt comp	No	50	11	< 2	< 2	< 4	
66	SDE4	SDE4.032701 COMP	2001	3/27/01	NPDES Storm	0.39	0.1	19	NPDES	flow-wt comp	No	18	6	< 2	< 2	< 4	
67	SDE4	SDE4.051401 COMP	2001	5/14/01	NPDES Storm	0.46	0.08	24	NPDES	flow-wt comp	No	6	< 2	< 2	< 4	< 4	
68	SDS1	SDS1.111694	1995	11/18/94	baseflow	0			NPDES		No	> 54	32	< 5	32	< 5	
69	SDS1	SDS1.111994	1995	11/19/94	NPDES Storm	0.42		52	NPDES		No	46	14	< 5	14	< 5	
70	SDS1	SDS1.020895	1995	2/8/95	baseflow	0			NPDES		No	< 5	< 5	< 5	< 10	< 10	
71	SDS1	SDS1.021395	1995	2/13/95	baseflow	0			NPDES		Yes	5	< 5	< 5	< 10	< 10	
72	SDS1	SDS1.021895	1995	2/15/95	NPDES Storm	1.1		86	NPDES		Yes	> 92	280	15	275	275	
73	SDS1	SDS1.042895	1995	4/28/95	baseflow	0			NPDES		No	< 5	< 5	< 5	< 10	< 10	
74	SDS1	SDS1.050295	1995	5/2/95	Other Storm	0.42		36	NPDES		No	< 5	< 5	< 5	< 10	< 10	
75	SDS1	SDS1.092995	1996	9/29/95	baseflow	0			NPDES		No	< 5	< 5	< 5	< 10	< 10	
76	SDS1	SDS1.011498	1996	1/13/96	NPDES Storm	0.37			NPDES	flow-wt comp	No	18	< 5	< 5	< 10	< 10	
77	SDS1	SDS1.012098 AVG	1996	1/19/96	Other	1.8			R/W W/O	avg of lime comp	Yes	130	105	193	298	298	20-hr avg of 6 discrete samples 5 TKN <MDL
78	SDS1	SDS1.012898	1996	1/28/96	baseflow				SES		Yes		320	5900	6220	6220	
79	SDS1	SDS1.013098	1996	1/30/96	baseflow				SES		Yes	690	71	220	291	291	
80	SDS1	SDS1.020196	1996	2/1/96	baseflow				SES		Yes	170	13	23	36	36	
81	SDS1	SDS1.020496 AVG	1996	2/3/96	NPDES Storm	1.8			SES	avg of lime comp	Yes	131	23	96	119	119	14-hr avg of 6 discrete samples 1 glycol <MDL
82	SDS1	SDS1.041696	1996	4/15/96	NPDES Storm	0.49			NPDES	flow-wt comp	No	24	< 5	< 5	< 10	< 10	
83	SDS1	SDS1.042296	1996	4/22/96	NPDES Storm	2.83			Slip Ag	flow-wt comp	No	9	< 5	< 5	< 10	< 10	
84	SDS1	SDS1.070496	1997	7/3/96	NPDES Storm	0.23			NPDES	flow-wt comp	No	11	< 5	< 5	< 10	< 10	
85	SDS1	SDS1.110496	1997	11/3/96	Other Storm	0.14		120	NPDES	flow-wt comp	No	6	< 5	< 5	< 10	< 10	taken for aircraft deicing only

Full Data Set (No Values Trimmed)
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Deicing Event Sample Data 9/1/94 - 6/30/01

SAMPLE DATA				STORM CHARACTERISTICS				CONCENTRATION, mg/L									
Seq	Out fall	Sample ID	Reported	Storm Date	Type	Dpth in	Maxint in/hr	Dryant hr	Purpose	Type	Ground Deice? Aircraft	BOD5	E-Glycol	P-Glycol	Total Glycol	Comments	
86	SDS1	SDS1 112096	1997	11/20/96	Other	0.45	0.07	16	RAW W/O	lime-comp	Yes	260	426	59	2800	2859	
87	SDS1	SDS1 112396	1997	11/23/96	NPDES Storm	0.83		72	NPDES	failed comp	Yes	112	258	6	190	198	not representative (<2 hrs) reference only.
88	SDS1	SDS1 120496	1997	12/4/96	NPDES Storm	0.82		44	NPDES	flow-wt comp	No	92	40	<5	24	29	
89	SDS1	SDS1 011697	1997	1/16/97	NPDES Storm	1.21		154	NPDES	flow-wt comp	No	136	79	<5	33	33	
90	SDS1	SDS1 041397	1997	4/13/97	NPDES Storm	0.31		135	NPDES	flow-wt comp	No	6	21	<5	<5	<10	
91	SDS1	SDS1 061797	1997	6/16/97	NPDES Storm	0.36		26	NPDES	flow-wt comp	No	3	4	<2	<2	<4	
92	SDS1	SDS1 102697	1996	10/26/97	NPDES Storm	0.47		24	NPDES	flow-wt comp	No	9	7	<2	<2	<4	
93	SDS1	SDS1 112097	1996	11/19/97	NPDES Storm	0.65		24	NPDES	flow-wt comp	No	16	<4	<2	<2	<4	
94	SDS1	SDS1 121697	1996	12/15/97	NPDES Storm	1		67	NPDES	flow-wt comp	No	30	6	<2	<2	<4	
95	SDS1	SDS1 011196	1996	1/12/96	Other Storm	1.13		123	NPDES	lime-comp	Yes	457	<12	<2	<2	<4	24-hour lime composite
96	SDS1	SDS1 030996	1996	3/6/96	NPDES Storm	0.86		132	NPDES	flow-wt comp	No	154	<2	6	7	7	fulfills annual sample reqmt
97	SDS1	SDS1 102796	1999	10/27/96	NPDES Storm	0.64	0.19	72	NPDES	flow-wt comp	No	16	6	<2	<2	<4	
98	SDS1	SDS1 121796	1999	12/17/96	Other Storm	0.11	0.03	33	NPDES	first flush grab	No	33	<2	<2	<2	<4	
99	SDS1	SDS1 031299	1999	3/12/99	NPDES Storm	0.83	0.07	71	NPDES	first flush grab	No	69	123	5	43	49	quarterly deice grab sample in first 60 minutes
100	SDS1	SDS1 062099	1999	6/20/99	NPDES Storm	0.21	0.03	46	NPDES	first flush grab	No	1	<2	<2	<2	<4	foam observed below outfall
101	SDS1	SDS1 062099	1999	6/20/99	NPDES Storm	0.21	0.03	46	NPDES	first flush grab	No	1	<2	<2	<2	<4	foam observed below outfall
102	SDS1	SDS1 070299	2000	7/2/99	NPDES Storm	0.3	0.11	103	NPDES	first flush grab	No	5	13	<2	<2	<4	
103	SDS1	SDS1 070299	2000	7/2/99	NPDES Storm	0.3	0.11	103	SicTrace	first flush grab	No	5	10	<2	<2	<4	
104	SDS1	SDS1 070299	2000	7/2/99	NPDES Storm	0.3	0.11	103	NPDES	flow-wt comp	No	5	6	<2	<2	<4	
105	SDS1	SDS1 112799	2000	11/27/99	NPDES Storm	0.32	0.07	22	NPDES	first flush grab	No	31	<2	<2	<2	<4	
106	SDS1	SDS1 010700	2000	1/7/00	NPDES Storm	0.36	0.12	23	NPDES	first flush grab	No	60	<2	<2	<2	<4	
107	SDS1	SDS1 011200	2000	1/12/00	NPDES Storm	0.37	0.04	10	NPDES	first flush grab	Yes	261	2	799	801	801	runway deice
108	SDS1	SDS1 042100	2000	4/21/00	Other Storm	0.1	0.04		NPDES	first flush grab	No		<2	<2	<2	<4	
109	SDS1	SDS1 112300	2001	11/23/00	NPDES Storm	0.37	0.1	330	NPDES	Non-Representative	No	292	4	6	10	10	Grab Not Representative-late on hydrograph
110	SDS1	SDS1 012901	2001	1/26/01	NPDES Storm	0.26	0.09	101	NPDES	flow-wt comp	No	187	3	5	6	6	

Full Data Set (No Values Trimmed)
R=Rejected Non-Representative Data - Refer to line comment for detail
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9/27/01 10:31:30 AM

Deicing Event Sample Data 9/1/94 - 6/30/01

CONCENTRATION, mg/L

STORM CHARACTERISTICS

SAMPLE DATA

Seq	Out fall	Sample ID	Reported	Storm Date	Type	Dpth in	Maxint in/hr	Dryant hr	Purpose	Type	Ground Dices? Aircraft	BOD5	E. Glycol	P. Glycol	Total Glycol	Comments
111	SDS1	SDS1 020801 GRAB	2001	2/8/01	NPDES Storm	0.3	0.14	55	NPDES	first flush grab	Yes	301	3	4	7	
112	SDS1	SDS1 021801- G1 GRAB	2001	2/18/01	NPDES Storm	0.46	0.14	29	NPDES	first flush grab	Yes	336	5	44	49	
113	SDS1	SDS1 021701- G2 GRAB	2001	2/16/01	NPDES Storm	0.46	0.14	29	NPDES	first flush grab	Yes	336	<2	4	5	
114	SDS3	SDS3 090894	1995	9/8/94	NPDES Storm	0.69		93	NPDES		No		<5	<5	<10	
115	SDS3	SDS3 111894	1995	11/18/94	baseflow	0			NPDES		No	2	<5	<5	<10	
116	SDS3	SDS3 111994	1995	11/19/94	NPDES Storm	0.42		52	NPDES	flow-wt comp	No	16	<5	<5	<10	glycols and BOD on labjob - J 014"
117	SDS3	SDS3 020895	1995	2/8/95	baseflow	0			NPDES		No		<5	<5	<10	
118	SDS3	SDS3 041295	1995	4/10/95	NPDES Storm	0.28		56	NPDES		No	4	<5	<5	<10	
119	SDS3	SDS3 042895	1995	4/28/95	baseflow	0			NPDES		No		<5	<5	<10	
120	SDS3	SDS3 050295	1995	5/2/95	Other Storm	0.42		36	NPDES		No		<5	<5	<10	
121	SDS3	SDS3 083095	1996	9/29/95	baseflow	0			NPDES		No		<5	<5	<10	
122	SDS3	SDS3 083095 GRAB	1996	9/29/95	baseflow	0			NPDES	random grab	No		<5	<5	<10	
123	SDS3	SDS3 011498	1996	1/13/98	NPDES Storm	0.37			NPDES	flow-wt comp	No	6	<5	<5	<10	
124	SDS3	SDS3 012298 AVG	1996	1/19/98	Other Storm	1.8			RAW W/O	avg of time comp	Yes	118	25	14	40	3.5-day avg of 8 discrete + 8 time-comp samples. 7 glycol, 4 TRN, 2 NH3 <MDL
125	SDS3	SDS3 012896	1996	1/28/96	baseflow				SES		Yes		28	45	73	
126	SDS3	SDS3 013096	1996	1/30/96	baseflow				SES		Yes	210	98	18	115	
127	SDS3	SDS3 020196	1996	2/1/96	baseflow				SES		Yes	130	18	13	31	
128	SDS3	SDS3 020696 AVG	1996	2/3/96	Other Storm	1.6			RAW W/O	avg of time comp	Yes	182	10	13	20	2-day avg of 8 time-comp samples. SBOD>result, 2 glycol, 1 NH3 <MDL
129	SDS3	sd3 032296	1996	3/22/96	NPDES Storm	0.21			Slip Ag	flow-wt comp	No	6	<5	<5	<10	
130	SDS3	SDS3 041896	1996	4/15/96	NPDES Storm	0.49			NPDES	flow-wt comp	No	6	<5	<5	<10	
131	SDS3	SDS3 102196	1997	10/21/96	NPDES Storm	0.68		64	NPDES	flow-wt comp	No	<4	<5	<5	<10	
132	SDS3	SDS3 112896 AVG	1997	11/20/96	Other	0.45	0.07	16	RAW W/O	avg of time comp	Yes	75	14	15	26	9-day avg of 32 time-comp samples. 11 glycol, 28 NH3 <MDL
133	SDS3	SDS3 112396	1997	11/23/96	NPDES Storm	0.63		72	Slip Ag	flow-wt comp	Yes	112	18	10	26	
134	SDS3	SDS3 010297 AVG	1997	12/26/96	Other	1.12			RAW W/O	avg of time comp	Yes	252	19	44	62	7-day avg of 29 time-comp samples. 12 glycol, 8 BOD, 14 NH3 <MDL
135	SDS3	SDS3 011697	1997	1/16/97	NPDES Storm	1.21		154	NPDES	flow-wt comp	No	136	<5	<5	<10	
136	SDS3	SDS3 030597	1997	3/5/97	NPDES Storm	0.39		42	NPDES	flow-wt comp	No	51	<4	<5	<10	
137	SDS3	SDS3 011298	1998	1/12/98	Other Storm	1.13		123	NPDES	line-comp	Yes	17	<2	5	5	24-hour time composite

Full Data Set (No Values Trimmed)

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9/27/01 10:31:31 AM

Deicing Event Sample Data 9/1/94 - 6/30/01

STORM CHARACTERISTICS

CONCENTRATION, mg/L

SAMPLE DATA

Seq	Out fall	Sample ID	Reported	Storm Date	Type	Dpth in	Maxint in/hr	Dryant hr	Purpose	Type	Ground Deice? Aircraft	BOD5	E. Glycol	P. Glycol	Total Glycol	Comments	
136	SDS3	SDS3 013006	1998	1/29/98	NPDES Storm	0.2		107	NPDES	flow-wt comp	No	39	14	5	4	10	
139	SDS3	SDS3 030106	1998	3/1/98	NPDES Storm	0.98		6	NPDES	flow-wt comp	No	11	8	<2	<2	<4	
140	SDS3	SDS3 030998	1998	3/8/98	NPDES Storm	0.86		132	NPDES	flow-wt comp	No	154	38	23	9	32	backup monthly sample in case 3/1/98 sample didn't qualify under new permit
141	SDS3	SDS3 042398	1998	4/23/98	NPDES Storm	0.46		284	NPDES	flow-wt comp	No	29	9	<2	<2	<4	
142	SDS3	SDS3 051498	1998	5/14/98	NPDES Storm	0.21		125	NPDES	flow-wt comp	No	15	6	<2	<2	<4	
143	SDS3	SDS3 091898	1998	9/18/98	Other Storm	0.19	0.18	456	NPDES	failed comp	No	5	12	<2	<2	<4	not representative, extended into post-storm baseflow period
144	SDS3	SDS3 092598	1999	9/24/98	NPDES Storm	0.47	0.26	146	NPDES	flow-wt comp	No	3	5	<2	2	3	glycols may be high biased, dupe was <MDL
145	SDS3	SDS3 100398	1999	10/3/98	NPDES Storm	0.4	0.22	36	NPDES	flow-wt comp	No	3	4	<2	<2	<4	
146	SDS3	SDS3 102798	1999	10/27/98	NPDES Storm	0.64	0.19	72	NPDES	flow-wt comp	No	16	5	<2	4	5	
147	SDS3	SDS3 110498	1999	11/3/98	NPDES Storm	1.62	0.48	35	NPDES	flow-wt comp	No	11	7	5	<2	6	
148	SDS3	SDS3 111398	1999	11/11/98	NPDES Storm	0.88	0.15	31	NPDES	flow-wt comp	No	26	18	10	<2	12	concurrent WET sample
149	SDS3	SDS3 121798	1999	12/17/98	Other Storm	0.11	0.03	33	NPDES	flow-wt comp	No	33	<2	12	13		
150	SDS3	SDS3 122598	1999	12/24/98	NPDES Storm	1.19	0.16	153	NPDES	flow-wt comp	Yes	373	450	32	62	113	
151	SDS3	SDS3 011099	1999	1/9/99	NPDES Storm	0.27	0.05	54	NPDES	flow-wt comp	No	39	22	8	14	22	
152	SDS3	SDS3 011499	1999	1/13/99	NPDES Storm	1.07	0.16	85	NPDES	flow-wt comp	No	37	8	<2	10	11	concurrent WET and WER
153	SDS3	SDS3 020399	1999	2/3/99	NPDES Storm	0.28	0.07	27	NPDES	flow-wt comp	No	16	6	<2	2	3	
154	SDS3	SDS3 030999	1999	3/6/99	NPDES Storm	0.28	0.05	98	NPDES	flow-wt comp	No	171	220	7	151	158	
155	SDS3	SDS3 031399	1999	3/12/99	NPDES Storm	0.83	0.07	71	NPDES	flow-wt comp	No	69	15	<2	6	7	
156	SDS3	SDS3 032599	1999	3/24/99	NPDES Storm	0.28	0.08	40	NPDES	flow-wt comp	No	16	<4	<2	<2	<4	
157	SDS3	SDS3 110699	2000	11/5/99	NPDES Storm	0.68	0.11	44	NPDES	flow-wt comp	No	22	15	<2	<2	<4	
158	SDS3	SDS3 110699	2000	11/5/99	NPDES Storm	0.68	0.11	44	SrTrace	flow-wt comp	No	22	11	<2	<2	<4	
159	SDS3	SDS3 110699	2000	11/5/99	NPDES Storm	0.68	0.11	44	SrTrace	random grab	No	22	14	<2	<2	<4	
160	SDS3	SDS3 111899	2000	11/16/99	NPDES Storm	0.6	0.07	23	NPDES	flow-wt comp	No	10	12	<2	6	7	
161	SDS3	SDS3 120599	2000	12/4/99	NPDES Storm	0.24	0.1	60	NPDES	flow-wt comp	No	34	48	3	18	21	
162	SDS3	SDS3 120999	2000	12/6/99	NPDES Storm	0.49	0.09	40	NPDES	flow-wt comp	No	43	28	<2	23	24	
163	SDS3	SDS3 011300	2000	1/12/00	NPDES Storm	0.37	0.04	10	NPDES	flow-wt comp	Yes	201	648	9	355	364	runway deice
164	SDS3	SDS3 031300	2000	3/13/00	NPDES Storm	0.47	0.13	49	NPDES	flow-wt comp	No	44	18	<2	9	10	
165	SDS3	SDS3 041400	2000	4/13/00	NPDES Storm	0.34	0.06	74	NPDES	flow-wt comp	No	16	18	<2	<2	<4	
166	SDS3	SDS3 101800	2001	10/17/00	NPDES Storm	0.36	0.12	27	NPDES	flow-wt comp	No	4	5	<2	<2	<4	
167	SDS3	SDS3 112300	2001	11/23/00	NPDES Storm	0.37	0.1	330	NPDES	flow-wt comp	No	202	87	5	79	84	

Full Data Set (No Values Trimmed)
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9/27/01 10:31:32 AM

Deicing Event Sample Data 9/1/94 - 6/30/01

SAMPLE DATA				STORM CHARACTERISTICS				CONCENTRATION, mg/L								
Seq	Out fail	Sample ID	Reported	Storm Date	Type	Dpth in	Maxint In/hr	Dryant hr	Purpose	Type	Ground Deicer/ Aircraft	BOD5	E-Glycol	P-Glycol	Total Glycol	Comments
168	SDS3	SDS3 010401	2001	1/3/01	NPDES Storm	0.44	0.13	77	NPDES	flow-wt comp	No	6	< 2	< 2	< 4	
169	SDS3	SDS3 012001	2001	1/28/01	NPDES Storm	0.28	0.09	101	NPDES	flow-wt comp	No	137	5	117	122	
170	SDS3	SDS3 020201	2001	2/1/01	NPDES Storm	0.29	0.09	62	NPDES	flow-wt comp	No	20	< 2	13	14	
171	SDS3	SDS3 020801	2001	2/8/01	NPDES Storm	0.3	0.14	55	NPDES	first flush grab	Yes	431	24	276	300	
172	SDS3	SDS3 020801-1	2001	2/8/01	NPDES Storm	0.3	0.14	55	NPDES	time-comp	Yes	756	19	407	426	
173	SDS3	SDS3 020801-2	2001	2/8/01	NPDES Storm	0.3	0.14	55	NPDES	time-comp	Yes	103	6	63	69	
174	SDS3	SDS3 021801- B1	2001	2/18/01	NPDES Storm	0.46	0.14	29	NPDES	time-comp	Yes	336	4	183	167	14-hr lime comp, bottle 1 of 7. Coincided with major (runway) deicing event
175	SDS3	SDS3 021801- B2	2001	2/18/01	NPDES Storm	0.46	0.14	29	NPDES	time-comp	Yes	336	12	536	548	14-hr lime comp, bottle 2 of 7. Coincided with major (runway) deicing event
176	SDS3	SDS3 021701- B3	2001	2/18/01	NPDES Storm	0.46	0.14	29	NPDES	time-comp	Yes	336	4	104	106	14-hr lime comp, bottle 3 of 7. Coincided with major (runway) deicing event
177	SDS3	SDS3 021701- B4	2001	2/18/01	NPDES Storm	0.46	0.14	29	NPDES	time-comp	Yes	336	< 2	46	47	9-hr lime comp, bottles 4 of 7. Coincided with major (runway) deicing event
178	SDS3	SDS3 021801- B5	2001	2/18/01	NPDES Storm	0.46	0.14	29	NPDES	time-comp	Yes	336	< 2	52	53	14-hr lime comp, bottle 5 of 7. Coincided with major (runway) deicing event
179	SDS3	SDS3 021801- B6	2001	2/18/01	NPDES Storm	0.46	0.14	29	NPDES	time-comp	Yes	336	< 2	20	< 21	14-hr lime comp, bottle 6 of 7. Coincided with major (runway) deicing event
180	SDS3	SDS3 021901- B7	2001	2/18/01	NPDES Storm	0.46	0.14	29	NPDES	time-comp	Yes	336	< 2	17	18	14-hr lime comp, bottle 7 of 7. Coincided with major (runway) deicing event
181	SDS3	SDS3 021901	2001	2/18/01	NPDES Storm	0.46	0.14	29	NPDES	time-comp	Yes	336	5	133	136	overall event 92-hr lime-composite of bottles 1-7, coincided with major (runway) deice event
182	SDS3	SDS3 031501	2001	3/15/01	NPDES Storm	0.32	0.05	43	NPDES	flow-wt comp	No	41	< 2	25	26	
183	SDS3	SDS3 032701	2001	3/27/01	NPDES Storm	0.39	0.1	19	NPDES	flow-wt comp	No	14	< 2	9	10	
184	SDS3	SDS3 051501	2001	5/14/01	NPDES Storm	0.46	0.08	24	NPDES	flow-wt comp	No	14	< 2	< 2	< 4	
185	SDS4	SDS4 111994	1995	11/19/94	NPDES Storm	0.42		52	NPDES		No	5	< 5	< 5	< 10	
186	SDS4	SDS4 021395	1995	2/13/95	baseflow	0			NPDES		Yes	5	< 5	< 5	< 10	
187	SDS4	SDS4 021695	1995	2/15/95	NPDES Storm	1.1		66	NPDES		Yes	> 63	< 5	< 5	< 10	
188	SDS4	SDS4 011496	1996	1/13/96	NPDES Storm	0.37			NPDES	flow-wt comp	No	6	< 5	< 5	< 10	
189	SDS4	SDS4 012096	1996	1/19/96	Other	1.8			RW W/O	avg of lime comp	Yes	138	2	4	6	20-hr avg of 6 discrete samples 4 glycol <MDL
190	SDS4	SDS4 020196	1996	2/1/96	baseflow				SES		Yes	4	< 5	< 5	< 10	
191	SDS4	SDS4 020596	1996	2/3/96	Other Storm	1.6			SES		Yes	13	14	7	21	

Full Data Set (No Values Trimmed)

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9/27/01 10:31:32 AM

Deicing Event Sample Data 9/1/94 - 6/30/01

STORM CHARACTERISTICS

SAMPLE DATA		CONCENTRATION, mg/L														
Seq	Out fall	Sample ID	Reported	Storm Date	Type	Dpth in	Maxint In/hr	Dryant hr	Purpose	Type	Ground Deice? A/craft	BOD5	E. Glycol	P. Glycol	Total Glycol	Comments
192	SDS4	SDS4 020486	1996	2/3/96	NPDES Storm	1.6			SES	avg of lime comp	Yes	242	13	16	31	12-hr avg of 5 discrete samples. all BOD>result
193	SDS4	SDS4 041696	1996	4/15/96	NPDES Storm	0.49			NPDES	flow-wt comp	No	5	<5	<5	<10	
194	SDS4	SDS4 042296	1996	4/22/96	NPDES Storm	2.83			Slip Ag	flow-wt comp	No	6	<5	<5	<10	
195	SDS4	SDS4 070496	1997	7/3/96	NPDES Storm	0.23			NPDES	flow-wt comp	No	6	<5	<5	<10	
196	SDS4	SDS4 120496	1997	12/4/96	NPDES Storm	0.82		44	NPDES	flow-wt comp	No	<4	<5	<5	<10	
197	SDS4	SDS4 041997	1997	4/19/97	NPDES Storm	1.16		64	NPDES	flow-wt comp	No	4	<5	<5	<10	
198	SDS4	SDS4 011298	1998	1/12/98	Other Storm	1.13		123	NPDES	lime-comp	Yes	<12	<2	<2	<4	24-hour lime composite
199	SDS4	SDS4 030698	1998	3/6/98	NPDES Storm	0.86		132	NPDES	flow-wt comp	No	<4	<2	<2	<4	makeup comp for 96Qw non-rep comp
200	SDS4	SDS4 111998	1999	11/19/98	NPDES Storm	2.34	0.16	73	NPDES	flow-wt comp	No	<4	<2	<2	<4	
201	SDS7	SDW3 020486	1996	2/3/96	NPDES Storm	1.6			RW W/O	avg of lime comp	Yes	76	6	6	12	24-hr avg of 3 lime-comp samples. 2 glycol-MDL
202	SDN1	SDN1 111994	1995	11/19/94	NPDES Storm	0.42		52	NPDES		No	6	<5	<5	<10	
203	SDN1	SDN1 010595	1995	1/5/95	baseflow	0			Other		No	11	<5	<5	<10	baseflow
204	SDN1	SDN1 020695	1995	2/6/95	baseflow	0			NPDES		No	<5	<5	<5	<10	
205	SDN1	SDN1 021395	1995	2/13/95	baseflow	0			NPDES		Yes	5	<5	<5	<10	
206	SDN1	SDN1 021695	1995	2/15/95	NPDES Storm	1.1		66	NPDES		Yes	31	6	<5	6	
207	SDN1	SDN1 030595	1995	3/4/95	NPDES Storm	0.16		159	Slip Ag		No	4	<5	<5	<10	
208	SDN1	SDN1 030695	1995	3/6/95	NPDES Storm	2.16		68	Slip Ag		No	6	<5	<5	<10	
209	SDN1	SDN1 031595	1995	3/13/95	Other Storm	0.23		24	Slip Ag	random grab	No	4	<5	<5	<10	
210	SDN1	SDN1 040595	1995	4/4/95	NPDES Storm	0.17		270	Slip Ag		No	5	<5	<5	<10	
211	SDN1	SDN1 040795	1995	4/6/95	NPDES Storm	0.61		60	NPDES		No	40	<5	<5	<10	
212	SDN1	SDN1 020496	1996	2/3/96	NPDES Storm	1.6			NPDES	flow-wt comp	Yes	15	<5	<5	<10	
213	SDN1	SDN1 040596	1996	4/5/96	baseflow				Slip Ag	first flush grab	No	44	<5	<5	<10	baseflow, no storm
214	SDN1	SDN1 041296	1996	4/11/96	Other Storm	0.21		110	Slip Ag	flow-wt comp	No	15	<5	<5	<10	
215	SDN1	SDN1 041696	1996	4/15/96	NPDES Storm	0.49			Slip Ag	flow-wt comp	No	<4	<5	<5	<10	
216	SDN1	SDN1 042296	1996	4/22/96	NPDES Storm	2.83			NPDES	flow-wt comp	No	9	<5	<5	<10	
217	SDN1	SDN1 042596	1996	4/25/96	Other Storm	0.31		18	Slip Ag	flow-wt comp	No	2	<5	<5	<10	
218	SDN1	SDN1 051396	1996	5/13/96	NPDES Storm	0.99		12	Slip Ag	flow-wt comp	No	4	<5	<5	<10	
219	SDN1	SDN1 052296	1996	5/21/96	NPDES Storm	0.31			Slip Ag	random grab	No	12	<5	<5	<10	
220	SDN1	SDN1 052296	1996	5/21/96	NPDES Storm	0.31			Slip Ag	flow-wt comp	No	10	<5	<5	<10	extra NPDES/Slip Ag.

Full Data Set (No Values Trimmed)

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9/27/01 10:31:33 AM

Deicing Event Sample Data 9/1/94 - 6/30/01

CONCENTRATION, mg/L

STORM CHARACTERISTICS

SAMPLE DATA

Seq	Out fail	Sample ID	Reported	Storm Date	Type	Dpth in	Maxint in/hr	Dryant hr	Purpose	Type	Ground Deice? Aircraft	BOD5	E-Glycol	P-Glycol	Total Glycol	Comments
221	SDN1	SDN1 062396	1996	6/23/96	NPDES Storm	0.46			Slip Ag	flow-wt comp	No	20	< 5	< 5	< 10	extra NPDES/Slip Ag
222	SDN1	SDN1 070496	1997	7/3/96	NPDES Storm	0.23			NPDES	flow-wt comp	No	11	< 5	< 5	< 10	
223	SDN1	SDN1 071796	1997	7/17/96	NPDES Storm	0.27			Slip Ag	flow-wt comp	No	25	< 5	< 5	< 10	
224	SDN1	SDN1 080296	1997	8/2/96	NPDES Storm	1.01		325	Slip Ag	flow-wt comp	No	14	< 5	< 5	< 10	
225	SDN1	SDN1 090396	1997	9/3/96	NPDES Storm	0.29		76	Slip Ag	flow-wt comp	No	3	< 5	< 5	< 10	
226	SDN1	SDN1 091496	1997	9/13/96	NPDES Storm	0.72		144	Slip Ag	flow-wt comp	No	0	< 5	< 5	< 10	
227	SDN1	SDN1 091996	1997	9/18/96	NPDES Storm	0.36		28	Slip Ag	flow-wt comp	No	0	< 5	< 5	< 10	
228	SDN1	SDN1 100496	1997	10/4/96	Other Storm	0.59		18	Slip Ag	flow-wt comp	No	2	< 5	< 5	< 10	paired up/down sample
229	SDN1 up	SDN1 121597	1996	12/15/97	NPDES Storm	1		87	NPDES	flow-wt comp	No	30	< 2	< 2	< 4	
230	SDN1 up	SDN1 091996	1999	9/18/96	Other Storm	0.19	0.16	456	NPDES	flow-wt comp	No	5	< 2	< 2	< 4	
231	SDN1 up	SDN1 122596	1999	12/24/96	NPDES Storm	1.19	0.16	153	NPDES	flow-wt comp	Yes	373	14	12	26	
232	SDN1 up	SDN1 111699	2000	11/16/99	NPDES Storm	0.6	0.07	23	NPDES	flow-wt comp	No	10	< 2	< 2	< 4	
233	SDN1 up	SDN1 041300	2000	4/13/00	NPDES Storm	0.34	0.08	74	NPDES	flow-wt comp	No	18	< 2	< 2	< 4	glycols not recd
234	SDN1 up	SDN1 031501	2001	3/15/01	NPDES Storm	0.32	0.05	43	NPDES	flow-wt comp	No	50	< 2	< 2	< 4	glycols not recd
235	SDN2	SDN2 111994	1995	11/19/94	NPDES Storm	0.42		52	NPDES		No	10	< 5	< 5	< 10	
236	SDN2	SDN2 030595	1995	3/4/95	NPDES Storm	0.16		156	Slip Ag		No	>12	38	< 5	36	
237	SDN2	SDN2 031595	1995	3/13/95	Other Storm	0.23		24	Slip Ag	random grab	No	5	< 5	< 5	< 10	
238	SDN2	SDN2 040795	1995	4/8/95	NPDES Storm	0.61		60	Slip Ag		No	15	< 5	< 5	< 10	
239	SDN2	SDN2 041295	1995	4/10/95	NPDES Storm	0.29		56	NPDES		No	30	< 5	19	18	
240	SDN2	SDN2 121095	1996	12/9/95	Other Storm	0.82			SES	flow-wt comp	No		< 5	< 5	< 10	
241	SDN2	SDN2 012296	1996	1/19/96	Other Storm	1.8			R/W W/O	avg of lime comp	Yes	21	22	24	44	4-day avg of 17 lime-composite samples 6 glycol, 5NH3, and 5 BOD<MDL storm after runway deice
242	SDN2	SDN2 020496	1996	2/3/96	NPDES Storm	1.6			R/W W/O	first flush grab	Yes	180	18	26	44	
243	SDN2	SDN2 020696	1996	2/3/96	Other Storm	1.6			R/W W/O	avg of lime comp	Yes	108	9	14	23	2.5-day avg of 8 lime-composite samples 3 glycol, 6 NH3 <MDL
244	SDN2	SDN2 021796	1996	2/17/96	NPDES Storm	1.29			NPDES	flow-wt comp	No	6	6	11	17	
245	SDN2	SDN2 032996	1996	3/29/96	Other Storm	0.13		120	Slip Ag	first flush grab	No	10	< 5	< 5	< 10	
246	SDN2	SDN2 040596	1996	4/5/96	baseflow				Slip Ag	first flush grab	No	< 1	< 5	< 5	< 10	baseflow, no storm
247	SDN2	SDN2 041696	1996	4/15/96	NPDES Storm	0.49			Slip Ag	flow-wt comp	No	< 4	< 5	< 5	< 10	
248	SDN2	SDN2 041996	1996	4/19/96	Other Storm	0.09		16	Slip Ag		No	6	< 4	< 5	< 10	
249	SDN2	SDN2 042296	1996	4/22/96	NPDES Storm	2.83			NPDES	flow-wt comp	No	7	< 5	< 5	< 10	

Full Data Set (No Values Trimmed)

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Deicing Event Sample Data 9/1/94 - 6/30/01

SAMPLE DATA				STORM CHARACTERISTICS				CONCENTRATION, mg/L									
Seq	Out fall	Sample ID	Reported	Storm Date	Type	Depth in	Maxint in/hr	Dryant hr	Purpose	Type	Ground Deice? Aircraft	BOD5	E-Glycol	P-Glycol	Total Glycol	Comments	
250	SDN2	SDN2 042596	1996	4/25/96	Other Storm	0.31		18	Slip Ag	flow-wt comp	No	5	<5	<5	<10		
251	SDN2	SDN2 051396	1996	5/13/96	NPDES Storm	0.99		12	Slip Ag	flow-wt comp	No	2	<5	<5	<10		
252	SDN2	SDN2 052296	1996	5/21/96	NPDES Storm	0.31			Slip Ag	random grab	No	6	<5	<5	<10		
253	SDN2	SDN2 052296	1996	5/21/96	NPDES Storm	0.31			Slip Ag	flow-wt comp	No	5	<5	<5	<10	xtra NPDES/Slip Ag	
254	SDN2	SDN2 062396	1996	6/23/96	NPDES Storm	0.46			Slip Ag	flow-wt comp	No	18	<5	<5	<10	xtra NPDES/Slip Ag	
255	SDN2	SDN2 070396	1997	7/3/96	NPDES Storm	0.23			Slip Ag	failed comp	No	21	<5	<5	<10		
256	SDN2	SDN2 071796	1997	7/17/96	NPDES Storm	0.27			Slip Ag	lime-comp	No	16	<5	<5	<10	flow-wt comp failed, reset to 20 min time comp	
257	SDN2	SDN2 102196	1997	10/21/96	NPDES Storm	0.66		64	NPDES	flow-wt comp	No	4	<5	<5	<10		
258	SDN2	SDN2 112896	1997	11/20/96	Other Storm	0.45	0.07	16	RW W/O	avg of lime comp	Yes	260	31	134	185	9-day avg of 33 time-composite samples. 2 glycol, all NH3 <MDL	
259	SDN2	SDN2 123196	1997	12/26/96	Other Storm	1.12			RW W/O	avg of lime comp	Yes	256	1180	315	370	894	6-day avg of 20 time-composite samples 1 BOD and 17 NH3 <MDL
260	SDN2	SDN2 010297	1997	12/26/96	Other Storm	1.12			RW W/O	avg of lime comp	Yes	256	54	11	27	37	2-day avg of 7 time-composite samples 1 glycol and 3 BOD <MDL
261	SDN2	SDN2 011697	1997	1/16/97	NPDES Storm	1.21		154	NPDES	flow-wt comp	No	136	<5	<5	51		
262	SDN2	SDN2 013197	1997	1/31/97	Other Storm				Other	random grab	No		4	<5	<5	<10	requested by Tom Hubbard via City of Seattle concern about foam seen at 154th outfall
263	SDN2	SDN2 041997	1997	4/19/97	NPDES Storm	1.16		64	NPDES	flow-wt comp	No	9	<4	<5	<5	<10	
264	SDN2	SDN2 110498	1998	11/3/98	NPDES Storm	1.62	0.48	35	NPDES	first flush grab	No	11	<4	<2	<4		N. cargo (IWS) pump station bypass
265	SDN2	SDN2 112598	1998	11/25/98	Other Storm	3.45	0.32	6	NPDES	first flush grab	No	15	<4	<2	<4		N. cargo (IWS) pump station bypass
266	SDN2	SDN2 012699	1999	1/26/99	Other Storm	1.16	0.1	33	NPDES	first flush grab	No	56		<2	<2	<4	N. cargo (IWS) pump station bypass, storm << design, maint notified (dam in progress)
267	SDN2	SDN2 062499	1999	6/24/99	NPDES Storm	1.12	0.35	10	NPDES	first flush grab	No	2	<2	<2	<4		N. cargo (IWS) pump station bypass (30 min)
268	SDN2	SDN2 121599	2000	12/15/99	Other Storm	1.26	0.32	6	NPDES	first flush grab	No	3	4	<2	<2	5	N. cargo (IWS) pump station bypass
269	SDN3	SDN3 111694	1995	11/19/94	NPDES Storm	0.42		52	NPDES		No	4	<5	<5	<10		
270	SDN3	SDN3 020695	1995	2/6/95	baseflow	0			NPDES		No		<5	<5	<10		
271	SDN3	SDN3 021395	1995	2/13/95	baseflow	0			NPDES		Yes	3	<5	<5	<10		
272	SDN3	SDN3 021695	1995	2/15/95	NPDES Storm	1.1		66	NPDES		Yes	>90	<5	<5	<10		
273	SDN3	SDN3 030595	1995	3/4/95	NPDES Storm	0.16		158	Slip Ag		No	3	<5	<5	<10		

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9/27/01 10:31:34 AM

Deicing Event Sample Data 9/1/94 - 6/30/01

STORM CHARACTERISTICS

SAMPLE DATA

Seq	Out fall	Sample ID	Reported	Storm Date	Type	Dpth in	Maxint in/hr	Dryant hr	Purpose	Type	Ground Deice? A/craft	BO05	E-Glycol	P-Glycol	Total Glycol	Comments
274	SDN3	SDN3 030995	1995	3/8/95	NPDES Storm	2.16		88	Slip Ag		No	3	<5	<5	<10	
275	SDN3	SDN3 031595	1995	3/13/95	Other Storm	0.23		24	Slip Ag	random grab	No	5	<5	<5	<10	
276	SDN3	SDN3 040595	1995	4/4/95	NPDES Storm	0.17		270	Slip Ag		No	3	<5	<5	<10	
277	SDN3	SDN3 011498	1998	1/13/98	NPDES Storm	0.37			NPDES	flow-wt comp	No	5	<5	<5	<10	
278	SDN3	SDN3 012098	1998	1/19/98	Other Storm	1.8			Slip Ag	avg of line comp	Yes	30	2	2	5	36-hr avg of 4 time-composite samples all glycol <MDL
279	SDN3	SDN3 020498	1998	2/3/98	NPDES Storm	1.6			Slip Ag	flow-wt comp	Yes		<5	<5	<10	g/um after runway deice
280	SDN3	SDN3 033098	1998	3/28/98	Other Storm	0.13		120	Slip Ag	first flush grab	No	5	<5	<5	<10	
281	SDN3	SDN3 040198	1998	3/31/98	NPDES Storm	0.64			Slip Ag	flow-wt comp	No	5	<5	<5	<10	extra NPDES/Slip Ag
282	SDN3	SDN3 040598	1998	4/5/98	baseflow				Slip Ag	first flush grab	No	5	<5	<5	<10	baseflow, no storm
283	SDN3	SDN3 041298	1998	4/11/98	Other Storm	0.21		110	Slip Ag	first flush grab	No	4	<5	<5	<10	
284	SDN3	SDN3 041898	1998	4/15/98	NPDES Storm	0.49			NPDES	flow-wt comp	No	<4	<5	<5	<10	
285	SDN3	SDN3 041998	1998	4/19/98	Other Storm	0.09		16	Slip Ag		No	6	<5	<5	<10	
286	SDN3	SDN3 042298	1998	4/22/98	NPDES Storm	2.83			Slip Ag	flow-wt comp	No	7	<5	<5	<10	extra NPDES/Slip Ag
287	SDN3	SDN3 042598	1998	4/25/98	Other Storm	0.31		18	Slip Ag	flow-wt comp	No	5	<5	<5	<10	
288	SDN3	SDN3 050798	1998	5/7/98	baseflow				Slip Ag	random grab	No	<4	<5	<5	<10	
289	SDN3	SDN3 051098	1998	5/10/98	baseflow				Slip Ag	random grab	No	<4	<5	<5	<10	base flow
290	SDN3	SDN3 051398	1998	5/13/98	NPDES Storm	0.99		12	Slip Ag	flow-wt comp	No	2	<5	<5	<10	
291	SDN3	SDN3 052298	1998	5/21/98	NPDES Storm	0.31			Slip Ag	flow-wt comp	No	<4	<5	<5	<10	
292	SDN3	SDN3 120498	1997	12/4/98	NPDES Storm	0.82		44	NPDES	flow-wt comp	No	92	<5	<5	<10	
293	SDN3	SDN3 122198	1997	12/19/98	NPDES Storm	0.36		103	NPDES	flow-wt comp	No	78	<5	<5	<10	
294	SDN3	SDN3 030597	1997	3/5/97	NPDES Storm	0.39		42	NPDES	flow-wt comp	No	51	<5	<5	8	
295	SDN3	SDN3 121897	1998	12/15/97	NPDES Storm	1		87	NPDES	flow-wt comp	No	30	<4	<2	<4	
296	SDN3	SDN3 122498	1999	12/24/98	NPDES Storm	1.19	0.18	153	NPDES	flow-wt comp	Yes	373	222	<2	14	15
297	SDN4	SDN4 120498	1997	12/4/98	NPDES Storm	0.82		44	NPDES	flow-wt comp	No	92	<5	<5	<10	
298	SDN4	SDN4 030597	1997	3/5/97	NPDES Storm	0.39		42	NPDES	flow-wt comp	No	51	<4	<5	<10	
299	SDN4	SDN4 102897	1998	10/28/97	NPDES Storm	0.47		26	NPDES	flow-wt comp	No	9	<2	<2	<4	
300	SDN4	SDN4 121897	1998	12/15/97	NPDES Storm	1		87	NPDES	flow-wt comp	No	30	5	<2	<2	<4
301	SDN4	SDN4 011298	1998	1/12/98	Other Storm	1.13		123	NPDES	lime-comp	Yes	457	<2	<2	<4	24-hour line composite

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AR 017236



Deicing Event Sample Data 9/1/94 - 6/30/01

SAMPLE DATA				STORM CHARACTERISTICS				CONCENTRATION, mg/L									
Seq	Out fall	Sample ID	Reported	Storm Date	Type	Dpth in in/hr	Maxint in/hr	Dryant fr	Purpose	Type	Ground Deice? Aircraft	BOD5 Glycol	E-Glycol	P-Glycol	Total Glycol	Comments	
302	SDN4	SDN4 030196	1996	3/1/96	NPDES Storm	0.96	0.96	6	NPDES	flow-wt comp	No	11	<4	<2	<4	backup monthly sample in case 3/1/98 sample didn't qualify under new permit	
303	SDN4	SDN4 030996	1996	3/8/96	NPDES Storm	0.96	0.96	132	NPDES	flow-wt comp	No	154	4	<2	<4		
304	SDN4	SDN4 052596	1996	5/24/96	NPDES Storm	0.50	0.50	87	NPDES	flow-wt comp	No	7	5	<2	<4	glycols may be high biased, dupes was <ndf	
305	SDN4	SDN4 062596	1999	9/24/98	NPDES Storm	0.47	0.26	148	NPDES	flow-wt comp	No	3	7	<2	2		
306	SDN4	SDN4 100396	1996	10/3/96	NPDES Storm	0.4	0.22	36	NPDES	flow-wt comp	No	3	<4	<2	<4	not representative, insufficient duration (~1hr)	
307	SDN4	SDN4 102796	1999	10/27/98	NPDES Storm	0.64	0.19	72	NPDES	failed comp	No	16	5	<2	<4		
308	SDN4	SDN4 110496	1996	11/3/96	NPDES Storm	1.62	0.48	35	NPDES	flow-wt comp	No	11	<4	<2	<4	concurrent WET sample	
309	SDN4	SDN4 111396	1996	11/11/96	NPDES Storm	0.96	0.15	31	NPDES	flow-wt comp	No	26	<4	<2	<4		
310	SDN4	SDN4 121796	1996	12/17/96	Other Storm	0.11	0.03	33	NPDES	flow-wt comp	No	33	<2	<2	<4	concurrent WET sample	
311	SDN4	SDN4 122596	1996	12/24/96	NPDES Storm	1.19	0.16	153	NPDES	flow-wt comp	Yes	373	168	7	27		
312	SDN4	SDN4 011499	1999	1/13/99	NPDES Storm	1.07	0.16	85	NPDES	flow-wt comp	No	37	<4	<2	<4	concurrent WET sample	
313	SDN4	SDN4 020499	1999	2/3/99	NPDES Storm	0.28	0.07	27	NPDES	flow-wt comp	No	16	<4	<2	<4		
314	SDN4	SDN4 031399	1999	3/12/99	NPDES Storm	0.83	0.07	71	NPDES	flow-wt comp	No	69	<4	<2	<4	concurrent WET sample	
315	SDN4	SDN4 032899	1999	3/27/99	NPDES Storm	0.24	0.07	28	NPDES	flow-wt comp	No	17	<4	<2	<4		
316	SDN4	SDN4 110699	2000	11/5/99	NPDES Storm	0.66	0.11	44	NPDES	flow-wt comp	No	22	7	<2	<4	concurrent WET sample	
317	SDN4	SDN4 111699	2000	11/16/99	NPDES Storm	0.6	0.07	23	NPDES	flow-wt comp	No	10	4	<2	<4		
318	SDN4	SDN4 120999	2000	12/8/99	NPDES Storm	0.49	0.09	40	NPDES	flow-wt comp	No	43	5	<2	2	concurrent WET sample	
319	SDN4	SDN4 121799	2000	12/17/99	NPDES Storm	0.34	0.08	26	NPDES	flow-wt comp	No	11	<4	<2	<4		
320	SDN4	SDN4 013100	2000	1/31/00	NPDES Storm	1.76	0.15	9	NPDES	flow-wt comp	No	12	<4	<2	<4	concurrent WET sample	
321	SDN4	SDN4 031400	2000	3/13/00	NPDES Storm	0.47	0.13	49	NPDES	flow-wt comp	No	44	4	<2	<4		
322	SDN4	SDN4 041300	2000	4/13/00	NPDES Storm	0.34	0.08	74	NPDES	flow-wt comp	No	16	6	<2	<4	concurrent WET sample	
323	SDN4	SDN4 101800	2001	10/17/00	NPDES Storm	0.36	0.12	27	NPDES	flow-wt comp	No	4	7	<2	<4		
324	SDN4	SDN4 110800	2001	11/8/00	NPDES Storm	0.77	0.18	54	NPDES	flow-wt comp	No	21	4	5	<2	6	concurrent WET sample
325	SDN4	SDN4 112300	2001	11/23/00	NPDES Storm	0.37	0.1	330	NPDES	flow-wt comp	No	282	9	<2	6		
326	SDN4	SDN4 113000	2001	11/29/00	NPDES Storm	0.29	0.06	54	NPDES	flow-wt comp	No	60	5	<2	<4	concurrent WET sample	
327	SDN4	SDN4 121400	2001	12/14/00	NPDES Storm	0.29	0.08	123	NPDES	flow-wt comp	No	245	26	3	10		
328	SDN4	SDN4 020601	2001	2/6/01	NPDES Storm	0.3	0.14	55	NPDES	first flush grab	Yes	301	661	101	351	452	
329	SDN4	SDN4 020601	2001	2/6/01	NPDES Storm	0.3	0.14	55	NPDES	time-comp	Yes	301	211	28	116	144	18-hr lime comp, bottles 1+2 of 7, coincided with major (runway)deicing event
330	SDN4	SDN4 021601- B1-2	2001	2/16/01	NPDES Storm	0.46	0.14	28	NPDES	time-comp	Yes	336	11	6	6	12	
331	SDN4	SDN4 021701- B3	2001	2/16/01	NPDES Storm	0.46	0.14	29	NPDES	time-comp	Yes	336	366	6	24	33	12-hr lime comp, bottle 3 of 7, coincided with major (runway)deicing event

Full Data Set (No Values Trimmed)
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AR 017237



9/27/01 10:31:35 AM

Deicing Event Sample Data 9/1/94 - 6/30/01

SAMPLE DATA				STORM CHARACTERISTICS				CONCENTRATION, mg/L								
Seq	Out fall	Sample ID	Reported	Storm Date	Type	Dpth in	Maxint in/hr	Dryant hr	Purpose	Type	Ground Deice? Aircraft	BOD5	E-Glycol	P-Glycol	Total Glycol	Comments
332	SDN4	SDN4 021701-B4	2001	2/16/01	NPDES Storm	0.46	0.14	29	NPDES	time-comp	Yes	336	<4	<2	<4	111 hr lime comp, bottle 4 of 7, coincided with major (runway)deicing event
333	SDN4	SDN4 021801-B5	2001	2/16/01	NPDES Storm	0.46	0.14	29	NPDES	lime-comp	Yes	336	<2	<2	<4	14-hr lime comp, bottle 5 of 7, coincided with major (runway)deicing event
334	SDN4	SDN4 021801-B6	2001	2/16/01	NPDES Storm	0.46	0.14	29	NPDES	lime-comp	Yes	336	<2	<2	<4	14-hr lime comp, bottle 6 of 7, coincided with major (runway)deicing event
335	SDN4	SDN4 021901-B7	2001	2/16/01	NPDES Storm	0.46	0.14	29	NPDES	lime-comp	Yes	336	<2	<2	<4	12-hr lime comp, bottle 7 of 7, coincided with major (runway)deicing event
336	SDN4	SDN4 021901	2001	2/16/01	NPDES Storm	0.46	0.14	29	NPDES	lime-comp	Yes	336	<2	<2	7	overall event 66-hr lime comp of bottles 1-7, coincided with major (runway) deicing event
337	SDN4	SDN4 030201	2001	3/1/01	NPDES Storm	0.27	0.11	127	NPDES	flow-wf comp	No	91	<2	<2	<4	
338	SDN4	SDN4 031801	2001	3/15/01	NPDES Storm	0.32	0.05	43	NPDES	flow-wf comp	No	50	<2	<2	3	
339	SDN4	SDN4 040601 COMP	2001	4/5/01	NPDES Storm	0.23	0.05	32	NPDES	flow-wf comp	No	<4	<2	<2	<4	
340	SDN4	SDN4 051401 COMP	2001	5/14/01	NPDES Storm	0.46	0.08	24	NPDES	flow-wf comp	No	6	<2	<2	<4	
341	EY	EY 013100	2000	1/31/00	NPDES Storm	1.78	0.15	9	NPDES	flow-wf comp	No	12	<2	<2	<4	glycol and metals data not reqd. analyzed for dupe only
342	TY	TY 030495	1995	3/4/95	NPDES Storm	0.18		158	NPDES		No		<5	<5	<10	glycol data not reqd

Dryant aircraft = total number of aircraft deiced at STIA in dry period prior to and including day of sampling

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- Bank -

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Deicing Event Statistics 9/1/94 - 6/30/01

CONCENTRATION, mg/L

		Dryant Aircraft	BOD5	E-Glycol	P-Glycol	Total Glycol
All Outfalls	Count	186	300	342	342	344
	Max	457	1180	320	5900	6220
	95th	380	248	225	115.4	135.6
	75th	136	28	2.5	5.7	9.7
	Median	31	8	3	3	5
	25th	11	5	1.0	1.0	2.0
	Min	1	1	1	1	2
	SD	135	134	28.9	358.5	376.0
	CV%	119%	251%	393%	784%	718%
	#NonDetects	0	52	283	235	227
%NonDetects	0%	17%	77%	68%	68%	
SDE4 (002)	Count	47	60	67	67	68
	Max	457	335	21	71	92
	95th	328	132	13.4	34.6	43.3
	75th	141	14	2.5	5.2	8.0
	Median	31	8	1	3	5
	25th	18	5	1.0	1.0	2.0
	Min	2	2	1	1	2
	SD	134	56	4.2	12.8	15.3
	CV%	113%	208%	139%	193%	163%
	#NonDetects	0	11	54	48	45
%NonDetects	0%	18%	81%	69%	66%	
SDS1 (003)	Count	24	28	46	46	48
	Max	457	680	320	5900	6220
	95th	331	388	98.8	654.3	675.2
	75th	205	100	4.7	21.0	33.0
	Median	65	20	3	3	5
	25th	18	7	1.0	1.0	2.0
	Min	1	2	1	1	2
	SD	131	152	61.6	955.1	999.8
	CV%	119%	177%	260%	420%	403%
	#NonDetects	0	2	30	28	28
%NonDetects	0%	7%	65%	61%	57%	

Full Data Set (No Values Trimmed)

Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.

c:\ENV-apps\EMIS\POS\DEICE\MISMain.mdb\rpt\SWNPDESDeicingEventStats

Deicing Event Statistics 9/1/94 - 6/30/01

CONCENTRATION, mg/L

	Dryant Aircraft	BOO5	E-Glycol	P-Glycol	Total Glycol
SDS3 (005)	Count	42	71	71	71
	Max	457	96	536	546
	95th	334	448	219.5	233.5
	75th	150	112	58	21.4
	Median	38	18	3	6
	25th	16	6	1.0	2.5
	Min	3	2	1	1
	SD	139	186	13.1	96.4
	CV%	104%	179%	191%	228%
	#NonDetects	0	3	45	30
%NonDetects	0%	5%	63%	42%	
SDS4 (009)	Count	5	16	16	16
	Max	457	242	14	18
	95th	398	164	13.3	9.9
	75th	154	8	2.5	2.5
	Median	92	6	3	3
	25th	52	4	2.5	2.5
	Min	9	2	1	1
	SD	164	68	3.9	4.1
	CV%	107%	200%	108%	114%
	#NonDetects	0	4	13	13
%NonDetects	0%	25%	81%	81%	
SDS7 (010)	Count	1	1	1	1
	Max	76	6	6	12
	95th	5	5.0	5.0	5.0
	75th	5	5.0	5.0	5.0
	Median	76	6	6	12
	25th	5	5.0	5.0	5.0
	Min	76	6	6	12
	SD	0	0.0	0.0	0.0
	CV%	0%	0%	0%	0%
	#NonDetects	0	0	0	0
%NonDetects	0%	0%	0%	0%	

Former location downstream, ends 10/1996

Full Data Set (No Values Trimmed)

Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.

c:\ENV-apps\EMIS\POS\DEVE\MISMain.mdb\rpt\SWNPDES\DeicingEventStats

Deicing Event Statistics 9/1/94 - 6/30/01

CONCENTRATION, mg/L

	Dryant Aircraft	BODS Glycol	E- Glycol	P- Glycol	Total Glycol
SDN1 (006)					
Count	12	32	33	33	33
Max	373	116	14	12	26
95th	195	42	39	25	5.4
75th	20	14	25	25	5.0
Median	6	9	3	3	5
25th	3	5	2.5	2.5	5.0
Min	1	2	1	1	2
SD	95	21	2.2	1.8	3.9
CV%	259%	144%	80%	71%	75%
#NonDetects	0	2	31	32	31
%NonDetects	0%	6%	94%	97%	94%
SDN2 (007)					
Count	13	30	34	34	34
Max	260	1180	315	370	684
95th	258	218	327	60.1	90.8
75th	58	21	38	8.9	18.6
Median	11	8	3	3	5
25th	5	5	2.5	2.5	5.0
Min	2	1	1	1	2
SD	104	218	53.7	66.1	118.2
CV%	138%	311%	359%	308%	327%
#NonDetects	0	6	25	25	23
%NonDetects	0%	20%	74%	74%	68%
SDN3 (008)					
Count	9	26	26	26	26
Max	373	222	6	14	15
95th	261	75	2.5	2.5	5.8
75th	76	5	2.5	2.5	5.0
Median	30	3	3	3	5
25th	6	2	2.5	2.5	5.0
Min	2	1	1	1	2
SD	112	46	0.8	2.2	2.0
CV%	155%	284%	32%	78%	38%
#NonDetects	0	11	26	26	25
%NonDetects	0%	42%	93%	93%	89%

Includes both SDN1 and SDN1up

Pumped to IWS as of late 1997.

Full Data Set (No Values Trimmed)

Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.

c:\ENV-apps\EMIS\POS\DE\EMISMain.mdb\rt\SWNPDES\DeicingEventStats

Deicing Event Statistics 9/1/94 - 6/30/01

CONCENTRATION, mg/L

	Drywt Aircraft	BOO5	E-Glycol	P-Glycol	Total Glycol
SDN4 (011)					
Count	35	43	44	44	45
Max	457	661	101	351	452
95th	347	207	83	289	340
75th	86	10	10	22	32
Median	30	5	1	1	2
25th	12	2	10	10	20
Min	3	2	1	1	2
SD	144	119	15.5	55.1	69.6
CV%	114%	275%	345%	411%	367%
#NonDetects	0	13	37	33	33
%NonDetects	0%	30%	84%	75%	73%
EY (012)					
Count	1	1	1	1	1
Max	12	24	1	1	2
95th	12	2	20	20	20
75th	12	2	20	20	20
Median	12	24	1	1	2
25th	12	2	20	20	20
Min	12	24	1	1	2
SD	0	0	0.0	0.0	0.0
CV%	0%	0%	0%	0%	0%
#NonDetects	0	0	1	1	1
%NonDetects	0%	0%	100%	100%	100%
TY (013)					
Count			1	1	1
Max			3	3	5
95th			20	20	20
75th			20	20	20
Median			3	3	5
25th			20	20	20
Min			3	3	5
SD			0.0	0.0	0.0
CV%			0%	0%	0%
#NonDetects			1	1	1
%NonDetects			100%	100%	100%

AR 017243

Full Data Set (No Values Trimmed)
 Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.
 c:\ENV-apps\EMIS\POSDEV\EMISMain.mdb\rpt\SWNPDESDeicingEventStats



9/27/01 10:31:55 AM

Deicing Event Statistics 9/1/94 - 6/30/01

		CONCENTRATION, mg/L				
		Dryant Aircraft	BOD5	E-Glycol	P-Glycol	Total Glycol
Airfield (SDS3,SDS4,SDN3,SDN4)						
Count		91	148	158	158	159
Max		457	927	101	536	548
95th		373	335	193	119.4	138.6
75th		102	31	2.5	9.0	11.3
Median		37	7	3	3	5
25th		18	4	1.0	1.0	2.0
Min		2	1	1	1	2
#NonDetects		0	31	120	101	99
%NonDetects		0%	21%	76%	64%	62%

Full Data Set (No Values Trimmed)

Values qualified as non-detect (<) calculated at 1/2 the reported detection limit.

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AR 017244

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AR 017245

APPENDIX D OTHER SAMPLE DATA

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AR 017246

Field QC Samples 7/1/00 - 6/30/01																					
Outfall	POSID	Purpose	StormDate	Event	SampleType	Comments	TSS	Turb NTU	BOODS	Cu	Pb	Zn	EGYcol	PGYcol	TotalGYcol	Fecals(MPN)	pH	TPH-D	TPH-MO	TPH-Dz	TPH-MOz
SDS1	SDS1 012901	NPDES	28 Jan-01	NPDES Storm COMP	FHDup		93	34		0.022	0.005	0.1	3	4.53	7.53						
SDS1	SDS1 012901D	FHDup	28 Jan-01	NPDES Storm COMP FHDup		RPD, %	89	35		0.025	0.005	0.095	2	1.16	4.06						
SDN1up	SDN1 030101	NPDES	01 Mar-01	NPDES Storm COMP	FHDup		127	71		0.114	0.01	0.195									
SDN1up	SDN1 030101D	FHDup	01 Mar-01	NPDES Storm COMP FHDup		RPD, %	132	75		0.039	0.01	0.197									
SDS3	SDS3 031501	NPDES	15-Mar-01	NPDES Storm COMP	FHDup		55	6		0.034	0.001	0.036	2	75	26						
SDS3	SDS3 031501D	FHDup	15-Mar-01	NPDES Storm COMP FHDup		RPD, %	4	55		0.017	0.001	0.03	2	25.7	76.7						
SDN4	SDN4 062901-COMP	NPDES	27-Jun-01	NPDES Storm COMP	FHDup		45	56		0.031	0.001	0.048									
SDN4	SDN4 062901 DUP COMP	FHDup	27-Jun-01	NPDES Storm COMP FHDup		RPD, %	4	51		0.024	0.001	0.005									
SDS7	SDS7 101700	NPDES	17 Oct-00	NPDES Storm COMP	FHDup		70	55		0.006	0.001	0.005									
SDS7	SDS7 101700 D comp	FHDup	17 Oct-00	NPDES Storm COMP FHDup		RPD, %	94	60		0.006	0.001	0.017									
		BLANKS																			
SDS1	SDS1 020201B	FHDup	01 Feb-01	NPDES Storm COMP Blank			0.19			0.004	< 0.002	0.008	2.73	3.83	5.56						
SDS3	SDS3 020101B GRAB	FHDup	02 Feb-01	NPDES Storm GRAB Blank																	
SDS3	SDS3 051501B GRAB	FHDup	14 May-01	NPDES Storm GRAB Blank																	
		non-detected, value shown is 1/2 MDL																			

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Non-Representative Samples 7/1/00-6/30/01																					
Outfall	POSID	Purpose	StormDate	Event	SampleType	Comments	TSS	Turb NTU	BOODS	Cu	Pb	Zn	EGYcol	PGYcol	TotalGYcol	Fecals (MPN)	pH	TPH-D	TPH-MO	TPH-Dz	TPH-MOz
SDS7up	SDS7 101700	NPDES	10/17/00	Storm	NonRep-COMP	Too Early - Non Representative	7	55				< 0.006	< 0.002	< 0.005							
SDN1up	SDN1 112300	NPDES	11/23/00	Storm	NonRep-COMP	Comp Not Representative-Messed up of 18 aliquots	77	36		6.36	0.021	0.009	0.157								
SDS7up	SDS7 113000	NPDES	11/29/00	Storm	NonRep-COMP	Not Representative-Started too late on hydrograph	3	5				< 0.006	< 0.002	0.006							
SDS7up	SDS7 101700 grab	NPDES	10/17/00	Storm	NonRep-GRAB	Too Early - Non Representative															
SDS1	SDS1 112300 GRAB	NPDES	11/23/00	Storm	NonRep-GRAB	Grab Not Representative: Too late							4.41	5.71	10.12	170	7.45	< 0.05	8.70	8.72	
SDS7up	SDS7 112900 GRAB	NPDES	11/29/00	Storm	NonRep-GRAB	Not Representative: Started too late on hydrograph															

APPENDIX E OUTFALL INSPECTION SUMMARY

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AR 017248

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AR 017249



2000 Dry Weather Inspection for Permitted Outfalls Conducted on 9/27/00 by Scott Tobiason, Port of Seattle				Visual Observations***					Remarks (4)			
Outfall Name	Outfall #	Inspection point (1)	date (2)	depth of flow (3), in.	Susp Solids (0-5)	Turbidity (0-5)	Color (hue) (0-5)	Sheen (0-5)		Odor (type) (0-5)	Foam (0-5)	other
SDJ4	002	manhole SDE-4-47	27-Sep	trickle	0	0	0	0	0	0	0	no flow, pipe was dry
SDS1	003	outfall	27-Sep	no flow	0	0	0	0	0	0	0	pipe and ditch were dry
SDS2	004	outfall	27-Sep	no flow	0	0	0	0	0	0	0	insignificant discharge (too little to sample), no problems apparent
SDS3	005	outfall	27-Sep	trickle	0	0	0	0	0	0	0	no flow, pipe was barely damp
SDN1	006	manhole SDN1-22	27-Sep	no flow	0	0	0	0	0	0	0	no flow from pump station
SDN2	007	manhole	27-Sep	no flow	0	0	0	0	0	0	0	pipe was barely damp, no flow
SDN3	008	outfall	27-Sep	trickle	0	0	0	0	0	0	0	no flow only standing backwater from creek
SDS4	009	outfall	27-Sep	no flow	0	0	0	0	0	0	0	pipe barely damp, no discharge
SDS7	010	manhole	27-Sep	no flow	0	0	0	0	0	0	0	pipe dry
SDN4	011	outfall	27-Sep	no flow	0	0	0	0	0	0	0	area dry
Eng Yard	012	drain inlet	27-Sep	no flow	0	0	0	0	0	0	0	area dry
Lawn Yard	013	drain inlet	27-Sep	no flow	0	0	0	0	0	0	0	pipe and ditch were dry
SDS6	014	outfall	27-Sep	no flow	0	0	0	0	0	0	0	pipe and ditch were dry
SDS5	015	outfall	27-Sep	no flow	0	0	0	0	0	0	0	pipe and ditch were dry

notes:
 1 Inspected visually from surface through inlets, or by pumped sample for outfalls with monitoring points requiring confined-space entry (SDF 4, SDN1, SDN2, E.Y., 1Y)
 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:

Location	Date	Flow	Depth	Susp Solids	Turbidity	Color	Sheen	Odor	Foam	Other
S 28th St outfall	n/a	outfall		0	0	0	0	0	0	optional location not inspected
DM Creek above SDS1	27-Sep	creek	~4"	0	0	0	0	0	0	flow was clear
DM Creek Weir at Golf Course	9/27/00	creek	~4"	0	0	0	0	0	0	flow was clear
DM Creek at SDS4	27-Sep	creek	~4"	0	0	0	0	0	0	flow was clear
Reba outlet	27-Sep	outlet	~3"	0	0	0	0	0	0	flow was clear

Scott Tobiason

Outfalls

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Wet Season Outfall Inspection Summary

outfall	17-Oct-00	18-Oct-00	19-Oct-00	20-Oct-00	24-Oct-00	31-Oct-00	01-Nov-00	07-Nov-00	08-Nov-00	16-Nov-00	21-Nov-00	22-Nov-00	23-Nov-00
SDE4	M	S (ob1)				M		M	S, D	M		M	M
SDS1												M	M
SDS2													
SDS3	M	S			M			M	S (ob4)	M	M		M
SDS4													
SDS5	M	NA	M	S								M	M
SDS6	M	M	M	S		M							
SDS7	M	S, D										M	
SDN1	M	S (ob2)				M		M				M	M
SDN2						M							
SDN3		M	M	S						M			
SDN4	M	S				M		M	S	M		M	M
EY		M	M	S (ob3)									
TY													
N.Cargo													

Information from site visit log books, chain-of-custodies, and field data sheets.

S = Sample
 D = duplicate sample taken
 B = blank sample taken
 Observations:
 1. SDE4: grab sample high turbidity (3/5)
 2. SDN1: grab sample high turbidity (3/5) and solids (3/5)
 3. EY: suspended solids 3/5 in grab sample
 4. SDS3: white foam observed at outfall. Manual grab taken; analyzed for surfactants, SRP, and TDP

M = visited for set up, maintenance, or data download
 DL = Data download from flowmeter
 NA = sample not analyzed

n#: note number
 ob#: observation number

Wet Season Outfall Inspection Summary

outfall	24-Nov-00	28-Nov-00	30-Nov-00	08-Dec-00	13-Dec-00	14-Dec-00	15-Dec-00	17-Dec-00	20-Dec-00	21-Dec-00	02-Jan-01	04-Jan-01	05-Jan-01
SDE4	S (ob5)			M	M	S				M	M	S (ob8)	
SDS1	S (ob5) (ob6)										M	M	
SDS2													
SDS3	S			M	M					M	M	S, D, B	
SDS4		M									M	S	
SDS5						M				S	M	S	
SDS6		M											
SDS7		M	S (n3)			M	S						
SDN1	S(n2,ob5)	M		M	M	S (obs 7)				M	M	S (ob8)	
SDN2		M		M			M						M
SDN3													
SDN4	S	M	S	M	M	S	B						
EY								M				M	S (ob8)
TY													
N.Cargo									D.L. (n4)				

Information from site visit log books, chain-of-custodies, and field data sheets.

S = Sample
 M = visited for set up, maintenance, or data download
 DL = Data download from flowmeter
 B = duplicate sample taken
 NA = sample not analyzed

Observations:
 5. S1, E4, N1: grab samples high turbidity (3/5)
 6. line grey sediment (concrete outwash) observed (CN, KM)
 7. N1: suspended solids (4/5) and turbidity (4/5), dark brown sample
 8. N1 grab and comp: susp. solids and turbidity (3/5). EY grab susp. solids and turb. (3/5). E4 grab susp. solids and turb. (3/5)

Notes:
 2. SDN1: comp sample un-representative
 3. SDS7: sample un-representative
 4. N. Cargo flow monitoring equipment removed 12/20/00

n#: note number
 ob#: observation number

Wet Season Outfall Inspection Summary

outfall	11-Jan-01	23-Jan-01	28-Jan-01	29-Jan-01	01-Feb-01	02-Feb-01	07-Feb-01	08-Feb-01	09-Feb-01	14-Feb-01	15-Feb-01	16-Feb-01	17-Feb-01
SDE4							M (n5)	M (n5)	S (n6)		M (n5)	M (n5)	S (n6)
SDS1	M	M	M	S (ob9), D				S (n6)				S (n6)	S (n6)
SDS2													
SDS3	M	M	M	S	M	S, B	M (n5)	S (ob11)	S (n6)		M (n5)	M (n5)	S (n6)
SDS4													
SDS5													
SDS6													
SDS7													
SDN1	M	M	M	S									
SDN2													
SDN3													
SDN4							M (n5)	S (ob11)	S (n6)	M	M (n5)	M (n5)	S (n6)
EY													
TY		M	M	S (ob9)	M	S (ob10)							
N.Cargo													

Information from site visit log books, chain-of-custodies, and field data sheets.

S = Sample M = visited for set up, maintenance, or data download n#: note number
 D = duplicate sample taken DL = Data download from flowmeter ob#: observation number
 B = blank sample taken NA = sample not analyzed

Notes:

- 9. S1 grab turbidity (4/5), orange-brown color
- 10. EY: grab sample only; susp. solids 3/5
- 11. S3: white foam observed at outfall
- 5. Stations setup for snow/ice de-icing event (time paced composites)
- 6. Glycol sampling for de-icing event

Wet Season Outfall Inspection Summary

	18-Feb-01	19-Feb-01	01-Mar-01	02-Mar-01	08-Mar-01	12-Mar-01	14-Mar-01	15-Mar-01	16-Mar-01	23-Mar-01	27-Mar-01	28-Mar-01	29-Mar-01
outfall													
SDE4	S (n6)		M		M	M	M	M	S (ob15,16)		M	S	
SDS1			M	S (ob13)			M						
SDS2													
SDS3	S (n6)	S (n6)	M		M	M	M (ob14)	M	S	M	M	S (ob17, n7)	
SDS4						M					M	S	
SDS5							M	M	S				
SDS6													
SDS7								M	S				
SDN1			M	S,D (ob12)		M	M	M	S (ob15)				M
SDN2													
SDN3													M
SDN4	S (n6)	S (n6)	M	S		M	M	M	S				M
EY													M
TY													
N.Cargo													

Information from site visit log books, chain-of-custodies, and field data sheets.

S = Sample
 D = duplicate sample taken
 DL = Data download from flowmeter
 B = blank sample taken
 NA = sample not analyzed

Notes:

- 12. N1: grab and comp sample high turbidity (3/5)
- 13. S1: small amount of foam observed (approx. 1 sq. ft.)
- 14. S3: light foam observed at outfall
- 15. N1, E4: petroleum odor in grab sample
- 16. E4: comp sample turbidity (3/5)
- 17. S3: approx. 1/2" thick of foam observed at outfall.

- n#: note number
- ob#: observation number
- 6. Glycol sampling for de-icing event
- 7. Increased flow recorded at outfall after storm hydrograph. Due to discharge from Lagoon 3 Int. facility on 188th St.

Wet Season Outfall Inspection Summary

	05-Apr-01	06-Apr-01	16-Apr-01	17-Apr-01	24-Apr-01	26-Apr-01	08-May-01	13-May-01	14-May-01	15-May-01	16-May-01	11-Jun-01	12-Jun-01
outfall				M	M		M	M	M	S			
SDE4													
SDS1													
SDS2													
SDS3				M				M	M	S, B			
SDS4													
SDS5													
SDS6													
SDS7													
SDN1								M	M	S			
SDN2								M				S (n1)	M
SDN3	M	S	M										
SDN4	M	S	M					M	M	S			
EY													
TY													
N.Cargo													

Information from site visit log books, chain-of-custodies, and field data sheets.

S = Sample
 D = duplicate sample taken
 B = blank sample taken
 M = visited for set up, maintenance, or data download
 DL = Data download from flowmeter
 NA = sample not analyzed
 n#: note number
 ob#: observation number

Notes:
 1. SDN2 pump station pumps capacity exceeded. Overflow to gravity storm sewer N2 outfall

Wet Season Outfall Inspection Summary

	24-Apr-01	26-Apr-01	08-May-01	13-May-01	14-May-01	15-May-01	16-May-01	11-Jun-01	12-Jun-01	14-Jun-01
SDE4	M			M		M		M		outfall
SDS1										
SDS2										
SDS3	M	M						S		
SDS4										
SDS5										
SDS6										
SDS7										
SDN1	M					M		S (ob18)		
SDN2							M			
SDN3										
SDN4	M			M		M		S, D		
EY					M	M		S		
TY						M				
N.Cargo										

Information from site visit log books, chain-of-custodies, and field data sheets.

S = Sample
 D = duplicate sample taken
 B = blank sample taken
 M = visited for set up, maintenance, or data download
 DL = Data download from flowmeter
 NA = sample not analyzed

nr#: note number
 ob#: observation number

Observations:
 18. NI: suspended solids (3/5); turbidity (4/5)

Wet Season Outfall Inspection Summary

outfall	total number of visits	01-Jul-00	03-Jul-00	04-Jul-00	05-Jul-00	08-Jul-00	11-Jul-00	20-Jul-00	21-Jul-00	24-Jul-00	25-Jul-00	04-Aug-00	08-Aug-00
SDE4	48		S								M		M
SDS1	16									M			
SDS2	2		S							M			
SDS3	52					M				M			
SDS4	9						M				M		
SDS5	17								M				
SDS6	9								M				
SDS7	11								M				
SDN1	38			M	S, D					M			
SDN2	19									M			
SDN3	12			M					M				M
SDN4	50						NA		M	M			
EY	14								M				M
TY	9								M				M
N.Cargo	2											DL	

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NA = sample not analyzed

n#: note number

ob#: observation number

Wet Season Outfall Inspection Summary

outfall	09-Aug-00	17-Aug-00	19-Aug-00	08-Sep-00	19-Sep-00	20-Sep-00	25-Sep-00	27-Sep-00	29-Sep-00	06-Oct-00	09-Oct-00	11-Oct-00	12-Oct-00
SDE4													
SDS1												M	
SDS2													
SDS3		M	S					M				M	M
SDS4	M												
SDS5						M	M		M				
SDS6									M			M	
SDS7													
SDN1	M			M									
SDN2	M							M				M	M
SDN3											S (n1)		
SDN4	M	M	S									M	M
EY		M	S, D										
TY													
N.Cargo													

Information from site visit log books, chain-of-custodies, and field data sheets.

S = Sample

D = duplicate sample taken

B = blank sample taken

Notes:

1. SDN2 pump station pumps capacity exceeded. Overflow to gravity storm sewer N2 outfall

M = visited for set up, maintenance, or data download

DL = Data download from flowmeter

NA = sample not analyzed

m#: note number
ob#: observation number