

Appendix B. Large Ship Sampling Data

MDL = Method Detection Limit

ND = Non Detect

Note: ½ MDL is substituted for non-detects in order to calculate a geometric mean. This is not done for chlorine because the MDL is greater than the Alaska water quality standard. These values are left as ND.

Table 1. 2003 Blackwater Conventional Pollutants

		Ammonia, total (as N)	pH	BOD5	COD	TSS	Total Chlorine Residual	Fecal Coliform	Free Chlorine Residual
		mg/L		mg/L	mg/L	mg/L	mg/L	MPN/100	mg/L
	MDL	0.03	0.10	2.0	3.0	1.3	0.10	2	0.10
VESSEL_ID	Sample Date								
Coral Princess	5/21/2003	188.00	7.9	5	135.0	0.0	ND	9	ND
Coral Princess	6/24/2003	110.00	7.5	33	130.0	0.0	ND	240	ND
Coral Princess	8/23/2003	66.00	7.5	0	40.0	0.0	ND	0	ND
Dawn Princess	6/5/2003	8.64	6.7	6	87.0	0.0	ND	0	ND
Dawn Princess	6/23/2003	22.20	7.1	0	55.0	0.0	ND	0	ND
Dawn Princess	6/24/2003	20.90	6.9	0	14.0	0.0	ND	0	ND
Dawn Princess	8/14/2003	33.00	7.2	0	45.0	0.0	ND	0	ND
Dawn Princess	8/14/2003	38.00	7.2	21	44.0	0.0	ND	0	ND
Island Princess	7/19/2003	7.47	7.9	0	77.0	0.0	ND	0	ND

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		Ammonia, total (as N)	pH	BOD5	COD	TSS	Total Chlorine Residual	Fecal Coliform	Free Chlorine Residual
		mg/L		mg/L	mg/L	mg/L	mg/L	MPN/100	mg/L
	MDL	0.03	0.10	2.0	3.0	1.3	0.10	2	0.10
VESSEL_ID	Sample Date								
Island Princess	7/29/2003	33.10	7.4	4	68.0	0.0	ND	0	ND
Island Princess	9/3/2003	29.00	7.4	3	38.0	0.0	2.50	0	2.00
Maasdam	5/17/2003	16.80	7.8	0	80.0	0.0	ND	0	ND
Maasdam	7/26/2003	23.20	7.7	0	72.0	0.0	ND	0	ND
Maasdam	8/9/2003	47.00	8.0	3	70.0	0.0	ND	0	ND
Mercury	5/15/2003	2.34	7.1	0	0.0	0.0	ND	2	ND
Norwegian Sky	5/20/2003	35.70	6.8	9	68.0	10.8	ND	0	ND
Norwegian Sky	5/20/2003	42.00	6.8	7	112.0	5.8	ND	0	ND
Norwegian Sky	7/29/2003	56.50	7.3	8	64.0	5.1	ND	0	ND
Norwegian Sky	7/29/2003	61.70	7.2	7	63.0	0.0	ND	0	ND
Norwegian Sun	6/17/2003	110.00	7.6	19	104.0	8.8	ND	0	ND
Norwegian Sun	6/24/2003	61.10	6.9	21	40.0	5.7	ND	0	ND
Norwegian Sun	9/9/2003	92.00	7.3	13	73.0	4.9	ND	0	ND
Norwegian Wind	6/18/2003	27.00	7.0	9	60.0	4.2	ND	0	ND
Norwegian Wind	6/18/2003	49.00	6.9	8	71.0	11.2	ND	0	ND

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		Ammonia, total (as N)	pH	BOD5	COD	TSS	Total Chlorine Residual	Fecal Coliform	Free Chlorine Residual
		mg/L		mg/L	mg/L	mg/L	mg/L	MPN/100	mg/L
	MDL	0.03	0.10	2.0	3.0	1.3	0.10	2	0.10
VESSEL_ID	Sample Date								
Norwegian Wind	7/23/2003	25.10	7.3	17	86.0	10.9	ND	0	ND
Norwegian Wind	7/23/2003	24.50	7.3	16	83.0	10.3	ND	0	ND
Pacific Princess	6/26/2003	58.00	7.8	9	93.0	0.0	ND	0	ND
Pacific Princess	8/31/2003	39.00	7.5	0	64.0	0.0	ND	0	ND
Pacific Princess	9/12/2003	37.00	7.2	3	81.0	0.0	ND	0	ND
Ryndam	5/27/2003	0.49	7.7	0	62.0	0.0	ND	0	ND
Ryndam	6/20/2003	10.60	7.7	3	52.0	0.0	ND	0	ND
Ryndam	7/1/2003	23.00	7.9	4	59.0	0.0	ND	0	ND
Seven Seas Mariner	7/19/2003	5.74	7.5	0	106.0	0.0	ND	11	ND
Seven Seas Mariner	8/9/2003	16.00	7.2	10	70.0	0.0	ND	0	ND
Seven Seas Mariner	8/27/2003	0.00	7.2	52	86.0	0.0	ND	0	ND
Seven Seas Mariner	8/27/2003	0.00	7.1	13	140.0	0.0	ND	0	ND
Star Princess	6/2/2003	47.20	7.6	0	59.0	0.0	ND	0	ND
Star Princess	8/11/2003	20.00	7.1	0	15.0	0.0	ND	0	ND
Star Princess	8/25/2003	22.00	6.5	42	61.0	0.0	ND	0	ND

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		Ammonia, total (as N)	pH	BOD5	COD	TSS	Total Chlorine Residual	Fecal Coliform	Free Chlorine Residual
		mg/L		mg/L	mg/L	mg/L	mg/L	MPN/100	mg/L
	MDL	0.03	0.10	2.0	3.0	1.3	0.10	2	0.10
VESSEL_ID	Sample Date								
Statendam	8/6/2003	30.00	7.9	11	430.0	0.0	ND	0	ND
Statendam	8/6/2003	0.00	8.0	6	88.0	0.0	ND	0	ND
Statendam	8/20/2003	25.00	7.3	25	110.0	0.0	ND	0	ND
Statendam	9/7/2003	0.14	7.5	0	73.0	0.0	ND	0	ND
Statendam	9/7/2003	0.14	7.5	0	73.0	0.0	ND	0	ND
Sun Princess	5/23/2003	92.70	7.5	4	150.0	0.0	0.40	0	0.30
Sun Princess	6/16/2003	141.00	7.3	20	162.0	0.0	Not taken	0	Not taken
Sun Princess	8/1/2003	88.80	7.4	0	82.0	0.0	ND	0	ND
Sun Princess	8/1/2003	92.20	7.3	0	80.0	0.0	ND	0	ND
Veendam	5/29/2003	10.40	7.8	0	58.0	0.0	ND	0	ND
Veendam	7/2/2003	42.00	7.4	5	68.0	0.0	ND	0	ND
Veendam	7/20/2003	139.00	7.8	0	101.0	0.0	ND	0	ND
Volendam	5/21/2003	20.20	7.4	0	84.0	0.0	ND	0	ND
Volendam	7/9/2003	20.00	8.1	0	45.0	0.0	ND	0	ND

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		Ammonia, total (as N)	pH	BOD5	COD	TSS	Total Chlorine Residual	Fecal Coliform	Free Chlorine Residual
		mg/L		mg/L	mg/L	mg/L	mg/L	MPN/100	mg/L
	MDL	0.03	0.10	2.0	3.0	1.3	0.10	2	0.10
VESSEL_ID	Sample Date								
Volendam	7/23/2003	3.89	8.0	0	66.0	0.0	ND	0	ND
Zaandam	5/19/2003	20.00	7.9	0	54.0	0.0	ND	0	ND
Zaandam	6/30/2003	9.80	7.7	4	260.0	0.0	ND	0	ND
Zaandam	7/28/2003	11.40	7.8	0	73.0	0.0	ND	0	ND
	Minimum	0.00	6.5	0	0.0	0.0	ND	0	ND
	Median	25.10	7.4	4	72.0	0.0	ND	0	ND
	Maximum	188.00	8.1	52	430.0	11.2	2.50	240	2.00
	Geometric Mean							1	

Table 2. Blackwater Conventional Pollutants (continued)

		Conductivity	Oil & Grease	Total Organic Carbon	Alkalinity	Total Nitrate and Nitrite as N	Total Phosphorus	Total Kjeldahl Nitrogen	Total Settleable Solids
		umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ml/L
	MDL	1	1.5	1.0	0.5	1.0	0.01	1.0	0.1
VESSEL_ID	Sample Date								
Coral Princess	5/21/2003	3330	5.5	28.7	597.0	0.0	13.40	160.0	0.0
Coral Princess	6/24/2003	1160	9.7	44.2	340.0	0.0	14.00	98.0	0.0
Coral Princess	8/23/2003	1050	0.0	13.1	273.0	0.0	4.90	66.0	0.0
Dawn Princess	6/5/2003	1190	0.0	25.2	73.3	9.8	15.60	9.9	0.0
Dawn Princess	6/23/2003	1170	0.0	19.2	158.0	0.0	9.20	25.0	0.0
Dawn Princess	6/24/2003	1170	0.0	19.4	151.0	0.0	8.80	25.0	0.0
Dawn Princess	8/14/2003	1280	0.0	13.4	129.0	4.1	7.00	22.0	0.0
Dawn Princess	8/14/2003	1280	0.0	14.7	137.0	3.8	7.00	31.0	0.0
Island Princess	7/19/2003	2930	0.0	29.0	599.0	0.0	3.06	160.0	0.0
Island Princess	7/29/2003	1740	0.0	22.3	173.0	0.0	16.60	39.0	0.0
Island Princess	9/3/2003	611	0.0	10.1	128.0	0.9	10.00	26.0	0.0
Maasdam	5/17/2003	1760	0.0	18.8	232.0	0.0	0.27	19.0	0.0
Maasdam	7/26/2003	800	0.0	19.2	250.0	0.0	0.31	28.0	0.0
Maasdam	8/9/2003	1040	0.0	22.9	412.0	0.0	3.80	35.0	0.0

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		Conductivity	Oil & Grease	Total Organic Carbon	Alkalinity	Total Nitrate and Nitrite as N	Total Phosphorus	Total Kjeldahl Nitrogen	Total Settleable Solids
		umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ml/L
	MDL	1	1.5	1.0	0.5	1.0	0.01	1.0	0.1
VESSEL_ID	Sample Date								
Mercury	5/15/2003	62	0.0	0.0	9.8	0.5	0.07	3.9	0.0
Norwegian Sky	5/20/2003	Not taken	Not taken	Not taken	Not taken	Not taken	Not taken	Not taken	Not taken
Norwegian Sky	5/20/2003	859	0.0	23.2	102.0	0.0	0.26	41.0	0.0
Norwegian Sky	7/29/2003	956	0.0	21.2	184.0	0.0	0.48	65.0	0.0
Norwegian Sky	7/29/2003	973	0.0	20.5	163.0	0.0	0.34	66.0	0.0
Norwegian Sun	6/17/2003	1280	0.0	28.4	254.0	0.0	0.35	79.0	0.0
Norwegian Sun	6/24/2003	1080	5.8	22.3	192.0	0.0	0.66	62.0	0.0
Norwegian Sun	9/9/2003	971	0.0	16.9	222.0	0.0	0.23	65.0	0.7
Norwegian Wind	6/18/2003	995	0.0	15.4	48.9	0.0	0.11	41.0	0.0
Norwegian Wind	6/18/2003	937	0.0	15.4	78.3	0.0	0.16	35.0	0.0
Norwegian Wind	7/23/2003	978	0.0	20.8	50.5	0.0	0.47	30.0	0.0
Norwegian Wind	7/23/2003	957	0.0	21.5	52.1	0.0	0.46	30.0	0.0
Pacific Princess	6/26/2003	829	5.8	25.8	159.0	7.1	13.30	40.0	0.0
Pacific Princess	8/31/2003	691	0.0	19.4	75.7	41.0	12.00	34.0	0.0
Pacific Princess	9/12/2003	1030	0.0	17.7	78.0	35.0	4.10	34.0	0.0

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		Conductivity	Oil & Grease	Total Organic Carbon	Alkalinity	Total Nitrate and Nitrite as N	Total Phosphorus	Total Kjeldahl Nitrogen	Total Settleable Solids
		umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ml/L
	MDL	1	1.5	1.0	0.5	1.0	0.01	1.0	0.1
VESSEL_ID	Sample Date								
Ryndam	5/27/2003	789	0.0	19.7	293.0	0.0	0.87	1.5	0.0
Ryndam	6/20/2003	823	0.0	14.5	308.0	0.0	2.10	12.0	0.0
Ryndam	7/1/2003	777	11.0	18.8	318.0	0.0	0.71	17.0	0.0
Seven Seas Mariner	7/19/2003	733	0.0	4.6	112.0	0.0	4.70	7.3	0.0
Seven Seas Mariner	8/9/2003	581	9.0	22.7	146.0	0.0	9.60	14.0	0.0
Seven Seas Mariner	8/27/2003	765	0.0	21.1	242.0	0.0	12.00	33.0	0.0
Seven Seas Mariner	8/27/2003	766	0.0	22.7	241.0	0.0	11.00	33.0	0.0
Star Princess	6/2/2003	3070	0.0	15.4	226.0	0.0	6.60	44.0	0.0
Star Princess	8/11/2003	3000	0.0	16.8	89.9	13.0	1.10	15.0	0.0
Star Princess	8/25/2003	3000	0.0	13.1	20.0	35.0	15.00	8.8	0.0
Statendam	8/6/2003	1450	0.0	26.4	122.0	0.0	0.65	27.0	0.0
Statendam	8/6/2003	1410	0.0	26.1	128.0	0.0	0.40	28.0	0.0
Statendam	8/20/2003	1730	0.0	33.5	278.0	0.0	1.60	28.0	0.0
Statendam	9/7/2003	1350	5.4	24.8	261.0	0.0	0.72	2.2	0.0
Statendam	9/7/2003	1350	5.4	24.8	261.0	0.0	0.72	2.2	0.0

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		Conductivity	Oil & Grease	Total Organic Carbon	Alkalinity	Total Nitrate and Nitrite as N	Total Phosphorus	Total Kjeldahl Nitrogen	Total Settleable Solids
		umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ml/L
	MDL	1	1.5	1.0	0.5	1.0	0.01	1.0	0.1
VESSEL_ID	Sample Date								
Sun Princess	5/23/2003	2670	7.8	26.0	278.0	0.0	8.35	87.0	0.0
Sun Princess	6/16/2003	2920	0.0	44.5	539.0	0.0	13.40	120.0	0.0
Sun Princess	8/1/2003	1700	5.9	19.4	217.0	0.0	10.70	85.0	0.0
Sun Princess	8/1/2003	1280	0.0	17.0	243.0	0.0	10.50	140.0	0.0
Veendam	5/29/2003	579	5.2	16.5	138.0	0.0	3.32	12.0	0.0
Veendam	7/2/2003	813	0.0	21.4	262.0	0.0	12.00	30.0	0.0
Veendam	7/20/2003	658	0.0	22.8	231.0	0.0	11.70	11.0	0.0
Volendam	5/21/2003	684	0.0	17.0	224.0	0.0	1.64	19.0	0.0
Volendam	7/9/2003	612	0.0	14.5	199.0	0.0	0.37	15.0	0.0
Volendam	7/23/2003	830	0.0	19.0	313.0	0.0	0.56	8.2	0.0
Zaandam	5/19/2003	62	11.0	15.5	297.0	0.0	6.10	22.0	0.0
Zaandam	6/30/2003	789	6.3	15.5	287.0	0.0	3.40	9.9	0.0
Zaandam	7/28/2003	724	0.0	16.6	268.0	0.8	4.25	15.0	0.0
	Minimum	62	0.0	0.0	9.8	0.0	0.07	1.5	0.0
	Median	987	0.0	19.4	219.5	0.0	3.60	29.0	0.0

		Conductivity	Oil & Grease	Total Organic Carbon	Alkalinity	Total Nitrate and Nitrite as N	Total Phosphorus	Total Kjeldahl Nitrogen	Total Settleable Solids
		umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ml/L
	MDL	1	1.5	1.0	0.5	1.0	0.01	1.0	0.1
VESSEL_ID	Sample Date								
	Maximum	3330	18.0	44.5	599.0	41.0	16.60	160.0	0.7

Table 3. 2003 Large Ship Graywater Conventional Pollutants

		Ammonia, total (as N)	pH	BOD5	COD	TSS	Total Chlorine Residual	Fecal Coliform	Free Chlorine Residual
		mg/L		mg/L	mg/L	mg/L	mg/L	MPN/100	mg/L
	MDL	0.03	0.1	2	3.0	1.3	0.10	2	0.10
VESSEL ID	Sample Date								
Carnival Spirit	8/30/2003	0.92	7.3	14	35.0	0.0	ND	0	ND
Carnival Spirit	9/12/2003	2.30	7.0	23	67.0	0.0	ND	23	ND
Carnival Spirit	9/12/2003	1.30	10.1	32	95.0	0.0	ND	17	ND
	Minimum	0.92	7.0	14	35.0	0.0	ND	0	ND
	Median	1.30	7.3	23	67.0	0.0	ND	17	ND
	Maximum Geometric Mean	2.30	10.1	32	95.0	0.0	ND	23 7	ND

Table 4. 2003 Large Ship Graywater Conventional Pollutants (continued)

		Conductivity	Oil & Grease	Total Organic Carbon	Alkalinity	Total Nitrate and Nitrite as N	Total Phosphorus	Total Kjeldahl Nitrogen	Total Settleable Solids
		umhos/cm	mg/L	Mg/L	mg/L	mg/L	mg/L	mg/L	ml/L
	MDL	1.00	1.5	1.0	1.7	1.0	.01	1.0	0.1
VESSEL_ID	Sample Date								
Carnival Spirit	8/30/2003	246	0.0	10.7	34.1	0.0	0.12	4.1	0.0
Carnival Spirit	9/12/2003	199	18.0	17.7	62.4	0.0	0.23	4.8	0.0
Carnival Spirit	9/12/2003	131	6.2	12.7	32.7	0.0	0.30	6.0	0.0
	Minimum	131	0.0	10.7	32.7	0.0	0.12	4.1	0.0
	Median	199	6.2	12.7	34.1	0.0	0.23	4.8	0.0
	Maximum	246	18.0	17.7	62.4	0.0	0.30	6.0	0.0

2003 Large Ship Continuous Compliance Samples

Samples Taken after Treatment System, Not As Being Discharged

Table 5. Reverse Osmosis/UV Treatment System

		pH	BOD 5	TSS	Total Chlori ne Resid ual	Free Chlorine Residual	Fecal Coliform
			mg/L	mg/L	mg/L	mg/L	MPN/100
VESSEL ID	Sample Date	0.1	2	1.3	0.10	0.10	2
Carnival Spirit	8/23/2003	7.3	16	0.0	0.00	0.00	0
Carnival Spirit	8/23/2003	9.1	15	0.0	0.00	0.00	4
Carnival Spirit	8/23/2003	6.9	17	0.0	0.00	0.00	0
Carnival Spirit	8/30/2003	7.8	14	0.0	0.00	0.00	0
Carnival Spirit	8/30/2003	7.1	16	0.0	0.00	0.00	0
Carnival Spirit	8/30/2003	7.3	15	0.0	0.00	0.00	0
Carnival Spirit	9/6/2003	7.0	21	0.0	0.00	0.00	0
Carnival Spirit	9/6/2003	7.0	23	0.0	0.00	0.00	0
Carnival Spirit	9/6/2003	7.1	21	0.0	0.00	0.00	0
Carnival Spirit	9/19/2003	7.2	27	0.0	0.00	0.00	0
Carnival Spirit	9/19/2003	7.3	24	0.0	0.00	0.00	0
Carnival Spirit	9/19/2003	7.2	26	0.0	0.00	0.00	0
Mercury	5/8/2003	7.0	3	0.0	0.00	0.00	0
Mercury	5/22/2003	7.9	0	0.0	0.00	0.00	
Mercury	6/12/2003	7.7	0	0.0	0.00	0.00	0
Mercury	6/26/2003	6.6	2	0.0	0.00	0.00	0
Mercury	7/17/2003	6.6	5	0.0	0.00	0.00	0
Mercury	7/31/2003	8.1	6	0.0	0.00	0.00	0
Mercury	8/14/2003	7.8	7	0.0	0.00	0.00	0

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		pH	BOD 5	TSS	Total Chlori ne Resid ual	Free Chlorine Residual	Fecal Coliform
			mg/L	mg/L	mg/L	mg/L	MPN/100
VESSEL_ID	Sample_Date	0.1	2	1.3	0.10	0.10	2
Mercury	9/4/2003	7.6	9	0.0	0.00	0.00	0
Mercury	9/18/2003	8.8	9	0.0	0.00	0.00	0
	Minimum	6.6	0	0.0	0.00	0.00	0
	Median	7.3	15	0.0	0.00	0.00	0
	Maximum	9.1	27	0.0	0.00	0.00	4

Table 6. Zenon/UV Treatment System

		pH	BOD5	TSS	Total Chlorine Residual	Free Chlorine Residual	Fecal Coliform
			mg/L	mg/L	mg/L	mg/L	MPN/100
VESSEL_ID	Sample_Date	0.1	2	1.3	0.10	0.10	2
Ryndam	5/27/2003	7.6	0	0.0	0.00	0.00	0
Ryndam	6/3/2003	7.4	0	0.0	0.00	0.00	0
Ryndam	7/8/2003	8.3	0	0.0	0.00	0.00	0
Ryndam	7/22/2003	7.8	0	0.0	0.00	0.00	0
Ryndam	8/12/2003	7.8	0	0.0	0.00	0.00	0
Ryndam	8/19/2003	7.5	0	0.0	0.00	0.00	0
Ryndam	9/2/2003	8.2	3	0.0	0.00	0.00	0
Ryndam	9/16/2003	8.0	0	0.0	0.00	0.00	0
Statendam	9/11/2003	7.6	0	0.0	0.00	0.00	0
Veendam	5/21/2003	7.2	0	0.0	0.00	0.00	0
Veendam	6/6/2003	7.4	0	0.0	0.00	0.00	0
Veendam	6/18/2003	8.1	0	0.0	0.00	0.00	0
Veendam	7/2/2003	7.4	5	0.0	0.00	0.00	0
Veendam	7/24/2003	8.1	5	0.0	0.00	0.00	0
Veendam	8/13/2003	7.5	4	0.0	0.00	0.00	0
Veendam	8/27/2003	7.4	0	0.0	0.00	0.00	0
Veendam	9/10/2003	8.4	0	0.0	0.00	0.00	0
Veendam	9/23/2003	7.6	0	0.0	0.00	0.00	0

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Appendix B. Large Ship Sampling Data

		pH	BOD5	TSS	Total Chlorine Residual	Free Chlorine Residual	Fecal Coliform
			mg/L	mg/L	mg/L	mg/L	MPN/100
VESSEL_ID	Sample_Date	0.1	2	1.3	0.10	0.10	2
Veendam	5/21/2003	7.2	0	0.0	0.00	0.00	0
Volendam	6/11/2003	7.5	4	0.0	0.00	0.00	0
Volendam	6/25/2003	7.8	3	0.0	0.00	0.00	0
Volendam	7/9/2003	8.1	0	0.0	0.00	0.00	0
Volendam	7/23/2003	8.1	0	0.0	0.00	0.00	0
Volendam	8/6/2003	7.5	0	0.0	0.00	0.00	0
Volendam	9/3/2003	7.7	0	0.0	0.00	0.00	0
	Minimum	7.2	0	0.0	0.00	0.00	0
	Median	7.6	0	0.0	0.00	0.00	0
	Maximum	8.4	5	0.0	0.00	0.00	0

Table 7. Scanship/UV Treatment System

		pH	BOD5	TSS	Total Chlorine Residual	Free Chlorine Residual	Fecal Coliform
			mg/L	mg/L	mg/L	mg/L	MPN/100
VESSEL_ID	Sample_Date	0.1	2	1.3	0.10	0.10	2
Norwegian Sky	7/8/2003	7.3	5	0.0	0.00	0.00	0
Norwegian Sky	7/22/2003	6.8	6	0.0	0.00	0.00	0
Norwegian Sky	8/5/2003	7.2	11	5.4	0.00	0.00	0
Norwegian Sky	8/19/2003	7.3	7	7.0	0.00	0.00	0
Norwegian Sky	9/9/2003	6.9	19	28.6	0.00	0.00	240
Norwegian Sky	9/22/2003	7.5	9	0.0	0.00	0.00	0
Norwegian Sky	9/22/2003	7.3	8	0.0	0.00	0.00	0
Norwegian Sun	7/8/2003	7.1	26	18.7	0.00	0.00	0
Norwegian Sun	7/29/2003	7.1	10	15.2	0.00	0.00	0
Norwegian Sun	8/12/2003	6.9	14	24.0	0.00	0.00	0
Norwegian Sun	8/19/2003	6.9	11	8.3	0.00	0.00	0
Norwegian Wind	6/18/2003	7.0	8	7.1	0.00	0.00	0
Norwegian Wind	7/30/2003	6.5	12	15.3	0.00	0.00	0
Norwegian Wind	8/13/2003	6.5	9	0.0	0.00	0.00	0
Norwegian Wind	8/20/2003	6.3	13	0.0	0.00	0.00	0
Norwegian Wind	9/17/2003	6.8	14	7.4	0.00	0.00	0
Norwegian Wind	7/9/2003	7.6	12	15.0	0.00	0.00	5
Norwegian Wind	9/10/2003	6.6	22	4.6	0.00	0.00	0

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

		pH	BOD5	TSS	Total Chlorine Residual	Free Chlorine Residual	Fecal Coliform
			mg/L	mg/L	mg/L	mg/L	MPN/100
VESSEL_ID	Sample_Date	0.1	2	1.3	0.10	0.10	2
	Minimum	6.3	5	0.0	0.00	0.00	0
	Median	6.9	11	7.0	0.00	0.00	0
	Maximum	7.6	26	28.6	0.00	0.00	240

Table 8. Hamworthy Treatment System

		pH	BOD5	TSS	total chlorine residual	free chlorine residual	fecal coliform
			mg/L	mg/L	mg/L	mg/L	MPN/100
VESSEL_ID	Sample_Date	0.1	2	1.3	0.10	0.10	2
Coral Princess	6/10/2003	7.3	0	0.0	0.00	0.00	23
Coral Princess	6/18/2003	7.9	20	0.0	0.20	0.00	0
Coral Princess	7/2/2003	7.1	4	0.0	0.00	0.00	220
Coral Princess	7/16/2003	7.8	2	0.0	0.00	0.00	0
Coral Princess	8/5/2003	6.7	3	0.0	44.00	7.50	0
Coral Princess	8/19/2003	8.1	7	0.0	0.00	0.00	0
Coral Princess	9/2/2003	7.8	0	0.0	0.00	0.00	0
Coral Princess	9/10/2003	7.8	3	0.0	0.00	0.00	0
Dawn Princess	5/22/2003	7.1	6	19.1	0.00	0.00	0
Dawn Princess	5/30/2003	7.7	9	0.0	0.00	0.00	0
Dawn Princess	6/13/2003	6.6	0	0.0	0.00	0.00	0
Dawn Princess	6/27/2003	7.1	11	0.0	0.00	0.00	0
Dawn Princess	7/11/2003	7.2	0	0.0	0.00	0.00	0
Dawn Princess	7/25/2003	7.2	0	0.0	0.00	0.00	0
Dawn Princess	8/8/2003	7.1	0	0.0	0.00	0.00	0
Dawn Princess	8/22/2003	7.0	0	0.0	0.00	0.00	0
Dawn Princess	9/5/2003	7.7	0	0.0	0.00	0.00	0
Dawn Princess	9/19/2003	7.3	0	0.0	0.00	0.00	0

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Appendix B. Large Ship Sampling Data

		pH	BOD5	TSS	total chlorine residual	free chlorine residual	fecal coliform
			mg/L	mg/L	mg/L	mg/L	MPN/100
VESSEL_ID	Sample_Date	0.1	2	1.3	0.10	0.10	2
Island Princess	7/15/2003	7.5	4	0.0	0.00	0.00	0
Island Princess	8/12/2003	7.4	19	0.0	1.30	0.25	0
Island Princess	8/26/2003	7.2	0	0.0	2.80	1.60	0
Island Princess	9/9/2003	7.2	14	0.0	0.70	0.15	0
Island Princess	9/17/2003	7.6	11	0.0	4.50	4.00	0
Island Princess	7/29/2003	7.4	6	0.0	0.00	0.00	0
Pacific Princess	7/19/2003	8.0	18	0.0	0.00	0.00	0
Pacific Princess	7/24/2003	7.8	3	0.0	0.20	0.00	0
Pacific Princess	8/8/2003	7.8	4	0.0	0.50	0.50	0
Pacific Princess	8/31/2003	7.1	0	0.0	0.00	0.00	0
Pacific Princess	9/12/2003	6.7	0	0.0	5.00	2.50	0
Seven Seas Mariner	7/26/2003	7.2	0	0.0	0.00	0.00	0
Seven Seas Mariner	8/9/2003	7.3	3	0.0	0.00	0.00	0
Seven Seas Mariner	8/30/2003	7.3	14	0.0	0.00	0.00	0
Seven Seas Mariner	9/6/2003	7.3	7	0.0	0.00	0.00	0
Seven Seas Mariner	9/14/2003	7.4	0	13.9	0.00	0.00	0
Star Princess	5/19/2003	7.2	0	0.0	0.00	0.00	8
Star Princess	5/26/2003	7.8	0	0.0	0.00	0.00	0
Star Princess	6/9/2003	7.3	13	0.0	0.00	0.00	0

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Appendix B. Large Ship Sampling Data

		pH	BOD5	TSS	total chlorine residual	free chlorine residual	fecal coliform
			mg/L	mg/L	mg/L	mg/L	MPN/100
VESSEL_ID	Sample_Date	0.1	2	1.3	0.10	0.10	2
Star Princess	6/16/2003	7.4	68	0.0	0.00	0.00	0
Star Princess	6/23/2003	7.7	3	0.0	0.00	0.00	0
Star Princess	7/7/2003	7.1	0	0.0	0.00	0.00	0
Star Princess	7/21/2003	7.6	2	0.0	0.00	0.00	0
Star Princess	8/4/2003	6.9	0	0.0	0.00	0.00	0
Star Princess	8/18/2003	7.2	0	0.0	0.00	0.00	0
Star Princess	9/8/2003	6.9	0	0.0	0.00	0.00	0
Star Princess	9/15/2003	6.8	0	0.0	0.00	0.00	0
Sun Princess	5/15/2003	7.5	11	0.0	2.00	2.00	0
Sun Princess	5/29/2003	7.9	4	6.4	0.00	0.00	0
Sun Princess	6/12/2003	7.6	6	0.0	0.00	0.00	0
Sun Princess	6/20/2003	7.7	86	0.0	0.00	0.00	0
Sun Princess	6/26/2003	7.8	0	0.0	55.00	50.00	0
Sun Princess	7/10/2003	7.9	0	0.0	3.50	2.50	0
Sun Princess	7/24/2003	7.6	0	0.0	0.50	0.40	0
Sun Princess	8/7/2003	7.6	0	0.0	1.00	1.00	0
Sun Princess	8/18/2003	7.2	0	0.0	0.00	0.00	0
Sun Princess	8/21/2003	7.4	0	0.0	1.40	1.20	0
Sun Princess	9/4/2003	7.2	3	4.3	0.80	0.70	11

		pH	BOD5	TSS	total chlorine residual	free chlorine residual	fecal coliform
			mg/L	mg/L	mg/L	mg/L	MPN/100
VESSEL_ID	Sample_Date	0.1	2	1.3	0.10	0.10	2
Sun Princess	9/12/2003	6.8	0	0.0	1.30	0.70	0
	Minimum	6.6	0	0.0	0.00	0.00	0
	Median	7.3	2	0.0	0.00	0.00	0
	Maximum	8.1	86	19.1	55.00	50.00	220

Table 9. 2003 Large Ship Graywater Priority Pollutant Results

		Arsenic, dissolved	Chromium, dissolved	Copper, dissolved	Lead, dissolved	Nickel, dissolved	Zinc, dissolved	1,2,4-trimethylbenzene	Acetone	m&p Xylenes	O-xylene	Benzyl Alcohol
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VESSEL_ID	Sample_Date	0.15	0.15	0.15	0.15	0.15	0.15	0.50	0.15	0.15	0.50	0.50
Carnival Spirit	8/30/2003	0.277	0.328	1.31	0.146	1.34	35.70	0.00	27.00	1.70	0.57	73.00
Carnival Spirit	9/12/2003	1.51	0.392	2.59	0.129	3.07	47.00	1.70	41.00	13.00	2.80	300.00
	Minimum	0.28	0.33	1.31	0.13	1.34	35.70	0.00	27.00	1.70	0.57	73.00
	Median	0.89	0.36	1.95	0.14	2.21	41.35	0.85	34.00	7.35	1.69	186.50
	Maximum	1.51	0.39	2.59	0.15	3.07	47.00	1.70	41.00	13.00	2.80	300.00

Table 10. 2003 Large Ship Blackwater Priority Pollutants, Excluding Metals

Median => MDL or at Least One Sample 10X MDL

		1,4-dichlorobenzene	chloroform	tetrachloroethene	trichloroethene	2,4-dichlorophenol	2,4,6-trichlorophenol	bromomethane, methyl bromide	chloromethane, methyl chloride	methylene chloride
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	1.00	0.50	0.50	0.50	1.00	1.00	1.00	1.00	1.00
VESSEL_ID	Sample_Date									
Coral Princess	8/23/03	0.00	2.00	0.53	0.00	2.70	0.00	0.00	0.00	0.00
Dawn Princess	6/23/03	0.00	0.00	0.00	0.00	4.10	1.90	0.00	0.00	1.10
Dawn Princess	6/24/03	0.00	0.00	0.00	0.00	7.50	2.30	0.00	0.00	1.20
Dawn Princess	8/14/03	0.00	0.71	0.00	0.00	1.20	0.00	0.00	0.00	0.00
Dawn Princess	8/14/03	0.00	0.72	0.00	0.00	1.20	0.00	0.00	0.00	0.00
Island Princess	7/19/03	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Island Princess	9/3/03	0.00	2.30	0.00	0.00	2.10	0.00	0.00	0.00	0.00
Maasdam	7/26/03	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maasdam	8/9/03	0.00	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Norwegian Sky	7/29/03	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Norwegian Sun	6/24/03	0.00	2.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Norwegian Sun	9/9/03	0.00	7.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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		1,4-dichlorobenzene	chloroform	tetrachloroethene	trichloroethene	2,4-dichlorophenol	2,4,6-trichlorophenol	bromomethane, methyl bromide	chloromethane, methyl chloride	methylene chloride
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	1.00	0.50	0.50	0.50	1.00	1.00	1.00	1.00	1.00
VESSEL_ID	Sample_Date									
Norwegian Wind	6/18/03	0.00	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Norwegian Wind	7/23/03	0.00	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Norwegian Wind	7/23/03	0.00	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pacific Princess	8/31/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pacific Princess	9/12/03	7.10	0.00	0.00	0.00	0.00	0.00	7.20	2.70	0.00
Ryndam	6/20/03	0.00	1.40	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Ryndam	7/1/03	0.00	2.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seven Seas Mariner	8/9/03	0.00	7.20	0.74	0.00	0.00	0.00	0.00	0.00	0.00
Seven Seas Mariner	8/27/03	0.00	1.30	1.10	0.00	0.00	0.00	0.00	0.00	0.00
Seven Seas Mariner	8/27/03	0.00	1.30	1.20	0.00	0.00	0.00	0.00	0.00	0.00
Star Princess	8/11/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Star Princess	8/25/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Statendam	8/20/03	0.00	4.80	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Statendam	9/7/03	0.00	3.10	0.57	0.00	0.00	0.00	0.00	0.00	0.96
Statendam	9/7/03	0.00	3.10	0.57	0.00	0.00	0.00	0.00	0.00	0.96

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		1,4-dichlorobenzene	chloroform	tetrachloroethene	trichloroethene	2,4-dichlorophenol	2,4,6-trichlorophenol	bromomethane, methyl bromide	chloromethane, methyl chloride	methylene chloride
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	1.00	0.50	0.50	0.50	1.00	1.00	1.00	1.00	1.00
VESSEL_ID	Sample_Date									
Sun Princess	6/16/03	0.00	4.10	0.00	0.00	0.00	0.00	13.00	0.00	0.00
Sun Princess	8/1/03	0.00	1.10	0.00	0.00	2.50	0.00	0.00	0.00	0.00
Veendam	7/2/03	0.00	1.80	7.10	0.00	0.00	0.00	0.00	0.00	0.00
Veendam	7/20/03	0.00	1.30	29.00	2.10	0.00	0.00	0.00	0.00	1.30
Volendam	7/9/03	0.00	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Volendam	7/23/03	0.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zaandam	7/28/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zaandam	6/30/03	0.00	0.49	0.00	0.00	Not taken	Not taken	0.00	0.00	0.00
	Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Median	0.00	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Maximum	7.10	7.30	29.00	2.10	7.50	2.30	13.00	2.70	1.30

Table 11. 2003 Large Ship Blackwater Priority Pollutants, Excluding Metals (continued)

Median => MDL or at Least One Sample 10X MDL

		ethylbenzene	naphthalene	toluene	n-nitrosodimethylamine	n-nitrosodimethylpropylamine	phenol	bis(2-ethylhexyl)phthalate	diethylphthalate	di-n-butylphthalate
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	0.50	2.00	0.50	1.00	1.00	1.00	1.00	1.00	1.00
VESSEL_ID	Sample_Date									
Coral Princess	8/23/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dawn Princess	6/23/03	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00	1.30
Dawn Princess	6/24/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dawn Princess	8/14/03	1.10	0.00	0.00	0.00	0.00	4.10	0.00	0.00	0.00
Dawn Princess	8/14/03	1.10	0.00	0.55	0.00	0.00	0.00	0.00	0.00	0.00
Island Princess	7/19/03	0.00	0.00	0.00	0.00	0.00	2.20	0.00	0.00	0.00
Island Princess	9/3/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Maasdam	7/26/03	0.00	0.00	0.00	0.00	0.00	3.30	0.00	0.00	1.40
Maasdam	8/9/03	0.00	0.00	0.73	0.00	0.00	3.80	0.00	0.00	0.00
Norwegian Sky	7/29/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	2.30
Norwegian Sun	6/24/03	0.00	1.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00

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		ethylbenzene	naphthalene	toluene	n-nitrosodimethylamine	n-nitrosodipropylamine	phenol	bis(2-ethylhexyl)phthalate	diethylphthalate	di-n-butylphthalate
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	0.50	2.00	0.50	1.00	1.00	1.00	1.00	1.00	1.00
VESSEL_ID	Sample_Date									
Norwegian Sun	9/9/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.50	0.00
Norwegian Wind	6/18/03	0.00	0.00	0.59	0.00	0.00	0.00	1.20	5.80	1.70
Norwegian Wind	7/23/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Norwegian Wind	7/23/03	0.00	0.00	0.00	0.00	0.00	0.00	1.20	8.60	0.00
Pacific Princess	8/31/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pacific Princess	9/12/03	0.00	0.00	0.00	26.32	0.00	0.00	0.00	0.00	0.00
Ryndam	6/20/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ryndam	7/1/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seven Seas Mariner	8/9/03	0.00	0.00	0.00	0.00	0.00	4.90	0.00	0.00	0.00
Seven Seas Mariner	8/27/03	0.00	0.00	0.00	0.00	0.00	3.80	0.00	0.00	0.00
Seven Seas Mariner	8/27/03	0.00	0.00	0.55	0.00	0.00	0.00	0.00	0.00	0.00
Star Princess	8/11/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Star Princess	8/25/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Appendix B. Large Ship Sampling Data

		ethylbenzene	naphthalene	toluene	n-nitrosodimethylamine	n-nitrosodipropylamine	phenol	bis(2-ethylhexyl)phthalate	diethylphthalate	di-n-butylphthalate
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	0.50	2.00	0.50	1.00	1.00	1.00	1.00	1.00	1.00
VESSEL_ID	Sample_Date									
Statendam	8/20/03	0.00	0.00	2.20	0.00	0.00	0.00	0.00	0.00	0.00
Statendam	9/7/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Statendam	9/7/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sun Princess	6/16/03	0.00	0.00	0.00	0.00	14.00	0.00	0.00	0.00	0.00
Sun Princess	8/1/03	0.00	0.00	0.00	0.00	0.00	8.90	0.00	0.00	0.00
Veendam	7/2/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.10
Veendam	7/20/03	0.00	0.00	3.20	0.00	0.00	2.90	0.00	0.00	0.00
Volendam	7/9/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.30
Volendam	7/23/03	0.00	0.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00
Zaandam	7/28/03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60
Zaandam	6/30/03	0.00	0.00	0.00						
	Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Median	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix B. Large Ship Sampling Data

		ethylbenzene	naphthalene	toluene	n-nitrosodimethylamine	n-nitrosodipropylamine	phenol	bis(2-ethylhexyl)phthalate	diethylphthalate	di-n-butylphthalate
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	0.50	2.00	0.50	1.00	1.00	1.00	1.00	1.00	1.00
VESSEL_ID	Sample_Date									
	Maximum	1.10	1.00	3.20	26.32	14.00	8.90	1.20	10.00	3.10

Table 12. 2003 Large Ship Blackwater Priority Pollutants, Excluding Metals (continued)

Median => MDL or at Least One Sample 10X MDL

		1,1-dichloroethene	1,2,4-trimethylbenzene	2-butanone	4-methyl-2-pentanone	Acetone	m&p Xylenes	3&4-Methylphenol	Chloroform
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	0.50	0.48	1.5	0.36	2.5	0.28	0.61	0.50
VESSEL_ID	Sample_Date								
Coral Princess	8/23/03	0.00	0.00	8.9	0.00	20.0	0.00	0.0	2.00
Dawn Princess	6/23/03	0.00	0.00	0.0	0.00	3.6	0.00	2.2	0.00
Dawn Princess	6/24/03	0.00	0.00	0.0	0.00	0.0	0.00	1.4	0.00
Dawn Princess	8/14/03	0.00	0.71	5.6	0.00	12.0	5.30	56.0	0.71
Dawn Princess	8/14/03	0.00	0.00	0.0	0.00	4.4	5.50	7.2	0.72
Island Princess	7/19/03	0.00	0.00	0.0	0.00	3.3	0.57	0.0	0.00
Island Princess	9/3/03	0.00	0.00	0.0	0.00	4.3	0.00	0.0	2.30
Maasdam	7/26/03	0.00	0.00	0.0	0.00	5.0	0.00	0.0	1.20
Maasdam	8/9/03	0.00	0.00	0.0	0.00	33.0	0.00	0.0	1.40
Norwegian Sky	7/29/03	0.00	0.00	0.0	0.00	28.2	0.00	0.0	1.20
Norwegian Sun	6/24/03	0.00	1.70	17.0	6.00	160.0	0.89	0.0	2.80

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

		1,1-dichloroethene	1,2,4-trimethylbenzene	2-butanone	4-methyl-2-pentanone	Acetone	m&p Xylenes	3&4-Methylphenol	Chloroform
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	0.50	0.48	1.5	0.36	2.5	0.28	0.61	0.50
VESSEL_ID	Sample_Date								
Norwegian Sun	9/9/03	0.00	0.00	0.0	0.00	65.3	0.00	0.0	7.30
Norwegian Wind	6/18/03	0.00	0.00	0.0	8.20	52.0	0.00	0.0	1.70
Norwegian Wind	7/23/03	0.00	0.00	0.0	0.00	0.0	0.00	0.0	1.40
Norwegian Wind	7/23/03	0.00	0.00	0.0	0.00	0.0	0.00	0.0	1.30
Pacific Princess	8/31/03	0.00	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Pacific Princess	9/12/03	0.00	0.00	0.0	0.00	6.7	0.00	0.0	0.00
Ryndam	6/20/03	0.00	0.00	980.0	0.00	200.0	0.00	0.0	1.40
Ryndam	7/1/03	0.00	0.00	1.9	0.00	14.0	0.00	0.0	2.30
Seven Seas Mariner	8/9/03	0.00	0.00	0.0	0.00	0.0	0.00	0.0	7.20
Seven Seas Mariner	8/27/03	0.00	0.00	0.0	0.00	5.9	0.00	19.0	1.30
Seven Seas Mariner	8/27/03	0.00	0.00	0.0	0.00	9.0	0.00	10.0	1.30
Star Princess	8/11/03	0.00	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Star Princess	8/25/03	0.00	0.00	0.0	0.00	45.0	0.00	0.0	0.00

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

		1,1-dichloroethene	1,2,4-trimethylbenzene	2-butanone	4-methyl-2-pentanone	Acetone	m&p Xylenes	3&4-Methylphenol	Chloroform
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	0.50	0.48	1.5	0.36	2.5	0.28	0.61	0.50
VESSEL_ID	Sample_Date								
Statendam	8/20/03	0.00	0.00	6.2	0.00	61.0	0.00	0.0	4.80
Statendam	9/7/03	0.00	0.00	0.0	0.00	8.6	0.00	0.0	3.10
Statendam	9/7/03	0.00	0.00	0.0	0.00	8.6	0.00	0.0	3.10
Sun Princess	6/16/03	0.00	0.00	0.0	0.00	3.9	0.00	0.0	4.10
Sun Princess	8/1/03	0.00	0.00	0.0	0.00	9.1	0.00	0.0	1.10
Veendam	7/2/03	0.00	0.00	9.5	0.00	32.0	0.00	0.0	1.80
Veendam	7/20/03	2.80	0.00	0.0	0.00	22.0	0.29	20.0	1.30
Volendam	7/9/03	0.00	0.00	0.0	0.00	6.4	0.45	0.0	0.79
Volendam	7/23/03	0.00	0.00	0.0	0.00	0.0	0.00	0.0	0.69
Zaandam	7/28/03	0.00	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Zaandam	6/30/03	0.00	0.00	0.0	0.00	0.0	0.00		0.49
	Minimum	0.00	0.00	0.0	0.00	0.0	0.00	0.0	0.00
	Median	0.00	0.00	0.0	0.00	6.7	0.00	0.0	1.30

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

		1,1-dichloroethene	1,2,4-trimethylbenzene	2-butanone	4-methyl-2-pentanone	Acetone	m&p Xylenes	3&4-Methylphenol	Chloroform
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	0.50	0.48	1.5	0.36	2.5	0.28	0.61	0.50
VESSEL_ID	Sample_Date								
	Maximum	2.80	1.70	980.0	8.20	200.0	5.50	56.0	7.30

Table 13. 2003 Large Ship Blackwater Priority Pollutants, Metals A - L
At Least One Sample 10X the Method Detection Limit (MDL)

		Arsenic (TR)	Arsenic, dissolved	Chromium (TR)	Chromium, dissolved	Copper (TR)	Copper, dissolved	Lead (TR)	Lead, dissolved
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
VESSEL ID	Sample Date								
Coral Princess	8/23/03	2.65	2.73	1.01	1.55	28.90	12.50	1.52	0.61
Dawn Princess	6/23/03	3.20	3.19	5.40	3.47	12.70	9.96	0.59	0.58
Dawn Princess	6/24/03	3.14	3.22	6.51	3.08	10.60	10.70	0.46	0.55
Dawn Princess	8/14/03	2.05	2.26	1.01	12.20	13.90	6.78	1.35	0.40
Dawn Princess	8/14/03	2.10	0.00	0.82	1.43	10.60	0.00	0.91	0.00
Island Princess	7/19/03	7.93	7.83	1.42	1.24	83.90	116.00	0.45	0.47
Island Princess	9/3/03	1.38	1.22	3.03	0.00	13.50	12.20	0.79	0.59
Maasdam	7/26/03	0.57	0.57	1.54	1.11	11.60	11.50	3.17	2.70
Maasdam	8/9/03	0.90	0.83	0.95	0.90	2.11	1.93	0.00	0.00
Norwegian Sky	7/29/03	1.84	1.71	0.55	0.45	27.90	22.00	1.02	0.82
Norwegian Sun	6/24/03	0.90	1.05	0.72	2.26	34.20	34.00	2.01	1.95
Norwegian Sun	9/9/03	0.94	0.99	0.38	4.90	41.70	25.20	2.55	2.22
Norwegian Wind	6/18/03	1.21	1.17	0.95	0.45	4.54	3.41	0.32	0.32
Norwegian Wind	7/23/03	1.46	1.38	0.52	0.64	5.02	2.42	0.24	0.22
Norwegian Wind	7/23/03	1.44	1.21	0.69	0.54	11.10	2.14	0.25	0.13
Pacific Princess	8/31/03	0.95	0.90	1.17	1.12	24.60	23.60	0.27	0.26

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

		Arsenic (TR)	Arsenic, dissolved	Chromium (TR)	Chromium, dissolved	Copper (TR)	Copper, dissolved	Lead (TR)	Lead, dissolved
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
VESSEL_ID	Sample_Date								
Pacific Princess	9/12/03	2.75	1.25	17.60	1.54	42.50	31.00	0.18	0.25
Ryndam	6/20/03	0.70	0.80	0.86	3.62	7.66	7.21	0.13	0.20
Ryndam	7/1/03	1.02	1.04	0.82	0.94	11.60	11.40	0.17	0.14
Seven Seas Mariner	8/9/03	1.02	0.96	1.45	1.29	5.42	4.77	0.20	0.18
Seven Seas Mariner	8/27/03	1.08	1.14	0.98	1.48	10.20	12.60	0.66	0.19
Seven Seas Mariner	8/27/03	1.12	1.15	1.01	1.03	12.70	9.33	0.32	0.30
Star Princess	8/11/03	6.37	5.56	3.18	2.07	115.00	115.00	0.85	0.00
Star Princess	8/25/03	4.38	4.30	23.60	24.60	189.00	177.00	0.99	1.25
Statendam	8/20/03	2.09	2.09	2.98	3.10	116.00	83.70	4.78	6.33
Statendam	9/7/03	1.69	1.64	11.40	11.30	4.89	5.90	0.27	0.28
Statendam	9/7/03	1.69	1.64	11.40	11.30	4.89	5.90	0.27	0.28
Sun Princess	6/16/03	3.48	3.28	4.97	6.92	21.30	18.90	0.37	0.33
Sun Princess	8/1/03	2.91	2.60	0.85	0.80	30.60	21.00	0.33	0.26
Veendam	7/2/03	1.56	ND	0.92	ND	6.69	0.08	0.12	0.8
Veendam	7/20/03	1.47	1.45	1.23	1.00	7.05	5.63	0.11	0.13
Volendam	7/9/03	0.66	0.67	0.72	1.43	5.49	4.89	0.25	0.31
Volendam	7/23/03	0.65	0.68	1.06	2.04	9.51	7.42	0.20	0.23

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

		Arsenic (TR)	Arsenic, dissolved	Chromium (TR)	Chromium, dissolved	Copper (TR)	Copper, dissolved	Lead (TR)	Lead, dissolved
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
VESSEL_ID	Sample_Date								
Zaandam	7/28/03	1.05	0.94	1.06	1.06	15.20	14.70	0.12	0.11
Zaandam	6/30/03	0.69	0.71	1.21	1.36	13.30	7.36	7.63	0.92
	Minimum	0.57	0.00	0.38	0.00	2.11	0.00	0.00	0.00
	Median	1.46	1.22	1.06	1.43	12.70	10.70	0.33	0.29
	Maximum	7.93	7.83	23.60	24.60	189.00	177.00	7.63	6.33
	10XMDL	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50

Table 14. 2003 Large Ship Blackwater Priority Pollutants, Metals N - Z

At Least One Sample 10X the Method Detection Limit (MDL)

		Nickel (TR)	Nickel, dissolved	Selenium (TR)	Selenium, dissolved	Silver (TR)	Silver, dissolved	Zinc (TR)	Zinc, dissolved
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
VESSEL_ID	Sample_Date								
Coral Princess	8/23/03	7.47	8.64	1.84	2.03	0.30	0.00	49.10	62.30
Dawn Princess	6/23/03	6.32	6.17	4.37	5.00	0.08	0.00	119.00	137.00
Dawn Princess	6/24/03	6.13	6.19	4.57	5.25	0.00	0.00	121.00	140.00
Dawn Princess	8/14/03	5.47	4.80	6.26	5.22	1.63	0.00	129.00	141.00
Dawn Princess	8/14/03	4.75	0.34	5.79	0.00	1.27	0.00	129.00	7.12
Island Princess	7/19/03	12.30	12.30	6.63	6.39	1.06	0.55	113.00	100.00
Island Princess	9/3/03	10.20	9.90	1.07	0.00	0.00	0.00	144.00	159.00
Maasdam	7/26/03	16.70	16.50	0.74	0.64	0.00	0.00	84.10	95.10
Maasdam	8/9/03	16.30	16.40	0.86	0.74	1.84	1.69	6.59	27.90
Norwegian Sky	7/29/03	12.80	12.60	0.64	0.69	0.50	0.00	164.00	188.00
Norwegian Sun	6/24/03	6.48	6.55	0.64	2.11	0.00	0.00	241.00	272.00
Norwegian Sun	9/9/03	5.20	5.16	0.27	0.00	0.99	0.00	364.00	230.00
Norwegian Wind	6/18/03	39.20	39.70	1.11	1.05	0.00	0.00	66.60	106.00

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

		Nickel (TR)	Nickel, dissolved	Selenium (TR)	Selenium, dissolved	Silver (TR)	Silver, dissolved	Zinc (TR)	Zinc, dissolved
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
VESSEL ID	Sample Date								
Norwegian Wind	7/23/03	34.80	33.00	1.78	1.76	0.14	0.00	38.40	61.00
Norwegian Wind	7/23/03	34.10	29.70	1.66	1.62	0.04	0.00	42.70	50.10
Pacific Princess	8/31/03	23.00	23.30	0.77	0.74	0.29	0.32	117.00	155.00
Pacific Princess	9/12/03	33.60	18.70	10.00	1.38	0.00	0.47	120.00	134.00
Ryndam	6/20/03	22.00	22.40	0.72	0.66	0.97	0.00	116.00	124.00
Ryndam	7/1/03	27.80	28.80	0.48	0.00	0.29	0.52	78.30	83.10
Seven Seas Mariner	8/9/03	15.70	15.00	0.78	0.74	2.21	1.55	77.90	100.00
Seven Seas Mariner	8/27/03	11.40	12.10	0.39	0.00	0.74	1.45	6.57	16.60
Seven Seas Mariner	8/27/03	11.70	11.60	0.48	0.63	0.85	1.02	4.89	15.20
Star Princess	8/11/03	18.80	19.20	18.10	14.40	0.91	1.95	128.00	132.00
Star Princess	8/25/03	28.00	27.30	10.70	10.90	0.33	0.36	350.00	359.00
Statendam	8/20/03	31.00	33.80	4.85	4.84	0.44	0.28	212.00	265.00
Statendam	9/7/03	35.10	35.60	2.86	3.08	0.00	0.00	41.90	52.00
Statendam	9/7/03	35.10	35.60	2.86	3.08	0.00	0.00	41.90	52.00
Sun Princess	6/16/03	8.16	8.05	5.06	3.42	0.00	0.00	111.00	103.00
Sun Princess	8/1/03	6.33	6.25	4.44	4.74	0.84	0.82	124.00	137.00

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

		Nickel (TR)	Nickel, dissolved	Selenium (TR)	Selenium, dissolved	Silver (TR)	Silver, dissolved	Zinc (TR)	Zinc, dissolved
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	MDL	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
VESSEL_ID	Sample_Date								
Veendam	7/2/03	9.00	0.8	0.86	ND	0.68	ND	131.00	ND
Veendam	7/20/03	10.10	9.46	0.42	0.00	0.51	0.98	163.00	156.00
Volendam	7/9/03	7.78	7.27	0.61	0.72	0.43	0.00	98.40	113.00
Volendam	7/23/03	7.97	8.02	0.74	0.73	0.53	0.00	96.60	135.00
Zaandam	7/28/03	14.70	14.50	1.47	0.68	0.53	0.00	58.00	71.10
Zaandam	6/30/03	13.50	14.10	1.06	1.04	0.24	0.00	127.00	79.30
	Minimum	4.75	0.34	0.27	0.00	0.00	0.00	4.89	7.12
	Median	12.80	12.60	1.11	1.05	0.43	0.00	116.00	109.50
	Maximum	39.20	39.70	18.10	14.40	2.21	1.95	364.00	359.00
	10XMDL	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50

2002

Table 15. 2002 Data from Large Ships - Blackwater Conventional Pollutants

Sample Name	Sample Date	Alkalinity	Ammonia as N	BOD	COD	Conductivity	Fecal coliform	Total CL	Free Cl	Oil & Grease	Nitrate as N	TKN	pH	Phosphorus	TOC	Settleable Solids	TSS
		CaCO3															
Units		mg/L	mg/L	mg/L	mg/L	Umhos/cm	MPN	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	Mg/L	mg/L
MDL		0.5	0.03	2	3.0	1	2	0.10	0.10	1.5	1.0	0.1	0.1	0.01	1.0	0.1	1.3
Mercury Rochem	5/23/02	Not taken	1.00	1	1.7	Not taken	1	ND	ND	Not taken	Not taken	Not taken	7.7	Not taken	Not taken	Not taken	0.1
Mercury Rochem	6/27/02	33.3	1.90	1	1.7	64	1	ND	ND	0.9	1.9	7.0	7.5	0.11	265.0	0.1	0.1
7 Seas Navigator C	8/10/02	70.9	43.80	1	169.0	1,940	1	ND	ND	13.0	56.9	43.9	6.7	18.20	32.0	0.1	0.1
7 Seas Navigator Ballast Tank	8/10/02	102.0	0.11	11	1,040.0	42	1	ND	ND	150.0	0.1	2.0	8.1	0.06	Not taken	0.1	65.2
7 Seas Navigator Ballast Tank	8/10/02	127.0	27.00	45	324.0	16,100	80	ND	ND	19.0	12.9	28.5	7.3	13.00	8.0	0.8	126.0
Seven Seas TWW-C	7/1/02	329.0	87.20	1	147.0	4,450	1	ND	ND	7.1	0.1	59.1	7.6	19.40	48.0	0.1	0.1
Seven Seas TWW-E	7/1/02	135.0	0.01	12	1,210.0	47,000	1	ND	ND	280.0	0.1	2.1	7.6	0.40	29.0	0.1	152.0
Seven Seas	7/1/02	507.0	130.00	231	536.0	7,730	2,200	ND	ND	15.0	0.1	11.4	7.5	16.10	153.	0.1	11.

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Alkalinity	Ammonia as N	BOD	COD	Conductivity	Fecal coliform	Total CL	Free Cl	Oil & Grease	Nitrate as N	TKN	pH	Phosphorous	TOC	Settleable Solids	TSS
		CaCO3															
Units		mg/L	mg/L	mg/L	mg/L	Umhos/cm	MPN	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	Mg/L	mg/L
MDL		0.5	0.03	2	3.0	1	2	0.10	0.10	1.5	1.0	0.1	0.1	0.01	1.0	0.1	1.3
TWW-F															0		2
Statendam	6/12/02	114.0	6.17	2	68.2	638	70	ND	0.05	0.9	0.1	6.8	7.1	3.04	23.0	0.1	0.1
Statendam	6/12/02	108.0	5.73	3	61.6	602	1	ND	0.05	0.9	0.1	8.9	7.0	1.71	23.0	0.1	0.1
Ryndam	8/17/02	174.0	18.80	1	31.0	588	1	ND	ND	0.9	0.1	21.0	7.7	0.61	13.0	0.1	0.1
Ryndam	6/24/02	135.0	18.60	4	52.9	2,000	900	ND	ND	0.1	0.1	27.0	7.4	2.28	16.0	0.1	0.1
Statendam	5/29/02	151.0	8.83	114	101.0	795	2	ND	ND	not taken	0.1	10.7	7.2	3.37	28.0	0.1	0.1
Statendam	8/21/02	208.0	27.70	1	59.4	854	1	ND	ND	0.9	0.1	33.0	7.7	5.00	20.0	0.1	0.1
Veendam	7/17/02	161.0	29.40	1	48.5	632	1	ND	ND	0.9	0.1	18.9	7.4	2.31	247.0	0.1	0.1
Volendam	6/6/02	60.1	0.60	5	46.3	375	900	ND	ND	0.9	5.0	1.9	7.5	2.86	12.0	0.1	7.1
Volendam	6/6/02	68.2	0.01	1	28.9	371	1	ND	ND	0.9	3.4	1.5	7.5	2.66	12.0	0.1	0.1

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Alkalinity	Ammonia as N	BOD	COD	Conductivity	Fecal coliform	Total CL	Free Cl	Oil & Grease	Nitrate as N	TKN	pH	Phosphorous	TOC	Settleable Solids	TSS
		CaCO3															
Units		mg/L	mg/L	mg/L	mg/L	Umhos/cm	MPN	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	Mg/L	mg/L
MDL		0.5	0.03	2	3.0	1	2	0.10	0.10	1.5	1.0	0.1	0.1	0.01	1.0	0.1	1.3
Volendam	8/21/02	189.0	24.20	11	83.5	593	1	ND	ND	8.4	0.1	26.6	7.5	8.47	25.0	0.1	0.1
Volendam	8/21/02	202.0	23.60	10	70.4	623	1	ND	ND	12.0	0.1	27.8	7.5	7.64	28.0	0.1	0.1
Zaandam	8/19/02	52.1	22.70	3	52.9	732	1	ND	ND	0.9	0.1	27.7	7.8	4.51	16.0	0.1	0.1
Zaandam	6/5/02	238.0	36.50	1	44.2	797	1	ND	ND	12.0	0.1	39.3	7.8	5.59	19.0	0.1	0.1
Minimum		52.0	0.01	1	28.9	371	1	ND	ND	0.1	0.1	1.5	7.4	0.40	12.0	0.1	0.1
Maximum		507.0	130.00	231	1,210.0	47,000	2,200	ND	ND	280.0	5.0	59.1	7.8	19.40	247.0	0.1	152.0
Geometric Mean		157.0	7.00	3	83.0	1,302	5	ND	ND	3.0	0.1	14.0	7.6	3.70	28.0	0.1	0.2
Median		135.0	18.80	3	61.6	685	1	ND	ND	0.9	0.1	20.0	7.5	3.21	23.0	0.1	0.1

Table 16. 2002 Data from Large Ships - Blackwater Metals Total & Dissolved (A-C)

Sample Name	Sample Date	Antimony-D	Antimony-T	Arsenic-D	Arsenic-T	Chromium-D	Chromium-T	Copper-D	Copper-T
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MDL		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
7 Seas Navigator TWW-C MBR	7/1/2002	0.298	0.255	3.38	3.13	2.27	1.82	131	135
7 Seas Navigator TWW-F Ballast Tank	7/1/2002	0.014	3.37	61.5	23.4	198	11	140	3970
Ryndam TWW	8/17/02	0.014	0.202	0.576	0.729	7.35	0.641	5.16	5.5
Statendam TWW	8/21/02	0.667	0.721	0.893	0.987	5.45	0.715	1.67	2.04
Veendam Zenon 71702-WW	7/17/02	0.181	0.255	1.26	1.45	3.36	0.856	5.9	6.49
Volendam TWW-1	8/21/02	0.106	0.255	0.552	0.82	5.72	0.972	7.52	7.9
Volendam TWW-2	8/21/02	0.014	0.255	0.569	0.801	5.83	1.42	7.91	7.66
Zaandam TWW	8/19/02	0.255	0.366	0.662	0.944	4.72	0.596	8.3	8.31
Minimum		0.01	0.2	0.55	0.73	2.27	0.6	1.67	2.04
Maximum		0.67	3.37	61.5	23.4	198	11	140	3970
Geometric mean		0.08	0.41	1.52	1.62	7.45	1.26	12.1	19.35
Median		0.14	0.26	0.78	0.97	5.59	0.91	7.72	7.78

Table 17. 2002 Data from Large Ships - Blackwater Metals Total & Dissolved (L-Z)

Sample Name	Date	Lead-D	Lead-T	Nickel-D	Nickel-T	Selenium-D	Selenium-T	Zinc-D	Zinc-T
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MDL		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
7 Seas Navigator TWW-C MBR	8/10/02	2.220	5.010	17.700	18.000	9.55	8.35	466.000	446.000
7 Seas Navigator TWW-F Ballast Tank	8/10/02	4.660	62.400	112.000	94.800	231.00	90.70	2470.000	7660.000
Ryndam TWW	8/17/02	1.220	1.350	22.900	22.100	0.95	1.54	208.000	183.000
Statendam TWW	8/21/02	0.236	1.430	23.300	22.200	1.27	1.63	24.800	23.600
Veendam Zenon 71702-WW	7/17/02	0.358	0.323	15.700	17.100	0.94	1.37	196.000	201.000
Volendam TWW-1	8/21/02	0.975	2.090	8.960	9.820	0.76	1.87	195.000	176.000
Volendam TWW-2	8/21/02	0.963	2.480	9.400	9.730	0.76	1.43	194.000	174.000
Zaandam TWW	8/19/02	2.090	3.300	7.360	7.190	0.92	1.95	195.000	152.000
Minimum		0.24	0.320	7.36	7.190	0.76	1.37	24.80	23.600
Maximum		4.66	62.400	112.00	94.800	231.00	90.70	2470.00	7660.000
Geometric Mean		1.10	2.760	17.85	17.750	2.45	3.29	232.66	246.890
Median		1.10	2.285	16.70	17.550	0.94	1.75	195.50	179.500

Table 18. 2002 Data from Large Ships - Blackwater Priority Pollutants excluding Metals

Sample_Name	Sample Date	1,2,4-Trimethylbenzene	2-Butanone	Acetone	Bis(2-Ethylhexyl)Phthalate	Chloroform	Di-n-Butyl phthalate	M&p Xylenes	Tetrachloroethene	Toluene
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	Ug/L	ug/L	ug/L
MDL		0.48	1.5	3.2	0.83	0.50	1.0	0.28	0.45	0.50
7 Seas Navigator TWW-C MBR	8/10/02	0.45	0.5	4.3	2.2	2.1	0.7	1.1	0.06	0.51
7 Seas Navigator TWW-F Ballast	8/10/02	2.2	0.5	6.2	5.2	3.1	0.7	3	0.06	1.2
Mercury Rochem Sample Port	6/27/02	0.15	0.5	1.25	0.335	0.65	0.7	0.075	0.06	0.125
Ryndam TWW	8/17/02	0.15	0.5	4.9	3.3	0.85	1.8	0.075	0.06	0.125
Statendam TWW	8/21/02	0.15	0.5	11	0.335	1.3	2.4	0.075	3.4	0.53
Veendam Zenon 71702-WW	7/17/02	0.15	0.5	21	0.335	1.3	3.4	0.075	0.06	0.92
Volendam TWW-1	8/21/02	0.15	2.8	25	0.335	1.2	1.8	0.075	0.06	1.1
Volendam TWW-2	8/21/02	0.15	3.1	26	0.335	1.2	3.1	0.075	0.06	0.96
Zaandam TWW	8/19/02	0.15	0.86	6.1	0.335	1.1	0.7	0.075	0.06	0.125
Min		0.15	0.5	1.25	0.34	0.65	0.7	0.08	0.06	0.13
Max		2.2	3.1	26	5.2	3.1	3.4	3	3.4	1.2
Geometric Mean		0.22	0.77	6.61	0.72	1.21	1.39	0.14	0.09	0.43
Median		0.15	0.50	6.15	0.34	1.20	1.80	0.08	0.06	0.55

Table 19. 2002 Data from Large Ships Graywater Conventional Pollutants

Sample Name	Sample Date	Ammonia as N	pH	BOD	COD	TSS	Fecal coliform	Total chlorine	Free chlorine
Units		mg/L		Mg/L	mg/L	mg/L	MPN	mg/L	Mg/L
MDL		0.03	0.1	2.0	3.0	1.3	2	0.1	0.1
Dawn Princess GW-11 Galley	9/3/02	2.56	4.82	2130.0	3060	1070	60,000	0.05	0.05
Dawn Princess GW-A-15	9/12/02	1	6.7	403.0	460	92.5	1,600,000	0.05	0.05
Dawn Princess GW-A-4 Dom/Laundry	9/12/02	0.97	7.59	50.6	240	68.2	300,000	0.05	0.05
Dawn Princess GW-A-4 Domestic	6/20/02	0.836	6.76	158.0	372	70.2	2,400,000	0.05	0.05
Dawn Princess GW-A-8 Domestic	6/20/02	0.64	7.17	62.3	180	71.1	130,000	0.05	0.05
Dawn Princess GW-A-8 Domestic	9/12/02	1.99	6.25	388.0	752	292	220,000	0.05	0.05
Dawn Princess GW-D-11 Galley	6/20/02	8.88	3.88	6920.0	18100	7,700	30,000	0.05	0.05
Sea Princess GW - A	5/30/02	1.71	4.46	1800.0	3280	604	24,000	0.2	0.05
Sea Princess GW - B	5/30/02	2.35	7.06	328.0	503	122	2,400,000	0.1	0.05
Sea Princess GW - D	5/30/02	1.11	5.87	799.0	1660	356	240,000	0.05	0.05

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Ammonia as N	pH	BOD	COD	TSS	Fecal coliform	Total chlorine	Free chlorine
Units		mg/L		Mg/L	mg/L	mg/L	MPN	mg/L	Mg/L
MDL		0.03	0.1	2.0	3.0	1.3	2	0.1	0.1
Norwegian Wind GW-1 C Laundry	5/24/02	4.21	6.68	194.0	643	43.8	110,000	0.05	0.05
Norwegian Wind GW-2 Mixed GW	5/24/02	0.008	6.92	199.0	652	128	3,000,000	0.05	0.05
Norwegian Wind GW-3 Mixed GW	5/24/02	0.008	6.86	178.0	639	122	5,000,000	0.05	0.05
Norwegian Sky GW-A	5/16/02	2.2	6.53	158.0	374	79.5	3,000,000	0.05	0.05
Ocean Princess GW-A-DB4 Domestic	5/21/02	0.768	7.1	263.0	553	48.5	300	3	0.2
Ocean Princess GW-A-DB8 Galley	5/21/02	1.26	4.3	1490.0	2680	144	500	0.05	0.05
Norwegian Sky GW-B	5/16/02	2.51	6.89	146.0	300	56.5	3,000,000	0.05	0.05
Ocean Princess GW-C Collection Tanks	7/19/02	0.191	7.28	110.0	389	46.6	300	0.05	0.05
Star Princess GW-C DB#8 Graywater	5/28/02	1.11	6.78	122.0	374	86.4	1,700,000	2	0.3

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Ammonia as N	pH	BOD	COD	TSS	Fecal coliform	Total chlorine	Free chlorine
Units		mg/L		Mg/L	mg/L	mg/L	MPN	mg/L	Mg/L
MDL		0.03	0.1	2.0	3.0	1.3	2	0.1	0.1
Star Princess GW-D DB#10 Galley	5/28/02	3.68	3.73	3660.0	6170	2660	300	0.05	0.05
Norwegian Sky GW-A Mixed	8/2/02	1.56	4.79	987.0	2600	333	2,090	1	0.05
Norwegian Sky GW-B Mixed	8/2/02	1.86	4.75	1310.0	3540	566	2,910	1.5	0.2
Norwegian Wind GW-2 Mixed GW	9/13/02	0.081	6.82	326.0	430	210	1,600	0.05	0.05
Norwegian Wind GW-3 Mixed GW	9/13/02	0.15	7.05	163.0	170	107	1,600	0.05	0.05
Ocean Princess GW-C Overboard	7/19/02	0.008	7.76	260.0	228	145	1	8	5.5
Ocean Princess GW-C-H Overboard	7/19/02	0.658	4.86	7660.0	4200	5470	1	7	4
Regal Princess GW-AD Overboard	7/13/02	23.4	7.16	151.0	509	82.6	800,000	0.5	0.05
Regal Princess GW-ADC Overboard	7/13/02	0.008	4.36	1170.0	1900	464	800,000	0.05	0.05

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Ammonia as N	pH	BOD	COD	TSS	Fecal coliform	Total chlorine	Free chlorine
Units		mg/L		Mg/L	mg/L	mg/L	MPN	mg/L	Mg/L
MDL		0.03	0.1	2.0	3.0	1.3	2	0.1	0.1
Regal Princess GW-AFT Mixed	7/23/02	0.878	5.06	1940.0	2260	1230	110,000	0.05	0.05
Regal Princess GW-FWD Mixed	7/23/02	4.17	7.02	330.0	621	64.8	500,000	0.05	0.05
Sea Princess GW-A-11 Galley	9/17/02	1.54	4.38	1370.0	2080	346	8,000	0.3	0.05
Sea Princess GW-D-6 Domestic	9/17/02	1.37	6.45	555.0	556	125	500,000	0.05	0.05
Sea Princess GW-D-8 Domestic	9/17/02	3.98	4.65	1310.0	1840	560	110,000	0.05	0.05
Sea Princess GW-D-9 Domestic	9/17/02	1.46	6.5	541.0	674	136	800,000	0.05	0.05
Star Princess GW-C (accom)	8/29/02	2.76	6.68	152.0	254	44.1	240	3.5	3.1
Star Princess GW-D (galley & laundry)	8/29/02	4.29	3.85	4280.0	17800	13,000.0	198,000	0.3	0.1
Sun Princess GW-A2 accomodations	6/7/02	0.632	6.21	875.0	1540	591.0	130,000	0.2	0.1

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Ammonia as N	pH	BOD	COD	TSS	Fecal coliform	Total chlorine	Free chlorine
Units		mg/L		Mg/L	mg/L	mg/L	MPN	mg/L	Mg/L
MDL		0.03	0.1	2.0	3.0	1.3	2	0.1	0.1
Sun Princess GW-A3 accommodations	6/7/02	0.776	7.58	346.0	793	212.0	500	4	3.5
Sun Princess GW-A4 accommodations	6/7/02	1.16	7.19	669.0	1220	333.0	30,000	4	1.7
Sun Princess GW-C galley	7/11/02	2.66	4.11	2790.0	5110	1320.0	900	0.3	0.1
Minimum		0.008	3.73	50.6	170	43.8	1	0.05	0.05
Maximum		23.4	7.76	7660.0	18100	13,000.0	5,000,000	8	5.5
Geometric Mean		0.87	5.88	521.9	1,009.43	247.0	32,833	0.17	0.1
Median		1.3	6.605	395.5	663.0	144.5	110,000	0.1	0.1

Table 20. 2002 Large Ship Graywater Conventional Pollutants (continued)

Sample Name	Sample Date	Conductivity	Oil & Grease	TOC	Alkalinity, as CaCO ₃	Nitrate as N	Phosphorous	Settleable Solids
Units		Umhos/cm	mg/L	mg/L	Mg/L	Mg/L	mg/L	Mg/L
MDL		1	1.5	1	0.5	1.0	0.01	0.1
Dawn Princess GW-11 Galley	9/3/02	3270	520.0	1070	0.25	0.15	14.10	23
Dawn Princess GW-A-15	9/12/02	1920	150.0	156	69.3	0.15	2.20	0.32
Dawn Princess GW-A-4 Domestic/Laundry	9/12/02	36500	140.0	149	113	0.15	1.60	0.05
Dawn Princess GW-A-4 Domestic	6/20/02	15100	51.0	106	70.7	0.15	6.07	0.05
Dawn Princess GW-A-8 Domestic	6/20/02	29600	46.0	41	80.2	0.15	1.90	0.21
Dawn Princess GW-A-8 Domestic	9/12/02	14600	110.0	233	58.9	0.15	2.74	6
Dawn Princess GW-D-11 Galley	6/20/02	13800	5500.0	5090	0.25	0.15	52.20	280
Sea Princess GW – A	5/30/02	7640	360.0	770	0.25	0.15	20.60	10

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Conductivity	Oil & Grease	TOC	Alkalinity, as CaCO3	Nitrate as N	Phosphorous	Settleable Solids
Units		Umhos/cm	mg/L	mg/L	Mg/L	Mg/L	mg/L	Mg/L
MDL		1	1.5	1	0.5	1.0	0.01	0.1
Sea Princess GW – B	5/30/02	528	120.0	114	53.4	0.15	3.06	0.66
Sea Princess GW – D	5/30/02	2500	270.0	358	52.2	0.15	9.36	6.5
Norwegian Wind GW-1 C Laundry	5/24/02	646	50.0	160	59.7	0.15	3.39	0.53
Norwegian Wind GW-2 Mixed GW	5/24/02	31100	56.0	83	94.8	0.15	1.86	0.05
Norwegian Wind GW-3 Mixed GW	5/24/02	32200	52.0	85	81.2	0.15	2.16	0.22
Norwegian Sky GW- A (overboard line)	5/16/02	3440	70.0	97	69.8	0.15	1.88	0.22
Ocean Princess GW- A-DB4 Domestic	5/21/02	617	87.0	148	54.6	0.15	2.80	0.05
Ocean Princess GW- A-DB8 Galley	5/21/02	1810	57.0	843	0.25	0.15	3.46	0.05
Norwegian Sky GW- B (overboard line)	5/16/02	344	37.0	82	75.3	0.15	2.14	0.05
Ocean Princess GW- C Collection Tanks	5/21/02	188	33.0	98	40.6	0.15	8.46	2.2

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Conductivity	Oil & Grease	TOC	Alkalinity, as CaCO3	Nitrate as N	Phosphorous	Settleable Solids
Units		Umhos/cm	mg/L	mg/L	Mg/L	Mg/L	mg/L	Mg/L
MDL		1	1.5	1	0.5	1.0	0.01	0.1
Star Princess GW-C DB#8 Graywater	5/28/02	8100	39.0	72	44.6	0.15	1.77	0.05
Star Princess GW-D DB#10 Galley	5/28/02	1190	950.0	2070	0.25	0.15	3.11	44
Norwegian Sky GW-A Mixed	8/2/02	558	not taken	1260	38.1	0.15	12.00	1.1
Norwegian Sky GW-B Mixed	8/2/02	606	not taken	849	32.2	0.15	17.60	6
Norwegian Wind GW-2 Mixed GW	9/13/02	22700	170.0	174	78.8	0.15	2.50	0.2
Norwegian Wind GW-3 Mixed GW	9/13/02	23200	61.0	72	80.8	0.15	2.50	0.05
Ocean Princess GW-C Overboard	7/19/02	499	290.0	470	78.5	0.15	0.86	0.05
Ocean Princess GW-C-H Overboard	7/19/02	4800	780	996	35.5	0.15	13.00	22
Regal Princess GW-AD Overboard	7/13/02	4660	34	128	129	0.15	4.59	0.8

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Conductivity	Oil & Grease	TOC	Alkalinity, as CaCO3	Nitrate as N	Phosphorous	Settleable Solids
Units		Umhos/cm	mg/L	mg/L	Mg/L	Mg/L	mg/L	Mg/L
MDL		1	1.5	1	0.5	1.0	0.01	0.1
Regal Princess GW-ADC Overboard	7/13/02	808	290	469	0.25	12.1	27.00	0.51
Regal Princess GW-AFT Mixed	7/23/02	509	440	579	0.25	0.15	27.30	9.2
Regal Princess GW-FWD Mixed	7/23/02	1060	63	165	36.2	0.15	7.59	0.42
Sea Princess GW-A-11 Galley	9/17/02	2000	72	669	0.25	0.15	17.10	90
Sea Princess GW-D-6 Domestic	9/17/02	834	160	257	76.2	0.15	8.94	0.05
Sea Princess GW-D-8 Domestic	9/17/02	6100	310	597	20.6	0.15	10.30	15
Sea Princess GW-D-9 Domestic	9/17/02	820	170	283	70.3	0.15	8.96	0.05
Star Princess GW-C (accom)	8/29/02	392	68	78	68.8	0.15	2.68	0.05
Star Princess GW-D (galley & laundry)	8/29/02	1250	2800	1730	0.25	0.15	13.80	370

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Conductivity	Oil & Grease	TOC	Alkalinity, as CaCO ₃	Nitrate as N	Phosphorous	Settleable Solids
Units		Umhos/cm	mg/L	mg/L	Mg/L	Mg/L	mg/L	Mg/L
MDL		1	1.5	1	0.5	1.0	0.01	0.1
Sun Princess GW-A2 accommodations	6/7/02	4080	230	369	83.3	0.15	9.12	9
Sun Princess GW-A3 accommodations	6/7/02	7270	140	186	92.3	0.15	4.93	2.6
Sun Princess GW-A4 accommodations	6/7/02	1060	240	381	89.4	0.15	8.49	6
Sun Princess GW-C galley	7/11/02	1680	9.9	1600	0.25	0.15	21.30	32
Minimum		188	9.9	41	0.25	0.15	0.86	0.05
Maximum		36,500	5,500	5090	129	12.1	52.20	370
Geometric Mean		2,627.33	138.46	292	15.8	0.17	5.72	1.05
Median		1,960.0	130	245	56.8	0.15	5.50	0.595

Table 21. 2002 Large Ship Galley Graywater Conventional Pollutants

Sample Name	Sample Date	Ammonia as N	pH	BOD	COD	TSS	Fecal coliform	Total chlorine	Free chlorine residual
	Units	mg/L		mg/L	mg/L	mg/L	MPN	mg/L	mg/L
	MDL	0.03	0.10	2	3.0	1.3	2	0.1	0.1
Dawn Princess GW-11 Galley	9/3/02	2.56	4.82	2130	3060	1070	60,000	ND	ND
Dawn Princess GW-D-11 Galley	6/20/02	8.88	3.88	6920	18100	7700	30,000	ND	ND
Ocean Princess GW-A-DB8 Galley	5/21/02	1.26	4.3	1490	2680	144	500	ND	ND
Star Princess GW-D DB#10 Galley	5/28/02	3.68	3.73	3660	6170	2660	300	ND	ND
Sea Princess GW-A-11 Galley	9/17/02	1.54	4.38	1370	2080	346	8,000	0.30	ND
Star Princess GW-D (galley & laun)	8/29/02	4.29	3.85	4280	17800	13000	198,000	0.30	0.10
Sun Princess GW-C Galley	7/11/02	2.66	4.11	2790	5110	1320	900	0.30	0.10
	Minimum	1.26	3.73	1,370	2,080	144	300	ND	ND
	Maximum	8.88	4.82	6,920	18,100	13,000	198,000	0.30	0.10
	Geo metric Mean	2.93	4.14	2,790	5,603	1,520	6,279	0.11	0.06
	Median	2.66	4.11	2,790	5,110	1,320	8,000	ND	ND

Table 22. 2002 Large Ship Galley Graywater Conventional Pollutants (continued)

Sample Name	Sample Date	Conductivity	Oil & Grease	TOC	Alkalinity, as CaCO ₃	Nitrate as N	Phosphorous, Total	Settleable Solids
Units		Umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	Mg/L
MDL		1	1.5	1.0	0.5	1.0	0.01	0.1
Dawn Princess GW-11 Galley	9/3/02	3270	520.0	1,070.0	0.25	0.2	14.10	23.0
Dawn Princess GW-D-11 Galley	6/20/02	13800	5,500.0	5,090.0	0.25	0.2	52.20	280.0
Ocean Princess GW-A-DB8 Galley	5/21/02	1810	57.0	843.0	0.25	0.2	3.46	0.1
Star Princess GW-D DB#10 Galley	5/28/02	1190	950.0	2,070.0	0.25	0.2	3.11	44.0
Sea Princess GW-A-11 Galley	9/17/02	2000	72.0	669.0	0.25	0.2	17.10	90.0
Star Princess GW-D (galley & laun)	8/29/02	1250	2,800.0	1,730.0	0.25	0.2	13.80	370.0
Sun Princess GW-C Galley	7/11/02	1680	9.9	1,600.0	0.25	0.2	21.30	32.0
Minimum		1,190	9.9	669.0	0.25	0.2	3.11	0.1
Maximum		13,800	5,500.0	5,090.0	0.25	0.2	52.20	370.0
Geo metric Mean		2,360	315.0	1,506.0	0.25	0.2	12.18	28.5
Median		1,810	520.0	1,600.0	0.25	0.2	14.10	44.0

Table 23. 2002 Large Ship Accommodations & Laundry Graywater Conventional Pollutants

Sample Name	Sample Date	Ammonia as N	pH	BOD	COD	TSS	Fecal coliform bacteria by MPN	Total chlorine residual	Free chlorine residual
Units		mg/L		mg/L	mg/L	mg/L	MPN	mg/L	mg/L
MDL		0.03	0.1	2	3.0	1.3	2	0.10	0.10
Dawn Princess GW-A-4 Domestic/Laun	9/12/02	0.97	7.59	51	240.0	68.2	300,000	ND	ND
Dawn Princess GW-A-4 Domestic	6/20/02	0.84	6.76	158	372.0	70.2	2,400,000	ND	ND
Dawn Princess GW-A-8 Domestic	9/12/02	0.64	7.17	62	180.0	71.1	130,000	ND	ND
Dawn Princess GW-A-8 Domestic	6/20/02	1.99	6.25	388	752.0	292.0	220,000	ND	ND
Ocean Princess GW-A-DB4 Domestic	5/21/02	0.77	7.1	263	553.0	48.5	300	3.00	0.20
Sea Princess GW-D-6 Domestic	9/17/02	1.37	6.45	555	556.0	125.0	500,000	ND	ND
Sea Princess GW-D-8 Domestic	9/17/02	3.98	4.65	1,310	1,840.0	560.0	110,000	ND	ND
Sea Princess GW-D-9 Domestic	9/17/02	1.46	6.5	541	674.0	136.0	800,000	ND	ND

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Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Ammonia as N	pH	BOD	COD	TSS	Fecal coliform bacteria by MPN	Total chlorine residual	Free chlorine residual
Units		mg/L		mg/L	mg/L	mg/L	MPN	mg/L	mg/L
MDL		0.03	0.1	2	3.0	1.3	2	0.10	0.10
Star Princess GW-C (accom)	8/29/02	2.76	6.68	152	254.0	44.1	240	3.50	3.10
Sun Princess GW-A2 accommodations	6/7/02	0.63	6.21	875	1,540.0	591.0	130,000	0.20	0.10
Sun Princess GW-A3 accommodations	6/7/02	0.78	7.58	346	793.0	212.0	500	4.00	3.50
Sun Princess GW-A4 accommodations	6/7/02	1.16	7.19	669	1,220.0	333.0	30,000	4.00	1.70
Minimum		0.63	4.65	51	180.0	44.0	240	ND	ND
Maximum		3.98	7.59	1,310	1,840.0	591.0	2,400,000	4.00	3.50
Geometric Mean		1.21	6.63	304	589.0	145.0	47,357	0.23	0.16
Median		1.07	6.72	367	615.0	130.5	130,000	ND	ND

Table 24. 2002 Large Ship Accommodations & Laundry Graywater Conventional Pollutants (continued)

Sample Name	Sample Date	Conductivity	Oil & Grease	TOC	Alkalinity, Total as CaCO3	Nitrate as N	Phosphorous, Total	Total Settleable Solids
Units		Umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MDL		1	1.5	1.0	0.5	1.0	0.01	0.1
Dawn Princess GW-A-4 Domestic/Laun	9/12/02	36500	140.0	149.0	113	0.2	1.60	0.1
Dawn Princess GW-A-4 Domestic	6/20/02	15100	51.0	106.0	70.7	0.2	6.07	0.1
Dawn Princess GW-A-8 Domestic	9/12/02	29600	46.0	41.0	80.2	0.2	1.90	0.2
Dawn Princess GW-A-8 Domestic	6/20/02	14600	110.0	233.0	58.9	0.2	2.74	6.0
Ocean Princess GW-A-DB4 Domestic	5/21/02	617	87.0	148.0	54.6	0.2	2.80	0.1
Sea Princess GW-D-6 Domestic	9/17/02	834	160.0	257.0	76.2	0.2	8.94	0.1
Sea Princess GW-D-8 Domestic	9/17/02	6100	310.0	597.0	20.6	0.2	10.30	15.0
Sea Princess GW-D-9 Domestic	9/17/02	820	170.0	283.0	70.3	0.2	8.96	0.1

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Conductivity	Oil & Grease	TOC	Alkalinity, Total as CaCO3	Nitrate as N	Phosphorous, Total	Total Settleable Solids
Units		Umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MDL		1	1.5	1.0	0.5	1.0	0.01	0.1
Star Princess GW-C (accom)	8/29/02	392	68.0	78.0	68.8	0.2	2.68	0.1
Sun Princess GW-A2 accommodations	6/7/02	4080	230.0	369.0	83.3	0.2	9.12	9.0
Sun Princess GW-A3 accommodations	6/7/02	7270	140.0	186.0	92.3	0.2	4.93	2.6
Sun Princess GW-A4 accommodations	6/7/02	1060	240.0	381.0	89.4	0.2	8.49	6.0
Minimum		392	46.0	41.0	20.6	0.2	1.60	0.1
Maximum		36,500	310.0	597.0	113	0.2	10.30	15.0
Geometric Mean		3,743	125.0	188.0	68.5	0.2	4.71	0.4
Median		5,090	140.0	209.5	73.5	0.2	5.50	0.1

Table 25. 2002 Large Ship Mixed Graywater Conventional Pollutants

Sample Name	Sample Date	Ammonia as N	pH	BOD	COD	TSS	Fecal coliform	Total chlorine residual	Free chlorine residual
Units		mg/L		Mg/L	mg/L	mg/L	MPN	mg/L	mg/L
MDL		0.03	0.1	2	3.0	1.3	2	0.10	0.10
Dawn Princess GW-A-15	9/12/02	1	6.7	403	460.0	92.5	1600000	0.05	0.05
Sea Princess GW - A	5/30/02	1.71	4.46	1800	3280.0	604.0	24000	0.2	0.05
Sea Princess GW – B	5/30/02	2.35	7.06	328	503.0	122.0	2400000	0.1	0.05
Sea Princess GW – D	5/30/02	1.11	5.87	799	1660.0	356.0	240000	0.05	0.05
Norwegian Wind GW-2 Mixed GW	5/24/02	0.008	6.68	199	652.0	43.8	3000000	0.05	0.05
Norwegian Wind GW-3 Mixed GW	5/24/02	0.008	6.92	178	639.0	128.0	5000000	0.05	0.05
Norwegian Sky GW-A (overboard line)	5/16/02	2.2	6.86	158	374.0	122.0	3000000	0.05	0.05
Norwegian Sky GW-B (overboard line)	5/16/02	2.51	6.53	146	300.0	79.5	3000000	0.05	0.05
Ocean Princess GW-C Collection Tanks	5/21/02	0.191	6.89	110	389.0	56.5	300	0.05	0.05

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Ammonia as N	pH	BOD	COD	TSS	Fecal coliform	Total chlorine residual	Free chlorine residual
	Units	mg/L		Mg/L	mg/L	mg/L	MPN	mg/L	mg/L
	MDL	0.03	0.1	2	3.0	1.3	2	0.10	0.10
Norwegian Sky GW-A Mixed	8/2/02	1.56	7.28	987	2600.0	46.6	2090	1	0.05
Norwegian Sky GW-B Mixed	8/2/02	1.86	4.79	1310	3540.0	333.0	2910	1.5	0.2
Norwegian Wind GW-2 Mixed GW	9/13/02	0.081	4.75	326	430.0	566.0	1600	ND	ND
Norwegian Wind GW-3 Mixed GW	9/13/02	0.15	6.82	163	170.0	210.0	1600	ND	ND
Ocean Princess GW-C Overboard	7/19/02	0.008	7.05	260	228.0	107.0	1	8	5.5
Ocean Princess GW-C-H Overboard	7/19/02	0.658	7.76	7660	4200.0	145.0	1	7	4
Regal Princess GW-AD Overboard	7/13/02	23.4	4.86	151	509.0	5470.0	800000	0.5	ND
Regal Princess GW-ADC Overboard	7/13/02	0.008	7.16	1170	1900.0	82.6	800000	ND	ND
Regal Princess GW-AFT Mixed	7/13/02	0.878	4.36	1940	2260.0	464.0	110000	ND	ND

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Ammonia as N	pH	BOD	COD	TSS	Fecal coliform	Total chlorine residual	Free chlorine residual
Units		mg/L		Mg/L	mg/L	mg/L	MPN	mg/L	mg/L
MDL		0.03	0.1	2	3.0	1.3	2	0.10	0.10
Regal Princess GW-FWD Mixed	7/23/02	4.17	5.06	330	621.0	1230.0	500000	ND	ND
Minimum		0.008	7.02	110	170.0	64.8	1	ND	ND
Maximum		23.4	4.36	7,660	4200.0	43.8	5,000,000	8	5.5
Geometric Mean		0.46	7.76	432	805.0	5470.0	38,603	0.14	0.08
Median		1.00	6.14	328	621.0	190.0	240,000	ND	ND

Table 26. 2002 Large Ship Mixed Graywater Conventional Pollutants (continued)

Sample Name	Sample Date	Conductivity	Oil & Grease	Phosphorous, Total	Alkalinity, Total as CaCO3	Nitrate as N	TOC	Total Settleable Solids
Units		Umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	Mg/L
MDL		1	1.5	0.01	0.5	1.0	1.0	0.1
Dawn Princess GW-A-15	9/12/02	1920	150.0	2.20	69.3	0.2	156.0	0.3
Sea Princess GW - A	5/30/02	7640	360.0	20.60	0.25	0.2	770.0	10.0
Sea Princess GW – B	5/30/02	528	120.0	3.06	53.4	0.2	114.0	0.7
Sea Princess GW – D	5/30/02	2500	270.0	9.36	52.2	0.2	358.0	6.5
Norwegian Wind GW-2 Mixed GW	5/24/02	31100	50.0	3.39	94.8	0.2	160.0	0.5
Norwegian Wind GW-3 Mixed GW	5/24/02	32200	56.0	1.86	81.2	0.2	83.0	0.1

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Conductivity	Oil & Grease	Phosphorous, Total	Alkalinity, Total as CaCO3	Nitrate as N	TOC	Total Settleable Solids
Units		Umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	Mg/L
MDL		1	1.5	0.01	0.5	1.0	1.0	0.1
Norwegian Sky GW-A (overboard line)	5/16/02	3440	52.0	2.16	69.8	0.2	85.0	0.2
Norwegian Sky GW-B (overboard line)	5/16/02	344	70.0	1.88	75.3	0.2	97.0	0.2
Ocean Princess GW-C Collection Tanks	5/21/02	188	37.0	2.14	40.6	0.2	82.0	0.1
Norwegian Sky GW-A Mixed	8/2/02	558	33.0	8.46	38.1	0.2	98.0	2.2
Norwegian Sky GW-B Mixed	8/2/02	606	Not taken	12.00	32.2	0.2	1,260.0	1.1
Norwegian Wind GW-2 Mixed GW	9/13/02	22700	Not taken	17.60	78.8	0.2	849.0	6.0

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Conductivity	Oil & Grease	Phosphorous, Total	Alkalinity, Total as CaCO3	Nitrate as N	TOC	Total Settleable Solids
Units		Umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	Mg/L
MDL		1	1.5	0.01	0.5	1.0	1.0	0.1
Norwegian Wind GW-3 Mixed GW	9/13/02	23200	170.0	2.50	80.8	0.2	174.0	0.2
Ocean Princess GW-C Overboard	7/19/02	499	61.0	2.50	78.5	0.2	72.0	0.1
Ocean Princess GW-C-H Overboard	7/19/02	4800	290.0	0.86	35.5	0.2	470.0	0.1
Regal Princess GW- AD Overboard	7/13/02	4660	780.0	13.00	129	0.2	996.0	22.0
Regal Princess GW- ADC Overboard	7/13/02	808	34.0	4.59	0.25	0.2	128.0	0.8
Regal Princess GW- AFT Mixed	7/23/02	509	290.0	27.00	0.25	12.1	469.0	0.5

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Conductivity	Oil & Grease	Phosphorous, Total	Alkalinity, Total as CaCO3	Nitrate as N	TOC	Total Settleable Solids
Units		Umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	Mg/L
MDL		1	1.5	0.01	0.5	1.0	1.0	0.1
Regal Princess GW-FWD Mixed	7/23/02	1060	440.0	27.30	36.2	0.2	579.0	9.2
Ocean Princess GW-C Collection Tanks	5/21/02	188	63.0	7.59	0.25	0.2	165.0	0.4
Minimum		188	33.0	0.86	0.25	0.2	72.0	0.1
Maximum		32,200	780.0	27.30	129.00	12.1	1,260.0	22.0
Geo metric Mean		2,085	116.0	5.22	26.54	0.2	229.0	0.7
Median		1,920	95.0	3.99	53.40	0.2	162.5	0.5

Table 27. 2002 Large Ship Mixed Graywater Total & Dissolved Metals A - L

	Sample Date	Antimony-D	Antimony-T	Arsenic-D	Arsenic-T	Chromium-D	Chromium-T	Copper-D	Copper-T	Lead-D	Lead-T
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MDL		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Dawn Princess GW-A-4	9/12/02	0.0135	0.025	3.12	0.06	4.5	5.81	46.3	144	11.7	18.00
Dawn Princess GW-A-8	9/12/02	4.1300	0.025	59.5	39.8	3.3	0.04	11.4	73.6	6.17	15.80
Norwegian Sky GW-A	8/2/02	0.9230	4.490	0.54	2.54	2.25	10.6	5.61	318	17	60.00
Norwegian Sky GW-B	8/2/02	3.9300	3.690	1.61	1.74	6.58	10.7	2.59	195	14.5	26.50
Norwegian Wind GW-2	9/13/02	0.0135	0.025	43.6	44.8	4.15	7.15	9.31	77.4	12.8	22.90
Norwegian Wind GW-3	9/13/02	0.0135	0.025	39.1	50	7.52	6.44	9.81	84.3	23.6	24.30
Ocean Princess GW-C	7/19/02	0.2420	0.303	0.209	2.32	0.79	3.83	79.2	129	0.654	7.22

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Appendix B. Large Ship Sampling Data

	Sample Date	Antimony-D	Antimony-T	Arsenic-D	Arsenic-T	Chromium-D	Chromium-T	Copper-D	Copper-T	Lead-D	Lead-T
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MDL		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Ocean Princess GW-C-H	7/19/02	0.5280	0.199	3.43	3.52	4.83	5.77	50.3	109	1.18	2.81
Regal Princess GW-AFT	7/23/02	0.1890	0.025	1.22	1.03	4.24	6.99	302	71.2	0.57	5.31
Regal Princess GW-FWD	7/23/02	0.1220	0.128	1.62	1.41	3.05	4.65	114	294	0.672	4.50
Sea Princess GW-A-11	9/17/02	0.0135	0.025	1.62	0.06	8.33	15.7	2.93	55.1	3.21	20.80
Sea Princess GW-D-8	9/17/02	0.0135	0.025	9.93	10.7	10.6	10.1	3.72	60.5	1.07	12.80
Star Princess GW-C	8/29/02	0.5180	0.549	0.459	0.388	1.5	1.86	61.4	143	2.07	6.48
Star Princess GW-D	8/29/02	0.3780	0.025	3.3	5.48	30.5	47.3	17	1980	0.777	21.30
Sun Princess GW-A4	7/11/02	0.2710	0.272	0.878	0.979	2.35	3.7	58.1	76.9	2.18	3.84

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Appendix B. Large Ship Sampling Data

	Sample Date	Antimony-D	Antimony-T	Arsenic-D	Arsenic-T	Chromium-D	Chromium-T	Copper-D	Copper-T	Lead-D	Lead-T
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MDL		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Sun Princess GW-C galley	7/11/02	0.1760	0.199	2.43	2.58	17.1	15.8	53.7	74.5	0.937	5.49
Minimum		0.01	0.03	0.21	0.06	0.79	0.04	2.59	55.10	0.57	2.81
Maximum		4.13	4.49	59.50	50.00	30.50	47.3	302.00	1,980.00	23.60	60.00
Geometric Mean		0.16	0.11	2.86	2.37	4.69	5.49	22.17	130.21	2.84	11.51
Median		0.22	0.08	2.03	2.43	4.37	6.72	31.65	96.65	2.13	14.30

Table 28. 2002 Large Ship Mixed Graywater Total & Dissolved Metals N-Z

Sample Name	Sample Date	Nickel-D	Nickel-T	Selenium-D	Selenium-T	Silver-D	Silver-T	Zinc-D	Zinc-T
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MDL		0.15	0.15	0.15	0.15	0.150	0.1500	0.15	0.15
Dawn Princess GW-A-4	9/12/02	5.19	6.12	13.60	14.00	0.014	0.0155	78.30	303.00
Dawn Princess GW-A-8	9/12/02	12.80	11.00	108.00	70.90	3.960	0.0155	60.60	71.10
Norwegian Sky GW-A	8/2/02	4.70	19.80	0.54	2.16	0.014	0.3810	522.00	1740.00
Norwegian Sky GW-B	8/2/02	11.30	12.60	1.24	1.36	0.014	0.1530	766.00	794.00
Norwegian Wind GW-2	9/13/02	33.80	25.50	74.90	88.60	0.014	0.0155	54.50	145.00
Norwegian Wind GW-3	9/13/02	29.60	32.80	91.20	83.60	0.014	0.0155	463.00	185.00
Ocean Princess GW-C	7/19/02	6.22	7.71	0.52	3.78	0.014	1.930	270.00	327.00
Ocean Princess GW-C-H	7/19/02	12.90	13.00	8.28	9.91	0.887	3.7400	22.10	224.00

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Nickel-D	Nickel-T	Selenium-D	Selenium-T	Silver-D	Silver-T	Zinc-D	Zinc-T
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MDL		0.15	0.15	0.15	0.15	0.150	0.1500	0.15	0.15
Regal Princess GW-AFT	7/23/02	17.00	14.80	1.66	0.54	0.205	0.7500	251.00	30.50
Regal Princess GW-FWD	7/23/02	12.60	14.40	3.74	3.45	0.197	0.2970	221.00	306.00
Sea Princess GW-A-11	9/17/02	9.47	11.90	5.89	6.83	0.014	0.0155	277.00	264.00
Sea Princess GW-D-8	9/17/02	11.60	13.00	42.00	26.10	0.014	1.3100	158.00	192.00
Star Princess GW-C	8/29/02	15.40	16.60	0.91	0.54	0.014	0.1740	599.00	742.00
Star Princess GW-D	8/29/02	53.00	64.50	4.65	9.34	0.014	4.080	1170.00	1390.00
Sun Princess GW-A4	7/11/02	7.59	8.61	2.12	2.42	0.373	0.1470	484.00	418.00
Sun Princess GW-C galley	7/11/02	20.00	15.20	2.98	4.24	0.014	1.5900	259.00	280.00
Minimum		4.70	6.12	0.52	0.54	0.014	0.0155	55.00	31.00
Maximum		53.00	64.50	108.00	88.60	3.960	4.0800	1170.00	1740.00

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Nickel-D	Nickel-T	Selenium-D	Selenium-T	Silver-D	Silver-T	Zinc-D	Zinc-T
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MDL		0.15	0.15	0.15	0.15	0.150	0.1500	0.15	0.15
Geometric Mean		13.18	14.99	5.68	6.63	0.040	0.2100	266.00	295.00
Median		12.70	13.70	4.20	5.54	0.014	0.2355	264.50	291.50

Table 29. 2002 Large Ship Mixed Graywater Priority Pollutants A - B

Sample Name	Sample Date	Acetone	1,2,4-Tri methyl benzene	2- Butanone	4- Isopropyl toluene	4-Methyl- 2- Pentanone	Bromo dichloromethane	Bromoform	Butyl benzyl phthalate
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MDL		3.2	0.50	1.50	0.55	0.36	0.50	0.50	1.00
Dawn Princess GW-A-4	9/12/02	72.0	0.08	4.20	0.055	0.08	0.48	0.16	1.90
Dawn Princess GW-A-8	9/12/02	38.0	0.08	2.90	0.055	0.08	0.12	1.8	0.18
Norwegian Sky GW-A	8/2/02	34.0	0.08	16.00	0.82	0.67	0.77	0.7	0.18
Norwegian Sky GW-B	8/2/02	35.0	0.08	13.00	0.87	1.7	0.89	0.94	0.18
Norwegian Wind GW-2	9/13/02	29.0	0.08	0.3	0.055	0.08	0.85	0.16	0.18
Norwegian Wind GW-3	9/13/02	18.0	0.08	0.3	0.055	0.08	0.86	0.16	0.18
Ocean Princess GW-C	7/19/02	140	0.08	24.00	0.055	0.08	4.2	0.16	0.18
Ocean Princess GW-C-H	7/19/02	120	0.08	0.3	0.055	0.08	7.5	0.16	0.18
Regal Princess GW-AFT	7/23/02	1.75	8.80	390.00	16	0.08	20	10	5.4

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Acetone	1,2,4-Tri methyl benzene	2- Butanone	4- Isopropyl toluene	4-Methyl- 2- Pentanone	Bromo dichloromethane	Bromoform	Butyl benzyl phthalate
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MDL		3.2	0.50	1.50	0.55	0.36	0.50	0.50	1.00
Regal Princess GW-FWD	7/23/02	970	42.00	56.00	5.2	0.08	27	9.4	0.18
Sea Princess GW-A-11	9/17/02	54	0.08	0.3	2.2	0.08	4.3	1.2	0.18
Sea Princess GW-D-8	9/17/02	53	0.08	17.00	6.1	0.08	3.9	3.3	0.18
Star Princess GW-C (acc)	8/29/02	55	0.08	5.30	0.055	5.1	0.88	0.16	2.6
Star Princess GW-D (G&L)	8/29/02	130	0.08	0.3	0.055	0.08	7.6	2	7.7
Sun Princess GW-A4	7/11/02	93	0.08	8.90	0.055	0.08	7	0.16	6.4
Sun Princess GW-C galley	7/11/02	220	0.08	0.3	3.4	0.08	6.1	0.16	12
Minimum		1.75	0.08	0.3	0.055	0.08	0.12	0.16	0.18
Maximum		970	42.00	390.0	16	5.1	27	10	12
Geometric Mean		59	0.16	3.4	0.32	0.14	2.5	0.61	0.63
Median		54.5	0.08	4.8	0.055	0.08	4.05	0.43	0.18

Table 30. 2002 Large Ship Mixed Graywater Priority Pollutants C - Z

Sample Name	Sample Date	Chloroethane	Chloroform	Chloromethane	Dibromochloromethane	Diethyl phthalate	Di-n-Butyl phthalate	M&p Xylenes	O-Xylene	Phenol	Tetrachloroethene	Toluene
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MDL		0.50	0.50	1.00	0.50	1.0	1.0	0.28	0.46	1.0	0.50	0.500
Dawn Princess GW-A-4	9/12/02	0.36	20	0.15	0.16	13	4.8	0.69	0.14	2.5	0.06	0.125
Dawn Princess GW-A-8	9/12/02	0.36	17	0.15	0.16	3.9	5.3	0.96	0.52	0.4	0.06	0.125
Norwegian Sky GW-A	8/2/02	0.36	18	0.15	0.16	3.8	0.7	0.08	0.14	0.4	0.06	0.125
Norwegian Sky GW-B	8/2/02	0.36	17	0.15	0.52	3.8	0.7	0.51	0.47	0.4	0.06	0.125
Norwegian Wind GW-2	9/13/02	0.36	3.1	0.15	0.16	3	9.6	1.2	1.2	0.4	0.85	0.125
Norwegian Wind GW-3	9/13/02	0.36	5.3	0.15	0.79	2.7	3.9	0.73	0.14	0.4	1.3	0.125
Ocean Princess GW-C	7/19/02	3.5	780	2.9	0.16	14	0.7	0.6	0.14	0.4	0.06	0.125
Ocean Princess GW-C-H	7/19/02	3.4	880	0.15	1.7	12	2.4	0.08	0.14	0.4	0.06	0.125

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Chloroethane	Chloroform	Chloromethane	Dibromochloromethane	Diethyl phthalate	Di-n-Butyl phthalate	M&p Xylenes	O-Xylene	Phenol	Tetrachloroethene	Toluene
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MDL		0.50	0.50	1.00	0.50	1.0	1.0	0.28	0.46	1.0	0.50	0.500
Regal Princess GW-AFT	7/23/02	0.36	140	0.15	18	2.2	0.7	14	0.14	4.3	0.06	93
Regal Princess GW-FWD	7/23/02	0.36	170	18	18	17	4.4	52	15	1.9	21	0.125
Sea Princess GW-A-11	9/17/02	0.36	140	0.15	1.6	3.9	0.7	1.9	0.83	3	1.8	0.125
Sea Princess GW-D-8	9/17/02	0.36	63	0.15	2.4	7.9	0.7	15	6	2.8	84	0.125
Star Princess GW-C (accom)	8/29/02	41	30	160	0.16	18	0.7	15	6.1	3.2	0.06	0.125
Star Princess GW-D (galley & laundry)	8/29/02	0.36	58	0.15	0.16	6.8	0.7	14	5	0.4	0.06	0.125
Sun Princess GW-A4	7/11/02	15	180	100	0.16	21	9.5	2.1	0.73	0.4	4.5	1.5

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Chloroethane	Chloroform	Chloromethane	Dibromochloromethane	Diethyl phthalate	Di-n-Butyl phthalate	M&p Xylenes	O-Xylene	Phenol	Tetrachloroethene	Toluene
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MDL		0.50	0.50	1.00	0.50	1.0	1.0	0.28	0.46	1.0	0.50	0.500
Sun Princess GW-C galley	7/11/02	5.3	180	17	0.16	3.5	7.7	0.08	0.14	0.4	0.06	1.4
Minimum		0.36	3.1	0.15	0.16	2.2	0.7	0.08	0.14	0.4	0.06	0.125
Maximum		41	880	160	18	21	9.6	52	15	4.3	84	93
Geometric Mean		0.96	57	0.76	0.55	6.5	2	1.52	0.62	0.84	0.31	0.27
Median		0.36	60.50	0.15	0.16	5.35	1.55	1.08	0.495	0.4	0.06	0.125

Table 31. 2002 Large Ship Mixed Graywater Priority Pollutants Base-Neutrals & Acids

Sample Name	Sample Date	Benzoic Acid	Benzyl Alcohol	3&4-Methyl phenol	Bis(2-Ethylhexyl)Phthalate	Butyl benzyl phthalate	Diethyl phthalate	Di-n-Butyl phthalate	Phenol
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MDL		25	0.65	0.61	1.0	1.0	1.0	1.0	1.0
Dawn Princess GW-A-4	9/12/02	190	8.5	11	11	1.9	13	4.8	2.5
Dawn Princess GW-A-8	9/12/02	46	2.9	6.3	2.8	0.18	3.9	5.3	0.4
Norwegian Sky GW-A	8/2/02	240	20	21	51	0.18	3.8	0.7	0.4
Norwegian Sky GW-B	8/2/02	310	25	26	48	0.18	3.8	0.7	0.4
Norwegian Wind GW-2	9/13/02	45	4.1	2	56	0.18	3	9.6	0.4
Norwegian Wind GW-3	9/13/02	54	3.4	2.3	13	0.18	2.7	3.9	0.4
Ocean Princess GW-C	7/19/02	220	24	0.6	5.6	0.18	14	0.7	0.4
Ocean Princess GW-C-H	7/19/02	250	28	0.6	7.6	0.18	12	2.4	0.4

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Sample Date	Benzoic Acid	Benzyl Alcohol	3&4-Methyl phenol	Bis(2-Ethylhexyl)Phthalate	Butyl benzyl phthalate	Diethyl phthalate	Di-n-Butyl phthalate	Phenol
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MDL		25	0.65	0.61	1.0	1.0	1.0	1.0	1.0
Regal Princess GW-AFT	7/23/02	40	23	31	13	5.4	2.2	0.7	4.3
Regal Princess GW-FWD	7/23/02	28	28	3.9	5.3	0.18	17	4.4	1.9
Sea Princess GW-A-11	9/17/02	900	19	36	4.6	0.18	3.9	0.7	3
Sea Princess GW-D-8	9/17/02	560	22	53	5.1	0.18	7.9	0.7	2.8
Star Princess GW-C (acc)	8/29/02	410	24	18	15	2.6	18	0.7	3.2
Star Princess GW-D (G&L)	8/29/02	840	46	9.8	31	7.7	6.8	0.7	0.4
Sun Princess GW-A4	7/11/02	76	0.28	5.9	18	6.4	21	9.5	0.4
Sun Princess GW-C galley	7/11/02	350	0.28	140	36	12	3.5	7.7	0.4
Minimum		28	0.28	0.6	2.8	0.18	2.2	0.7	0.4
Maximum		900	46	140	56	12	21	9.6	4.3
Geometric Mean		169	9.21	9	13	0.63	6.5	2	0.84
Median		205	19.5	9.4	13	0.18	5.2	1.7	0.4

2001

Table 32. 2001 Large Ship Graywater Accommodations - Conventional Pollutants from Double Bottom Tanks (Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Vessel Name	Sample Date	Sample Name	Fecal Coliform (f.c./100 ml)	TSS (mg/l)	Ammonia (mg/l)	pH	BOD (mg/l)	COD (mg/l)	Cl, Residual (mg/l)	Cl, Free (mg/l)	Conductivity (umhos/cm)
		MDL	2	0.1	0.03	0.1	2	3.0	0.1	0.1	1
N/A	6/5/2001	DB11 -	invalidated	56.0	not taken	6.8	97	240.0	ND	ND	4,100
N/A	6/5/2001	DB4 -	invalidated	230.0	not taken	4.2	1,000.00	2300.0	ND	ND	3,240
N/A	6/5/2001	DB8 -	invalidated	150.0	not taken	4.3	870	2100.0	ND	ND	4,320
Dawn Princess	7/23/2001	DB4	invalidated	102.0	0.01	5.2	373	765.0	ND	ND	2,060
N/A	5/31/2001	DB11	invalidated	66.0	not taken	7.6	190	450.0	2.00	0.20	440
N/A	5/31/2001	DB4	invalidated	66.0	not taken	7.1	210	460.0	0.10	ND	410
Ocean Princess	7/26/2001	DB 4	16,000,000	50.7	0.83	6.5	217	410.0	ND	ND	418
N/A	6/21/2001	DB 4P	invalidated	107.0	not taken	7.2	241	565.0	0.20	1.50	559
N/A	6/22/2001	DB 4S	600,000	67.2	not taken	6.7	182	382.0	0.10	1.20	867
Regal Princess	8/2/2001	DB 4P	1	31.0	0.01	7.7	151	295.0	3.50	0.70	953
Regal Princess	8/2/2001	DB 4S	1	39.2	0.01	7.3	158	327.0	14.00	14.00	857
Sea Princess	7/10/2001	DB 4	invalidated	52.4	0.72	7.0	157	342.0	0.30	ND	868
Sea Princess	7/10/2001	DB 8	invalidated	240.0	0.55	6.0	750	1470.0	0.30	ND	1,040
N/A	6/7/2001	DB8	invalidated	54.0	not taken	7.0	250	510.0	ND	ND	401
Sun Princess	8/22/2001	DB 8	16,000,000	74.6	0.11	6.3	281	582.0	0.30	ND	306
	Minimum		1	31.0	0.01	4.2	97	240.0	ND	ND	306

	Maximum		16,000,000	240.0	0.83	7.7	1,000	2300.0	14.00	14.00	4,320
	Geometric Mean		10,896	77.0	0.08	6.4	266	573.0	0.21	0.15	939
	Median		600,000	66.0	0.11	6.8	217	460.0	0.30	1.20	867

Table 33. 2001 Large Ship Graywater Accommodations - Conventional Pollutants from Collecting Tanks

Vessel Name	Sample Date	Sample Name	Fecal Coliform (fc/100 ml)	TSS (mg/l)	Ammonia (mg/l)	pH	BOD (mg/l)	COD (mg/l)	Cl, Residual (mg/l)	Cl, Free (mg/l)	Conductivity (umhos/cm)
		MDL	2	1.3	0.03	0.1	2	3.0	0.10	0.10	1
	8/21/2001	CT F	16,000,000	2,880.0	1.08	5.3	4,230	5,650.0	ND	ND	173
N/A	6/27/2001	CT 7 PT	Invalidated	49.0	not taken	6.9	150	270.0	ND	ND	334
N/A	6/27/2001	CT 7 SB	Invalidated	36.0	not taken	7.0	150	280.0	ND	ND	371
N/A	5/24/2001	CT G	300,000	79.0	not taken	6.7	230	300.0	2.50	ND	96
N/A	5/24/2001	CT E	300,000	38.0	not taken	6.6	130	200.0	3.00	2.00	100
Ocean Princess	7/26/2001	CT C	1	not found	1.09	9.8	487	825.0	4.00	3.50	441
N/A	5/25/2001	CT 4	22,000	22.0	not taken	7.4	130	220.0	3.50	0.30	470
N/A	5/25/2001	CT 5	350,000	56.0	not taken	7.6	170	300.0	1.80	0.40	270
N/A	5/25/2001	CT 6	33	55.0	not taken	7.5	450	1,200.0	2.00	0.10	430
Regal Princess	9/25/2001	CT	50,000	126.0	0.89	9.0	1,340	2,320.0	0.90	ND	536
N/A	6/5/2001	CT 3 E	170	100.0	not taken	9.2	500	970.0	3.50	0.30	1,080
N/A	6/5/2001	CT 4 D	1	22.0	not taken	7.9	100	250.0	70.00	50.00	4,220
N/A	6/5/2001	CT 6F	1	25.0	not taken	8.9	120	240.0	19.00	18.00	503

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Appendix B. Large Ship Sampling Data

Vessel Name	Sample Date	Sample Name	Fecal Coliform (fc/100 ml)	TSS (mg/l)	Ammonia (mg/l)	pH	BOD (mg/l)	COD (mg/l)	Cl, Residual (mg/l)	Cl, Free (mg/l)	Conductivity (umhos/cm)
		MDL	2	1.3	0.03	0.1	2	3.0	0.10	0.10	1
Sea Princess	9/19/2001	CT C	50	56.6	0.25	7.6	296	765.0	5.00	0.70	891
N/A	6/8/2001	CT 8	170,000	87.0	not taken	9.4	170	390.0	8.00	4.00	418
		Minimum	1	22.0	0.25	5.3	100	200.0	ND	ND	96
		Maximum	16,000,000	2,880.0	1.09	9.8	4,230	5,650.0	70.00	50.00	4,220
		Geometric Mean	2,189	67.0	0.72	7.7	282	527.0	1.82	0.50	420
		Median	22,000	55.5	0.99	7.6	170	300.0	3.00	0.30	430

Table 34. 2001 Large Ship Graywater Galley - Conventional Pollutants from Double Bottom Tanks

(Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Vessel Name	Sample Date	Sample Name	Fecal Coliform (MPN/100 ml)	TSS (mg/l)	Ammonia (mg/l)	pH	BOD (mg/l)	COD (mg/l)	Cl, Residual (mg/l)	Cl, Free (mg/l)	Conductivity (umhos/cm)
		MDL	2	1.3	0.03	0.1	2	3.0	0.10	0.10	1
N/A	5/31/2001	DB8 (galley)	Invalidated	270.0	Not taken	4	1,300	2,700.0	ND	ND	1,300
Dawn Princess	7/23/2001	DB 8 (galley)	Invalidated	383.0	0.01	4.1	1,150	1,290.0	ND	ND	2,870
Ocean Princess	7/26/2001	DB T and #8,11,13 domestic/galley	230,000	46.2	0.65	7.6	ND	521.0	ND	ND	521
N/A	6/21/2001	DB 15P (galley)	Invalidated	430.0	Not taken	6.2	1,440	1,920.0	0.10	1.70	509
N/A	6/22/2001	DB 15S (galley)	358,000	597.0	Not taken	4.4	1,520	2,270.0	0.10	2.00	757
Regal Princess	8/2/2001	DB 15P (galley)	Invalidated	368.0	0.88	5.1	980	1,550.0	3.30	3.00	885
Regal Princess	8/2/2001	DB 15S (galley)	15,300,000	ND	Not taken	5.3	1,080	1,620.0	ND	ND	883
Sea Princess	7/10/2001	DB 11 (Galley)	Invalidated	149.0	0.01	ND	814	1,520.0	ND	ND	803
N/A	6/7/2001	DB11 (Galley)	Invalidated	26000.0	Not taken	3.6	7,800	54,000.0	ND	ND	2,670
	8/22/2001	DB 11 (galley)	300,000	1390.0	1.38	4.05	2,900	3,950.0	ND	ND	863
		Minimum	230,000	46.0	0.01	3.6	814	521.0	ND	ND	509
		Maximum	15,300,000	26000.0	1.38	7.6	7,800	54,000.0	3.30	3.00	2,870

Vessel Name	Sample Date	Sample Name	Fecal Coliform (MPN/100 ml)	TSS (mg/l)	Ammonia (mg/l)	pH	BOD (mg/l)	COD (mg/l)	Cl, Residual (mg/l)	Cl, Free (mg/l)	Conductivity (umhos/cm)
		MDL	2	1.3	0.03	0.1	2	3.0	0.10	0.10	1
		Geometric Mean	784,072	512.0	0.14	4.8	1,587	2,404.0	0.12	0.23	1,008
		Median	329,000	383.0	0.65	4.4	1,300	1,770.0	ND	ND	873

Table 35. 2001 Large Ship Graywater Galley - Conventional Pollutants from Collecting Tanks

(Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Vessel Name	Sample Date	Sample Name	Fecal Coliform MPN/100 ml	TSS (mg/l)	Ammonia (mg/l)	pH	BOD (mg/l)	COD (mg/l)	Cl, Residual (mg/l)	Cl, Free (mg/l)	Conductivity (umhos/cm)
		MDL	2	1.3	0.03	0.1	2	3.0	0.10	0.10	1
N/A	6/6/2001	CT (butcher)	16,000,000	804.0	Not taken	7.1	941	3,320.0	ND	ND	427
Dawn Princess	8/21/2001	CT (butcher)	80,000	148.0	9.27	6.5	530	1,030.0	3.50	0.10	692
Ocean Princess	7/26/2001	CT I (butcher)	1	141.0	1.35	7.0	311	712.0	100.00	ND	2,360
Regal Princess	8/2/2001	CT9 (butcher)	1	29.6	0.57	7.4	90	240.0	4.00	ND	915
N/A	6/12/2001	HT (butcher)	Missing	130.0	Not taken	7.5	720	1,500.0	4.00	ND	1,160
Sea Princess	9/19/2001	CT (butcher)	Missing	393.0	0.85	6.9	669	1,410.0	35.00	35.00	3,300
Dawn Princess	8/21/2001	CT (galley)	230,000	230.0	1.00	9.9	846	1,150.0	3.50	0.10	427
N/A	6/27/2001	HT 14PT (galley)	1,600,000	700.0	Not taken	4.8	2,200	3,500.0	ND	ND	1,090
N/A	6/27/2001	HT 3C (galley)	Missing	860.0	Not taken	4.7	1,700	2,700.0	ND	ND	672
N/A	5/24/2001	CT H - (galley)	5,000	2,300.0	Not taken	4.1	5,900	6,400.0	ND	ND	1,200
N/A	6/6/2001	CT (galley)	7,000	492.0	Not taken	9.4	1,460	2,360.0	0.40	0.20	665
Sea Princess	9/19/2001	CT (galley)	23	266.0	0.25	10.2	599	642.0	10.00	3.40	878
N/A	6/1/2001	CT (galley)	Missing	780.0	Not taken	9.6	1,600	2,300.0	3.50	ND	665

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Vessel Name	Sample Date	Sample Name	Fecal Coliform MPN/100 ml	TSS (mg/l)	Ammonia (mg/l)	pH	BOD (mg/l)	COD (mg/l)	Cl, Residual (mg/l)	Cl, Free (mg/l)	Conductivity (umhos/cm)
		MDL	2	1.3	0.03	0.1	2	3.0	0.10	0.10	1
N/A	5/25/2001	CT 8 (galley)	50	880.0	Not taken	7.6	1,600	1,700.0	2.80	1.30	1,100
Ocean Princess	7/26/2001	CT H (galley)	170,000	2,520.0	0.86	4.8	ND	3,700.0	ND	ND	ND
Regal Princess	9/25/2001	CT (galley)	30	173.0	2.19	6.6	239	536.0	2.80	0.20	260
N/A	6/5/2001	CT (galley)	1	130.0	Not taken	9.3	760	1,400.0	30.00	1.00	1,180
Ocean Princess	7/26/2001	CT L (fish prep)	1	238.0	7.41	6.8	663	1,290.0	50.00	7.00	1,710
N/A	6/12/2001	HT (fish shop)	1	170.0	Not taken	8.2	550	1,100.0	4.00	1.50	1,150
Sea Princess	9/19/2001	CT (fish shop)	1	163.0	3.29	7.0	414	914.0	35.00	10.00	1,640
Regal Princess	8/2/2001	CT 10 (fish prep)	624	124.0	0.21	7.1	83	308.0	3.00	3.50	267
N/A	6/8/2001	CT (fish shop)	1	580.0	Not taken	7.0	1,000	1,900.0	2.00	0.10	1,850
N/A	6/6/2001	CT (fish shop)	500,000	1,610.0	Not taken	7.0	1,470	2,670.0	ND	ND	563
		Minimum	1	30.0	0.21	4.1	83	240.0	ND	ND	260
		Maximum	16,000,000	2,520.0	9.27	10.2	5,900	6,400.0	100.00	35.00	3,300
		Geometric Mean	402	349.0	1.27	7.0	728	1,414.0	2.00	0.34	904
		Median	50	266.0	1.00	7.0	740	1,410.0	4.00	1.30	1,003

Table 36. 2001 Large Ship Mixed Graywater – Conventional Pollutants from Double Bottom Tanks

(Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Vessel Name	Sample Date	Sample Name	Fecal Coliform (MPN/100 ml)	TSS (mg/l)	Ammonia (mg/l)	pH	BOD (mg/l)	COD (mg/l)	Cl, Residual (mg/l)	Cl, Free (mg/l)	Conductivity (umhos/cm)
		MDL	2	1.3	0.03	0.1	2	3.0	0.10	0.10	1
Dawn Princess	8/20/2001	DB 11	500,000	259.0	0.63	6.3	216	982.0	ND	ND	30,500
Norwegian Sky	8/29/2001	DB3C	1,700,000	365.0	0.01	4.8	936	174.0	ND	ND	691
Norwegian Sky	8/29/2001	DB7P	700,000	40.3	0.01	6.8	130	Not taken	ND	ND	296
Norwegian Sky	8/29/2001	DB7S	300,000	43.6	1.92	7.0	171	289.0	ND	ND	355
		Minimum	300,000	40.3	0.01	4.8	130	174.0	ND	ND	296
		Maximum	1,700,000	365.0	1.92	7.0	936	982.0	ND	ND	30,500
		Geometric Mean	649,994	113.5	0.09	6.1	259	367.0	ND	ND	1,220
		Median	600,000	151.3	0.32	6.5	194	289.0	ND	ND	523

Table 37. 2001 Large Ship Mixed Graywater – Conventional Pollutants from Collecting Tanks
(Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Vessel Name	Sample Date	Sample Name	Fecal Coliform (MPN/100 ml)	TSS (mg/l)	Ammonia (mg/l)	pH	BOD (mg/l)	COD (mg/l)	Cl, Residual (mg/l)	Cl, Free (mg/l)	Conductivity (umhos/cm)
		MDL	2	1.3	0.03	0.1	2	3.0	0.10	0.10	1
N/A	6/6/2001	CT B	2	21.0	not taken	7.8	87	155.0	0.80	ND	271
N/A	6/6/2001	CT C	70,000	4770.0	not taken	5.2	1,920	3,100.0	ND	ND	501
N/A	6/6/2001	CT E	90	45.0	not taken	7.9	101	151.0	ND	0.30	236
N/A	6/6/2001	CT F	50,000	40.4	not taken	7.4	56	144.0	ND	ND	174
N/A	5/30/2001	HT – 2102	1	260.0	not taken	9.8	110	540.0	3.00	0.60	3,970
N/A	5/30/2001	HT – 9149	9,000,000	710.0	not taken	6.4	770	1,100.0	ND	ND	1,020
N/A	5/30/2001	HT – 9249	9,000,000	370.0	not taken	6.5	510	690.0	ND	ND	1,310
Norwegian Wind	8/17/2001	HT – 2229	2,800,000	45.4	0.74	6.1	194	361.0	ND	ND	345
Norwegian Wind	8/17/2001	HT – 9149	3,500,000	144.0	0.30	6.3	325	722.0	ND	ND	1,710
Norwegian Wind	8/17/2001	HT – 9249	16,000,000	76.5	0.48	6.0	324	520.0	ND	ND	1,310
N/A	6/12/2001	HT E	Invalidated	27.0	not taken	7.5	110	230.0	2.50	ND	337
N/A	6/12/2001	HT F	Invalidated	94.0	not taken	7.2	600	1,200.0	4.00	1.80	399
N/A	6/12/2001	HT G	Invalidated	18.0	not taken	7.6	220	380.0	0.30	ND	183
		Minimum	1	18.0	0.30	5.2	56	144.0	ND	ND	174
		Maximum	16,000,000	4770.0	0.74	9.8	1,920	3,100.0	4.00	1.80	3,970
		Geometric Mean	38,933	108.0	0.48	7.0	246	473.9	0.22	0.11	562

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		Median	1,435,000	76.5	0.48	7.2	220	520.0	ND	ND	399
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Table 38. 2001 Large Ship Graywater Laundry – Conventional Pollutants from Double Bottom Tanks

(Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Vessel Name	Sample Date	Sample Name	Fecal Coliform (MPN/100 ml)*	TSS (mg/l)	Ammonia (mg/l)	PH	BOD (mg/l)	COD (mg/l)	Cl, Residual (mg/l)	Cl, Free (mg/l)	Conductivity (umhos/cm)
		MDL	2	1.3	0.03	0.1	1	3.7	0.10	0.10	1
N/A	5/31/2001	DB- Laundry)	Invalidated	23.0	not taken	9.9	120	410.0	0.20	0.10	350
Ocean Princess	7/26/2001	DB (laundry)	2,400,000	18.0	0.39	6.9	75	268.0	0.20	ND	153
N/A	6/21/2001	DB 9 (laundry)	Invalidated	68.0	not taken	9.7	160	410.0	0.40	0.70	465
Regal Princess	8/2/2001	DB Laundry	48,000	43.0	0.40	9.2	164	502.0	1.20	1.00	300
Sea Princess	7/10/2001	DB (Laundry)	Invalidated	14.6	0.13	8.3	79	310.0	0.30	ND	200
N/A	6/7/2001	DB6 (Laundry)	Invalidated	400.0	not taken	4.2	1,400	2,600.0	ND	ND	3,360
Sun Princess	8/22/2001	DB 6 (laundry)	2,400,000	743.0	7.35	6.7	1,320	2,250.0	0.10	0.05	2,830
		Minimum	48,000	15.0	0.13	4.2	75	268.0	ND	ND	153
		Maximum	2,400,000	743.0	7.35	9.9	1,400	2,600.0	1.20	1.00	3,360
		Geometric Mean	651,460	66.0	0.62	7.6	230	634.0	0.22	0.12	545
		Median	2,400,000	43.0	0.40	8.3	160	410.0	0.20	ND	350

Table 39. 2001 Large Ship Graywater Laundry – Conventional Pollutants from Collecting Tanks
(Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Sample Date	Sample Name	Fecal Coliform (MPN/100 ml)*	TSS (mg/l)	Ammonia (mg/l)	pH	BOD (mg/l)	COD (mg/l)	Cl, Residual (mg/l)	Cl, Free (mg/l)	Conductivity (umhos/cm)
	MDL	2	1.3	0.03	0.1	2	3.0	0.10	0.10	1
6/27/2001	HT 7PT (laundry)	30	24.0	not taken	9.2	150	340.0	2.00	2.00	647
6/27/2001	HT 7SB (laundry)	30	20.0	not taken	7.6	49	960.0	ND	ND	9,740
	Minimum	30	20.0	not taken	7.6	49	340.0	ND	0.05	647
	Maximum	30	24.0	not taken	9.2	150	960.0	2.00	2.00	9,740
	Geometric Mean	30	22.0	not taken	8.4	86	571.0	0.32	0.32	2,510
	Median	30	22.0	not taken	8.4	100	650.0	1.03	1.03	5,194

Table 40. 2001 Large Ship Graywater Conventional Pollutants taken with Priority Pollutants

(Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Vessel Name	Tank Type	Water type	Sample Date	Ammonia	PH	BOD5	COD	TSS	total CL	Fecal coliform	Conductivity	Free CL	Oil & grease	TOC	Alkalinity	Total N	phosphorus	TKN	Settable Solids
				mg/l		mg/l	mg/l	mg/l	mg/l	MPU/100ml	Umhos/cm	mg/l	mg/l	mg/l	mg/l as CaCO3	mg/l	mg/l	mg/l	mg/l
			MDL	0.03	0.1	2	3.0	1.3	0.1	2	1	0.1	1.5	1.0	0.5	1.0	0.22	0.1	0.1
Crystal Harmony	CT	Accomo	19-Sep-01	0.251	7.57	296	765	56.6	5	50	891	0.7	0.5	529	193	0.59	42.1	11.1	0.1
Crystal Harmony	CT	Galley	19-Sep-01	0.245	10.2	599	642	266	10	23	878	3.4	0.5	304	242	0.72	15.2	11.1	0.7
Norwegian Wind	CT	Mixed Gray	17-Aug-01	0.301	6.25	325	722	144	0.05	3500000	1710	0.05	130	885	65.5	0.01	5.4	12.9	2.8
Norwegian Wind	CT	Mixed Gray	17-Aug-01	0.481	6	324	520	76.5	0.05	16000000	1310	0.05	98	454	62.7	0.01	4.17	18.5	1.4
Norwegian Sky	DB	Mixed Gray	29-Aug-01	Na	Na	Na	Na	Na	Na	Na	Na	Na	46	Na	Na	Na	Na	Na	Na
Norwegian Sky	DB	Mixed Gray	29-Aug-01	Na	Na	Na	Na	Na	Na	Na	Na	Na	38	Na	Na	Na	Na	Na	Na
Norwegian Sky	DB	Mixed Gray	29-Aug-01	Na	6.75	130	Na	40.3	0.05	700000	296	0.05	Na	305	35.8	Na	1.04	3.7	0.1
Norwegian Sky	DB	Mixed Gray	29-Aug-01	1.92	7.01	171	289	43.6	0.05	300000	355	0.05	Na	279	67.2	0.01	2.76	9.1	0.1
Regal Princess	DB	Galley	2-Aug-01	Na	5.3	1080	1620	Na	0.5	15300000	883	0.5	290	480	33	0.01	7.96	22.2	0.7
Sun	DB	Galley	22-Aug-01	1.38	4.05	2900	3950	1390	0.05	300000	863	0.05	200	1570	Na	Na	19	61.1	35.0

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Vessel Name	Tank Type	Water type	Sample Date	Ammonia	PH	BOD5	COD	TSS	total CL	Fecal coliform	Conductivity	Free CL	Oil & grease	TOC	Alkalinity	Total N	phosphorus	TKN	Settable Solids
				mg/l		mg/l	mg/l	mg/l	mg/l	MPU/100ml	Umhos/cm	mg/l	mg/l	mg/l	mg/l as CaCO3	mg/l	mg/l	mg/l	mg/l
			MDL	0.03	0.1	2	3.0	1.3	0.1	2	1	0.1	1.5	1.0	0.5	1.0	0.22	0.1	0.1
Princess																			
Dawn Princess	DB	Galley	23-Jul-01	Na	4.1	1150	1290	383	0.05	invalid	2870	0.05	Na	336	0.095	0.01	6.1	50	1.3
Ocean Princess	DB	Acc/galley	26-Jul-01	0.65	7.6	Na	521	46.2	Na	230000	521	Na	Na	137	50.2	0.01	3.49	Na	0.2
Ocean Princess	DB	Laundry	26-Jul-01	0.394	6.9	75	268	18	0.2	2400000	153	0.05	Na	65	28.2	0.01	5.54	5.6	0.1
Dawn Princess	DB	Accomo	23-Jul-01	Na	5.2	373	765	102	0.05	invalid	2060	0.05	Na	231	56.5	0.01	5.89	20.9	0.1
Regal Princess	DB	Accomo	2-Aug-01	Na	7.7	151	295	31	3.5	Invalid	953	0.7	47	87	82	0.01	2.18	7.5	0.1
			Minimum	0.016	0.1	1	3.4	1.3	0.05	2	1	0.05	0.5	0.3	0.019	0.01	0.22	0.1	0.1
			Maximum	1.92	10.2	2900	3950	1390	10	16,000,000	2870	3.4	290	1,570	242	0.72	42.1	61.1	35.0
			Geometric Mean	0.528	6.31	368.72	700.08	92.8	0.221	179,261	808.452	0.134	29.146	310.5	38.145	0.02	5.854	14.1	0.4
			Median	0.4375	6.75	324.5	682	66.55	0.05	500,000	883	0.05	47	305.0	59.6	0.01	5.54	12.0	0.2

Table 41. 2001 Large Ship Graywater Volatile Organic Compounds (a-e)

(Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Vessel Name	Sample Name	Water type	Sample Date	1,1-Dichloro Propene	Acrylonitrile	bromodichloromethane	bromoform	Chloroethane	Carbon Tetrachloride	Chloroform	dibromochloromethane	Ethyl Benzene
			MDL	0.5	2.000	0.50	0.50	0.5	0.5	0.5	0.50	0.50
Crystal Harmony	CT	Accomo	19-Sep-01	0.095	0.165	2.5	0.16	7.9	0.085	170	0.16	0.095
Crystal Harmony	CT	Galley	19-Sep-01	0.095	4.000	6	0.16	0.18	0.085	0.125	0.16	0.095
Norwegian Wind	CT	Mixed Gray	17-Aug-01	0.095	0.165	3	0.16	0.18	0.085	19	2.1	0.095
Norwegian Wind	CT	Mixed Gray	17-Aug-01	0.095	0.165	3.4	1.4	0.18	0.085	19	2.4	0.095
Norwegian Sky	DB	Mixed Gray	29-Aug-01	0.095	0.165	2.7	6.3	0.18	0.085	12	3.4	0.52
Norwegian Sky	DB	Mixed Gray	29-Aug-01	0.095	0.165	3.1	6.5	0.18	0.085	8.9	3.5	0.51
Norwegian Sky	DB	Mixed Gray	29-Aug-01	0.095	0.165	0.115	0.16	0.18	0.085	0.125	0.16	0.095
Norwegian Sky	DB	Mixed Gray	29-Aug-01	0.095	0.165	0.115	0.16	0.18	0.085	0.125	0.16	0.095
Regal Princess	DB	Galley	2-Aug-01	1.3	0.165	1.6	0.16	0.18	1.9	140	0.16	0.095
Sun Princess	DB	Galley	22-Aug-01	0.095	0.165	1.3	0.16	0.18	0.085	37	0.16	0.095

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Dawn Princess	DB	Galley	23-Jul-01	0.095	0.165	0.115	31	0.18	0.085	16	1.2	0.51
Ocean Princess	DB	Acc/galley	26-Jul-01	0.095	0.165	3.4	0.16	0.18	0.085	95	0.16	58
Ocean Princess	DB	Laundry	26-Jul-01	0.095	0.165	1.4	0.16	0.18	0.085	31	0.16	1.8
Dawn Princess	DB	Accomo	23-Jul-01	0.095	0.165	1.6	3	0.18	0.085	58	0.16	0.095
Regal Princess	DB	Accomo	2-Aug-01	0.095	0.165	0.115	0.16	16	3.5	0.125	0.16	0.095
			Minimum	0.095	0.165	0.115	0.16	0.18	0.085	0.125	0.16	0.095
			Maximum	1.3	4	6	31	16	3.5	170	3.5	58
			Geometric Mean	0.113	0.204	1.088	0.522	0.312	0.134	7.769	0.392	0.248
			Median	0.095	0.165	1.6	0.16	0.18	0.085	19	0.16	0.095

Table 42. 2001 Large Ship Graywater Volatile Organic Compounds (m-t) (Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Vessel Name	Tank Type	Water type	Sample Date	methyl chloride	methylene chloride	Toluene	Tetrachloroethene	Trichloroethene
			MDL	1.0	1.0	0.50	0.5	0.5
Crystal Harmony	CT	Accomo	19-Sep-01	8.4	0.6	0.125	0.06	0.13
Crystal Harmony	CT	Galley	19-Sep-01	0.6	0.6	0.125	0.06	0.13
Norwegian Wind	CT	Mixed Gray	17-Aug-01	0.6	0.6	0.125	35	5.1
Norwegian Wind	CT	Mixed Gray	17-Aug-01	0.6	0.6	0.125	40	9
Norwegian Sky	DB	Mixed Gray	29-Aug-01	0.6	1.8	1.1	0.7	0.13
Norwegian Sky	DB	Mixed Gray	29-Aug-01	0.6	1.9	0.125	0.78	0.13
Norwegian Sky	DB	Mixed Gray	29-Aug-01	0.6	0.6	0.125	0.06	0.13
Norwegian Sky	DB	Mixed Gray	29-Aug-01	0.6	0.6	0.125	0.06	0.13
Regal Princess	DB	Galley	2-Aug-01	5	8.2	2.2	0.06	0.13
Sun Princess	DB	Galley	22-Aug-01	0.6	0.6	0.125	0.06	0.13
Dawn	DB	Galley	23-Jul-01	0.6	0.6	1.7	0.06	0.13

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Vessel Name	Tank Type	Water type	Sample Date	methyl chloride	methylene chloride	Toluene	Tetrachloroethene	Trichloroethene
			MDL	1.0	1.0	0.50	0.5	0.5
Princess								
Ocean Princess	DB	Acc/galley	26-Jul-01	0.6	0.6	0.125	0.06	0.13
Ocean Princess	DB	Laundry	26-Jul-01	0.6	0.6	0.125	0.96	0.13
Dawn Princess	DB	Accomo	23-Jul-01	0.6	0.6	0.83	0.06	0.13
Regal Princess	DB	Accomo	2-Aug-01	81	12	0.125	0.06	0.13
			Minimum	0.6	0.6	0.125	0.06	0.13
			Maximum	81	12	2.2	40	9
			Geometric Mean	1.143	1.013	0.236	0.238	0.22
			Median	0.6	0.6	0.125	0.06	0.13

Table 43. 2001 Large Ship Graywater Bases-Neutrals & Acids

(Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Vessel Name	Water type	Sample Date	Bis(2-Ethylhexyl)Phthalate	Butylbenzylp h thalate	2,4-dichloroh phenol	Diethylp thalate	2,4,6-trichlorophenol	
			MDL	1.0	1.0	1.0	1.0	1.0
Crystal Harmony	Accomo	19-Sep-01		8.2	0.19	2.2	9.4	0.195
Crystal Harmony	Galley	19-Sep-01		9.1	1.4	42	6.9	40
Norwegian Wind	Mixed Gray	17-Aug-01		55	0.19	0.275	7.9	0.195
Norwegian Wind	Mixed Gray	17-Aug-01		15	0.19	0.275	7.4	0.195
Norwegian Sky	Mixed Gray	29-Aug-01		15	0.19	0.275	17	0.195
Norwegian Sky	Mixed Gray	29-Aug-01		21	0.19	0.275	20	0.195
Norwegian Sky	Mixed Gray	29-Aug-01		0.35	0.19	0.275	0.275	0.195
Norwegian Sky	Mixed Gray	29-Aug-01		0.35	0.19	0.275	0.275	0.195
Regal Princess	Galley	2-Aug-01		3.4	0.19	0.275	7.6	0.195
Sun Princess	Galley	22-Aug-01		3.1	2.7	0.275	3.6	0.195
Dawn Princess	Galley	23-Jul-01		5.8	1.9	0.275	6.3	0.195
Ocean Princess	Acc/galley	26-Jul-01		14	0.19	0.275	12	0.195
Ocean Princess	Laundry	26-Jul-01		17	0.19	0.275	15	0.195
Dawn Princess	Accomo	23-Jul-01		8.9	2.3	0.275	9.6	0.195
Regal Princess	Accomo	2-Aug-01		5.2	0.19	3.2	13	5.6
		Minimum		0.35	0.19	0.275	0.275	0.195
		Maximum		55	2.7	42	20	40

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Vessel Name	Water type	Sample Date	Bis(2-Ethylhexyl)Phthalate	Butylbenzylphthalate	2,4-dichlorophenol	Diethylphthalate	2,4,6-trichlorophenol
			MDL	1.0	1.0	1.0	1.0
		Geometric Mean	6.51	0.357	0.52	5.913	0.348
		Median	8.9	0.19	0.275	7.9	0.195

Table 44. 2001 Large Ship Graywater Bases-Neutrals & Acids (continued) (Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Vessel Name	Tank Type	Water Type	Sample Date	Diethylphthalate	Di-N-Butylphthalate	Di-N-Octylphthalate	Phenol	2,4,6-trichlorophenol
			MDL	1.0	1.0	1.0	1.0	1.0
Crystal Harmony	CT	Accomo	19-Sep-01	9.4	0.7	0.125	0.44	0.195
Crystal Harmony	CT	Galley	19-Sep-01	6.9	1.7	0.125	0.44	40
Norwegian Wind	CT	Mixed Gray	17-Aug-01	7.9	2.9	3.5	0.44	0.195
Norwegian Wind	CT	Mixed Gray	17-Aug-01	7.4	3.8	0.125	0.44	0.195
Norwegian Sky	DB	Mixed Gray	29-Aug-01	17	0.7	0.125	4	0.195
Norwegian Sky	DB	Mixed Gray	29-Aug-01	20	0.7	0.125	0.44	0.195
Norwegian Sky	DB	Mixed Gray	29-Aug-01	0.275	0.7	0.125	0.44	0.195
Norwegian Sky	DB	Mixed Gray	29-Aug-01	0.275	0.7	0.125	0.44	0.195
Regal Princess	DB	Galley	2-Aug-01	7.6	2.2	0.125	0.44	0.195
Sun Princess	DB	Galley	22-Aug-01	3.6	2.7	0.125	0.44	0.195

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Vessel Name	Tank Type	Water Type	Sample Date	Diethylphthalate	Di-N-Butylphthalate	Di-N-Octylphthalate	Phenol	2,4,6-trichlorophenol
			MDL	1.0	1.0	1.0	1.0	1.0
Dawn Princess	DB	Galley	23-Jul-01	6.3	2.9	0.125	1.8	0.195
Ocean Princess	DB	Acc/galley	26-Jul-01	12	14	0.125	0.44	0.195
Ocean Princess	DB	Laundry	26-Jul-01	15	4	0.125	0.44	0.195
Dawn Princess	DB	Accomo	23-Jul-01	9.6	1.9	0.125	0.44	0.195
Regal Princess	DB	Accomo	2-Aug-01	13	3.7	0.125	0.44	5.6
			Minimum	0.275	0.7	0.125	0.44	0.195
			Maximum	20	14	3.5	4	40
			Geometric Mean	5.913	1.944	0.156	0.56	0.348
			Median	7.9	2.2	0.125	0.44	0.195

Table 45. 2001 Large Ship Graywater Metals (Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Vessel Name	Tank Type	Water type	Sample Date	antimony	arsenic III	beryllium	cadmium (TR)	chromium (TR)	copper (TR)	lead (TR)	nickel (TR)	selenium (TR)	silver (TR)	zinc (TR)
			MDL	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Crystal Harmony	CT	Accomo	19-Sep-01	0.75	1.44	0.1	0.0724	2.72	255	4.47	27.9	0.965	0.367	458
Crystal Harmony	CT	Galley	19-Sep-01	0.75	0.434	0.1	0.4	10.6	74.9	2.51	15.4	0.862	1.43	173
Norwegian Wind	CT	Mixed Gray	17-Aug-01	2.74	3.52	0.0867	0.789	4.11	275	78.6	51.9	9.14	0.43	10300
Norwegian Wind	CT	Mixed Gray	17-Aug-01	0.417	2.55	0.0167	0.4	4.88	272	12.6	56	6.63	0.167	1390
Norwegian Sky	DB	Mixed Gray	29-Aug-01	0.75	0.18	0.1	0.4	1.15	0.6	0.7	0.55	2.4	0.45	1.4
Norwegian Sky	DB	Mixed Gray	29-Aug-01	0.75	0.18	0.1	0.4	1.15	0.6	0.7	0.55	2.4	0.45	1.4
Norwegian Sky	DB	Mixed Gray	29-Aug-01	1.01	0.419	0.0157	0.317	1.82	338	1.7	15	0.566	0.231	289
Norwegian Sky	DB	Mixed Gray	29-Aug-01	0.893	0.447	0.0274	0.26	3.1	267	2.25	13.7	0.771	0.138	228
Regal Princess	DB	Galley	2-Aug-01	0.125	0.846	0.0289	0.177	10.7	652	1.06	17.1	1.16	0.294	106
Sun Princess	DB	Galley	22-Aug-01	0.365	2.38	0.0206	0.108	8.76	69.3	2.73	13.2	1.25	1.18	206
Dawn	DB	Galley	23-Jul-01	0.748	8.27	0.1	0.4	13.6	1710	94.7	32.3	31.5	1.68	400

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Vessel Name	Tank Type	Water type	Sample Date	antimony	arsenic III	beryllium	cadmium (TR)	chromium (TR)	copper (TR)	lead (TR)	nickel (TR)	selenium (TR)	silver (TR)	zinc (TR)
			MDL	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Princess														
Ocean Princess	DB	Acc/galley	26-Jul-01	0.364	0.454	0.0273	0.111	3.87	170	5.7	16.9	1.28	0.15	411
Ocean Princess	DB	Laundry	26-Jul-01	0.635	0.192	0.1	0.308	2.05	44.1	3.27	5.25	0.396	0.384	163
Dawn Princess	DB	Accomo	23-Jul-01	0.434	2.43	0.1	0.4	4.96	174	4.25	10.7	8.99	0.901	270
Regal Princess	DB	Accomo	2-Aug-01	0.338	0.559	0.1	0.281	2.62	355	2.75	8.71	1.76	0.431	276
			Minimum	0.125	0.18	0.0157	0.0724	1.15	0.6	0.7	0.55	0.396	0.138	1.4
			Maximum	2.74	8.27	0.1	0.789	13.6	1710	94.7	56	31.5	1.68	10300
			Geometric Mean	0.591	0.835	0.054	0.273	3.833	103.439	4.039	11.084	2.047	0.43	179.346
			Median	0.748	0.559	0.1	0.317	3.87	255	2.75	15	1.28	0.43	270

Table 46. 2001 Large Ship Blackwater Conventional Pollutants(Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

	Treatment Type	Sample Date	Waste Type	Fecal Coliform (MPN/100 ml)	TSS (mg/l)	Ammonia (mg/l)	pH	BOD (mg/l)	COD (mg/l)	Cl, Residual (mg/l)	Cl, Free (mg/l)	Conductivity (umhos/cm)
			MDL	2	1.3	0.03	0.1	2	3.0	0.10	0.10	1
N/A	Advanced	5/14/2001	Black/Gray	2	0.7	1.18	4.0	63	99.7	ND	ND	16.1
Mercury	Advanced	7/31/2001	Black/Gray	1	0.7	0.73	7.4	1	1.7	ND	ND	61.9
Mercury	Advanced	8/8/2001	Black/Gray	1	0.7	0.62	7.1	2	1.7	ND	ND	36.2
Mercury	Advanced	8/8/2001	Black/Gray	1	0.7	0.95	7.0	5	10.4	ND	ND	69.3
Mercury	Advanced	8/9/2001	Black/Gray	1	0.7	0.46	6.8	3	1.7	ND	ND	45.8
Mercury	Advanced	8/10/2001	Black/Gray	1	0.7	0.54	7.2	1	1.7	ND	ND	46.1
Mercury	Advanced	8/10/2001	Black/Gray	1	0.7	0.49	7.0	11	23.2	ND	ND	65
Mercury	Advanced	8/11/2001	Black/Gray	1	0.7	0.27	7.4	2	1.7	ND	ND	85
Mercury	Advanced	8/11/2001	Black/Gray	1	0.7	0.17	7.3	1	12.6	ND	ND	86.8
Mercury	Advanced	9/9/2001	Black/Gray	1	0.7	0.45	7.1	1	14.7	ND	ND	13.2
N/A	Advanced	6/28/2001	Black/Gray	1	0.7	0.64	7.2	ND	ND	ND	ND	ND
Statendam	Advanced	8/1/2001	Black/Gray	1	0.7	17.90	7.6	1	1.7	ND	ND	570
Universe Explorer	Macerator/Chlorinator	7/13/2001	Black/Gray	60	189.0	0.34	7.0	134	1,100.0	5.00	1.40	40,400.00
Universe Explorer	Macerator/Chlorinator	7/13/2001	Black/Gray	5	128.0	3.49	7.1	190	973.0	2.50	0.40	34,400.00
Universe Explorer	Macerator/Chlorinator	8/8/2001	Black/Gray	Invalidated	326.0	11.20	ND	313	ND	ND	ND	ND
Universe Explorer	Macerator/Chlorinator	8/8/2001	Black/Gray	Invalidated	173.0	16.70	7.2	180	1,100.0	ND	ND	28,500.00

Appendix B. Large Ship Sampling Data

	Treatment Type	Sample Date	Waste Type	Fecal Coliform (MPN/100 ml)	TSS (mg/l)	Ammonia (mg/l)	pH	BOD (mg/l)	COD (mg/l)	Cl, Residual (mg/l)	Cl, Free (mg/l)	Conductivity (umhos/cm)
			MDL	2	1.3	0.03	0.1	2	3.0	0.10	0.10	1
			Minimum	1	0.7	0.17	4.0	1	1.7	ND	ND	13.2
			Median	1	0.7	0.63	7.1	3	11.5	ND	ND	67.2
			Maximum	60	326.0	17.90	7.6	313	1,100.0	5.00	1.40	40,400.00
			Geometric Mean	2	2.7	1.08	6.9	7	16.7	0.09	0.07	223

Table 47. 2001 Large Ship Blackwater Conventional Pollutants taken with Priority Pollutants(Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Vessel/Type	Water type	Sample Date	Ammonia		BOD5	COD	TSS	Total CL	Fecal Coliform	Conductivity	Free CL	Oil & Grease	TOC	Alkalinity	Total N	Phosphorus	TKN	Settable Solids
		Units	mg/l	pH	mg/l	mg/l	mg/l	Mg/l	MPU/100ml	Umhos/cm	mg/l	mg/l	mg/l	mg/l as CaCO3	mg/l	mg/l	mg/l	mg/l
		MDL	0.1	1	2	3.0	1.3	0.1	2	1	0.1	1.5	1.0	0.5	1.0	0.01	1.0	0.1
Statendam/Advanced	Mixed BW&GW	20-Sep-01	17.9	7.55	1.7	0.65	0.05	0.05	1	570	0.05	n/a	12.0	99.7	1.9	14.30	19.4	0.1
Mercury/Advanced	Mixed BW&GW	9-Sep-01	0.454	7.05	1.7	14.7	n/a	n/a	n/a	13.2	n/a	0.1	1.0	6.3	0.1	0.05	11.1	0.1
Universe Explorer/Macerator	Mixed BW&GW	8-Aug-01	11.2	7.1	313	1180	326	0.05	n/a	26,400	0.05	n/a	229.0	n/a	0.6	n/a	29.6	10.0
Universe Explorer/Macerator	Mixed BW&GW	8-Aug-01	16.7	7.2	180	1100	173	0.05	n/a	28,500	0.05	35.0	100.0	151.0	0.5	3.79	27.8	4.5
Crystal Harmony /Biological*	BW	19-Aug-01	292	7.85	258	1630	692	0.05	1700000	3,590	0.05	0.2	373.0	743.0	41.2	102.00	363.0	32.0
		Minimum	0.454	7.05	1.7	0.65	0.05	0.05	1	13.2	0.05	0.1	1.0	6.3	0.1	0.05	11.1	0.1
		Maximum	292	7.85	313	1,630	692	0.05	1,700,000	28,500	0.05	35.0	373.0	743.0	41.2	102.00	363.0	32.0
		Geometric Mean	13.472	7.34	33.471	115.12	37.375	0.05	1,303.84	1,826	0.05	0.6	40.0	91.4	1.2	4.08	36.5	1.3
		Median	16.7	7.2	180	1,100	249.5	0.05	850,000.5	3,590	0.05	0.2	100.0	125.4	0.6	9.05	27.8	4.5

* This ship continued to sample but was not discharging in Alaska waters.

Table 48. 2001 Large Ship Blackwater Volatile Organic Compounds (Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Type	Water type	Sample Date	Bromodi			Dibromo	Ethylbenzene		
			chloro methane	Bromoform	Chloroform	Chloro methane		Tetrachloroethene	Trichloroethene
			0.50	0.50	0.50	0.50	0.50	0.50	0.50
Statendam/ Advanced	Mixed BW&GW	20-Sep-01	0.68	0.16	4.2	0.115	0.125	11.00	0.51
Mercury/ Advanced	Mixed BW&GW	9-Sep-01	0.6	0.16	11	0.115	0.125	0.13	0.25
Universe Explorer/ Macerator	Mixed BW&GW	8-Aug-01	4.8	26	22	9.6	0.125	0.13	0.25
Universe Explorer/Macerator	Mixed BW&GW	8-Aug-01	0.6	13	27	3.3	0.53	0.13	0.25
Crystal Harmony DB	Mixed BW&GW	19-Aug-01	0.6	0.16	1.7	0.115	0.125	0.13	0.25
Crystal Harmony /Biological	BW	19-Aug-01	0.6	0.16	0.87	0.115	0.125	0.13	0.25
		Minimum	0.6	0.16	0.87	0.115	0.125	0.13	0.25
		Maximum	4.8	26	27	9.6	0.53	11.00	0.51
		Geometric Mean	0.866	0.778	5.862	0.421	0.159	0.27	0.28
		Median	0.60	0.16	7.6	0.115	0.125	0.13	0.25

Table 49. 2001 Large Ship Blackwater Base-Neutrals and Acids (Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Type	Water Type	Sample Date	1,4 di Chlorobenzene	Bis(2-Ethylhexyl)Phthalate	Butylbenzyl phthalate	Diethylphthalate	Di-N-Butylphthalate	Phenol
		MDL	1.00	1.0	1.00	1.0	1.0	1.0
Statendam/Advanced	Mixed BW&GW	20-Sep-01	0.18	0.19	0.275	0.7	3.2	0.35
Mercury/Advanced	Mixed BW&GW	9-Sep-01	0.18	4.2	0.275	0.7	0.165	0.35
Universe Explorer/Macerator	Mixed BW&GW	8-Aug-01	3.9	0.19	0.275	0.7	0.165	0.35
Universe Explorer/Macerator	Mixed BW&GW	8-Aug-01	0.18	3.1	0.275	2.3	2.9	2.3
Crystal Harmony DB	Mixed BW&GW	19-Aug-01	0.18	7	1.2	0.7	3.7	0.35
Crystal Harmony /Biological	BW	19-Aug-01	0.18	0.19	0.275	0.7	1.8	0.35
		Minimum	0.18	0.19	0.275	0.7	0.165	0.35
		Maximum	3.9	7	1.2	2.3	3.7	2.3

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Appendix B. Large Ship Sampling Data

		Geometric						
		Mean	0.301	0.925	0.352	0.853	1.091	0.479
		Median	0.18	1.65	0.275	0.70	2.35	0.35

Table 50. 2001 Large Ship Blackwater Metals

(Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Type	Water type	Sample Date	Arsenic III	Antimony(Tr)	Beryllium	Cadmium (TR)	Chromium (TR)	Copper (TR)	Lead (TR)	Nickel (TR)	Selenium (TR)	Silver (TR)	Zinc (TR)
		MDL	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Statendam/ Advanced	Mixed BW&GW	20-Sep-01	1.09	1.8	0.4	1.15	0.685	2.66	0.0628	18.3	1.05	1.4	32.4
Mercury/ Advanced	Mixed BW&GW	9-Sep-01	0.1	0.104	0.4	1.15	0.196	0.501	0.195	0.688	0.213	1.4	3.02
Universe Explorer/ Macerator	Mixed BW&GW	8-Aug-01	32.8	1.8	0.465	1.15	8.12	203	3.67	25.4	105	1.4	228
Universe Explorer/Macerator	Mixed BW&GW	8-Aug-01	36	1.8	0.4	1.15	6.92	98.7	0.55	22.7	155	1.4	111
Crystal Harmony DB	Mixed BW&GW	19-Aug-01	53.4	22.7	0.381	1.15	0.6	169	3.43	16.2	152	1.66	268
Crystal Harmony /Biological	BW	19-Aug-01	9.03	1.99	0.4	2.52	2.61	1670	80.3	38.1	8.31	0.983	3020
		Minimum	0.1	0.104	0.381	1.15	0.196	0.501	0.0628	0.688	0.213	0.983	3.02
		Maximum	53.4	22.7	0.465	2.52	8.12	1670	80.3	38.1	155	1.66	3020
		Geometric Mean	6.292	1.736	0.407	1.311	1.509	44.278	1.377	12.84	12.895	1.358	112.286
		Median	20.915	1.8	0.4	1.15	1.6475	133.85	1.99	20.5	56.655	1.4	169.5

2000 Large ship data

(Samples Taken before July 1, 2001 are part of the voluntary program and the ship name withheld).

Table 51. 2000 Large Ship Accommodations & Laundry Graywater – Conventional Pollutants

Sample Date	Ammonia	pH	BOD	COD	TSS	T Cl	FECAL	FREE CL
	mg/L		mg/L	mg/L	mg/L	Mg/L	MPN/100ml	mg/L
MDL	0.03	0.1	2	3.0	1.3	0.10	2	0.10
20-Sep-00	0.61	7.3	69	240.0	30.0	ND	1	ND
13-Sep-00	ND	ND	ND	ND	ND	2.80	230	0.10
25-Aug-00	45.00	6.7	58	ND	200.0	ND	1	0.40
Minimum	0.61	6.7	58	240.0	30.0	ND	1	ND
Maximum	45.00	7.3	69	240.0	200.0	2.80	230	0.40
Geometric Mean	5.24	7.0	63	240.0	77.5	0.37	6	0.13
Median	25.12	6.8	61	240.0	138.7	0.37	4	0.26

Table 52. 2000 Large Ship Accommodations Graywater Conventional Pollutants

Sample Date	Ammonia	pH	BOD	COD	TSS	T Cl	FECAL	FREE CL
	mg/l		mg/l	mg/l	mg/l	mg/l	MPN/100ml	mg/l
MDL	0.03	0.1	2	3.0	1.3	0.10	2	0.10
6-Sep-00	0.88	9.0	500	ND	110.0	ND	ND	ND
18-Sep-00	ND	ND	ND	ND	ND	0.05	1,200	ND
18-Sep-00	49.00	7.8	210	1,340.0	800.0	1.50	9	ND
Minimum	0.88	7.8	210	1,340.0	110.0	0.05	9	ND
Maximum	49.00	9.0	500	1,340.0	800.0	1.50	1,200	ND
Geometric Mean	6.57	8.4	324	1,340.0	297.0	0.27	104	ND
Median	24.94	8.4	355	1,340.0	455.0	0.78	605	ND

Table 53. 2000 Large Ship Laundry Graywater Conventional Results

Sample	Sample	Ammonia	pH	BOD	COD	TSS	T Cl	FECAL	FREE CL
Date	Name								
		mg/L		mg/L	mg/L	mg/L	mg/L	MPN/100ml	mg/L
	MDL	0.03	0.1	2	3.0	1.3	0.10	2	0.10
29-Aug-00	Gry laundry	0.17	7.6	120	400.0	39.0	not taken	8,000	ND
7-Aug-00	Gry laundry	0.39	10.5	70	230.0	4.0	0.85	1	0.40
22-Aug-00	Gry stbrd laundry	0.10	9.6	7	180.0	54.0	not taken	1	ND
29-Sep-00	Gry laundry	not taken	not taken	not taken	not taken	not taken	0.50	not taken	not taken
20-Sep-00	Gry laundry coll. Tank	not taken	not taken	not taken	not taken	not taken	1.00	1	0.80
3-Aug-00	Gry laundry	3.00	9.2	85	300.0	19.0	ND	700	ND
12-Aug-00	Gry laundry room	10.00	3.0	290	1,310.0	420.0	ND	1	ND
6-Sep-00	Gry laundry	0.01	7.6	86	270.0	46.0	ND	1	ND
2-Sep-00	Gry laundry	0.75	10.2	98	300.0	38.0	1.00	1	0.40
18-Sep-00	Gry laundry tank	not taken	not taken	not taken	not taken	not taken	ND	30	0.05
Minimum		0.01	3.0	7	180.0	4.0	0.05	1	0.05
Maximum		10.00	10.5	290	1,310.0	420.0	1.00	8,000	0.80
Geometric Mean		0.38	7.7	74	340.0	38.0	0.20	8	0.11

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Date	Sample Name	Ammonia	pH	BOD	COD	TSS	T Cl	FECAL	FREE CL
		mg/L		mg/L	mg/L	mg/L	mg/L	MPN/100ml	mg/L
	MDL	0.03	0.1	2	3.0	1.3	0.10	2	0.10
Median		0.39	9.2	86	300.0	39.0	0.28	1	0.05

Table 54. 2000 Large Ship Galley Graywater Conventional Pollutants

Sample	Waste	Ammonia	pH	BOD	COD	TSS	T CI	FECAL	FREE
Date	Type								CL
		mg/L		mg/L	mg/L	Mg/L	mg/L	MPN/100ml	mg/L
	MDL	0.03	0.1	2	3.0	1.3	0.10	2	0.10
6-Sep-00	Gray (Galley)	2.00	7.3	11	25.0	21.0	ND	ND	ND
13-Sep-00	Gray (Galley)	0.63	9.5	1,210	1,730.0	320.0	ND	ND	ND
13-Sep-00	Gray (Galley)	ND	ND	ND	ND	ND	2.50	3,000	0.20
29-Sep-00	Gray (Galley)	ND	ND	ND	ND	ND	4.00	ND	4.00
3-Aug-00	Gray (Galley)	1.60	6.1	1,720	1,090.0	257.0	ND	ND	ND
5-Aug-00	Gray (Galley)	11.00	7.1	180	430.0	140.0	ND	ND	ND
29-Aug-00	Gray (Galley)	9.50	6.9	490	790.0	160.0	0.05	28,000	ND
2-Sep-00	Gray (Galley)	0.01	5.6	330	785.0	190.0	0.05	9,000,000	ND
18-Sep-00	Gray (Galley)	ND	ND	ND	ND	ND	0.05	130,000	ND
9-Sep-00	Gray (Galley)	2.37	6.8	3,190	10,420.0	4,500.0	0.05	5	1.20
18-Sep-00	Gray (Galley)	8.20	3.7	37,030	69,080.0	29,400.0	0.05	ND	ND
Minimum		0.01	3.7	11	25.0	21.0	0.05	5	ND
Maximum		11.00	9.5	37,030	69,080.0	29,400.0	4.00	9,000,000	4.00
Geometric Mean		1.55	6.4	728	1,317.0	420.0	0.16	13,750	0.18

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample	Waste	Ammonia	pH	BOD	COD	TSS	T Cl	FECAL	FREE CL
Date	Type	mg/L		mg/L	mg/L	Mg/L	mg/L	MPN/100ml	mg/L
	MDL	0.03	0.1	2	3.0	1.3	0.10	2	0.10
Median		2.19	6.9	850	940.0	223.5	0.05	28,000	ND

Table 55. Ship Mixed Graywater held in Collecting Tanks - Conventional Pollutants

Sample	Ammonia	pH	BOD	COD	TSS	T Cl	FECAL	FREE CL
Date	mg/L		mg/L	mg/L	mg/L	mg/L	MPN/100ml	mg/L
MDL	0.03	0.1	2	3.0	1.3	0.10	2	0.10
7-Aug-00	3.40	7.2	81	190.0	67.0	ND	50,000	ND
13-Sep-00	not taken	not taken	not taken	not taken	not taken	not taken	30	not taken
2-Aug-00	1.40	6.1	1,120	2,060.0	497.0	ND	350,000	ND
29-Sep-00	0.12	7.5	730	440.0	190.0	ND	invalid	ND
29-Sep-00	5.30	6.7	190	286.0	86.0	ND	170,000	ND
3-Aug-00	1.70	4.7	86	1,250.0	171.0	ND	1,300,000	ND
21-Sep-00	2.10	6.6	180	370.0	110.0	ND	280,000	ND
25-Aug-00	3.80	3.8	Invalidated	15,700.0	3,000.0	ND	7,000	ND
22-Sep-00	1.20	7	150	410.0	69.0	ND	70,000	ND
5-Aug-00	0.45	10.3	440	850.0	98.0	ND	490,000	ND
5-Aug-00	0.99	6.8	89	410.0	37.0	0.20	22,000	ND
5-Aug-00	0.26	4.7	780	1,160.0	294.0	ND	9,200,000	ND
5-Aug-00	0.50	6.4	170	350.0	57.0	0.10	16,000,000	ND
12-Aug-00	2.00	9.1	150	170.0	67.0	ND	220,000	ND
15-Aug-00	1.30	4.8	1,030	1,530.0	500.0	ND	invalid	ND
12-Aug-00	1.10	5.7	810	1,190.0	150.0	ND	1,600	ND
12-Aug-00	0.52	7.7	130	380.0	54.0	ND	800,000	ND
29-Aug-00	2.10	7.2	130	250.0	51.0	ND	8,000	ND
18-Sep-00	1.40	8	230	400.0	230.0	ND	invalid	ND
9-Sep-00	26.90	6.8	170	470.0	110.0	ND	110,000	ND
20-Sep-00	2.90	7.6	150	290.0	51.0	1.20	invalid	0.60

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample	Ammonia	pH	BOD	COD	TSS	T Cl	FECAL	FREE CL
Date								
	mg/L		mg/L	mg/L	mg/L	mg/L	MPN/100ml	mg/L
MDL	0.03	0.1	2	3.0	1.3	0.10	2	0.10
9-Aug-00	not taken	7.9	40	400.0	62.0	ND	invalid	3.50
14-Sep-00	not taken	6.6	270	360.0	73.0	ND	2,200,000	ND
Minimum	0.12	3.8	40	170.0	37.0	ND	30	ND
Maximum	26.90	10.3	1,120	15,700.0	3,000.0	1.20	16,000,000	3.50
Geometric Mean	1.41	6.62	223	573.0	124.0	0.06	118,052	0.07
Median	1.40	6.8	170	405.0	92.0	ND	170,000	ND

Table 56. Ship Mixed Graywater held in Ballast Tanks - Conventional Pollutants

Date	Ammonia	pH	BOD	COD	TSS	T CI	FECAL	FREE CL
	mg/L		mg/L	mg/L	mg/L	mg/L		mg/L
MDL	0.03	0.1	2.0	3.0	1.3	0.10	2	0.10
22-Aug-00	1.20	6.00	1040.0	1,140.0	480	0.00	32,000,000	0.00
22-Aug-00	1.70	5.50	420.0	860.0	250	0.00	27,000	0.00
01-Aug-00	24.00	5.80	1100.0	3,860.0	623	0.10	3,500,000	0.10
02-Aug-00	15.00	4.80	1270.0	3,460.0	612	0.00	490,000	0.00
13-Sep-00	0.76	6.20	480.0	720.0	120	0.00	16,000,000	0.00
29-Sep-00	0.00	7.80	4.8	320.0	18	0.00	invalid	0.00
20-Sep-00	missing	missing	missing	missing	missing	0.00	170,000	0.00
20-Sep-00	missing	missing	missing	missing	missing	0.00	50,000	0.00
20-Sep-00	30.00	5.90	420.0	1,020.0	250	0.00	invalid	0.00
21-Sep-00	48.00	7.20	1190.0	2,760.0	2060	0.00	5,000,000	0.00
22-Sep-00	0.18	6.40	110.0	280.0	55	0.00	900,000	0.00
06-Aug-00	0.76	5.50	360.0	780.0	120	0.00	invalid	0.00
15-Aug-00	missing	missing	missing	missing	missing	missing	5,000,000	missing
Minimum	0.00	4.80	4.8	280.0	18	0.00	27,000	0.00
Maximum	48.00	7.80	1270.0	3,860.0	2060	0.10	32,000,000	0.10
Median	1.45	5.95	450.0	940.0	250	0.00	2,200,000	0.00

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Date	Ammonia	pH	BOD	COD	TSS	T Cl	FECAL	FREE CL
	mg/L		mg/L	mg/L	mg/L	mg/L		mg/L
Geometric Mean							1,163,188	

Table 57. 2000 Large Ship Graywater Priority Pollutants (Table 1 of 3)

Sample Name	Ethylbenzene	Naphthalene	Toluene	Phenol	Heptachlor	Bis(2-Ethylhexyl) Phthalate	Butylbenzyl Phthalate	Diethyl	Dimethyl	Di-N-Butyl Phthalate	Acena Phthene	Fluoran Thene	Fluorene	Phenan Threne
								Phthalate	Phthalate					
MDL	0.500	2.000	0.500	1.00	0.150	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.440	1.000
Ballast tank 5S	0.180	0.100	0.770	0.425	0.075	17.000	0.180	3.700	0.250	2.500	0.240	0.260	0.220	0.260
Composite graywater	0.180	0.100	0.260	0.425	0.075	10.000	0.180	3.000	0.250	1.100	0.240	0.260	0.220	0.260
Composite# 4,6,11	0.180	0.100	0.260	0.425	0.075	11.000	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Gray water accommodation tank 4	0.180	0.100	0.260	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Gray water composite mixed	0.180	0.100	0.260	0.425	0.075	0.340	0.180	1.100	0.250	6.500	0.240	0.260	0.220	0.260
Gray water galley tank 4	0.180	0.100	0.260	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Gray water overboard	0.180	0.100	0.260	0.425	0.075	32.000	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Graywater composite	0.180	0.100	0.260	2.900	0.075	15.000	1.600	5.800	0.250	8.400	0.240	0.260	0.220	0.260
Graywater port	1.600	0.100	1.400	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Graywater starboard	2.600	0.100	1.700	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Gry 78 port	0.530	0.100	0.470	0.425	0.075	20.000	1.100	4.500	0.250	2.200	0.240	0.260	0.220	1.400
Gry accom	0.180	0.100	11.410	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Gry ballast #6	1.500	0.100	1.300	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Gry comp	0.180	0.100	0.260	0.425	0.082	183.000	1.200	13.000	0.250	8.100	0.240	0.260	0.220	0.260

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Ethylbenzene	Naphthalene	Toluene	Phenol	Heptachlor	Bis(2-Ethylhexyl) Phthalate	Butylbenzyl Phthalate	Diethyl	Dimethyl	Di-N-Butyl Phthalate	Acena Phthene	Fluoran Thene	Fluorene	Phenan Threne
								Phthalate	Phthalate					
MDL	0.500	2.000	0.500	1.00	0.150	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.440	1.000
Gry composite	0.180	0.100	0.260	1.200	0.075	112.000	9.600	12.800	0.250	10.300	0.240	0.260	0.220	0.260
Gry DHTS composite	0.180	3.000	0.260	0.425	0.075	35.000	0.180	6.000	0.250	5.300	7.700	1.200	4.100	3.100
Gry gal/acco	0.180	0.100	0.260	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Gry galley	0.180	0.100	1.300	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Gry galley #11	1.100	0.100	0.260	0.425	0.075	0.340	0.180	5.800	0.250	0.700	0.240	0.260	0.220	0.260
Gry galley tank #11	0.180	0.100	0.260	0.425	0.075	3.700	0.180	6.300	0.250	3.300	0.240	0.260	0.220	0.260
Gry galley tank H	0.180	0.100	0.260	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Gry HTS composite	0.180	0.100	0.260	0.425	0.075	51.000	1.100	8.500	0.250	6.800	0.240	0.260	0.220	0.260
Gry laundry	0.180	0.100	0.260	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Gry pump accom.	2.800	0.100	1.700	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Gry tank #2		0.100	0.260	0.425	0.075	20.000	0.180	5.800	0.250	2.100	0.240	0.260	0.220	0.260
Gry tank 3C	0.680	0.100	0.260	0.425	0.075	7.600	0.180	3.600	0.250	3.300	0.240	0.260	0.220	0.260
Gry tank 7 port and starboard	0.680	0.100	0.260	3.100	0.075	14.000	0.180	11.000	0.250	3.000	0.240	0.260	0.220	0.260
Gry tank C	0.590	0.100	0.260	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Gry Tank F	0.180	0.100	0.260	0.425	0.075	13.000	0.180	15.000	1.100	1.600	0.240	0.260	0.220	0.260

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Ethylbenzene	Naphthalene	Toluene	Phenol	Heptachlor	Bis(2-Ethylhexyl) Phthalate	Butylbenzyl Phthalate	Diethyl	Dimethyl	Di-N-Butyl Phthalate	Acena Phthene	Fluoran Thene	Fluorene	Phenan Threne
								Phthalate	Phthalate					
MDL	0.500	2.000	0.500	1.00	0.150	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.440	1.000
Grywtr 5 tank (composite)	0.180	0.100	0.260	2.200	0.075	19.000	0.610	9.700	0.250	0.700	0.240	0.260	0.220	0.260
Grywtr laundry room	24.000	0.100	1.700	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Grywtr shaft tank	1.000	0.100	0.260	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Grywtr stabilizer port tank	0.180	0.100	0.260	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Main graywater	0.180	0.100	0.260	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Minimum	0.180	0.100	0.260	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260
Maximum	24.000	3.000	11.410	3.100	0.082	183.000	9.600	15.000	1.100	10.300	7.700	1.200	4.100	3.100
Geometric Mean	0.362	0.111	0.416	0.516	0.075	2.359	0.263	1.144	0.261	1.397	0.266	0.272	0.240	0.294
Median	0.180	0.100	0.260	0.425	0.075	0.340	0.180	0.260	0.250	0.700	0.240	0.260	0.220	0.260

Table 58. 2000 Large Ship Graywater Priority Pollutants (Table 2 of 3)

Sample Name	1,4 Dichloro benzene	Chloro ethane	1,2- Dichloro ethane	1,1,2,2,- Tetra chloroethane	Bis(2- Chloro ethoxy) Methane	Carbon tetra chloride	Chloroform	Tetrachloro ethene	Trichloro ethene	2,4,6- Trichlorophenol	Bromoform	Dibromo chloro methane	Bromodichloromethane	Methyl chloride
MDL	1.000	0.500	0.500	0.500	1.000	0.500	0.500	0.500	0.500	1.000	0.500	0.500	0.500	1.000
Ballast tank 5S	0.140	0.180	0.750	0.110	0.200	0.090	15.000	230.000	71.000	0.250	0.160	0.160	1.100	0.600
Composite graywater	0.140	0.180	0.190	0.110	0.200	0.090	0.130	0.060	0.130	2.300	0.160	0.160	0.120	0.600
Composite# 4,6,11	0.140	0.180	0.190	0.110	0.200	0.090	0.130	0.060	0.130	0.250	0.160	0.160	0.120	0.600
Gray water accumulation tank 4	0.140	0.180	0.190	0.110	0.200	0.090	4.000	0.060	0.130	0.250	2.100	2.800	2.000	0.600
Gray water composite (galley,accumulation,laundry)	0.140	0.180	0.190	0.110	14.000	0.090	0.130	0.060	0.130	0.250	0.160	0.160	0.120	0.600
Gray water galley tank 4	0.140	0.180	0.190	0.110	0.200	0.090	2.000	0.060	0.130	0.250	1.200	1.300	0.980	0.600
Gray water overboard	0.140	0.180	0.520	0.110	0.200	0.090	1.800	0.060	0.130	0.250	0.160	0.160	0.120	0.600
Graywater composite	0.140	0.180	0.190	0.110	0.200	0.090	0.130	0.060	0.130	0.250	0.160	0.160	0.120	0.600
Graywater port	0.140	0.180	0.190	0.110	0.200	0.090	15.000	0.060	0.130	0.250	0.160	0.160	0.120	0.600
Graywater starboard	0.140	0.180	0.190	0.110	0.200	0.090	19.000	0.060	0.130	0.250	1.100	0.160	0.120	0.600
Gry 78 port	0.140	0.180	0.190	0.110	0.200	0.090	44.000	0.060	0.130	0.250	0.160	0.160	1.300	0.600
Gry accom	0.140	0.180	0.700	0.910	0.200	1.800	313.000	11.650	0.670	0.250	41.200	27.100	29.520	28.300
Gry ballast #6	0.140	0.180	0.190	0.110	0.200	0.090	4.100	0.740	0.130	0.250	0.160	1.400	1.500	0.600
Gry comp	11.000	0.180	0.190	0.110	0.200	0.090	0.130	0.060	0.130	0.250	0.160	0.160	0.120	0.600

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	1,4 Dichloro	Chloro	1,2- Dichloro	1,1,2,2,- Tetra chloroethane	Bis(2- Chloro ethoxy)	Carbon tetra	Chloroform	Tetrachloro	Trichloro	2,4,6- Trichlorophenol	Bromoform	Dibromo chloro	Bromodichloromethane	Methyl chloride
	benzene	ethane	ethane	Methane	chloride	ethene		ethene	methane					
MDL	1.000	0.500	0.500	0.500	1.000	0.500	0.500	0.500	0.500	1.000	0.500	0.500	0.500	1.000
Gry composite	2.200	0.180	0.190	0.110	0.200	0.090	0.130	0.060	0.130	0.250	0.160	0.160	0.120	0.600
Gry gal/acco	0.140	0.180	0.190	0.110	0.200	0.090	19.000	0.060	0.130	0.250	0.160	0.160	1.000	0.600
Gry galley	0.140	0.180	0.190	1.000	0.200	0.090	292.800	2.200	0.130	0.250	0.160	0.160	2.580	0.600
Gry galley #11	0.140	0.180	0.190	0.110	0.200	0.090	1.400	0.060	0.130	0.250	1.900	0.160	0.120	0.600
Gry galley tank #11	0.140	1.500	0.190	0.110	0.200	0.090	48.000	0.060	0.130	0.250	9.800	14.000	16.000	3.000
Gry galley tank H	0.140	0.180	0.760	0.110	0.200	0.090	14.000	0.060	0.130	0.250	0.160	0.160	0.120	0.600
Gry HTS composite	0.140	0.180	0.190	0.110	0.200	0.090	0.130	0.060	0.130	0.250	0.160	0.160	0.120	0.600
Gry laundry	0.140	0.180	0.190	0.110	0.200	0.090	207.000	954.000	8.200	0.250	0.160	0.160	0.570	0.600
Gry pump accom.	0.140	0.180	0.190	0.110	0.200	0.090	2.300	0.060	0.130	0.250	0.160	0.160	0.120	0.600
Gry tank #2	0.140	0.180	0.650	0.110	0.200	0.090	1.800	7.700	1.600	0.250	0.160	0.160	0.120	0.600
Gry tank 3C	0.140	0.180	0.190	0.110	0.200	0.090	26.000	0.060	0.130	0.250	0.160	0.160	0.510	0.600
Gry tank 7 port and starboard	0.140	0.180	0.190	0.110	0.200	0.090	16.000	0.060	0.130	0.250	1.200	1.100	2.000	0.600
Gry tank C	0.140	0.180	0.190	0.110	0.200	0.090	15.000	0.060	0.130	0.250	0.160	0.860	2.100	0.600
Gry Tank F	0.140	0.180	0.190	0.110	0.200	0.090	6.500	4.200	0.130	0.250	0.540	4.200	1.100	0.600
Grywtr 5 tank (composite)	0.140	0.180	0.190	0.110	0.200	0.090	0.130	0.060	0.130	0.610	0.160	0.160	0.120	0.600
Grywtr laundry room	0.140	0.180	0.190	0.110	0.200	0.090	13.000	2.300	0.760	0.250	0.160	0.160	0.120	0.600
Grywtr shaft tank	0.140	0.180	0.190	0.110	0.200	0.090	34.000	0.060	0.130	0.250	0.160	0.160	0.120	23.000

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	1,4 Dichloro	Chloro	1,2- Dichloro	1,1,2,2,- Tetra chloroethane	Bis(2- Chloro ethoxy)	Carbon tetra	Chloroform	Tetrachloro	Trichloro	2,4,6- Trichlorophenol	Bromoform	Dibromo chloro	Bromodichloromethane	Methyl chloride
	benzene	ethane	ethane	Methane	chloride	ethene		ethene	methane					
MDL	1.000	0.500	0.500	0.500	1.000	0.500	0.500	0.500	0.500	1.000	0.500	0.500	0.500	1.000
Grywtr stabilizer port tank	0.140	0.180	0.190	0.110	0.200	0.090	25.000	0.060	0.130	0.250	0.160	0.160	0.690	0.600
Main graywater	0.140	0.180	0.910	0.110	0.200	0.090	15.000	0.060	0.130	0.250	1.300	0.650	0.700	0.600
Starboard graywater	0.140	0.180	0.190	0.110	0.200	0.090	96.000	0.460	0.130	0.250	32.000	64.000	89.000	0.600
Minimum	0.140	0.180	0.190	0.110	0.200	0.090	0.130	0.060	0.130	0.250	0.160	0.160	0.120	0.600
Maximum	11.000	1.500	0.910	1.000	14.000	1.800	313.000	954.000	71.000	2.300	41.200	64.000	89.000	28.300
Geometric Mean	0.177	0.196	0.235	0.128	0.232	0.100	4.081	0.219	0.218	0.281	0.317	0.334	0.415	0.808
Median	0.140	0.180	0.190	0.110	0.200	0.090	13.500	0.060	0.130	0.250	0.160	0.160	0.315	0.600

Table 59. 2000 Large Ship Graywater Priority Pollutants (Table 3 of 3)

Sample Name	Methylene chloride	Cadmium (TR)	Chromium (TR)	Copper (TR)	Cyanide (total)	Lead (TR)	Mercury (TR)	Nickel (TR)	Silver (TR)	Zinc(TR)
					mg/L					
MDL	1.000	0.150	0.150	0.150	1.500	0.150	0.150	0.150	0.150	0.150
Ballast tank 5S	0.600	0.014	0.038	150.000	0.001	0.023	0.025	46.000	0.016	460.000
Composite graywater	0.600	0.014	0.038	260.000	22.000	7.500	0.025	0.090	0.016	560.000
Composite# 4,6,11	0.600	0.014	0.038	2,200.000	0.001	0.023	0.025	0.090	1.500	860.000
Gray water accumulation tank 4	0.600	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Gray water composite (galley,accumulation,laundry)	0.600	0.014	0.038	230.000	0.001	21.000	0.025	0.090	0.016	480.000
Gray water galley tank 4	0.600	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Gray water overboard	0.600	0.290	4.000	62.000	0.001	2.500	0.330	0.090	0.300	350.000
Graywater composite	0.600	0.480	30.000	1,203.400	0.001	21.400	0.025	99.000	7.500	770.000
Graywater starboard	0.600	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Gry 78 port	0.600	0.014	0.038	180.000	22.000	0.023	0.025	0.090	2.300	750.000
Gry accom	4.800	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Gry ballast #6	3.200	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Gry comp	0.600	0.014	14.000	4,320.000	0.001	387.000	0.330	184.000	4.900	2,860.000
Gry composite	0.600	0.014	57.000	710.000	0.001	28.000	0.025	676.000	4.000	1,460.000

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Methylene chloride	Cadmium (TR)	Chromium (TR)	Copper (TR)	Cyanide (total)	Lead (TR)	Mercury (TR)	Nickel (TR)	Silver (TR)	Zinc(TR)
					mg/L					
MDL	1.000	0.150	0.150	0.150	1.500	0.150	0.150	0.150	0.150	0.150
Gry DHTS composite	0.600	0.014	0.038	720.000	0.001	0.023	0.025	46.000	0.016	600.000
Gry gal/acco	0.600	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Gry galley	41.000	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Gry galley #11	0.600	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Gry galley tank #11	0.600	0.014	53.000	650.000	0.001	62.000	0.025	0.090	0.016	530.000
Gry galley tank H	0.600	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Gry HTS composite	0.600	0.014	0.038	830.000	0.001	0.023	0.025	44.000	0.016	400.000
Gry laundry	67.000	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Gry pump accom.	0.690	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Gry tank #2	0.600	0.014	0.038	130.000	0.001	0.023	0.025	85.000	0.016	340.000
Gry tank 3C	0.600	12.000	0.038	1,500.000	0.001	0.023	0.025	140.000	0.016	540.000
Gry tank 7 port and starboard	0.600	0.014	0.038	150.000	0.001	0.023	0.025	0.090	0.016	740.000
Gry tank C	0.600	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Gry Tank F	1.100	0.014	0.038	210.000	0.001	0.023	0.025	0.090	0.016	330.000
Grywtr 5 tank (composite)	0.600	0.350	0.038	480.000	0.001	14.000	0.025	0.090	3.500	0.050
Grywtr laundry room	0.600	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Grywtr shaft tank	0.600	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Name	Methylene chloride	Cadmium (TR)	Chromium (TR)	Copper (TR)	Cyanide (total)	Lead (TR)	Mercury (TR)	Nickel (TR)	Silver (TR)	Zinc (TR)
					mg/L					
MDL	1.000	0.150	0.150	0.150	1.500	0.150	0.150	0.150	0.150	0.150
Grywtr stabilizer port tank	0.600	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Main graywater	0.600	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Starboard graywater	0.600	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Minimum	0.600	0.014	0.038	0.020	0.001	0.023	0.025	0.090	0.016	0.050
Maximum	67.000	12.000	57.000	4,320.000	22.000	387.000	0.330	676.000	7.500	2,860.000
Geometric Mean	0.891	0.023	0.097	2.973	0.001	0.117	0.029	0.473	0.044	4.229
Median	0.600	0.014	0.038	31.010	0.001	0.023	0.025	0.090	0.016	0.050

Table 60. 2000 Large Ship Mixed Black and Graywater held in Double Bottom Tanks - Conventional results

Sample Date	Waste Type	Ammonia	pH	BOD	COD	TSS	T CI	FECAL	FREE CL
		mg/L		mg/L	mg/L	mg/L	mg/L	MPN/100ml	mg/L
	MDL	0.03	0.1	2	3.0	1.3	0.10	2	0.10
25-Aug-00	Blk/Gry DB	0.19	5.0	650	230.0	380.0	ND	50,000	ND
30-Jul-00	Blk/Gry DB	57.00	5.9	220	395.0	40.0	ND	35,000	ND
10-Sep-00	Blk/Gry RO treated	1.22	5.9	80	130.0	not taken	ND	1	ND
10-Sep-00	Blk/Gry RO treated,	1.24	6.1	75	130.0	not taken	ND	1	ND
19-Aug-00	Gry/Blk aft	8.10	7.5	110	670.0	130.0	1.00	4,000	0.20
19-Aug-00	Gry/blk forward	13.00	7.4	130	710.0	92.0	1.30	510	0.75
29-Aug-00	Gry/Blk aft	3.70	7.8	72	135.0	89.0	1.10	30,000	0.70
29-Aug-00	Gry/Blk forward	8.50	7.6	150	135.0	150.0	1.10	60,000	0.75
5-Aug-00	Gry/Blk DB tank	17.00	7.0	110	710.0	55.0	ND	16,000,000	ND
12-Aug-00	Gry/Blk DB tank	13.00	6.3	180	680.0	110.0	ND	3,000,000	ND
6-Aug-00	Gry/Blk	200.00	8.3	250	1,030.0	320.0	ND	5,000,000	ND
	DB								
	Minimum	0.19	5.0	72	130.0	40.0	ND	1	ND
	Maximum	200.00	8.3	650	1,030.0	380.0	1.30	16,000,000	0.75
	Geometric Mean	7.12	6.7	146	338.0	119.0	0.16	12,824	0.12
	Median	8.50	7.0	130	395.0	110.0	ND	35,000	ND

Table 61. 2000 Large Ship Blackwater Conventional Pollutants

Sample Date	Sample Name	Waste Type	Ammonia	pH	BOD	COD	TSS	T Cl	FECAL	FREE CL
		Units	mg/L		Mg/L	mg/L	Mg/L	mg/L	mg/L	mg/L
		MDL	0.03	0.1	2	3.0	1.30	0.10	2	0.10
2-Aug-00	Composite	Blackwater	100.00	5.3	75	not taken	236.00	composite	composite	Composite
13-Sep-00	Composite	Blackwater	64.10	6.9	130	not taken	650.00	1.50	4,410	1.13
29-Sep-00	Composite	Blackwater	66.00	7.6	150	1,400.00	1,430.00	0.11	182,436	0.08
29-Sep-00	Composite	Blackwater	52.00	7.3	250	not taken	1,480.00	1.50	3,504	0.50
20-Sep-00	Composite	Blackwater	74.00	7.7	49	not taken	300.00	0.24	18,027	0.09
3-Aug-00	One Unit	Blackwater	520.00	8.4	140	not taken	589.00	ND	1,400,000	ND
21-Sep-00	One Unit	Blackwater	730.00	8.7	320	not taken	950.00	ND	700,000	ND
22-Sep-00	Composite	Blackwater	44.00	4.6	58	510.00	250.00	0.92	2	ND
25-Aug-00	Composite	Blackwater	not taken	missing	not taken	not taken	not taken	ND	300	ND
5-Aug-00	Composite	Blackwater	90.25	7.9	109	not taken	231.76	0.07	387,493	ND
12-Aug-00	2 of 4 units	Blackwater	65.89	7.7	65	not taken	407.00	ND	1,100,000	ND
29-Aug-00	Composite	Blackwater	109.00	7.8	65	not taken	330.00	0.42	4,650	ND
6-Sep-00	Composite	Blackwater	96.00	7.6	80	not taken	335.50	0.56	invalidated	ND
9-Aug-00	Composite	Blackwater	100.00	6.9	130	not taken	1,260.00	0.46	5,349	0.18
20-Sep-00	Composite	Blackwater	50.00	7.4	140	not taken	860.00	not taken	7	3.33
9-Aug-00	Composite	Blackwater	110.00	7.5	170	not taken	1,230.00	not taken	100	0.96
14-Sep-00	Composite	Blackwater	140.00	8.2	82	not taken	280.00	ND	6,300	ND

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Sample Date	Sample Name	Waste Type	Ammonia	pH	BOD	COD	TSS	T CI	FECAL	FREE CL
		Units	mg/L		Mg/L	mg/L	Mg/L	mg/L	mg/L	mg/L
		MDL	0.03	0.1	2	3.0	1.30	0.10	2	0.10
2-Sep-00	Unit	Blackwater	180.00	7.6	150	1,210.00	200.00	ND	80	ND
18-Sep-00	Unit	Blackwater	130.00	6.7	110	not taken	300.00	3.00	1	2.00
9-Sep-00	Composite	Blackwater	155.00	7.5	250	not taken	980.00	not taken	540	0.54
18-Sep-00	Unit	Blackwater	17.60	7.6	146	not taken	580.00	0.87	24	0.13
6-Aug-00	Unit	Blackwater	160.00	8.5	120	not taken	280.00	9.00	23	ND
		Minimum	17.60	4.6	49	510.00	200.00	ND	1	ND
		Maximum	730.00	8.7	320	1,400.00	1,480.00	9.00	1,400,000	3.33
		Geometric Mean	104.48	7.2	105	845.00	478.00	0.21	18,213	0.09
		Median	100.00	7.6	130	1,210.00	407.00	0.33	3,957	ND

Table 62. 2000 Large Ship Blackwater Priority Pollutants in Alphabetical Order (Table 1 of 3)

Type	Sample Date	1,1,2,2-Tetrachloroethane	1,2-Dichloro	1,2-Dichloro	1,3-Dichloro	1,4-Dichloro	2,4,6-Trichloro	2-Nitro	4-Nitro	Alpha-Bhc	Bis(2-Ethylhexyl)Phthalate	Bromodi	Bromoform	Butylbenzyl
			benzene	ethane	benzene	benzene	phenol	phenol	phenol			chloro		phthalate
		0.500	1.000	0.500	1.000	1.000	1.000	1.000	25.000	0.011	1.000	0.500	0.500	1.000
DB	8-Sep-00	0.220	0.210	0.370	0.220	1.100	0.190	0.280	0.080	0.002	1.500	0.230	0.315	1.100
DB	14-Sep-00	0.220	0.210	0.750	0.220	0.230	0.190	0.280	0.080	0.002	17.000	1.100	0.315	0.550
DB	20-Sep-00	0.220	0.210	0.370	0.220	0.230	0.190	0.280	0.080	0.002	6.500	6.300	16.000	0.550
DB	21-Sep-00	0.220	0.210	0.370	0.220	2.800	2.000	0.280	0.080	0.002	3.700	0.230	0.315	0.550
HT	21-Sep-00	0.220	0.210	0.370	0.220	0.230	0.190	0.280	0.080	0.002	8.800	1.700	1.100	0.550
MSD	11-Aug-00	0.220	0.210	0.370	0.220	0.230	0.190	0.280	0.080	0.002	1.900	0.230	0.315	0.550
MSD	15-Aug-00	0.220	0.210	0.370	0.220	0.230	0.190	0.280	0.080	0.002	2.000	0.230	3.300	0.550
MSD	18-Aug-00	0.220	0.210	0.370	0.220	1.200	0.190	0.280	0.080	0.002	1.900	1.900	1.200	0.550
MSD	22-Aug-00	0.220	0.210	1.500	0.220	0.230	0.190	0.280	0.080	0.002	0.340	18.000	95.000	0.550
MSD	25-Aug-00	0.220	0.210	0.370	0.220	0.230	0.190	5.400	0.080	0.002	0.340	1.100	0.315	0.550
MSD	6-Sep-00	0.220	0.210	0.970	0.220	0.230	0.190	0.280	0.080	0.140	0.340	18.000	28.000	0.550
MSD	13-Sep-00	0.220	0.210	0.370	0.220	0.230	0.190	0.280	0.080	0.002	0.340	77.000	170.000	0.550
MSD	14-Sep-00	0.220	0.210	0.890	0.220	0.230	0.190	0.280	0.080	0.002	1.400	110.000	14.000	0.550
MSD	15-Sep-00	0.220	0.210	0.970	0.220	0.230	0.190	0.280	0.080	0.002	2.300	43.000	6.100	0.550
MSD	18-Sep-00	5.900	390.000	0.370	380.000	350.000	3.200	0.280	0.080	0.002	6.200	180.000	440.000	0.550
MSD	20-Sep-00	0.220	0.210	0.660	0.220	0.230	0.190	0.280	0.080	0.002	5.100	53.000	80.000	0.550
MSD	22-Sep-00	0.220	0.210	0.370	0.220	0.230	0.190	0.280	0.080	0.002	0.340	190.000	25.000	0.550
MSD	26-Sep-00	0.220	0.210	0.370	0.220	0.230	0.190	0.280	7.700	0.002	1.800	0.230	0.315	0.550
MSD	29-Aug-00	0.220	0.210	1.200	0.220	0.230	0.190	0.280	0.080	0.002	3.600	3.600	30.000	0.550
RO	2-Sep-00	0.220	0.210	1.900	0.220	0.230	0.190	0.280	0.080	0.002	4.100	0.230	0.315	0.550
RO	10-Sep-00	0.220	0.210	0.370	1.200	0.230	0.190	0.280	0.080	0.002	1.300	0.230	0.315	0.550
	Minimum	0.220	0.210	0.370	0.220	0.230	0.190	0.280	0.080	0.002	0.340	0.230	0.315	0.550
	Maximum	5.900	390.000	1.900	380.000	350.000	3.200	5.400	7.700	0.140	17.000	190.000	440.000	1.100
	Geometric Mean	0.257	0.301	0.549	0.340	0.428	0.243	0.322	0.099	0.002	1.888	3.651	4.086	0.568
	Median	0.220	0.210	0.370	0.220	0.230	0.190	0.280	0.080	0.002	1.90	1.900	3.300	0.550

Table 63. 2000 Large Ship Blackwater Priority Pollutants in Alphabetical Order (Table 2 of 3)

Type	Sample Date	Cadmium (TR)	Carbon tetra chloride	Chloro Form	Chromium (TR)	Copper (TR)	cyanide (total)mg/l	delta-bhc	Dibromo Chloro methane	Diethyl phthalate	di-n-butyl phthalate	di-n-octyl phthalate	Endosulphan sulfate	Ethyl benzene	Lead (TR)
	MDL	0.15	0.500	0.500	0.150	0.150	1.500	0.009	0.500	1.000	1.000	1.000	0.009	0.500	0.15
DB	15-Aug-00	0.013	0.170	0.700	3.100	0.020	0.001	0.002	0.100	0.250	0.700	0.160	0.002	0.180	0.020
DB	8-Sep-00	0.013	0.170	0.790	0.038	510.000	0.001	0.068	0.100	0.250	0.700	0.160	0.002	0.180	30.000
DB	14-Sep-00	0.013	0.170	15.000	0.038	150.000	0.001	0.002	0.100	3.700	2.500	0.160	0.002	0.180	0.020
DB	20-Sep-00	0.013	0.170	6.700	0.038	530.000	0.001	0.002	0.100	2.700	3.900	0.160	0.002	0.870	0.020
DB	21-Sep-00	0.013	0.170	0.700	10.000	3,900.000	0.001	0.002	0.990	0.250	8.200	0.160	0.002	0.180	0.020
HT	21-Sep-00	0.013	0.170	13.000	0.038	6,400.000	0.001	0.002	0.100	3.300	2.100	0.160	0.002	0.920	16.000
MSD	11-Aug-00	0.013	0.170	0.700	0.038	360.000	0.001	0.002	0.100	0.250	0.700	0.160	0.002	0.180	0.020
MSD	15-Aug-00	0.430	0.170	2.900	0.038	210.000	0.001	0.002	0.100	2.700	0.700	0.160	0.002	0.930	0.020
MSD	18-Aug-00	0.013	0.170	1.600	0.038	50.000	0.001	0.002	1.400	0.250	4.800	0.160	0.002	0.180	0.020
MSD	22-Aug-00	0.013	0.170	21.000	18.000	560.000	25.000	0.002	40.000	0.250	0.700	0.160	0.002	0.180	23.000
MSD	25-Aug-00	0.260	0.170	18.000	1.500	150.000	51.000	0.002	0.100	0.250	0.700	0.160	0.002	0.180	1.800
MSD	6-Sep-00	0.013	0.170	20.000	0.038	530.000	19.000	0.073	18.000	0.250	0.700	0.160	0.035	0.180	27.000
MSD	13-Sep-00	0.013	4.200	210.000	0.038	240.000	73.000	0.002	88.000	0.250	0.700	0.160	0.002	0.180	0.020
MSD	14-Sep-00	0.013	2.000	140.000	0.038	170.000	0.001	0.002	63.000	0.250	3.200	0.160	0.002	0.180	18.000
MSD	15-Sep-00	0.013	0.170	200.000	0.038	760.000	0.001	0.002	16.000	0.250	2.000	0.160	0.002	0.180	0.020
MSD	18-Sep-00	0.013	5.800	380.000	14.000	7,100.000	28.000	0.002	270.000	0.250	2.700	1.200	0.002	4.700	0.020
MSD	20-Sep-00	0.013	1.600	93.000	19.000	360.000	26.000	0.002	56.000	0.250	3.100	0.160	0.002	0.180	0.020
MSD	21-Sep-00	0.013	0.170	1.600	25.000	130.000	0.001	0.002	0.100	0.250	2.600	0.160	0.002	0.180	0.020
MSD	22-Sep-00	0.013	27.000	1,500.000	0.038	0.020	0.001	0.002	88.000	0.250	0.700	0.160	0.002	0.180	0.020
MSD	26-Sep-00	0.240	0.170	3.700	0.038	54.000	0.001	0.002	0.100	0.250	2.100	0.160	0.002	0.180	0.020
OB	11-Aug-00	0.013	0.170	1.200	0.038	0.020	0.001	0.002	0.100	0.250	0.700	0.160	0.002	0.180	0.020
OB	29-Aug-00	0.013	0.170	15.000	52.000	740.000	0.001	0.002	13.000	1.600	9.800	0.160	0.002	0.530	50.000
RO	2-Sep-00	0.013	0.170	4.800	0.038	0.020	0.001	0.002	0.100	0.250	0.700	0.160	0.002	0.180	0.020
RO	10-Sep-00	0.013	0.170	4.100	0.038	0.020	0.001	0.002	0.100	0.250	1.100	0.160	0.002	0.180	0.020
	Minimum	0.01	0.170	0.70	0.038	0.020	0.001	0.002	0.100	0.250	0.70	0.160	0.002	0.180	0.020
	Maximum	0.43	27.000	1,500.00	52.000	7,100.000	73.000	0.073	270.000	3.700	9.80	1.200	0.035	4.700	50.000

Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska

Appendix B. Large Ship Sampling Data

Type	Sample Date	Cadmium (TR)	Carbon tetra chloride	Chloro Form	Chromium (TR)	Copper (TR)	cyanide (total)mg/l	delta-bhc	Dibromo Chloro methane	Diethyl phthalate	di-n-butyl phthalate	di-n-octyl phthalate	Endosulphan sulfate	Ethyl benzene	Lead (TR)
	MDL	0.15	0.500	0.500	0.150	0.150	1.500	0.009	0.500	1.000	1.000	1.000	0.009	0.500	0.15
	Geometric Mean	0.02	0.338	10.91	0.255	52.839	0.011	0.003	1.233	0.410	1.57	0.174	0.002	0.264	0.144
	Median	0.01	0.170	9.85	0.038	225.000	0.001	0.002	0.100	0.250	1.55	0.160	0.002	0.180	0.020

Table 64. 2000 Large Ship Blackwater in Alphabetical Order (Table 3 of 3)

Type	Sample Date	Mercury (TR)	Methyl bromide	Methyl chloride	Methylene chloride	Nickel (TR)	Phenan Threne	Phenol	Silver (TR)	Tetrachloro ethene	Toluene	Trichloro ethene	Zinc (TR)
		0.150	1.000	1.000	1.000	0.150	1.000	1.000	0.150	0.500	0.500	0.500	0.150
DB	8-Sep-00	0.930	0.600	0.600	0.115	0.018	0.270	250.000	0.015	0.115	0.255	0.255	1,200.000
DB	14-Sep-00	0.025	0.600	0.600	0.115	46.000	0.270	0.430	0.015	230.000	0.770	71.000	460.000
DB	20-Sep-00	0.025	0.600	0.600	1.000	42.000	0.270	0.430	0.015	33.000	0.690	1.300	530.000
DB	21-Sep-00	0.300	0.600	0.600	0.115	0.018	0.270	160.000	0.015	0.115	0.255	0.255	390.000
HT	21-Sep-00	0.840	0.600	0.600	0.115	0.018	0.270	17.000	2.100	0.115	0.255	0.255	1,800.000
MSD	11-Aug-00	0.025	0.600	0.600	0.115	0.018	0.270	13.000	0.760	0.115	0.255	0.255	170.000
MSD	15-Aug-00	0.025	0.600	0.600	0.115	0.018	1.800	29.000	0.590	0.115	0.255	0.255	390.000
MSD	18-Aug-00	0.025	0.600	0.600	0.115	0.018	0.270	0.430	0.270	0.115	0.255	0.255	210.000
MSD	22-Aug-00	0.025	0.600	25.000	0.115	0.018	0.270	0.430	0.015	0.115	0.255	0.255	1,100.000
MSD	25-Aug-00	0.025	0.600	0.600	0.115	130.000	0.270	0.430	0.180	0.115	0.255	0.255	350.000
MSD	6-Sep-00	0.025	0.600	0.600	0.115	41.000	0.270	0.430	1.900	0.115	0.255	0.255	1,000.000
MSD	13-Sep-00	0.670	0.600	0.600	0.115	0.018	0.270	0.430	0.015	0.115	0.255	0.255	580.000
MSD	14-Sep-00	0.025	0.600	9.400	0.115	0.018	0.270	0.430	1.500	0.115	0.255	0.255	800.000
MSD	15-Sep-00	0.240	0.600	0.600	0.115	0.018	0.270	0.430	0.015	0.115	0.730	0.255	0.500
MSD	18-Sep-00	0.260	7.000	160.000	42.000	0.018	0.270	0.430	2.000	7.600	2.200	0.255	610.000
MSD	20-Sep-00	0.230	0.600	0.600	1.800	89.000	0.270	0.430	0.015	0.115	0.255	0.255	620.000
MSD	21-Sep-00	0.370	0.600	0.600	0.115	0.018	0.270	100.000	0.015	0.115	0.255	0.255	700.000
MSD	22-Sep-00	0.025	0.600	81.000	0.115	0.018	0.270	0.430	0.015	0.115	0.255	0.255	0.500
MSD	26-Sep-00	0.025	0.600	240.000	0.115	0.018	0.270	0.430	0.015	0.115	0.255	0.255	250.000
OB	29-Aug-00	0.025	0.600	0.600	0.115	0.018	0.270	0.430	1.900	0.115	0.255	0.255	140.000
RO	2-Sep-00	0.025	0.600	0.600	0.115	0.018	0.270	0.430	0.015	0.115	0.580	0.255	7.000
RO	10-Sep-00	0.025	0.600	0.600	0.115	0.018	0.270	2.100	0.015	0.115	0.255	0.255	0.500
	Minimum	0.025	0.600	0.600	0.115	0.018	0.270	0.430	0.015	0.115	0.26	0.255	0.500
	Maximum	0.930	7.000	240.000	42.000	130.000	1.800	250.000	2.100	230.000	2.20	71.000	1,800.000
	Geometric Mean	0.069	0.671	1.704	0.188	0.115	0.294	1.729	0.081	0.254	0.34	0.355	162.133
	Median	0.025	0.600	0.600	0.115	0.018	0.270	0.430	0.015	0.115	0.26	0.255	425.000