2005 Large Ships Sampling Results (2 samples per season)

Federal and State Laws

U.S. Congress enacted Title XIV – Certain Alaskan Cruise Ship Operations on December 21, 2000. Under this federal legislation, large[1] cruise ships may discharge blackwater[2] in Alaska marine waters while underway[3] or continuously[4] while meeting effluent standards. Federal law states that during an underway discharge, blackwater effluent must contain no more than 200 fecal coliform bacteria per 100 milliliters and no more than 150 milligrams per liter of total suspended solids. Large ships must meet more stringent standards to discharge continuously.

Alaska Statute AS 46.03.460-46.03.490 establishes the same standards for blackwater as the federal law and includes graywater[5] discharges. Large ships that discharge blackwater, graywater or other wastewater in Alaska are subject to two unannounced sampling events each season to demonstrate compliance with state and federal standards. Large ships certified by the United States Coast Guard (USCG) to discharge continuously must sample twice per month to maintain their certification. Please refer to the "2005 Large Ship Wastewater Continued Compliance Samples for continuous discharge certification by the USCG" report for more information on continuous compliance samples.

Of the twenty-nine large ships that visited Alaska in 2005, 20 discharged into Alaska waters and were subject to the unannounced sampling requirements. The other nine discharge outside Alaska waters. All ships discharging in Alaska water had continuous discharge approval from the USCG, except for Seven Seas Mariner who discharged outside 1 nautical mile from shore traveling greater than six knots. The Statendam and Infinity received their USCG certification late in the season on September 2, 2005 and September 6, 2005 respectively. The Statendam began discharging upon USCG approval and was subject to the unannounced sampling requirements. However, the Infinity did not discharge in Alaska waters despite USCG approval and therefore did not participate in the unannounced sampling events.

Tables 1 through 4 provide a summary of the two unannounced sampling results for all large ships for the 2005 season. The samples from the first sampling events were analyzed for Conventional Pollutants only and the second rounds of samples included analyses for Conventional and Priority Pollutants. Table 5 provides a list of analyses included in Conventional and Priority Pollutant test suites.

Advanced wastewater treatment systems continue to be effective at removing bacteria and suspended solids. Chlorine concentrations of large ships effluent has declined from past seasons to below detection levels. Some large ships wastewater discharges have ammonia, dissolved copper, dissolved nickel and dissolved zinc results that exceed Alaska water quality standards. Most of these standards will be met quickly in the receiving water because the effluent is dispersed and should not pose a risk to the environment. The Department of Environmental Conservation contacted representatives of ships that had results that may pose a risk to the environment. If this trend continues in 2006, ADEC may proceed with enforcement.

Table 1. Summary 2005 Large Ship Unannounced Sampling Results, Excluding Priority Pollutants (20 ships, 42 samples)

	Ammonia as N	pH	Biochemical O_2 Demand	Chemical O_2 Demand	Total Suspended Solids	Chlorine, Free	Chlorine, Residual	Fecal Coliform Bacteria by MPN
Alaska Water Quality Standards	20.0[6]	6.5-8.5	N/A	N/A	N/A	0.0075	N/A	14[7]
Units	mg/l	s.u.	mg/l	mg/l	mg/l	mg/l	mg/l	MPN/100ml
Minimum	0	6.38	0	0	0	0	0	0
Maximum	95.8	9.5	160	285	6.3	0	0.19	20
Median	24.5	7.47	3.45	59	0	0	0	0

[1] 500+ overnight passengers
[2] Wastewater from toilets
[3] Traveling at a minimum speed of six knots and at least one nautical mile from shore.
[4] Traveling at less than six knots and within one nautical mile from shore.
[5] Wastewater from galley, sinks and showers and laundry.
[6] Ammonia standards are based on temperature, pH and salinity. This standard is from Table IX in the *Alaska Water Quality Criteria Manual for Toxics and Other Deleterious Organic and Inorganic Substances* using a ph 7.8, salinity of 20 g/kg and temperature between 10-15 degrees Celsius. Large ships while stationary have a minimum dilution factor of 10. Ammonia results greater than 20 mg/L exceed water quality standards in the receiving water.
[7] Standard used for consumption of raw shellfish.

Table 2. Summary 2005 Large Ship Unannounced Sampling Results, Excluding Priority Pollutants (20 ships, 42 samples)

	Conductivity	Oil & Grease	Total Organic Carbon	Alkalinity	Total Nitrate	Phosphorus, Total	Total Kjeldahl Nitrogen	Total Settleable Solids
Alaska Water Quality Standards	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SS[8]
Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Minimum	30.6	0	0	14.7	0	0	0	0
Maximum	3,400	19	130	491	53	24	96	0.1
Median	759	0	16.5	116	0	1.95	29	0

Table 3 includes the 2005 unannounced twice-per-season sampling results for Conventional Pollutants. Sample results highlighted in yellow indicate that the parameter exceeded the continuous discharge or underway limits. Sample results highlighted in blue indicate that the parameter exceeded Alaska's water quality standards.

One unannounced sample per season included testing for 167 priority pollutants: 13 total metals, 12 dissolved metals, 72 volatile organic compounds (VOC's), and 70 bases, neutral, acids (BNA's). Table 4 includes only pollutants with sample medians that exceeded the reportable limit (PQL) or a pollutant with a sample maximum that was 10 times the PQL.A list of all the priority pollutants that were analyzed and the associated PQL can be found in Table 5. The pollutants not listed in Table 4 are considered not detected and the statistical analysis of those pollutants is unnecessary. Sample results highlighted in blue indicate that the parameter exceeded Alaska's water quality standards.

It should be noted that some of the dissolved metal totals are higher than the total recoverable metals, which is not what is expected. This issue has also been observed in past season's sample results, and ADEC is looking into reasons for these discrepancies. One reason for the discrepancies could be explained through comparison of the range of acceptability for each test method, which is +/- 10% of the actual result. A situation where dissolved metal totals are higher than total metals could be attributed to a dissolved metal result at the top of the variance and total metal result at the end of the variance. Since the allowable variance can be as much as 20% there can be a significant difference in the results for dissolved and total metals.

[8] Alaska Water Quality Standards definition- No measurable increase in the concentration of settleable solids above natural conditions, as measured by the volumetric Imhoff cone method.

Table 3. 2005 Large Ships Unannounced Sampling Results for Conventional Pollutants

Vessel	Sample Date	Ammonia as N	pH	Biochemical O_2 Demand	Chemical O_2 Demand	Total Suspended Solids	Free Chlorine	Residual Chlorine	Fecal Coliform Bacteria by MPN	Conductivity	Oil & Grease	Total Organic Carbon	Alkalinity	Total Nitrate	Total Phosphorus	Total Kjeldahl Nitrogen	Total Settable Solids
	Detection Limit	0.10	0.10	2.00	10.00	4.00	0.10	0.10	2.00	2.00	5.00	1.00	2.00	1.00	0.05	1.00	4.00
	Units	mg/l	s.u.	mg/l	mg/l	mg/l	mg/l	mg/l	MPN/100 ml	umhos/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Alaska Water Quality Standards		20*	6.5-8.5	N/A	N/A	N/A	0.0075	N/A	14**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SS***
Carnival Spirit	6/4/05	0.41	7.08	10.6	ND	ND	ND	ND	ND	30.6	ND	5.8	14.7	ND	ND	2.14	ND
Carnival Spirit	7/16/05	0.24	9.5	5.24	ND	ND	ND	ND	ND	104	ND	ND	46.8	0.21	ND	ND	ND
Coral Princess	5/25/05	25	7.61	ND	47	ND	ND	ND	ND	614	ND	18	97.6	9.6	11	25.4	ND
Coral Princess	7/12/05	32	7.45	6.51	47	ND	ND	ND	ND	850	19	20	131	9.2	14	35.8	ND
Dawn Princess	5/27/05	74	7.45	ND	88	ND	ND	ND	ND	939	ND	22	230	0.18	9.6	73.7	ND
Dawn Princess	7/28/05	23	7.16	7.91	61	ND	ND	ND	ND	922	9	21	113	14	14	22.4	ND
Diamond Princess	5/23/05	41	7.27	ND	51	ND	ND	ND	ND	1240	ND	17	82.9	30	14	35.6	ND
Diamond Princess	7/18/05	79	7.77	2.39	72	ND	ND	ND	ND	1840	ND	19	382	21	11	85.8	ND
Island Princess	5/24/05	34	7.52	13.7	55	ND	ND	0.11	ND	838	ND	16	121	21	19	36.2	ND
Island Princess	7/13/05	14	7.32	2.27	68	ND	ND	ND	ND	656	ND	20	47.5	22	14	13.7	ND
Mercury	6/5/05	0.61	7.45	ND	ND	ND	ND	ND	ND	33.9	ND	ND	14.9	ND	ND	1.47	ND
Mercury	7/24/05	ND	8.85	ND	ND	ND	ND	ND	ND	42.5	ND	ND	21	ND	ND	2.43	ND

ND means not detected

* Ammonia standards are based on temperature, pH and salinity. This standard is from Table IX in the *Alaska Water Quality Criteria Manual for Toxics and Other Deleterious Organic and Inorganic Substances* using a ph 7.8, salinity of 20 g/kg and temperature between 10-15 degrees Celsius

** Standard used for the consumption of raw shellfish

*** Alaska Water Quality Standards definition- No measurable increase in the concentration of settleable solids above natural conditions, as measured by the volumetric Imhoff cone method.

Table 3 continued

Vessel	Sample Date	Ammonia as N	pH	Biochemical O_2 Demand	Chemical O_2 Demand	Total Suspended Solids	Free Chlorine	Residual Chlorine	Fecal Coliform Bacteria by MPN	Conductivity	Oil & Grease	Total Organic Carbon	Alkalinity	Total Nitrate	Total Phosphorus	Total Kjeldahl Nitrogen	Total Settable Solids
	Detection Limit	0.10	0.10	2.00	10.00	4.00	0.10	0.10	2.00	2.00	5.00	1.00	2.00	1.00	0.05	1.00	4.00
	Units	mg/l	s.u.	mg/l	mg/l	mg/l	mg/l	mg/l	MPN/100 ml	umhos/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Alaska Water Quality Standards		20*	6.5-8.5	N/A	N/A	N/A	0.0075	N/A	14**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SS***
Norwegian Dream	6/26/05	41	6.77	160	285	ND	ND	ND	ND	921	ND	92	119	ND	0.56	51.8	ND
Norwegian Dream	7/24/05	13	6.38	12.4	38	ND	ND	ND	ND	735	ND	22	59.1	ND	0.089	14.6	ND
Norwegian Spirit	5/24/05	18	6.52	ND	56	ND	ND	0.17	ND	623	ND	9.4	48	0.89	ND	20.5	ND
Norwegian Spirit	7/26/05	16	6.87	2.88	40	ND	ND	ND	ND	529	ND	9.4	64.7	0.3	0.085	16.8	ND
Norwegian Star	6/14/05	46	6.62	3.64	90	ND	ND	ND	ND	1040	ND	14	94.1	ND	ND	47.8	ND
Norwegian Star	7/19/05	50	7.74	ND	30	ND	ND	ND	ND	983	ND	18	113	1.3	0.11	40.5	ND
Norwegian Sun	6/1/05	28	7.13	6.37	26	ND	ND	ND	6	788	10	12	60.6	1.4	0.15	31.7	ND
Norwegian Sun	8/17/05	36	7	6.78	58	ND	ND	ND	ND	1440	ND	15	82.6	ND	0.24	39.6	ND
Oosterdam	6/27/05	21	7.52	32.3	95	6	ND	ND	6	477	ND	22	143	ND	1.5	20.7	ND
Oosterdam	8/8/05	17	7.59	14.6	68	ND	ND	ND	ND	361	ND	21	94.9	ND	2.6	18.8	0.1
Regal Princess	6/3/05	49	6.9	4.98	178	ND	ND	ND	ND	2010	ND	56	64.1	53	24	45.9	ND
Regal Princess	9/10/05	30	7.88	9.61	109	ND	ND	0.19	20	697	ND	29	80.6	25	6.8	34	ND

ND means not detected

* Ammonia standards are based on temperature, pH and salinity. This standard is from Table IX in the *Alaska Water Quality Criteria Manual for Toxics and Other Deleterious Organic and Inorganic Substances* using a ph 7.8, salinity of 20 g/kg and temperature between 10-15 degrees Celsius

** Standard used for the consumption of raw shellfish.

*** Alaska Water Quality Standards definition- No measurable increase in the concentration of settleable solids above natural conditions, as measured by the volumetric Imhoff cone method.

Table 3 continued

Vessel	Sample Date	Ammonia as N	pH	Biochemical O_2 Demand	Chemical O_2 Demand	Total Suspended Solids	Free Chlorine	Residual Chlorine	Fecal Coliform Bacteria by MPN	Conductivity	Oil & Grease	Total Organic Carbon	Alkalinity	Total Nitrate	Total Phosphorus	Total Kjeldahl Nitrogen	Total Settable Solids
	Detection Limit	0.10	0.10	2.00	10.00	4.00	0.10	0.10	2.00	2.00	5.00	1.00	2.00	1.00	0.05	1.00	4.00
	Units	mg/l	s.u.	mg/l	mg/l	mg/l	mg/l	mg/l	MPN/100 ml	umhos/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Alaska Water Quality Standards		20*	6.5-8.5	N/A	N/A	N/A	0.0075	N/A	14**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SS***
Ryndam	6/1/05	26	7.94	ND	48	ND	ND	ND	ND	652	ND	14	196	3.2	5.4	29.8	ND
Ryndam	7/27/05	16	7.77	2.93	50	ND	ND	ND	ND	750	ND	16	264	ND	2.4	30.8	ND
Sapphire Princes	5/25/05	51	7.89	4.09	176	ND	ND	ND	ND	967	ND	38	215	0.51	9.2	53.5	ND
Sapphire Princes	7/20/05	95.8	8	9.73	179	ND	ND	ND	ND	1420	ND	47	491	ND	15	94.5	ND
Serenade of the Seas	6/23/05	19	7.04	6.18	61	5.6	ND	ND	ND	973	ND	16	50.6	ND	ND	15.9	ND
Serenade of the Seas	8/18/05	21	6.68	4.93	60	6.3	ND	ND	ND	1650	ND	13	73.9	ND	0.17	24.3	ND
Seven Seas Mariner	6/6/05	92.7	7.99	ND	60	ND	ND	ND	ND	1110	ND	15	385	ND	17	96	ND
Seven Seas Mariner	7/25/05	0.097	7.53	9.77	65	ND	ND	ND	ND	325	ND	17	75.4	ND	3.6	1.15	ND
Statendam	9/6/05	57	7.61	6.53	62	ND	ND	ND	ND	1210	ND	16	334	ND	4.6	59.3	ND
Statendam	9/11/05	37	7.97	ND	53	ND	ND	ND	ND	760	ND	12	223	ND	1.2	37.4	ND

ND means not detected

*Ammonia standards are based on temperature, pH and salinity. This standard is from Table IX in the *Alaska Water Quality Criteria Manual for Toxics and Other Deleterious Organic and Inorganic Substances* using a ph 7.8, salinity of 20 g/kg and temperature between 10-15 degrees Celsius

** Standard used for the consumption of raw shellfish

*** Alaska Water Quality Standards definition- No measurable increase in the concentration of settleable solids above natural conditions, as measured by the volumetric Imhoff cone method.

Table 3. continued

Vessel	Sample Date	Ammonia as N	pH	Biochemical O_2 Demand	Chemical O_2 Demand	Total Suspended Solids	Free Chlorine	Residual Chlorine	Fecal Coliform Bacteria by MPN	Conductivity	Oil & Grease	Total Organic Carbon	Alkalinity	Total Nitrate	Total Phosphorus	Total Kjeldahl Nitrogen	Total Settable Solids
	Detection Limit	0.10	0.10	2.00	10.00	4.00	0.10	0.10	2.00	2.00	5.00	1.00	2.00	1.00	0.05	1.00	4.00
	Units	mg/l	s.u.	mg/l	mg/l	mg/l	mg/l	mg/l	MPN/100 ml	umhos/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Alaska Water Quality		20*	6.5-8.5	N/A	N/A	N/A	0.0075	N/A	14**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SS***
Sun Princess	5/26/05	74	7.63	ND	138	ND	ND	ND	ND	2390	ND	26	346	ND	9.6	78.1	ND
Sun Princess	8/12/05	66	7.46	3.25	174	ND	ND	ND	ND	3400	ND	130	309	ND	8.2	70.1	ND
Veendam	5/19/05	1.8	7.08	ND	63	ND	ND	ND	ND	563	ND	22	149	ND	0.48	1.91	ND
Veendam	6/30/05	0.051	7.48	ND	58	ND	ND	ND	ND	758	ND	11	258	ND	0.18	2.01	ND
Volendam	5/20/05	13	7.21	ND	45	ND	ND	ND	ND	563	ND	15	169	ND	0.059	17.2	ND
Volendam	6/24/05	10	7.43	2.95	63	ND	ND	ND	ND	714	ND	13	272	ND	0.25	8.69	ND
Zaandam	6/27/05	24	7.86	2.85	58	ND	ND	ND	ND	619	ND	20	222	ND	2.5	27.7	ND
Zaandam	8/8/05	20	7.89	4.94	49	ND	ND	ND	ND	722	ND	11	266	ND	0.42	21.1	ND
	MIN	**0**	**6.38**	**0**	**0**	**0**	**0**	**0**	**0**	**30.6**	**0**	**0**	**14.7**	**0**	**0**	**0**	**0**
	MAX	**95.8**	**9.5**	**160**	**285**	**6.3**	**0**	**0.19**	**20**	**3400**	**19**	**130**	**491**	**53**	**24**	**96**	**0.1**
	MEDIAN	**24.5**	**7.47**	**3.445**	**59**	**0**	**0**	**0**	**0**	**759**	**0**	**16.5**	**116**	**0**	**1.95**	**28.75**	**0**

ND means not detected

*Ammonia standards are based on temperature, pH and salinity. This standard is from Table IX in the *Alaska Water Quality Criteria Manual for Toxics and Other Deleterious Organic and Inorganic Substances* using a ph 7.8, salinity of 20 g/kg and temperature between 10-15 degrees Celsius

** Standard used for the consumption of raw shellfish

*** Alaska Water Quality Standards definition- No measurable increase in the concentration of settleable solids above natural conditions, as measured by the volumetric Imhoff cone method.

Table 4. 2005 Large Ships Unannounced Sampling Results for Priority Pollutant

Vessel	Date	Acetone	chromium (TR)	Chromium dissolved	copper (TR)	Copper dissolved	nickel (TR)	Nickel dissolved	selenium (TR)	Selenium dissolved	zinc (TR)	Zinc dissolved
	PQL	50.0	2.5	2.5	1.0	1.0	1.0	1.0	2.5	2.5	2.5	2.5
	Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Alaska Water Quality Standards		N/A	N/A	N/A	N/A	3.10	N/A	8.20	N/A	71.00	N/A	81.00
Carnival Spirit	7/16/05	25	2.33*	2.24*	3.48	1.23	2.32	1.02	3.06	4.73	190	135
Coral Princess	7/12/05	25	2.5**	2.5**	25.8	23.6	8.48	8.21	2.5**	2.5**	166	171
Dawn Princess	7/28/05	200	3.06	3.7	13.4	11.2	5.09	5.09	6.8	5.69	86.5	89.2
Diamond Princess	7/18/05	25	1.25	1.25	33.3	31.1	10.7	10.5	3.99	3.37	108	106
Island Princess	7/13/05	25	1.25	1.25	21	20.3	5.62	5.53	1.25	1.25	148	141
Mercury	7/24/05	50	4.53	1.57*	1.13	0.25*	0.785*	0.375*	1.25	0.25	3.28	2.73
Norwegian Dream	7/24/05	110	4.99	1.85*	12.7	11.3	39.7	39.2	3.12	2.55	101	97
Norwegian Spirit	7/26/05	25	1.85*	0.942*	11.7	4.11	5.43	5.37	1.25	1.61	69.1	66.9
Norwegian Star	7/19/05	25	8.33	1.91*	6.04	5.75	7.57	7.09	11.5	5.63	158	169
Norwegian Sun	8/17/05	25	13.5	6.79	4.09	4.21	6.24	6.36	6.87	6.33	112	117

* Samples were run at a lower reporting limit (PQL).

** Samples were run at a lower reporting limit, but the samples were diluted prior to analysis thus increasing the PQL higher than what was listed in the Quality Assurance Quality Control Plan.

Table 4. continued.

Vessel	Date	Acetone	chromium (TR)	Chromium dissolved	copper (TR)	Copper dissolved	nickel (TR)	Nickel dissolved	selenium (TR)	Selenium dissolved	zinc (TR)	Zinc dissolved
	PQL	50.0	2.5	2.5	1.0	1.0	1.0	1.0	2.5	2.5	2.5	2.5
	Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Alaska Water Quality Standards		N/A	N/A	N/A	N/A	3.10	N/A	8.20	N/A	71.00	N/A	81.00
Oosterdam	8/8/05	25	14.2	12	2.35	1.63	5.73	5.27	1.14*	0.917	260	172
Regal Princess	9/10/05	25	12.7	13.3	129	128	8.8	9.33	2.5**	2.5**	71.7	54.4
Ryndam	7/27/05	25	6.39	5.61	4.59	4.41	18.4	18.5	1.25	1.33*	36.2	34.4
Sapphire Princes	7/20/05	25	1.25	1.25	3.31	1.25	3.55	3.58	1.25	1.25	24.2	26.6
Serenade of the Seas	8/18/05	25	12.6	5.99	3.14	3.83	21.4	19	7.9	7.89	226	312
Seven Seas Mariner	7/25/05	25	1.25	1.25	3.1	2.76	3.32	3.42	1.25	1.25	78	84.5
Statendam	9/11/05	25	30.8	33.4	66.2	51.8	24.8	23.9	2.5**	2.5**	10	11.7
Sun Princess	8/18/05	25	28.2	3.96	11.3	10.2	8.43	6.5	51.2	50	63.7	91.9
Veendam	7/28/05	25	1.25	1.25	4	3.95	18.8	19.1	1.25	1.25	51	50.5
Volendam	6/24/05	25	2.5**	2.5**	12.7	12.4	10.9	11.1	2.5**	2.5**	49.3	48.2
Zaandam	8/8/05	25	57.5	43.5	9.96	6.25	17.7	11.7	37.3	1.25	108	57.1
	Minimum	**25**	**1.25**	**0.942**	**1.13**	**0.25**	**0.785**	**0.375**	**1.14**	**0.25**	**3.28**	**2.73**
	Maximum	**200**	**57.5**	**43.5**	**129**	**128**	**39.7**	**39.2**	**51.2**	**50**	**260**	**312**
	Median	**25**	**4.53**	**2.5**	**9.96**	**5.75**	**8.43**	**7.09**	**2.5**	**2.5**	**86.5**	**89.2**

* Samples were run at a lower reporting limit (PQL).

** Samples were run at a lower reporting limit, but the samples were diluted prior to analysis thus increasing the PQL higher than what was listed in the Quality Assurance Quality Control Plan.

Table 5. Conventional and Priority Pollutants Analyzed

Conventional Pollutants	**Method**	**Reportable Limit (PQL) mg/L**
Ammonia- Total	350.3	0.10
Biochemical Oxygen Demand	405.1	2.0
Chemical Oxygen Demand	410.4	10
Chlorine, residual	SM 4500	0.1
Chlorine, free	SM 4500	0.1
Alkalinity	SM 2320 B	2.0
Settable Solids	160.5	0.10 (ml/L)
Total Suspended Solids	160.2	4.0
Fecal Coliform	SM 9221E or SM 9222 D	2 (FC/100 ml)
Specific Conductance-Conductivity	120.1	2 (µmHos/cm)
Total Organic Carbon	SM 5310 B	1.0
Oil and Grease	1664	5.0
Total Kjeldahl Nitrogen	EPA various	1.0
Total Phosphorus	EPA 365.2	0.050
Priority Pollutants	**Method**	**Reportable Limit (PQL)**
Total Recoverable Metals		**Ug/l**
Antimony	200.8	2.5
Arsenic	200.8	2.5
Beryllium	200.8	1.0
Cadmium	200.8	1.0
Chromium	200.8	2.5
Copper	200.8	1.0
Lead	200.8	1.0
Mercury (Total)	245.1	1.0
Nickel	200.8	1.0
Selenium	200.8	2.5
Silver	200.8	1.0
Thallium	200.8	1.0
Zinc	200.8	2.5
Dissolved Metals		
Antimony	200.8	2.5
Arsenic	200.8	2.5
Beryllium	200.8	1.0
Cadmium	200.8	0.5

Chromium	200.8	2.5
Copper	200.8	1.0
Lead	200.8	1.0
Nickel	200.8	1.0
Selenium	200.8	2.5
Silver	200.8	1.0
Thallium	200.8	1.0
Zinc	200.8	2.5
VOCs		
1,1,1,2-Tetrachloroethane	624	2
1,1,1-Trichloroethane	624	2
1,1,2,2-Tetrachloroethane	624	2
1,1,2-Trichloroethane	624	2
1,1-Dichloroethane	624	2
1,1-Dichloroethene	624	2
1,1-Dichloropropene	624	2.5
1,2,3-Trichlorobenzene	624	2.8
1,2,3-Trichloropropane	624	2.5
1,2,4-Trichlorobenzene	624	2.8
1,2,4-Trimethylbenzene	624	2.7
1,2-Dibromo-3-Chloropropane	624	10
1,2-Dichlorobenzene	624	2
1,2-Dichloroethane	624	2
1,2-Dichloroethane	624	2
1,2-Dichloropropane	624	2
1,3,5-Trimethylbenzene	624	2
1,3-Dichlorobenzene	624	2
1,3-Dichloropropane	624	2
1,4-Dichlorobenzene	624	2
2,2-Dichloropropane	624	2
2-Butanone	624	50
2-Chloroethyl Vinyl Ether	624	10
2-Chlorotoluene	624	2.1
2-Hexanone	624	20
4-Chlorotoluene	624	2
4-Isopropyltoluene	624	2.8
4-Methyl-2-Pentanone	624	20
Acetone	624	50
Acrolein	624	100
Acrylonitrile	624	10

VOCs continued		
Benzene	624	2
Bromobenzene	624	2
Bromochloromethane	624	2
Bromodichloromethane	624	2
Bromoform	624	2
Bromomethane	624	5
Carbon Disulfide	624	2
Carbon Tetrachloride	624	2
Chlorobenzene	624	2
Chloroethane	624	5
Chloroform	624	2
Chloromethane	624	5
Cis-1,2-Dichloroethene	624	2
Cis-1,3-Dichloropropene	624	2.3
Dibromochloromethane	624	2
Dibromomethane	624	2
Dichlorodifluoromethane	624	5
Ethylbenzene	624	2
Hexachlorobutadiene	624	2
Iodomethane	624	5
Isopropylbenzene	624	2.6
m&p Xylenes	624	2
Methylene Chloride	624	5
Naphthalene	624	2.8
n-Butylbenzene	624	2.8
n-Propylbenzene	624	2
O-Xylene	624	2.3
sec-Butylbenzene	624	2.3
Styrene	624	2.6
tert-Butyl Methyl Ether	624	2
tert-Butylbenzene	624	3.0
Tetrachloroethene	624	2
Toluene	624	2
Trans 1,2-Dichloroethene	624	2
trans-1,3-Dichloropropene	624	2.1
trans-1,4-Dichloro-2 Buten	624	10
Trichloroethene	624	2
Trichlorofluoromethane	624	2
Trichlorotrifluoroethane	624	2

Vinyl Acetate	624	5
Vinyl Chloride	624	2
BNAs		
1,2,4-Trichlorobenzene	625	5
1,2-Dichlorobenzene	625	5
1,2-Diphenylhydrazine	625	5
1,3-Dichlorobenzene	625	5
1,4-Dichlorobenzene	625	5
2,4,5-Trichlorophenol	625	5
2,4,6-Trichlorophenol	625	5
2,4-Dichlorophenol	625	5
2,4-Dimethylphenol	625	25
2,4-Dinitrophenol	625	100
2,4-Dinitrotoluene	625	5
2,6-Dinitrotoluene	625	5
2-Chloronaphthalene	625	10
2-Chloronapthalene	625	10
2-Chlorophenol	625	5
2-Methylnaphthalene	625	5
2-Methylphenol	625	5
2-Nitroaniline	625	100
2-Nitrophenol	625	5
3&4-Methylphenol	625	5
3,3’-Dichlorobenzidine	625	20
3-Nitroaniline	625	50
4,6-Dinitro-2-methylphenol	625	25
4-Bromophenyl Phenyl ether	625	5
4-chloro-3-methylphenol	625	5
4-Chloroaniline	625	5
4-Chlorophenyl methylsulfone	625	20
4-Chlorophenyl Phenyl ether	625	5
4-Nitroaniline	625	50
4-Nitrophenol	625	100
Acenaphthene	625	5
Acenaphthylene	625	5
Anthracene	625	5
Benzidine	625	200
Benzo (A) Anthracene	625	5
Benzo (A) Pyrene	625	5
Benzo (B) Fluoranthene	625	5

BNAs continued		
Benzo (g,h,i) Perylene	625	5
Benzo (K) Fluoranthene	625	5
Benzoic Acid	625	130
Benzyl Alcohol	625	10
Bis (2-Chloroethoxy) methane	625	5
Bis (2-chloroethyl) ether	625	5
Bis (2-Chloroisopropyl) ether	625	5
Bis (2-Ethylhexyl) Phthalate	625	2.5
Butyl Benzyl Phthalate	625	5
Chrysene	625	5
Dibenzo (a,h) Anthracene	625	5
Dibenzofuran	625	5
Diethyl Phthalate	625	5
Dimethyl Phthalate	625	5
Di-N-Butyl Phthalate	625	5
Di-N-Octyl Phthalate	625	5
Fluoranthene	625	5
Fluorene	625	5
Hexachlorobenzene	625	5
Hexachlorobutadiene	625	5
Hexachlorocyclopentadiene	625	10
Hexachloroethane	625	5
Indeno (1,2,3-CD) Pyrene	625	5
Isophorone	625	5
Napthalene	625	10
Nitrobenzene	625	5
N-Nitrosodimethylamine	625	5
N-Nitrosodi-N-Propylamine	625	5
N-Nitrosodiphenylamine	625	10
Pentachlorophenol	625	5
Phenanthrene	625	5
Phenol	625	5
Pyrene	625	5