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ENVIRONMENTAL PROTECTION AGENCY-REGION VII
REGIONAL HEARING CLERK

Mid-American Coaches, Inc. Washington, MO
Order for Compliance: 54
Docket No. 07-2008-0089
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ENVIRONMENTAL PROTECTION AGENCY-REGION VII
REGIONAL HEARING CLERK

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
901 NORTH FIFTH STREET
KANSAS CITY, KANSAS 66101

IN THE MATTER OF)
)
) Docket No. 07-2008-0089
)
)
MID-AMERICAN COACHES, INC.)
WASHINGTON, MISSOURI)
) FINDINGS OF VIOLATION,
) ORDER FOR COMPLIANCE
Respondent)
)
)
)
Proceedings under Section 309(a)(3))
of the Clean Water Act,)
33 U.S.C. § 1319(a)(3))
_____)

I. Background and Findings of Violation

Jurisdiction

1. The following Findings of Violation and Order for Compliance (Order) are made and issued pursuant to the authority vested in the Administrator of the United States Environmental Protection Agency (EPA) by Section 309(a)(3) of the Clean Water Act (CWA), 33 U.S.C. §1319(a)(3).

2. EPA is alleging that Respondent discharged pollutants into the waters of the United States in violation of Section 301 of the CWA, 33 U.S.C. §1311 and a permit issued pursuant to Section 402 of the CWA, 33 U.S.C. §1342.

Parties

3. The Complainant, by delegation of the Administrator of EPA to the Regional Administrator, EPA, Region 7, is the Director of Region 7's Water, Wetlands and Pesticides Division.

4. The Respondent, Mid-American Coaches, Inc., located at 4530 Hwy. 47, Washington, Missouri 63090-5264, owns and operates a wastewater treatment plant (WWTP) that treats facility process wastewater.

5. The Respondent's facility is a bus maintenance facility. The Respondent owns 22 buses which are maintained and serviced at the Washington, Missouri facility. The Respondent's activities at the site include routine maintenance, mechanical work, vehicle washing, and discharge of the bus on-board restroom sanitary wastes.

II. Statutory and Regulatory Framework

6. Section 301(a) of the CWA, 33 U.S.C. § 1311(a), prohibits the discharge of pollutants except in compliance with, inter alia, Section 402 of the CWA, 33 U.S.C. § 1342. Section 402 of the CWA provides that pollutants may be discharged only in accordance with the terms of a National Pollutant Discharge Elimination System (NPDES) permit issued pursuant to that Section.

7. The CWA prohibits the "discharge of pollutants" from a "point source" into a "navigable water" of the United States, as these terms are defined by Section 502 of the CWA, 33 U.S.C. § 1362.

8. To implement Section 402 of the CWA, EPA promulgated regulations codified at 40 C.F.R. Part 122. Under 40 C.F.R. Part 122.1, a NPDES permit is required for the discharge of pollutants from any point source into waters of the United States.

9. The Missouri Department of Natural Resources (MDNR) is the state agency with the authority to administer the federal NPDES program in Missouri pursuant to Section 402 of the CWA, 33 U.S.C. § 1342, implementing regulations, and a Memorandum of Understanding dated October 30, 1974. EPA maintains concurrent enforcement authority with authorized states for violations of the CWA.

III. Findings of Fact

10. The Respondent is a "person" as defined by Section 502(5) of the CWA, 33 U.S.C. §1362(5).

11. The Respondent owns and operates a WWTP that receives and treats wastewater from the various activities conducted by the Respondent at its facility as described in Paragraphs 4 and 5 of this Order.

12. The Respondent's WWTP is a "point source" as defined by the CWA Section 502(14), 33 U.S.C. § 1362(14).

13. The Respondent's WWTP causes the "discharge of pollutants" as defined by the CWA Section 502(12), 33 U.S.C. §1362(12).

14. The Respondent's WWTP discharges pollutants into an unnamed tributary of Busch Creek, a tributary of the Missouri River. Busch Creek and the Missouri River are "navigable waters" as defined by the CWA Section 502(7), 33 U.S.C. §1362(7).

15. The Respondent's discharge of pollutants from its WWTP requires a permit issued pursuant to Section 402 of the CWA, 33 U.S.C. § 1342.

16. MDNR granted an NPDES Permit, No. MO-0113964, to Respondent, effective July 23, 2004 through July 22, 2009, for discharges from its WWTP into an unnamed tributary of Busch Creek.

17. The Respondent's NPDES permit contains a compliance schedule for meeting the effluent limits for fecal coliform; effluent limitations for discharge from the WWTP; reporting requirements; and requirements for sampling procedures.

18. Failure to comply with the conditions of an NPDES permit is a violation of the CWA 33 U.S.C. §1318(a); 40 C.F.R. §122.41(a).

19. On April 22-23, 2008, EPA performed an inspection of the Respondent's wastewater treatment facility under the authority of Section 308(a) of the CWA, 33 U.S.C. §1318(a). Included in the inspection was observation of the Respondent's WWTP and sampling of the waste stream.

IV. Findings of Violation

20. Paragraphs 10 through 19 are incorporated by reference as if fully set forth herein.

Count I - Compliance Schedule

21. The Respondent's NPDES Permit, No. MO-0113964, Part D, Compliance Schedule, requires that the permittee upgrade the treatment facility to meet the effluent limits for fecal coliform with the following schedule:

- a. By November 30, 2004, submit an engineering report identifying the steps to improve the existing treatment facility or eliminate the discharge.
- b. By March 31, 2005, submit plans and specifications and an application with the appropriate fee for a construction permit to improve the existing facility or eliminate the discharge.
- c. By May 31, 2006, this project shall be completed in accordance with the approved plans and specifications. This facility shall meet the fecal coliform limitations listed in Part A of this permit.

22. The Respondent did not complete any of the activities required by the Compliance Schedule. At the time of EPA's inspection no steps had been taken to meet the requirements of Part D of Respondent's permit.

23. By failing to comply with the Compliance Schedule set forth in the Respondent's NPDES Permit, the Respondent violated the terms and conditions of its NPDES Permit, and as such, violated Sections 301(a) and 402 of the CWA, 33 U.S.C. § 1311 and § 1342, and implementing regulations.

Count II – Effluent Limitations

24. The Respondent's NPDES Permit, No. MO-0113964, Part A, Effluent Limitations and Monitoring Requirements, set the following limits for discharges from outfall #001 to the unnamed tributary to Busch Creek. The limitations were effective upon permit issuance:

- a. Total Suspended Solids shall be limited to a daily maximum of 45 mg/L and a monthly average of 30 mg/L.
- b. Fecal Coliform shall be limited to a daily maximum of 1000#/100 ml and a monthly average of 400#/100 ml.
- c. Total Phosphorus shall be limited to 0.5 mg/l as a daily maximum and 0.5 mg/l as a monthly average.
- d. Chemical Oxygen Demand shall be limited to 30 mg/l as a daily maximum and 20 mg/l as a monthly average.
- e. Sodium shall be limited to 250 mg/l as a daily maximum and 250 mg/l as a monthly average.
- f. Chloride shall be limited to 250 mg/l as a daily maximum and 250 mg/l as a monthly average.
- g. Temperature shall be limited to 90 degrees Fahrenheit as a daily maximum and 90 degrees Fahrenheit as a monthly average.

25. A review of Discharge Monitoring Reports revealed that Respondent's discharge exceeded the permitted limitations for Total Suspended Solids (TSS) as follows:

<u>Date</u>		<u>Limit</u>	<u>Reported Value</u>
5/2/07	(monthly avg.)	30mg/l	34 mg/l
8/22/07	(daily max)	45 mg/l	57.2 mg/l
8/22/07	(monthly avg.)	30 mg/l	57.2 mg/l

11/7/07	(monthly avg.)	30 mg/l	36.8 mg/l
2/2/08	(monthly avg.)	30 mg/l	40.7 mg/l

26. A review of Discharge Monitoring Reports revealed that Respondent's discharge exceeded the permitted limitations for Fecal Coliform as follows:

<u>Date</u>		<u>Limit</u>	<u>Reported Value</u>
5/18/05	(daily max)	1000/100 ml	3600/100 ml
5/18/05	(monthly avg.)	400/100 ml	3600/100 ml
8/18/05	(daily max)	1000/100 ml	4600/100 ml
8/18/05	(monthly avg.)	400/100 ml	4600/100 ml
5/4/06	(daily max)	1000/100 ml	4400/100 ml
5/4/06	(monthly avg.)	400/100 ml	4400/100 ml
8/2/06	(daily max)	1000/100 ml	>40,000/100 ml
8/2/06	(monthly avg.)	400/100 ml	>40,000/100 ml
11/16/06	(daily max)	1000/100 ml	>40,000/100 ml
11/16/06	(monthly avg.)	400/100 ml	>40,000/100 ml
2/8/07	(daily max)	1000/100 ml	1440/100 ml
2/8/07	(monthly avg.)	400/100 ml	1440/100 ml
5/2/07	(daily max)	1000/100 ml	4600/100 ml
5/2/07	(monthly avg.)	400/100 ml	4600/100 ml
8/22/07	(daily max)	1000/100ml	2080/100 ml
8/22/07	(monthly avg.)	400/100ml	2080/100 ml
11/7/07	(daily max)	1000/100ml	2080/100 ml
11/7/07	(monthly avg.)	400/100ml	2080/100 ml
2/20/08	(daily max)	1000/100 ml	4800/100 ml
2/20/08	(monthly avg.)	400/100 ml	4800/100 ml

27. A review of Discharge Monitoring Reports revealed that Respondent's discharge exceeded the permitted limitations for Total Phosphorus as follows:

<u>Date</u>		<u>Limit</u>	<u>Reported Value</u>
8/18/05	(daily max)	0.5 mg/L	5.94 mg/L
8/18/05	(monthly avg.)	0.5 mg/L	5.94 mg/L
11/16/05	(daily max)	0.5 mg/L	12.3 mg/L
11/16/05	(monthly avg.)	0.5 mg/L	12.3 mg/L
2/2/06	(daily max)	0.5 mg/L	9.92 mg/L
2/2/06	(monthly avg.)	0.5 mg/L	9.92 mg/L
5/4/06	(daily max)	0.5 mg/L	11.5 mg/L
5/4/06	(monthly avg.)	0.5 mg/L	11.5 mg/L
8/2/06	(daily max)	0.5 mg/L	17.8 mg/L

8/2/06	(monthly avg.) 0.5 mg/L	17.8 mg/L
11/16/06	(daily max) 0.5 mg/L	23.3 mg/L
11/16/06	(monthly avg.) 0.5 mg/L	23.3 mg/L
2/8/07	(daily max) 0.5 mg/L	16.5 mg/L
2/8/07	(monthly avg.) 0.5 mg/L	16.5 mg/L
5/2/07	(daily max) 0.5 mg/L	15.5 mg/L
5/2/07	(monthly avg.) 0.5 mg/L	15.5 mg/L
11/7/07	(daily max) 0.5 mg/L	10.6 mg/L
11/7/07	(monthly avg.) 0.5 mg/L	10.6 mg/L
2/20/08	(daily max) 0.5 mg/L	7.75 mg/L
2/20/08	(monthly avg.) 0.5 mg/L	7.75 mg/L
4/22/08	(daily max) 0.5 mg/L	10 mg/L
4/22/08	(monthly avg.) 0.5 mg/L	10 mg/L
4/23/08	(daily max) 0.5 mg/L	12.4 mg/L
4/23/08	(monthly avg.) 0.5 mg/L	12.4mg/L

28. A review of Discharge Monitoring Reports revealed that Respondent's discharge exceeded the permitted limitations for Chemical Oxygen Demand (COD) as follows:

<u>Date</u>		<u>Limit</u>	<u>Reported Value</u>
8/18/05	(monthly avg.)	20 mg/L	25.2 mg/L
11/16/05	(daily max)	30 mg/L	37 mg/L
11/16/05	(monthly avg.)	20 mg/L	37 mg/L
2/2/06	(daily max)	30 mg/L	32.5 mg/L
2/2/06	(monthly avg.)	20 mg/L	32.5 mg/L
5/4/06	(daily max)	30 mg/L	57.7 mg/L
5/4/06	(monthly avg.)	20 mg/L	57.7 mg/L
8/2/06	(monthly avg.)	20 mg/L	20.2 mg/L
11/16/06	(daily max)	30 mg/L	38 mg/L
11/16/06	(monthly avg.)	20 mg/L	38 mg/L
2/8/07	(daily max)	30 mg/L	52.7 mg/L
2/8/07	(monthly avg.)	20 mg/L	52.7 mg/L
5/2/07	(daily max)	30 mg/L	36.7 mg/L
5/2/07	(monthly avg.)	20 mg/L	36.7 mg/L
11/7/07	(monthly avg.)	20 mg/L	30 mg/L
2/20/08	(daily max)	30 mg/L	84 mg/L
2/20/08	(monthly avg.)	20 mg/L	84 mg/L
4/22/08	(monthly avg.)	20 mg/L	28.9 mg/L

29. A review of Discharge Monitoring Reports revealed that Respondent's discharge exceeded the permitted limitations for Sodium as follows:

<u>Date</u>	<u>Limit</u>	<u>Reported Value</u>
8/18/05	(daily max) 250 mg/L	339 mg/L
8/18/05	(monthly avg.) 250 mg/L	339 mg/L
11/16/05	(daily max) 250 mg/L	265 mg/L
11/16/05	(monthly avg.) 250 mg/L	265 mg/L
2/2/06	(daily max) 250 mg/L	365 mg/L
2/2/06	(monthly avg.) 250 mg/L	365 mg/L
5/4/06	(daily max) 250 mg/L	316 mg/L
5/4/06	(monthly avg.) 250 mg/L	316 mg/L
8/2/06	(daily max) 250 mg/L	398 mg/L
8/2/06	(monthly avg.) 250 mg/L	398 mg/L
11/16/06	(daily max) 250 mg/L	431 mg/L
11/16/06	(monthly avg.) 250 mg/L	431 mg/L
2/8/07	(daily max) 250 mg/L	584 mg/L
2/8/07	(monthly avg.) 250 mg/L	584 mg/L
2/20/08	(daily max) 250 mg/L	320 mg/L
2/20/08	(monthly avg.) 250 mg/L	320 mg/L

30. A review of Discharge Monitoring Reports revealed that Respondent's discharge exceeded the permitted limitations for Chloride as follows:

<u>Date</u>	<u>Limit</u>	<u>Reported Value</u>
11/16/05	(daily max) 250 mg/L	407 mg/L
11/16/05	(monthly avg.) 250 mg/L	407mg/L
2/2/06	(daily max) 250 mg/L	363 mg/L
2/2/06	(monthly avg.) 250 mg/L	363 mg/L
8/2/06	(daily max) 250 mg/L	1264 mg/L
8/2/06	(monthly avg.) 250 mg/L	1264 mg/L
11/16/06	(daily max) 250 mg/L	316mg/L
11/16/06	(monthly avg.) 250 mg/L	316mg/L
2/8/07	(daily max) 250 mg/L	631 mg/L
2/8/07	(monthly avg.) 250 mg/L	631 mg/L
11/7/07	(daily max) 250 mg/L	254 mg/L
11/7/07	(monthly avg.) 250 mg/L	254 mg/L
2/20/08	(daily max) 250 mg/L	315 mg/L
2/20/08	(monthly avg.) 250 mg/L	315 mg/L
4/23/08	(daily max) 250 mg/L	328 mg/L
4/23/08	(monthly avg.) 250 mg/L	272mg/L

31. A review of Discharge Monitoring Reports revealed that Respondent's discharge exceeded the permitted limitations for Temperature as follows:

<u>Date</u>	<u>Limit</u>	<u>Reported Value</u>
8/2/06	90° F	98° F

32. Respondent's discharge of pollutants in excess of permit limits are violations of the terms and conditions of the Respondent's NPDES permit, and as such, are violations of Sections 301(a) and 402 of the CWA, 33 U.S.C. § 1311(a) and § 1342, and implementing regulations.

Count III- Quarterly Monitoring Reports

33. Part A of Respondent's permit requires quarterly submittal of Discharge Monitoring Reports. Discharge Monitoring Reports were not submitted to MDNR in the first quarter of 2005.

34. The Respondent's failure to submit quarterly discharge monitoring reports to MDNR is a violation of the terms and conditions of the Respondent's NPDES permit, and as such, is in violation of Sections 301(a) and 402 of the CWA, 33 U.S.C. §1311(a) and §1342, and implementing regulations.

Count IV- Failure to Sample

35. Part A of Respondent's permit requires sampling of certain parameters to be completed on a quarterly basis with Monitoring Reports to be submitted quarterly to MDNR. Respondent failed to sample all of the parameters for each quarter as required by the Permit. A summary of the violations can be found in Attachment A to this Order.

36. Respondent's failure to conduct sampling of all parameters for each quarter as required by the Permit is a violation of the terms and conditions of the Respondent's NPDES permit, and, as such, is in violation of Sections 301(a) and 402 of the CWA, 33 U.S.C. §1311(a) and §1342, and implementing regulations.

Count V - Sampling Procedures

37. Part B of Respondent's permit incorporates Parts I and III standard conditions. Part I, Section A, Paragraph 4, Test Procedures, requires that test procedures for the analysis of pollutants shall be in accordance with the Missouri Clean Water Commission Effluent Regulations, 10 CSR 20-7015. These regulations lay forth the holding times for samples collected to demonstrate compliance with permit effluent limitations. Biological Oxygen Demand (BOD) must be analyzed within 48 hours of sample collection. Respondent's quarterly report for 2004 indicates that a sample collected on May 19, 2004, was not analyzed for BOD until May 29, 2004.

38. Respondent's sampling procedure for analyzing BOD for a sample collected May 19, 2004, is in violation of the terms and conditions of Respondent's NPDES permit, and, as such, is a violation of Sections 301(a) and 402 of the CWA, 33 U.S.C. § 1311(a) and § 1342, and implementing regulations.

V. Order For Compliance

39. Based on the Findings of Fact and Findings of Violation set forth above, and pursuant to Section 309(a)(3) of the CWA, 33 U.S.C. § 1319(a)(3), the Respondent is hereby ORDERED to take the actions described below in paragraphs 40 through 44 of this Order.

40. Within thirty (30) days of the effective date of this Order, the Respondent shall take whatever corrective action is necessary to correct the deficiencies and eliminate and prevent recurrence of the violations cited above, and to come into compliance with all of the applicable requirements of its NPDES permit.

41. Within thirty (30) days of the effective date of this Order, the Respondent shall submit a written report detailing the specific actions taken to correct the violations cited herein and explaining why such actions are anticipated to be sufficient to prevent recurrence of these or similar violations.

42. In the event that the Respondent believes complete correction of the violations cited herein is not possible within thirty (30) days of the effective date of this Order, the Respondent shall, within those thirty (30) days, submit to EPA and MDNR for review and approval, a comprehensive written plan for the elimination of the cited violations. Such plan shall describe in detail the specific corrective actions to be taken and why such actions are sufficient to correct the violations. The plan shall include a detailed schedule for the elimination of the violations within the shortest possible time, as well as measures to prevent these or similar violations from recurring.

- a. If EPA and MDNR approve the work plan, the work plan shall be implemented according to the schedule for implementation in the approved plan.
- b. If EPA and MDNR disapprove of the work plan with comments, the Respondent shall address the comments and resubmit the work plan for review within thirty (30) days of receipt of EPA and MDNR's disapproval.
- c. Upon resubmission, EPA and MDNR in their sole discretion may either approve the work plan, or if EPA and MDNR determine that the work plan does not adequately address the comments provided by EPA and

MDNR, EPA and MDNR may unilaterally modify the work plan and will provide the Respondent with a copy of the work plan as modified. The Respondent shall implement the modified work plan according to the schedule contained therein.

43. Within thirty (30) days of receipt of this Order, the Respondent shall submit to EPA with a copy to MDNR, documentation that sampling is representative and in compliance with the Respondent's NPDES permit.

44. From the effective date of this Order, until terminated by EPA, the Respondent shall submit quarterly to EPA, with a copy to MDNR, all monthly monitoring and sampling information conducted during the quarter. The Respondent shall also send a copy of the Quarterly Discharge Monitoring Report to EPA with the original to MDNR.

Certification

45. Each submittal to EPA pursuant to the requirements of this Order shall include a written statement by Respondent signed by a principle executive officer or a ranking elected official, or by a duly authorized representative of that person, that contains the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Submissions

46. All documents required to be submitted to EPA by this Order, shall be submitted by mail to:

Cynthia Sans
Water, Wetlands and Pesticides Division
U.S. Environmental Protection Agency - Region 7
901 North Fifth Street
Kansas City, KS 66101

47. A copy of documents required to be submitted to MDNR by this Order, shall be submitted by mail to:

Mr. Kevin Mohammadi, Chief
Enforcement Section
Water Pollution Control Program
Missouri Dept. of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

VI. General Provisions

Effect of Compliance with the Terms of this Order for Compliance

48. Compliance with the terms of this Order shall not relieve the Respondent of liability for, or preclude EPA from, initiating an administrative or judicial enforcement action to recover penalties for any violations of the CWA, or to seek additional injunctive relief, pursuant to Section 309 of the CWA, 33 U.S.C. §1319.

49. This Order does not constitute a waiver or a modification of any requirements of the CWA, 33 U.S.C. § 1251 *et seq.*, all of which remain in full force and effect. EPA retains the right to seek any and all remedies available under Sections 309(b), (c), (d) or (g) of the CWA, 33 U.S.C. §1319(b), (c), (d) or (g), for any violation cited in this Order. Issuance of this Order shall not be deemed an election by EPA to forgo any civil or criminal action to seek penalties, fines, or other appropriate relief under the CWA for any violation whatsoever.

Access and Requests for Information

50. Nothing in this Order shall limit EPA's right to obtain access to, and/or to inspect the Respondent's facility, and/or to request additional information from the Respondent, pursuant to the authority of Section 308 of the CWA, 33 U.S.C. §1318 and/or any other authority.

Severability

51. If any provision or authority of this Order, or the application of this Order to the Respondent, is held by federal judicial authority to be invalid, the application to the Respondent of the remainder of this Order shall remain in full force and effect and shall not be affected by such a holding.

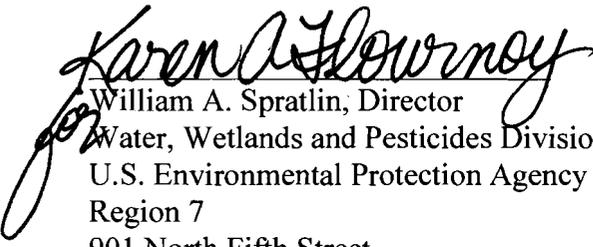
Termination

52. This Order shall remain in effect until a written notice of termination is issued by an authorized representative of the EPA. Such notice shall not be given until all of the requirements of this Order have been met.

Effective Date

53. The terms of this Order shall be effective and enforceable against the Respondent upon its receipt of an executed copy of the Order.

Issued this 29th day of September, 2008.


William A. Spratlin, Director
Water, Wetlands and Pesticides Division
U.S. Environmental Protection Agency
Region 7
901 North Fifth Street
Kansas City, Kansas 66101


Sara Hertz
Assistant Regional Counsel
U.S. Environmental Protection Agency
Region 7
901 North Fifth Street
Kansas City, Kansas 66101

CERTIFICATE OF SERVICE

I certify that on the date noted below I hand delivered the original and one true copy of this Findings of Violation and Administrative Order for Compliance to the Regional Hearing Clerk, United States Environmental Protection Agency, 901 North Fifth Street, Kansas City, Kansas 66101

Mid-American Coaches, Inc.
4530 Highway 47
Washington, Missouri 63090-5264

Mr. Kevin Mohammadi, Chief
Enforcement Section
Water Pollution Control Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102

9/30/08

Date



Attachment A

Parameter	8/04	11/04	2/05	5/05	8/05	11/05	2/06	8/07
Flow			X					X
BOD			X					
COD	X	X	X	X				
TSS			X					
Fecal Coliform	X	X	X					
Chloride	X	X	X	X				X
Phosphorus, total	X	X	X	X				X
Oil & Grease			X					
Sodium	X	X	X	X				X
Lead, total recoverable	X	X	X	X				X
Boron, total recoverable	X	X	X	X				X
Zinc, total recoverable	X	X	X	X	X	X	X	X
Copper, total recoverable	X	X	X	X				X
Nickel	X	X	X	X				X
Aluminum			X					X
Mercury	X	X	X	X				X
Manganese			X					X
Cadmium	X	X	X	X				X
Iron			X					X
Chromium	X	X	X	X				X
Residual Chlorine	X	X	X	X				X
Temperature	X	X	X	X	X			
pH - units			X					
Surfactants	X	X	X	X		X		X

X = parameters not sampled