

**AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM**

In compliance with the provisions of the federal Clean Water Act, as amended, 33 U.S.C. §§1251 et seq., and the Massachusetts Clean Waters Act, as amended, Massachusetts General Laws ch. 21, §§26-53, the

**City of Worcester
Department of Public Works**

is authorized to discharge from:

**Quinsigamond Avenue Combined Sewer Overflow
Storage and Treatment Facility (QCSOSTF)**

to receiving waters named:

Mill Brook storm drain to the Blackstone River (HUC 01090003)

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

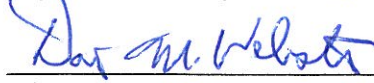
This permit shall become effective sixty (60) days after the date of signature.

This permit and the authorization to discharge expire at midnight, five years from the effective date.

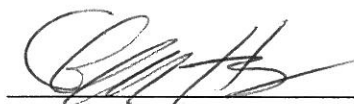
This permit supercedes the permit issued on November 8, 1990.

This permit consists of **9** pages and **Attachments A and B** in Part I and 35 pages in Part II including General Conditions and Definitions.

Signed this 2nd day of June, 2005



Director
Office of Ecosystem Protection
Environmental Protection Agency
Region I
Boston, MA



Director
Division of Watershed Management
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

Part I. Effluent Limitations

A.1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge from outfall serial number 001 , partially treated CSO discharges to the Mill Brook storm drain to the Blackstone River. Dry weather discharges are not authorized by this permit. Such discharges shall be limited and monitored as specified below.						
<u>EFFLUENT CHARACTERISTIC</u>			<u>EFFLUENT LIMITS</u>		<u>MONITORING REQUIREMENTS</u>	
PARAMETER	AVERAGE MONTHLY	AVERAGE WEEKLY	MAXIMUM DAILY	MEASUREMENT FREQUENCY	SAMPLE TYPE ¹	
FLOW	*****	*****	350 MGD	CONTINUOUS	RECORDER ²	
TSS ³	*****	Report mg/l	Report mg/l	1/DISCHARGE ⁴	COMPOSITE ⁴	
BOD ³	*****	Report mg/l	Report mg/l	1/DISCHARGE ⁴	COMPOSITE ⁴	
pH RANGE ⁵	6.5 - 8.3 s.u. - See Permit Page 4, Part I.A.1.b.		1/DISCHARGE	1/DISCHARGE	GRAB	
TOTAL CHLORINE RESIDUAL ^{5,6,7}	Report ug/l	*****	72 ug/l	1/HOUR	GRAB	
FECAL COLIFORM ^{5,6}	200 cfu per 100ml	*****	400 cfu per 100 ml	1/HOUR	GRAB	
PHOSPHORUS, TOTAL	Report mg/l	*****	Report mg/l	2/YEAR	COMPOSITE ⁴	
PHOSPHORUS, ORTHO	Report mg/l	*****	Report mg/l	2/YEAR	COMPOSITE ⁴	
TOTAL KJELDAHL NITROGEN	Report mg/l	*****	Report mg/l	2/YEAR	COMPOSITE ⁴	
NITRATE & NITRITE NITROGEN	Report mg/l	*****	Report mg/l	2/YEAR	COMPOSITE ⁴	
RAINFALL/PRECIPITATION	Report National Weather Service Data for the City of Worcester		1/DISCHARGE	1/DISCHARGE	TOTAL	
WHOLE EFFLUENT TOXICITY SEE FOOTNOTES 8, 9 and 10	Acute - Monitor Only		4/YEAR	4/YEAR	COMPOSITE ^{4,8}	

Footnotes:

1. All required effluent samples, shall be collected at the outlet of the detention tank and prior to discharge through the effluent gates. Any change in sampling location must be reviewed and approved in writing by EPA and MADEP. All samples shall be tested using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.
2. For flow, report the total volume of each discharge and the duration of each discharge to the closest fifteen (15) minutes. Consistent with and upon completion of the portions of the compliance schedule set forth in Part I.E. of the permit, **the average number of treated overflows from this facility will be limited to 4 per year or less beginning in 2007 and to 2 per year or less beginning in 2010.** If the permittee is unable to fully implement any of the LTCP measures as a result of actions by the Upper Blackstone Water Pollution Abatement District (UBWPAD), the permittee shall contact EPA within thirty (30) days of this determination in order to determine alternative control measures necessary to achieve similar water quality benefits. Alternative control measures, including an appropriate schedule, will be incorporated in a modified permit or an administrative order.
3. Sampling required for influent and effluent.
4. For these composite samples, sampling must be conducted at least hourly for the duration of each discharge. The first influent sample should be collected immediately upon the opening of the influent gates and the first effluent sample should be collected immediately upon the opening of the effluent gates.
5. Required for State Certification.
6. Fecal coliform and total residual chlorine monitoring will be conducted year round. This is also a State certification requirement. Fecal coliform discharges shall not exceed a monthly geometric mean of 200 colony forming units (cfu) per 100 ml, nor shall they exceed 400 cfu per 100 ml as a daily maximum. This monitoring shall be conducted concurrently with the TRC sampling described below. For both parameters, grab samples shall be analyzed individually. The first grab sample for both parameters shall be collected immediately upon the opening of the effluent gates and then hourly for as long as there is a discharge. The individual sampling results shall be submitted with each discharge monitoring report (DMR).
7. The minimum level (ML) for total residual chlorine is defined as 20 ug/l. This value is the minimum level for chlorine using EPA approved methods found in the most currently approved version of Standard Methods for the Examination of Water and Wastewater, Method 4500 CL-E and G, or USEPA Manual of Methods of Analysis of Water and Wastes, Method 330.5. One of these methods must be used to determine total residual chlorine. Sample results of 20 ug/l or less shall be reported as zero on the discharge monitoring report.
8. The permittee shall conduct acute toxicity tests four times per year. The permittee shall test the daphnid, Ceriodaphnia dubia. Toxicity test samples shall be collected during the months of January, April, July and October. If there are no flows during the sampling month, the permittee may collect the samples during the next month that there is discharge flow. The test results shall be submitted no later than the last day of each calendar quarter. The results are due March 31st, June 30th, September 30th and December 31st, respectively, provided that sampling occurred during that quarter. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit, with the exception that composite samples of less than 24 hours may be used, since discharge durations vary.

Part I.A.1. (Continued)

9. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms.
10. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall follow procedures outlined in **Attachment A, Section IV., DILUTION WATER** in order to obtain permission to use an alternate dilution water. In lieu of individual approvals for alternate dilution water required in **Attachment A**, EPA-New England has developed a Self-Implementing Alternative Dilution Water Guidance document (called "Guidance Document") which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. If this Guidance document is revoked, the permittee shall revert to obtaining approval as outlined in **Attachment A**. The "Guidance Document" has been sent to all permittees with their annual set of DMRs and Revised Updated Instructions for Completing EPA's Pre-Printed NPDES Discharge Monitoring Report (DMR) Form 3320-1 and is not intended as a direct attachment to this permit. Any modification or revocation to this "Guidance Document" will be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment A**.
 - a. The discharge shall not cause a violation of State or Federal water quality standards of the receiving waters.
 - b. The pH of the effluent shall not be less than 6.5 nor greater than 8.3 at any time, unless these values are exceeded as a result of an approved treatment process.
 - c. The discharge shall not cause objectionable discoloration of the receiving waters.
 - d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.
 - e. The permittee shall minimize the use of chlorine while maintaining adequate bacterial control. Screening, detention and chlorination shall be provided for CSO discharges resulting from all storms.
 - f. The results of sampling for any parameter above its required frequency must also be reported.
 - g. Dry weather discharges are not authorized.
2. During wet weather, the permittee is authorized to discharge combined storm water and wastewater from the combined sewer outfall listed in the permit, subject to the following effluent limitations.
 - a. The discharges shall receive treatment at a level providing Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT) to control and abate conventional pollutants and Best Available Technology Economically Achievable (BAT) to control and abate non-conventional and toxic pollutants. The EPA has made a Best Professional Judgement (BPJ) determination that BPT, BCT, and BAT for combined sewer overflow (CSO) control include the implementation of Nine Minimum Controls (NMC) specified below and detailed further in Part I.B. NMCs and Part I.C. Minimum Implementation Levels, of this permit. Implementation of these controls is required by the effective date of the permit. See **Attachment B** for NMC documentation and implementation guidance.

- i. Proper operation and regular maintenance programs for the sewer system and the combined sewer overflows.
- ii. Maximum use of the collection system for storage.
- iii. Review and modification of the pretreatment program to assure CSO impacts are minimized.
- iv. Maximization of flow to the POTW for treatment.
- v. Prohibition of dry weather overflows from CSOs.
- vi. Control of solid and floatable materials in CSO.
- vii. Pollution prevention programs that focus on contaminant reduction activities.
- viii. Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts.
- ix. Monitoring to effectively characterize CSO and the efficacy of CSO controls.

B. Nine Minimum Controls, Minimum Implementation Levels

The permittee is implementing the nine minimum controls (NMC) in accordance with the documentation submitted on May 25, 2001. EPA approved this submittal on 10/26/01. The permittee must evaluate, in its annual report (see Part I.D. below) any modifications to the approved program which enhance its effectiveness and can be reasonably implemented during the upcoming year. The proposed level of control must always meet or exceed the Minimum Implementation Levels described in Part I.C.

C. Minimum Implementation Levels

1. Each CSO structure/regulator, pumping station and/or tidegate shall be routinely inspected, at a minimum of once per month, to insure that it is in good working condition and adjusted to minimize combined sewer discharges and tidal surcharging. (NMC # 1, 2 and 4). The following inspection results shall be recorded: the date and time of the inspection, the general condition of the facility, and whether the facility is operating satisfactorily. If maintenance is necessary, the permittee shall record: the description of the necessary maintenance, the date the necessary maintenance was performed, and whether the observed problem was corrected. The permittee shall maintain all records of inspections for at least three years.

Annually, no later than **April 30th**, the permittee shall submit a certification to the State and EPA which states that the previous calendar year's monthly inspections were conducted, results recorded, and records maintained. This certification should be submitted with the Annual Report described in Section D.

2. Discharges to the combined system of septage, holding tank wastes or other material which may cause a visible oil sheen or containing floatable materials are prohibited during wet weather when CSO discharges may be active. (NMC# 3,6, and 7).
3. Dry weather overflows (DWOs) are prohibited (NMC# 5). All dry weather sanitary and/or industrial discharges from CSOs must be reported to EPA and the State within 24 hours in accordance with the reporting requirements for plant bypass (See Part 1.F. Unauthorized Discharges and Part II.D.1.e. of this permit).
4. The permittee shall quantify and record all discharges from combined sewer outfalls (NMC# 9). Quantification may be through direct measurement or estimation. When estimating, the permittee shall make reasonable efforts, i.e. gaging, measurements, to verify the validity of the estimation technique. The following information must be recorded for each combined sewer outfall for each discharge event:
 - Estimated duration (hours) of discharge;
 - Estimated or measured volume (gallons) of discharge; and
 - National Weather Service precipitation data from the nearest gage where precipitation is available at daily (24-hour) intervals and the nearest gage where precipitation data at minimum of one-hour intervals is available to the permittee. Cumulative precipitation per discharge event shall be provided;
 - A description of whether the discharge activation and volume are in accordance with the LTCP.

The permittee shall maintain all records of discharges for at least eight (8) years after the expiration date of this permit.

5. The permittee shall maintain identification signs for all combined sewer outfall structures (NMC# 8). The signs must be located at or near the combined sewer outfall structures and easily readable by the public from the land and water. These signs shall be a minimum of 12 x 18 inches in size, with white lettering against a green background, and shall contain the following information:

WARNING:*
CITY OF WORCESTER
WET WEATHER
SEWAGE DISCHARGE
OUTFALL (discharge serial number)

* For existing signs which otherwise meet the requirements of this section, the word "Warning" need not be added.

Where easements over property not owned by the permittee must be obtained to meet this requirement, the permittee will use its best efforts to identify the appropriate landowners and to obtain the necessary easements.

The permittee, to the extent feasible, will add a universal symbol to their warning signs reflecting a CSO discharge, or will place additional signs in languages other than English based on notification from the EPA and the State or on the permittee's own good faith determinations that the primary language of a substantial percentage of the residents in the vicinity of a given outfall structure is not English.

D. Annual Report

By **April 30th** of each year, the permittee shall submit a report which includes the following information;

1. Activation frequency and discharge volume for each CSO during the previous calendar year.
2. Precipitation during the previous year for each day, including total rainfall, peak intensity, and average intensity.
3. Status of the implementation of the Phase II CSO Long Term Control Plan's Recommended Plan (RP) as set forth in Part I.E.
4. For each CSO listed in the permit, provide the following information in the Annual Report for years 3 and 5:
 - a. A comparison between the precipitation for the previous year and the precipitation in the typical year under future planned conditions used in the LTCP. The comparison shall include the number of events and size of events (including recurrence interval).
 - b. A comparison, for each CSO, between the activation volume and frequency for the previous year and the volume and frequency expected during a typical year under future planned conditions.
 - c. An evaluation of whether the CSO activation volume and frequency for the previous year is in accordance with the projections in the LTCP, given the precipitation which occurred during the year and the CSO abatement activities which have been implemented. Where CSO discharges are determined to be greater than the activation frequency or volume in the LTCP, the permittee shall include a discussion of remaining CSO abatement activities and an assessment of the impact of those projects on attaining the level of CSO control identified in the LTCP.
5. A summary of modifications to the approved NMC program which have been evaluated and a description of those which will be implemented during the upcoming year. In the first annual report submitted in accordance with this permit, the permittee shall submit a public notification plan to describe the measures actively being taken to meet NMC #9, and an evaluation of further measures to enhance the public notification program, including use of web postings with CSO information. (see NMC #9 in Part I A.1.a.viii)

E. Compliance Schedule

The following compliance schedule includes compliance dates which relate to the improvements that the permittee will be undertaking consistent with its recommended plan (RP). These improvements are detailed in the report entitled,

"Phase II CSO Long Term Control Plan Report" that was submitted to EPA in February of 2004. All elements of each improvement, as described in the RP (Section 4) of this report, shall be completed.

1. The City shall complete the weir modifications at the four (4) proposed locations within **thirty (30) days after the effective date of the permit.**

2. The City shall complete the Green Hill Pond Diversion project by **September 30, 2005**.
3. The City shall complete the design associated with the Kelly Square Rehabilitation project by **November 30, 2005**.
4. The City shall complete the Kelly Square Rehabilitation project by **June 30, 2006**. The possible existence of live service connections in the proximity of the portion of the Old Mill Brook to be utilized for in-line storage may require extensive new sanitary sewer construction. If this were to occur, the timeline for completion of the Kelly Square Project could potentially be delayed and EPA and MADEP will consider the negotiation of a later completion date at such time.
5. The City shall complete the design associated with the Installation of Submersible Pumps at the QCSOSTF by **June 1, 2008**.
6. The City shall complete the Installation of Submersible Pumps at the QCSOSTF by **June 1, 2010**.

F. Unauthorized Discharges

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit from those outfalls listed in the permit. Discharges of wastewater from any other point sources are prohibited. The permittee must provide twenty four hour reporting of unauthorized discharges (see section D.1.e. of Part II of the permit) for all dry weather overflows from the combined system.

G. Notice of Elimination

The permittee shall give notice of elimination or change in status of any outfall listed in the permit as soon as possible in writing to the Director of the Office of Ecosystem Protection at EPA and to the Director of the Division of Watershed Management at the MA DEP.

H. Certification and Signature of Reports

All reports required by the permit and other information requested by the Director shall be signed and certified in accordance with section D.2. of Part II of this permit.

I. Report Submission

1. Signed and dated originals of all notifications and reports required herein, shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, MA 02114

2. Signed copies of all notifications and reports shall be submitted to the State at:

Massachusetts Department of Environmental Protection
Central Regional Office
Bureau of Waste Prevention
627 Main Street
Worcester, MA 01608

Massachusetts Department of Environmental Protection
1 Winter Street
Boston, MA 02108
Attn: Mr. Kevin Brander

and

Massachusetts Department of Environmental Protection
Division of Watershed Management
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, MA 01608

J. Retention of Records

The permittee shall retain all records of all monitoring information, copies of all reports required by this permit and records of all other data required by or used to demonstrate compliance with this permit, until at least three years after coverage under this permit terminates. This period may be modified by alternative provisions of this permit or extended by request of the Director at any time.

K. State Permit Conditions

1. This Discharge Permit is issued jointly by the U. S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection under Federal and State law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the Massachusetts DEP pursuant to M.G.L. Chap. 21, §43.
2. Each Agency shall have the independent right to enforce the terms and conditions of this Permit. Any modification, suspension or revocation of this Permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of this Permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this Permit is declared, invalid, illegal or otherwise issued in violation of State law such permit shall remain in full force and effect under Federal law as an NPDES Permit issued by the U.S. Environmental Protection Agency. In the event this Permit is declared invalid, illegal or otherwise issued in violation of Federal law, this Permit shall remain in full force and effect under State law as a Permit issued by the Commonwealth of Massachusetts.

ATTACHMENT A
FRESHWATER ACUTE
TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **Daphnid (Ceriodaphnia dubia) definitive 48 hour test.**

Acute toxicity test data shall be reported as outlined in Section VIII.

II. METHODS

Methods should follow those recommended by EPA in:

Weber, C.I. et al. Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, Fourth Edition. Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH. August 1993, EPA/600/4-90/027F. Any exceptions are stated herein.

III. SAMPLE COLLECTION

A discharge sample shall be collected. Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses required. The remaining sample shall be measured for total residual chlorine and dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.) Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1.0 mg/L chlorine. A thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) should also be run.

All samples held overnight shall be refrigerated at 4°C.

IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point upstream of the discharge free from toxicity or other sources of contamination. Avoid collecting near areas of obvious road or agricultural runoff, storm sewers or other point source discharges. An additional control (0% effluent) of a standard laboratory water of known quality shall also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S)**. Written requests for use of an alternate dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency-New England
JFK Federal Building (CAA)
Boston, MA 02203

It may prove beneficial to have the proposed dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol.

V. TEST CONDITIONS

The following tables summarize the accepted daphnid and fathead minnow toxicity test conditions and test acceptability criteria:

EPA NEW ENGLAND RECOMMENDED EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA 48 HOUR ACUTE TESTS¹

1. Test type	Static, non-renewal
2. Temperature (°C)	20 ± 1° C or 25 ± 1°C
3. Light quality	Ambient laboratory illumination
4. Photoperiod	16 hour light, 8 hour dark
5. Test chamber size	Minimum 30 ml
6. Test solution volume	Minimum 25 ml
7. Age of test organisms	1-24 hours (neonates)
8. No. daphnids per test chamber	5
9. No. of replicate test chambers per treatment	4
10. Total no. daphnids per test concentration	20
11. Feeding regime	Feed YCT and <u>Selenastrum</u> while holding organisms prior to initiating test as per manual.
12. Aeration	None
13. Dilution water ²	Receiving water, other surface water, synthetic soft water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q ^R or equivalent deionized water and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14. Dilution factor	≥ 0.5

15. Number of dilutions ³	5 plus a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16. Effect measured	Mortality-no movement of body or appendages on gentle prodding
17. Test acceptability	90% or greater survival of test organisms in control solution
18. Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection.
19. Sample volume required	Minimum 1 liter

Footnotes:

1. Adapted from EPA/600/4-90/027F.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.
3. When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

**EPA NEW ENGLAND RECOMMENDED TEST CONDITIONS FOR THE FATHEAD
MINNOW (PIMEPHALES PROMELAS) 48 HOUR ACUTE TEST¹**

- | | |
|--|---|
| 1. Test Type | Static, non-renewal |
| 2. Temperature (°C): | 20 ± 1 ° C or 25 ± 1°C |
| 3. Light quality: | Ambient laboratory illumination |
| 4. Photoperiod: | 16 hr light, 8 hr dark |
| 5. Size of test vessels: | 250 mL minimum |
| 6. Volume of test solution: | Minimum 200 mL/replicate |
| 7. Age of fish: | 1-14 days old and age within 24 hrs of the others |
| 8. No. of fish per chamber | 10 (not to exceed loading limits) |
| 9. No. of replicate test vessels per treatment | 4 |
| 10. Total no. organisms per concentration: | 40 |
| 11. Feeding regime: | Light feeding using concentrated brine shrimp nauplii while holding prior to initiating the test as per manual |
| 12. Aeration: | None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.) |

13. dilution water: ²	Receiving water, other surface water, synthetic soft water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q ^R or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14. Dilution factor	≥ 0.5
15. Number of dilutions ³	5 plus a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16. Effect measured	Mortality-no movement on gentle prodding
17. Test acceptability	90% or greater survival of test organisms in control solution
18. Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection.
19. Sample volume required	Minimum 2 liters

Footnotes:

1. Adapted from EPA-600/4-90/027F.
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.
3. When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour intervals. It is also recommended that total alkalinity and total hardness be measured in the control and highest effluent concentration at the beginning of the test. The following chemical analyses shall be performed for each sampling event.

<u>Parameter</u>	<u>Effluent</u>	<u>Diluent</u>	<u>Minimum Quantification Level (mg/L)</u>
Hardness ^{*1}	x	x	0.5
Alkalinity	x	x	2.0
pH	x	x	---
Specific Conductance	x	x	---
Total Solids and Suspended Solids	x	x	---
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Residual Chlorine (TRC) ^{*2}	x	x	0.05
Dissolved Oxygen	x	x	1.0
<u>Total Metals</u>			
Cd	x		0.001
Cr	x		0.005
Pb	x	x	0.005
Cu	x	x	0.0025
Zn	x	x	0.0025
Ni	x	x	0.004
Al	x	x	0.02
Mg, Ca	x	x	0.05

Superscripts:

^{*1} Method 2340 B (hardness by calculation) from APHA (1992) Standard Methods for the Examination of Water and Wastewater. 18th Edition.

^{*2} Total Residual Chlorine

Either of the following methods the 18th Edition of the APHA Standard Methods for the Examination of Water and Wastewater must be used for these analyses.

-Method 4500-CL E Low Level Amperometric Titration Method (the preferred method); or

-Method 4500-CL G DPD Colorimetric Method or use USEPA Manual of Methods Analysis of Water and Wastes, Method 330.5

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Kärber
- Trimmed Spearman-Kärber
- Graphical

See the flow chart in Figure 6 on p. 77 of EPA 600/4-90/027F for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 94 of EPA 600/4-90/027F.

VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

- Description of sample collection procedures, site description;
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody; and
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicant test data should be included.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)
- Raw data and bench sheets.
- Provide a description of dechlorination procedures (as applicable).
- Any other observations or test conditions affecting test outcome.

ATTACHMENT B
NINE MINIMUM TECHNOLOGY BASED CONTROLS
DOCUMENTATION AND IMPLEMENTATION GUIDANCE

The following guidance is for communities preparing documentation to demonstrate adequate implementation of the nine minimum technology based control measures for combined sewer overflows.

EPA has made a Best Professional Judgement (BPJ) determination that adequate implementation of these nine minimum control measures satisfies technology based requirements (Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT) to control and abate conventional pollutants and Best Available Technology Economically Achievable (BAT) to control and abate non-conventional and toxic pollutants.

Documentation Requirements

Documentation should provide sufficient information to demonstrate:

- that alternatives were considered for each of the nine minimum control measures.
- the reasoning for the alternatives that were selected.
- that the selected alternatives have been implemented.
- that the permittee has developed a schedule for actions that have been selected but not yet fully implemented.

Nine Minimum Technology Based Limitations (MTBL)

The following is a summary of specific information which must be included in the documentation of each of the MTBLs.

- 1. Proper operation and regular maintenance programs for the sewer system and combined sewer overflow points.**
 - a. An organizational chart showing the staff responsible for operation and maintenance (O&M) of the combined sewer system. Document that organization and staffing levels are adequate.
 - b. The funding allocated for O&M of the combined sewer system. Document that funding is adequate.
 - c. A list of facilities and structures that are critical to the performance of the combined sewer system, including all regulators, tide gates, pumping stations, and sections of sewer lines which are prone to sedimentation or obstruction.

Include an inspection plan which identifies the locations, frequency, procedures, documentation, and reporting of periodic and emergency inspections and maintenance. Document that these facilities are adequately operated and maintained.

- d. A summary of safety training and equipment provided to inspection and maintenance personnel. For instance, workers entering sewers must be trained and equipped for confined space entry. Document that training listed is adequate.
- e. A summary of technical training and maintenance equipment provided to inspection and maintenance personnel. Document that training and equipment are adequate to maintain the facilities identified in item 1.c. above.

2. Maximum Use of the Collection System for Storage

- a. Collection system inspection: This should focus on the identification of maintenance or design deficiencies that restrict the use of otherwise available system capacity. This evaluation should document that inadequate regulators, piping bottlenecks, and pumping deficiencies have been identified and corrected, or scheduled for correction. Where increased inspection and/or maintenance is proposed, this shall be reflected in the inspection plan required in item 1.c.
- b. Tide gate maintenance and repair: Tide gates prevent significant volumes of water from entering the conveyance system, thereby freeing up system storage capacity during wet weather periods. Where appropriate, document that tide gate maintenance and repair procedures are adequate.
- c. Adjustment of regulator settings: Adjustment of regulating devices can increase in-system storage of CSO flows and maximize transport to the POTW. Care should be taken to ensure that the regulator adjustment will not result in unacceptable surcharging of the system. Document that regulators have been adjusted to optimum settings. The method by which the community determined the optimum regulator setting (e.g. modeling, trial and error) shall be included in the documentation.
- d. Removal of obstructions to flow: Document that accumulations of debris which may cause flow restrictions are identified, and debris is removed routinely. Documentation shall include a summary of the locations where sediment is removed, the number of times each year the sediment is removed and the total quantity of material removed each year.

3. Review and Modification of the Industrial Pretreatment Program to assure CSO impacts are minimized.

- a. Review legal authority: Review the community's legal authority (i.e. pretreatment program, sewer use ordinance) to regulate non domestic discharges to its collection system. Identify those activities for which the community has or can obtain legal authority to address CSO induced water quality violations. For example, does the community have legal authority to require non domestic dischargers to store wastewater discharges during precipitation events or can the community require non domestic dischargers to implement runoff controls?
- b. Inventory non domestic dischargers: Identify those non domestic discharges that may, through quantity of flow or pollutant concentration or loadings, contribute to CSO induced water quality violations,
- c. Assess the significance of identified dischargers to CSO control issues: Assess whether the identified non domestic sources cause or contribute to CSO induced water quality standards by using monitoring, dilution calculations or other reasonable methods.
- d. Evaluate and propose feasible modifications: Identify, evaluate, and propose site-specific modifications to the pretreatment program which would address the non domestic dischargers identified as significant. Modifications which shall be considered include;

Volume-related controls: Document that detaining wastewater flows (sanitary, industrial, and/or storm water) within the industrial facility until they can be safely discharged to the POTW for treatment was considered and implemented where reasonable.

Pollutant Load-related controls: Document that reduction of concentrations of pollutants that enter the collection system during storm periods was considered and implemented where reasonable. Methods to be considered for reducing pollutant concentrations from stormwater runoff controls include structural and non-structural controls such as covering material storage areas, reducing impervious area, detention structures, and good housekeeping.

4. Maximization of flow to the POTW for treatment

It is recognized that most of the actions recommended for maximization of the collection system for storage will also serve to maximize flow to the POTW. In addition to optimizing those controls to maximize flow to the POTW, the following specific controls should be evaluated and implemented where possible;

- a. Use of off-line or unused POTW capacity for storage of wet weather flows.
- b. Use of excess primary treatment for treatment of wet weather flows. If the use of excess primary capacity will result in violations of the community's NPDES permit limits, the community shall get approval of the proposed bypass from the permitting authority prior to implementation.

5. Prohibition of CSO discharges during dry weather

- a. Document that the community's monitoring and inspections are adequate to detect and correct dry weather overflows (DWOs) in a timely manner.
- b. Document that DWOs due to inadequate sewer system capacity have been eliminated. If elimination is scheduled but not yet completed, the documentation shall include the schedule.
- c. Document that DWOs due to clogging of pipes and regulators or due to other maintenance problems have been eliminated to the maximum extent practicable. Increased inspection and maintenance of problem areas must be considered as well as modification or replacement of existing structures.

6. Control of Solid and Floatable Material in CSO Discharges

Document that low cost control measures have been implemented which reduce solids and floatables discharged from CSOs to the maximum extent practicable. Alternatives which shall be considered include;

- a. baffles in regulators or overflow structures.
- b. trash racks in CSO discharge structures.
- c. static screens in CSO discharge structures.
- d. catch basin modifications.
- e. end of pipe nets.
- f. outfall booms (on surface of receiving water)

7. Pollution prevention programs that focus on contaminant reduction activities.

- a. Prevention: through public education or increased awareness. For example, a water conservation outreach effort could result in less dry weather sanitary flow to the POTW and an increase in the volume of wet weather flows that can be treated

at the POTW.

- b. Control of disposal: through the use of garbage receptacles, more efficient garbage collection, or again, through public education.
- c. Anti-litter campaigns: Campaigns through public outreach and public service announcements can be employed to educate the public about the effects of littering, overfertilizing, pouring used motor oil down catch basins, etc.
- d. Illegal dumping: Programs such as law enforcement and public education can be used as controls for illegal dumping of litter, tires, and other materials into water bodies or onto the ground. Free disposal of these products at centrally located municipal dump sites can also reduce the occurrence of illegal dumping.
- e. Street cleaning
- f. Hazardous waste collection days: Communities are encouraged to schedule one or two days a year where household hazardous wastes can be brought to a common collection area for collection and environmentally safe disposal.

8. Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts.

The objective of this control element is to ensure that the public receives adequate notification of CSO impacts on pertinent water use areas. Of particular concern are beach and recreational areas that are affected by pollutant discharges in CSOs.

Where applicable, the permittee shall provide users of these types of areas with a reasonable opportunity to inform themselves of the existence of potential health risks associated with the use of the water body (bodies). The minimum control level, found in Section C.2.e. of the permit is posting of CSO discharge points.

9. Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

If possible, the permittee shall initiate monitoring and/or inspection activities above and beyond the minimum control levels specified in the permit. The purpose of these additional monitoring and/or inspection events is to better characterize quality of the CSOs and their impacts on all receiving waters. Examples of such events include CSO monitoring or receiving water monitoring for pollutants of particular concern.