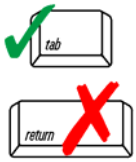
Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Drinking Water Program

Water Supply Facility Checklist for Hypochlorination Using Sodium Hypochlorite (NaOCl) or Calcium Hypochlorite ($Ca(OCl)_2$) for Permit Review/Approval

Instructions to Applicant

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



The purpose of this Drinking Water Program (DWP) Facility Checklist is to assist the public water systems to prepare drinking water program permit applications that comply with current MassDEP regulations, policies, and guidelines. Completion of this checklist ensures that the applicant has considered all minimum permitting aspects identified by the MassDEP Drinking Water Program. MassDEP may require additional information as regulations, standards or procedures are implemented or revised.

A Massachusetts registered professional engineer must complete the appropriate section(s) of the checklist for the permit requested (including any brief explanations), sign the certification statement, and submit this checklist, brief explanations (where noted), and certification with the permit application (BRP WS 23A, BRP WS 23B, BRP WS 23C, BRP WS 24, BRP WS 25, BRP WS 29, BRP WS 34, or other BRP WS). The DWP staff will use these documents to expedite the review/approval of the permit application.

MassDEP Guidelines & Policies for Public Water Systems
http://www.mass.gov/dep/water/laws/policies.htm#dwguid

MassDEP Drinking Water Regulations 310 CMR 22.00:
http://www.mass.gov/dep/service/regulations/310cmr22.doc

For this particular checklist it is understood the following words when used shall mean Sodium Hypochlorite(NaOCl) or bleach or Calcium Hypochlorite ($Ca(OCl)_2$): “chemical”, “disinfection”, “chlorine", “feed”, ”pump”, “hypochlorite”, or “feeder”.

If more than one chemical application or treatment plant is proposed, a separate checklist will be required.

N/A means “not applicable.”

A. Facility Information

PWS Name

City/Town | PWS ID # | Source Code #

Treatment Facility | Permit Application #

Check form submitted: ☐ BRP WS 34 ☐ BRP WS 29 ☐ BRP WS 25

☐ BRP WS 24 ☐ BRP WS 23C ☐ BRP WS 23B ☐ BRP WS 23A

☐ other BRP WS MassDEP Transmittal #

Chemical proposed: ☐ $Ca(OCl)_2$ ☐ NaOCl

This treatment is considered: ☐ Permanent ☐ Temporary ☐ Optional ☐ Emergency ☐ N/A

Water Supply Facility Checklist for Hypochlorination Using Sodium Hypochlorite (NaOCl) or Calcium Hypochlorite ($Ca(OCl)_2$) for Permit Review/Approval

B. Project Checklist

1. Brief Project description, Include any waiver sought from MassDEP requirements.

2. Treatment

Answer the following questions regarding treatment. Please note that the questions and sections correspond with the standards contained in the Massachusetts Department of Environmental Protection Drinking Water Program's latest editions of Guidelines and Policies for Public Water Systems.

Chapter 5.1 Treatment – General Information	**Yes**	**No**	**N/A**
1. Was a pilot study or in-plant demonstration, including the engineer's design recommendations, submitted to and approved by MassDEP prior to preparing plans and specifications?	☐	☐	☐
2. Will the engineer submit a copy of these proposed hypochlorite plans and specifications in one hard copy and one electronic copy on a compact disk in PDF format for MassDEP approval?	☐	☐	☐
3. Will an operation and maintenance manual be prepared in accordance with DWP Policy 93-02 after construction?	☐	☐	☐
4. Will a calibration curve be provided for all chemical feed pumps (after construction) for the operator?	☐	☐	☐
5. Has a contact time (CT) tracer study been conducted?	☐	☐	☐
6. Will the hypochlorite treatment pumping system be overseen by a certified operator who has been properly trained in the operation and maintenance of each piece of equipment, and will records of such training, signed by both the trainer and the operator, be maintained?	☐	☐	☐
Chapter 5.4 Disinfection			
7. Will any disinfection byproduct maximum contaminant level (MCL)'s and maximum residual disinfection level (MRDL)'s be exceeded under Drinking Water Regulations 310 CMR 22.00?	☐	☐	☐

Water Supply Facility Checklist for Hypochlorination Using Sodium Hypochlorite (NaOCl) or Calcium Hypochlorite ($Ca(OCl)_2$) for Permit Review/Approval

B. Project Checklist (cont'd)

	Yes	No	N/A
8. Is chlorine residual test equipment recognized in the latest edition of Standards Methods for the Examination of Water and Wastewater provided and capable of measuring residuals to the nearest 0.1 milligrams per liter, and use an instrument employing the DPD colorimetric method with a digital readout and a self-contained light source?	☐	☐	☐
9. Can chlorine be applied to raw water, settled water, filtered water, and water entering the distribution system for those systems using surface water filters?	☐	☐	☐
10. If only one chemical discharge line is run from metering pump to point of injection, is an extra (labeled) corporation cock and injection nozzle installed for emergency use?	☐	☐	☐
11. For permanent and temporary use, is the chemical equipment designed to ensure that no unchlorinated water is allowed into the distribution system?	☐	☐	☐
12. Is chemical system emergency or standby power available?	☐	☐	☐
13. Is the chlorinator capacity such that a free chlorine residual of at least 2 mg/l can be attained in the water after contact time of at least 30 minutes when maximum flow rates coincide with anticipated maximum chlorine demands?	☐	☐	☐

3. Chemical Application

Answer the following questions regarding chemical application. Please note that the questions and sections correspond with the standards contained in the Massachusetts Department of Environmental Protection Drinking Water Program's latest editions of Guidelines and Policies for Public Water Systems.

Chapter 6.0 Chemical Application	Yes	No	N/A
Plans & Specifications			
1. Are descriptions of feed equipment, including maximum, average, and non-zero minimum feed ranges (expressed in daily/monthly use and gallons/volume/weight per hour), provided?	☐	☐	☐
2. Are the locations of feeders, piping layout, and points of application shown?	☐	☐	☐
3. Are descriptions of storage and handling facilities provided?	☐	☐	☐
4. Are there specifications for the chemicals to be used?	☐	☐	☐
5. Are there operating and control procedures, including proposed application rates?	☐	☐	☐

Water Supply Facility Checklist for Hypochlorination Using Sodium Hypochlorite (NaOCl) or Calcium Hypochlorite ($Ca(OCl)_2$) for Permit Review/Approval

B. Project Checklist (cont'd)

	Yes	No	N/A
6. Are descriptions of testing equipment and procedures provided?	☐	☐	☐
7. Do the plans include a chemical schematic of all chlorine equipment and piping including sampling and monitoring equipment?	☐	☐	☐
8. Are chemicals applied at points and by means to assure maximum treatment efficiency?	☐	☐	☐
9. Are chemicals applied at points and by means to provide maximum safety to consumers?	☐	☐	☐
10. Are chemicals applied at points and by means to provide maximum safety to operators?	☐	☐	☐
11. Are chemicals applied at points and by means to assure satisfactory mixing of the chemicals with the water?	☐	☐	☐
12. Are chemicals applied at points and by means to provide maximum flexibility of operation through various points of application?	☐	☐	☐
13. Are chemicals applied at points and by means to prevent backflow, prevent back-siphonage, prevent bypassing of treatment units, and eliminate multiple points of feed through common manifolds?	☐	☐	☐
14. Is completed chemical injection point into a pipeline that uses an injection nozzle with corporation stop, ball check (to prevent backflow), and safety chain/cable, or uses a diffuser pipe into a basin?	☐	☐	☐
General Equipment Design			
15. Will the feeders be able to supply, at all times, the necessary amounts of chemicals at an accurate rate, throughout the range of feed?	☐	☐	☐
16. Can a minimum free chlorine residual of 0.2 mg/L after a 10-minute contact time be maintained in the water entering the distribution system?	☐	☐	☐
17. Are the chemical-contact materials and surfaces resistant to the aggressiveness of the chemical solution?	☐	☐	☐
18. Are corrosive chemicals introduced in such a manner as to minimize potential for corrosion?	☐	☐	☐
19. Are chemicals that are incompatible <u>not</u> fed, stored or handled together?	☐	☐	☐
20. Is concentrated NaOCl chemical kept separate from any wetted metals (except for titanium and tantalum) during the entire chemical feed process for operator safety?	☐	☐	☐
21. Are all chemicals conducted from the feeder to the point of application in separate conduits?	☐	☐	☐
22. Are chemical feeders as near as practical to the feed point?	☐	☐	☐
23. Is pump sized in specifications such that pump will not operate at a point no lower than 10% of feed range dial at any time for greater metering accuracy?	☐	☐	☐

B. Project Checklist (cont'd)

	Yes	No	N/A
24. Is pump sized in specifications such that pump will not deliver more than 2,000 % of optimal chemical dosage in mg/l to help prevent potential overfeeds?	☐	☐	☐
Chapter 6.1 Facility Design			
Feeders and Metering Pumps			
25. Does the chemical feed system include a minimum of two feeders, of which the standby unit or a combination of units is of sufficient capacity to replace the largest unit during shutdown?	☐	☐	☐
26. Is a separate feeder system used for each chemical applied?	☐	☐	☐
27. Are spare parts available for all feeders to replace parts that are subject to wear and damage, such as, anti-siphon valves, belts, tubing, etc.?	☐	☐	☐
Control of Feeders and Metering Pumps			
28. Are feeders manually or automatically controlled in setting stroke length, with automatic controls designed so as to allow override by manual controls?	☐	☐	☐
29. Are chemical feed rates proportioned or automatically flow paced to water flow?	☐	☐	☐
30. Is a means to measure treated water flow (in gpm and total gallons) provided?	☐	☐	☐
31. Are provisions made for measuring the daily net quantities of chemicals used in milliliters, gallons, or pounds?	☐	☐	☐
32. Are chemical feeders synchronized to start and stop (electrically interlocked with appropriate upstream water pump motor or thermal type flow switch) with the flow of water being treated as the primary electrical interlock?	☐	☐	☐
33. Will the chemical metering pumps interlock system be hard wired or use a twist type plug and receptacle with pilot light "on or energized" indicator to help prevent overfeeds?	☐	☐	☐
34. Will the controls be configured such that the chemical metering pumps are restarted only at the water treatment facility following an alarm initiated shutdown?	☐	☐	☐
35. If scales are used, are scales accurate to measure 0.5% of the load in pounds?	☐	☐	☐
36. Are positive displacement type solution pumps used to feed hypochlorite chemicals?	☐	☐	☐

Water Supply Facility Checklist for Hypochlorination Using Sodium Hypochlorite (NaOCl) or Calcium Hypochlorite ($Ca(OCl)_2$) for Permit Review/Approval

B. Project Checklist (cont'd)

	Yes	No	N/A
37. Does each feeder have a pressure relief valve (that is safely tubed or piped back into the daytank, solution tank, carboy shipping container, or 1,000 ml calibration chamber used as a suction chamber) on the discharge line for operator safety?	☐	☐	☐
38. Is there a clear calibration chamber (in ml) or mass flow meter mounted near each feed pump to aid the operator in setting the pump rate?	☐	☐	☐
Liquid Chemical Feeders - Siphon Control			
39. Do liquid chemical feeders provide discharge at a point of positive pressure or provide vacuum relief; and provide an air gap or anti-siphon device?	☐	☐	☐
40. If a peristaltic pump is used, is an anti-siphon or back-pressure valve used on discharge line?	☐	☐	☐
41. Do liquid chemical feeders provide other suitable means or combinations as necessary to prevent chemical solutions from being siphoned into the water supply, such as a diaphragm type operated back-pressure valve or diaphragm type operated anti-siphon valve located where visible and easily accessible to the operator?	☐	☐	☐
Cross-Connection Control			
42. Is cross connection control in this permit provided in accordance with regulations of the MassDEP Drinking Water Regulations (310 CMR 22.22), and any filtered water feed points and un-filtered water feed points are not cross connected via the daytank and chemical feeder?	☐	☐	☐
Location of Chemical Feed Equipment			
43. Is the chemical feed equipment located in a separate room to reduce hazards and vapors?	☐	☐	☐
44. Is the chemical feed equipment conveniently located near points of application to minimize length of feed lines?	☐	☐	☐
45. Is the chemical feed equipment readily accessible with adequate space provided for servicing, repair, and observation of operation?	☐	☐	☐
46. Is the chemical feed equipment located either above or inside the containment area?	☐	☐	☐
47. Are all chlorine storage containers stored out of the direct sunlight and in a cool area?	☐	☐	☐
In Plant Service Supply			
48. Is the in plant service water supply (if used in this permit) ample in quantity and adequate in pressure?	☐	☐	☐
49. Is the in plant service water supply provided with a means for measurement if preparing specific solution concentrations by dilution?	☐	☐	☐
50. Is the in plant service water supply (if used in this permit) properly protected against backflow and back-siphonage?	☐	☐	☐

B. Project Checklist (cont'd)

Chemical Storage and Process Tanks	Yes	No	N/A
51. Is space provided for:			
a. at least 30 days of chemical supply to meet average treated water demand?	☐	☐	☐
b. convenient and efficient handling of chemicals?	☐	☐	☐
52. Are storage tanks and pipelines for liquid chemicals dedicated to the specific chemicals?	☐	☐	☐
53. Will the chemicals be stored in covered or unopened shipping containers, unless the chemical is transferred into an approved covered storage unit?	☐	☐	☐
54. Do bulk liquid chemical tanks have:			
a. a means to visually observe liquid level that is calibrated to indicate the liquid volume in the tank?	☐	☐	☐
b. a proper vent that is separate from any other chemical vent?	☐	☐	☐
c. an overflow with minimum size and capacity equal to the fill pipe?	☐	☐	☐
d. a minimum 6-inch high containment curb?	☐	☐	☐
e. a label to designate the chemical name contained?	☐	☐	☐
f. a threaded and capped ball valved drain that discharges to a containment area or holding tank?	☐	☐	☐
g. a vent(s) sized at 150% of fill pipe diameter to prevent excess pressures or vacuum?	☐	☐	☐
h. a bulk solution tank fill valve station labeled with the chemical name, 4 digit UN number, and formula of the chemical, and provisions for locking when not in use, and provide containment for minor releases during the fill process?	☐	☐	☐
i. a cover?	☐	☐	☐
j. a high level liquid sensor that activate audible and visual alarms mounted at locations that will alert both the treatment system operator and tank truck delivery driver to prevent overfilling of bulk tank(s)?	☐	☐	☐
k. a ball shut off valve on inside fill pipe to prevent backflow of chemical when hose is disconnected, and to guard against any unauthorized fill ups?	☐	☐	☐
l. a design to minimize accidental splashing, and is overflow brought down to 12-24 inches from floor that discharges over a splash plate, and away from any sensitive equipment?	☐	☐	☐

B. Project Checklist (cont'd)

	Yes	No	N/A
m. outside vent(s) terminating to prevent contamination, such as, in a down turned position, and covered with a 24-mesh corrosion-resistant screen?	☐	☐	☐
n. if penetrating a roof, does vent terminate at least 24 inches above the roof to prevent snowmelt from entering bulk tank?	☐	☐	☐
o. an inside building location or above ground location?	☐	☐	☐
55. Do containment areas provide:			
a. a bermed area capable of containing 110% of the volume of the chemicals stored within the area?	☐	☐	☐
b. no floor drains or sump pumps unless the flow is directed to a separate containment area or tank?	☐	☐	☐
c. a sump or sloped to a low area to allow pumpage?	☐	☐	☐
d. an overflow from chemical storage tanks that discharges to the containment area?	☐	☐	☐
e. separate containment for chemicals that are not compatible, such as, acids and bases?	☐	☐	☐
f. a leak/spill detection alarm device?	☐	☐	☐
56. If overflow discharge to the outside of the containment area, can overflows do one of the following? a. discharge to a holding tank with a minimum volume equal to 25% of the storage tank, or b. discharge to a separate covered containment area with a minimum volume equal to 25% of the storage tank, or c. have an overflow capacity in the storage tank with a minimum volume equal to 25% of the capacity of the tank and a high audio and visual level alarm that will be set at the full level, excluding the overflow volume?	☐	☐	☐
57. Are two solution tanks of adequate volume provided, if necessary, to assure continuity of supply in servicing a solution tank?	☐	☐	☐
58. Are all chemical solutions kept covered and are the openings in bulk tanks with access openings curbed and fitted with tight overhanging covers?	☐	☐	☐
59. Subsurface locations for bulk solution tanks:			
a. do they assure freedom from sources of possible contamination?	☐	☐	☐
b. are they located in a double walled containment vault with a spill/leak detection device?	☐	☐	☐

B. Project Checklist (cont'd)

	Yes	No	N/A
60. Are overflow pipes:			
a. directed downward into the containment area, with the end screened or otherwise protected?	☐	☐	☐
b. located where noticeable?	☐	☐	☐
61. Is each large tank provided with a valved drain, protected against backflow in accordance with Cross Connection Control Regulations and liquid chemical feeder's guidance, and located so that chemicals from equipment failure, spillage, or accidental drainage will not enter the water in conduits or treatment or storage basins?	☐	☐	☐
62. If a smaller system, does design show a hypochlorite chemical fed directly from a scale mounted shipping container no larger than 30 gallons?	☐	☐	☐
63. Is a covered, labeled, and vented day tank provided when bulk storage tank(s) are provided?	☐	☐	☐
64. Are the day tank(s) sized to hold no more than a 30 - 60 hour chemical supply at average treated water demand rate?	☐	☐	☐
65. Are precise means (scale mounting, ultrasonic level sensing, gauge rods with floats, or visual calibration where ratio of tank height to diameter are meaningful) provided to measure the volume or weight of hypochlorite fed daily?	☐	☐	☐
66. Transfer of Chemicals:			
a. Are motor or magnetic-driven transfer pumps to daytank provided?	☐	☐	☐
1. Is a liquid level limit switch on daytank cover provided to automatically shut off transfer pump when daytank is full?	☐	☐	☐
b. Is filling of daytank done manually and not automated and filled by a safe means?	☐	☐	☐
Feed Lines			
67. Are feed lines as short and straight as possible in length of run and:			
a. of durable, corrosion resistant material?	☐	☐	☐
b. easily accessible?	☐	☐	☐
c. protected against freezing?	☐	☐	☐
d. readily cleanable?	☐	☐	☐
e. properly protected and secured?	☐	☐	☐

B. Project Checklist (cont'd)

	Yes	No	N/A
68. Does the suction feed line(s) slope upward from the chemical source to the metering pump without loops to help avoid air-entrapment with a foot-valve and degassing valve pump head, or in larger systems is a flooded suction used with 2 anti-siphon or backpressure valves in series on discharge line?	☐	☐	☐
69. Are the feed lines designed consistent with scale-forming or solids depositing properties of the water, chemical, solution or mixture conveyed?	☐	☐	☐
70. Are the feed lines color-coded yellow, labeled with chemical name, and show arrows for direction of flow?	☐	☐	☐
71. Are any outside underground feed lines in secondary containment?	☐	☐	☐
72. Are any outside underground secondary containment of feed lines sloped to a location where any leaks are visually noticeable?	☐	☐	☐
Handling			
73. Are carts, elevators, drum skids, drum trucks and other appropriate means provided for lifting chemical containers to minimize excessive lifting by operators?	☐	☐	☐
74. If drums or barrels are used, are provisions made for disposing of drums or barrels by an approved procedure which will minimize exposure, and not be allowed to be rinsed out or otherwise exposed to internal contamination (covered in SOP)?	☐	☐	☐
Housing			
75. Are floor surfaces smooth, impervious, slip-proof and well drained?	☐	☐	☐
76. Do vents from feeders, storage facilities and equipment exhaust discharge to the outside atmosphere above grade and remote from air intakes, doors, windows, and parked vehicles?	☐	☐	☐
77. Is adequate ventilation and heating provided that conforms to all local and/or state codes?	☐	☐	☐
Chapter 6.2 Chemicals			
Shipping Containers			
78. Do specs state that chemical shipping containers shall be fully labeled to include chemical name, purity, concentration, supplier name and address?	☐	☐	☐

B. Project Checklist (cont'd)

	Yes	No	N/A
Specifications			
79. Do specs state that chemicals shall meet (latest issue) ANSI / AWWA B300-04 (AWWA Standard for Hypochlorites) and NSF 60 specifications as referenced in standard operating procedure (SOP)?	☐	☐	☐
Assay			
80. Are there provisions for assay of chemicals bulk delivered, such as, a labeled sampling tap on fill line to bulk tank to verify accuracy of chemical specifications?	☐	☐	☐
81. For non-bulk deliveries will recommendation that visual and chemical sampling of chemical during delivery be conducted to verify the correct chemical is being added be included in standard operating procedure (SOP), or for bulk deliveries, will the will the applicant's O & M include delivery and inspection requirements for all bulk chemical deliveries to water treatment facilities, as provided in MassDEP "SOP – Security Guidelines for the Inspection of Bulk Chemical Deliveries"? http://www.mass.gov/dep/water/drinking/bulkchem.doc?	☐	☐	☐
Chapter 6.3 Operator Safety **Other Protective Equipment and Systems**			
82. Are a pair of rubber gloves, an apron or other protective clothing, splash goggles, and facemask provided for each operator per Material Safety Data Sheets (MSDS) and OSHA 29CFR1910?	☐	☐	☐
83. Are a safety deluge shower and eyewash installed between the location of the hazard and the nearest means of egress?	☐	☐	☐
84. If a bulk chemical tank over 1,000 gallons is used, are safety deluge shower and piped eye-washing device approved by ANSI Z358.1-2004?	☐	☐	☐
85. Does activation of deluge shower or eyewash initiate a visual and audible alarm to remote location?	☐	☐	☐
86. Is a water-holding tank that will allow water to come to room temperature installed in the water line feeding the safety deluge shower and piped eye washing device?	☐	☐	☐
87. Will a sufficient amount of spill absorbent be stored on site for any uncontrolled discharges?	☐	☐	☐
88. Will a standard operating procedure (SOP) for hypochlorite be posted in a protective shop envelope on the wall for the operator, and will the hypochlorite MSDS be available on site?	☐	☐	☐

B. Project Checklist (cont'd)

	Yes	No	N/A
Chapter 6.4.6 Sodium Hypochlorite			
89. If sodium hypochlorite is used, will feed rate be adjusted by operator (covered in SOP) to compensate for progressive loss in chlorine content due to storage age of chemical?	☐	☐	☐
90. If sodium hypochlorite is used, when chemical dilution is unavoidable, is dilution water soft, non-acid, and deionized to help avoid contamination?	☐	☐	☐
91. If sodium hypochlorite storage containers are used, will containers be located and used out of sunlight and in a cool area, and will containers be returned for credit and not rinsed out (covered in SOP)?	☐	☐	☐
92. If sodium hypochlorite is used, will the SOP include guidance on occurrence of perchlorate, and methods to minimize its occurrence?	☐	☐	☐

4. Chapter 7.0 Pumping Facilities

Answer the following questions regarding pumping facilities. Please note that the questions and sections correspond with the standards contained in the Massachusetts Department of Environmental Protection Drinking Water Program's Guidelines and Policies for Public Water Systems.

1. Are analyzer discharges in compliance with DEP fact sheet "Registration of Discharges to the Ground From Pump Houses and Other Public Water System Facilities Including Discharges from In-line Analyzers"? http://www.mass.gov/dep/water/laws/phdisreg.htm	☐	☐	☐
2. Is a representative labeled sample tap located 100 feet downstream available for daily chlorine testing of the treated water?	☐	☐	☐

5. Additional Questions: Including Chapters 2 & 12 and Chapter 6.1.3 Chemical Safety Control Strategy for Critical Chemical Control Systems

1. Is a representative labeled raw water sample tap available that is a smooth-nosed type without exterior or interior threads, and without aerators or screens present, and is not of the petcock type?	☐	☐	☐
2. If sodium hypochlorite is proposed, amount of sodium to be added to the water at recommended free chlorine dosages is (fill in number) mg/l			☐
3. Is a continuous free chlorine monitor with two alarm contacts available to prevent chlorine overfeed or chlorine underfeed conditions?	☐	☐	☐
4. Is there an emergency under and over-feed alarm system?	☐	☐	☐
5. Is there any emergency automatic phone, radio, or cellular dialer alarm to a properly certified operator to report a chemical under or over-feed?	☐	☐	☐
6. Are controls designed so that if a chemical feed pump is in the manual mode, the operator is notified locally by a visual and/or audible alarm and/or remotely by an autodialer?	☐	☐	☐

B. Project Checklist (cont'd)

	Yes	No	N.A.
7. Does each metering pump have a HOA (hand, off, automatic) switch, and a timer on hand mode so chemical metering pump will automatically shut down after no more than one hour or a spring loaded HOA switch?	☐	☐	☐
8. Will each HOA switch show proper signage on site explaining usage?	☐	☐	☐
9. If not staffed 24/7/365, will the chemical feed pumps and water flow or water pumps automatically shut down and notify the operator if a chlorine underfeed or overfeed occurs?	☐	☐	☐
10. Will the chemical feed system be linked to a computer SCADA or alarm system via radio or leased phone lines?	☐	☐	☐
11. Do the plans and specifications include a description of the "Chemical Safety Control Strategy for Critical Chemical Feed Systems" as described in section 6.1.3?	☐	☐	☐
12. Is a free chlorine analyzer provided to monitor the treated water, or was a hypochlorite analyzer waiver granted by MassDEP in writing?	☐	☐	☐
13. Is the chlorine analyzer interlocked so if chlorine is out of range, then the water flow or water pumps and metering pump will automatically shut down and an alarm will be sent to the certified operator?	☐	☐	☐
14. Is powering of all chlorine metering pumps configured to prevent overriding of the safety shut down system?	☐	☐	☐
15. Will the SOP include procedures to test all chlorine alarms and controls (both high and low) quarterly?	☐	☐	☐
16. Are the chemical feed system operational parameters recorded by a chart recorder, electronic data logger, or SCADA system?	☐	☐	☐
17. Will the applicant's emergency response plan (ERP) be updated to include the hypochlorite chemical addition emergency procedures and notification pursuant to 310 CMR 22.04(13) and MassDEP Guidelines and Policies for Public Water Supplies, Chapter 12 - Emergency Response Planning Requirements Guidance including Appendix O - Handbook for Water Supply Emergencies? http://www.mass.gov/dep/water/laws/policies.htm#dwguid http://www.mass.gov/dep/water/drinking/systems.htm#emerresp	☐	☐	☐
6.0 Certified Operator Staffing & Treatment Plant Classification			
1. With the proposed chemical addition, and including any additional treatment processes, indicate the water treatment plant classification for this facility pursuant to 310 CMR 22.11B(4)(a): ☐ VSS, ☐ I-T, ☐ II-T, ☐ III-T, or ☐1V-T			☐
2. Does the applicant's proposed staffing plan comply with the Certified Operator provisions of 310 CMR 22.11B? Submittal of plan is required.	☐	☐	☐

B. Project Checklist (cont'd)

7.0 Monitoring and Reporting

	Yes	No	N.A.
1. Will the applicant prepare and submit to MassDEP monthly Chemical Addition reports for each chemical added pursuant to 310 CMR 22.15(4) requirements?	☐	☐	☐
2. If raw water is currently not sampled for total coliform each monitoring period, will the applicant prepare and submit to MassDEP a revised Total Coliform Sampling plan for approval, that includes sampling of the raw water as required by 310 CMR 22.05(1)(a)?	☐	☐	☐

8.0 Ground Water Rule (GWR) Disinfection Provisions *The applicant must demonstrate ability to respond to a Ground Water Rule fecal contamination event in the source water.*

1. If used as a primary or secondary disinfectant is a "Ground Water Rule Log Credit Determination" form (GWR form A) and associated schematic for each disinfected point of entry included in the application?	☐	☐	☐
2. Has the applicant previously completed the Groundwater Rule Immediate & Long-Term Response to Fecal Contamination form (GWR B-Response form)?	☐	☐	☐
3. If the source is subject to either GWR compliance monitoring requirements, or Surface Water or Ground Water Under the Influence of Surface Water (GWUI) requirements, are applicable monitoring, reporting and recordkeeping requirements included in the SOP?	☐	☐	☐
4. Is a GWR B-Response form included with the application?	☐	☐	☐
5. Is the treatment system able to provide 4-log disinfection for the inactivation of viruses prior to the first customer?	☐	☐	☐
6. If the treatment system is designed to provide 4-log disinfection, but this level of treatment is not currently required, does the applicant intend to conduct GWR compliance monitoring and reporting to avoid source water GWR triggered monitoring requirements?	☐	☐	☐
7. If 4-log disinfection is required, what is the minimal dosing level of hypochlorite to be maintained at the point of application? (fill in number) mg/L	☐	☐	☐
8. a. Are there satisfactory alarms installed to indicate failures in continuous monitoring?	☐	☐	☐
b. fill in the appropriate low and high hypochlorite alarm set points: Low Alarm set point in mg/l High alarm set point in mg/l	☐	☐	☐

B. Project Checklist (cont'd)

9. Detailed Explanation

Please attach a brief explanation for any question answered "No" and "N/A" in the checklist. The brief explanation should explain why the applicant/applicant's engineer does not feel this item is necessary to maintain the integrity of the design and/or operation of the facility.

Detailed explanation of the following question(s) is attached:

Section #	Page #	Question #

C. Certification

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Drinking Water Program

Water Supply Facility Checklist for Hypochlorination Using Sodium Hypochlorite (NaOCl) or Calcium Hypochlorite ($Ca(OCl)_2$) for Permit Review/Approval

A. Applicant's Engineer

I hereby certify, as a Professional Engineer registered in Massachusetts, that the Drinking Water Facilities Checklist is a true and accurate representation on the information contained in my plans and specifications submitted with this permit application.

Signature/Stamp of Professional Engineer

Signature/Stamp of Second Professional Engineer (if needed)

Date

Date

Printed Name

Printed Name

Title

Title

Employer

Employer

Phone Number | Email Address

Phone Number | Email Address

B. Applicant

This checklist and attached permit application are submitted on behalf of water representative:

City/Town

Address

PWS Name | PWS ID # | Phone Number

Applicant Name/Title

Email Address

Applicant Signature

Date