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.; the "CWA", and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§26-53),

CSX Transportation, Inc.
500 Water Street – J275
Jacksonville, FL 32202

is authorized to discharge from a facility located at

CSX Transportation, Inc.
Beacon Park Yard
170 Cambridge Street
Allston, MA 02134

to receiving water named

Charles River Basin (MA72-36)

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

This permit shall become effective on the first day of the calendar month following 60 days after signature if comments are received. If no comments are received, this permit shall become effective following signature.

This permit and the authorization to discharge expire at midnight, five (5) years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on July 1, 2005, was modified on February 2, 2006, and expired (as modified) on November 18, 2010.

This permit consists of ***13*** pages in Part I including effluent limitations and monitoring requirements, ***5 pages in Attachment 1, 4 pages in Attachment 2, 39 pages in Attachment 3,*** and 25 pages in Part II including Standard Conditions.

Signed this day of

Ken Moraff, Acting Director
Office of Ecosystem Protection
Environmental Protection Agency Program
Boston, MA

David Ferris, Director
Massachusetts Wastewater Management
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge treated stormwater and process water through **Outfall Serial Number 001A** to the Salt Creek Chamber which is part of a stormwater drainage system that flows to the Charles River. Such discharge shall: 1) be limited and monitored by the permittee as specified below; and 2) not cause a violation of the State Surface Water Quality Standards of the receiving water.

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirements [1]	
		Average Monthly	Maximum Daily	Measurement Frequency [2,3]	Sample Type
Flow Rate Effluent	GPD	47,000	315,000	Continuous	Recorder
Oil and Grease (O&G)	mg/L	---	15	1/Month	Grab
pH [4]	SU	6.0 – 8.3		Continuous	Recorder
Benzene	ug/L	---	51.0	1/Month	Grab
Total Suspended Solids (TSS)	mg/L	---	100.0	1/Month	Grab
Surfactants	mg/L	---	Report	1/Month	Grab
Toluene	ug/L	---	Report	1/Quarter	Grab

Ethylbenzene	ug/L	---	Report	1/Quarter	Grab
Xylenes	ug/L	---	Report	1/Quarter	Grab
Zinc	ug/L	---	Report	1/Quarter	Grab
Chloroform	ug/L	---	Report	1/Quarter	Grab
Cyanide	mg/L	---	Report	1/Quarter	Grab
Bis(2-ethylhexyl)phthalate	ug/L	---	Report	1/Quarter	Grab
~~***Phosphorus***~~	~~***mg/L***~~	~~***---***~~	~~***Report***~~	~~***1/Quarter***~~	~~***Grab***~~
Escherichia coli (*E. coli*) (wet weather) [5]	colonies/ 100mL	---	Report	1/Quarter	Grab
Escherichia coli (*E. coli*) (dry weather) [5]	colonies/ 100mL	---	Report	1/Month	Grab

See page 4 for explanation of footnotes.

(Part I.A.1, Continued)

Footnotes:

1. All samples shall be representative of the effluent that is discharged through Outfall 001A, taken at a representative location between the point of discharge from the last oil/water (o/w) separator and the point of discharge to the Salt Creek Chamber. All samples shall be taken during normal operating conditions, which are defined as normal working hours when the o/w separator is operating. A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of the month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report submitted to EPA. In addition, all samples shall be analyzed using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP.

2. Continuous monitoring shall be defined as monitoring at a minimum of fifteen (15) minute intervals during discharge. The results shall be recorded with the time and date on a chart, and shall be made readily available upon request by USEPA or MassDEP. The permittee shall use EPA Method 150.2 for continuous monitoring of pH, and use applicable instruments according to the manufacturing specifications that are commercially available to monitor and record flow rate. For operation and maintenance activities and for equipment failures and other malfunctions of the monitoring and recording equipment, the permittee shall estimate the flow rate if the equipment becomes inoperable using standard engineering principles at least once per day for up to seven days maximum. The chosen equipment for flow rate shall have an accuracy of +/- 100 GPD.

3. Sampling frequency of 1/month is defined as the sampling of one (1) discharge event during each calendar month, when discharge occurs. Sampling frequency of 1/quarter is defined as the sampling of four (4) discharge events in each calendar year, when discharge occurs. Quarters are defined as the interval of time between the months of: January through March, inclusive; April through June, inclusive; July through September, inclusive; and October through December, inclusive. If no discharge occurs during the monitoring period, the permittee shall indicate this on the Discharge Monitoring Report (DMR). The permittee shall submit the results to EPA of any additional testing done to that required herein, if it is conducted in accordance with EPA approved methods consistent with the provisions of 40 CFR §122.41(l)(4)(ii).

4. Required for State Certification. The permittee shall report the minimum daily pH value and the maximum daily pH value for each monitoring period. The pH shall be in the range of 6.0 to 8.3 standard units and no more than 0.5 units outside of the natural background range. There shall be no change from natural background conditions that would impair any use assigned to this Class.

5. The permittee shall sample for *E. coli* on a monthly basis during dry weather and a quarterly basis during wet weather.

Part I.A. (Continued)

2. The discharge shall not cause objectionable discoloration of the receiving waters.

3. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.

4. Any process that adds heat to the wastewater or stormwater effluent is prohibited.

5. The discharge of any flows through Outfall 002 other than stormwater not associated with industrial activity is prohibited.

6. The discharge of any flows other than those specified in this permit which discharge through Outfalls 001 and 002 are prohibited.

7. The discharge shall not contain materials in concentrations or combinations which are hazardous or toxic to human health, aquatic life of the receiving surface waters or which would impair the uses designated by its classification.

8. EPA may modify this permit in accordance with EPA regulations in 40 Code of Federal Regulations (CFR) §122.62 and §122.63 to incorporate more stringent effluent limitations, increase the frequency of analyses, or impose additional sampling and analytical requirements.

9. All existing manufacturing, commercial, mining and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:

   a. That any activity has occurred or will occur which would result in the discharge, on a routine basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

      (1) One hundred micrograms per liter (100 µg/l);

      (2) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrite; five hundred micrograms per liter (500 µg/l) for 2,4-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

      (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R.§122.21(g)(7); or

      (4) Any other notification level established by the Director in accordance with 40 C.F.R.§122.44(f).

   b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

      (1) Five hundred micrograms per liter (500 µg/l);

(2) One milligram per liter (1 mg/l) for antimony;

(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R.§122.21(g)(7);

(4) Any other notification level established by the Director in accordance with 40 C.F.R.§122.44(f).

c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

10. Toxics Control

a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.

b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

B. REOPENER CLAUSES

a. This permit shall be modified, or alternately, revoked and reissued, to comply with any applicable standard or limitation promulgated or approved under sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:

a. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or

b. Controls any pollutants not limited in the permit.

C. STORM WATER POLLUTION PREVENTION PLAN

1. The permittee shall develop, implement, and maintain a Stormwater Pollution Prevention Plan (SWPPP) designed to reduce, or prevent, the discharge of pollutants in stormwater to the receiving waters identified in this permit. The SWPPP shall be a written document that is consistent with the terms of this permit. Additionally, the SWPPP shall serve as a tool to document the permittee's compliance with the terms of this permit. Development guidance and a recommended format for the SWPPP are available on the EPA website for the Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activities (http://cfpub.epa.gov/npdes/stormwater/msgp.cfm).

2. The SWPPP shall be completed or updated and certified by the permittee within 90 days after the effective date of this permit. The permittee shall certify that its SWPPP has been completed or updated and shall be signed in accordance with the requirements identified in 40 CFR §122.22. A copy of this initial certification shall be sent to EPA and MassDEP within one hundred and twenty (120) days of the effective date of this permit.

3. The SWPPP shall be prepared in accordance with good engineering practices and shall be consistent with the general provisions for SWPPPs included in the most current version of the MSGP. In the current MSGP (effective May 27, 2009), the general SWPPP provisions are included in Part 5 and Part 8.P. Specifically, the SWPPP shall document the selection, design, and installation of control measures and contain the elements listed below:

   a. A pollution prevention team with collective and individual responsibilities for developing, implementing, maintaining, revising and ensuring compliance with the SWPPP;
   b. A site description which includes the activities at the facility; a general location map showing the facility, receiving waters, and outfall locations; and a site map showing the extent of significant structures and impervious surfaces, directions of stormwater flows, and locations of all existing structural control measures, stormwater conveyances, pollutant sources (identified in Part 3.c. below), stormwater monitoring points, stormwater inlets and outlets, and industrial activities exposed to precipitation such as, storage, disposal, material handling;
   c. A summary of all pollutant sources which includes a list of activities exposed to stormwater, the pollutants associated with these activities, a description of where spills have occurred or could occur, a description of non-stormwater discharges, and a summary of any existing stormwater discharge sampling data;
   d. A description of all stormwater controls, both structural and non-structural;
   e. A schedule and procedure for implementation and maintenance of the control measures described above and for the quarterly inspections and best management practices (BMPs) described below;
   f. Sector specific SWPPP provisions included in Sector P – Land Transportation and Warehousing, Subsector P1 - Railroad Transportation.

4. The SWPPP shall document the appropriate best management practices (BMPs) implemented or to be implemented at the facility to minimize the discharge of pollutants in stormwater to waters of the United States and to satisfy the non-numeric technology-based effluent limitations included in this permit. At a minimum, these BMPs shall be consistent with the control measures described in the most current version of the MSGP. In the current MSGP (effective May 27, 2009), these control measures are described in Part 2.1.2 and Part 8.P. Specifically, BMPs must be selected and implemented to satisfy the following non-numeric technology-based effluent limitations:

   a. Minimizing exposure of manufacturing, processing, and material storage areas to stormwater discharges.
   b. Good housekeeping measures designed to maintain areas that are potential sources of pollutants.

c. Preventative maintenance programs to avoid leaks, spills, and other releases of pollutants in stormwater discharged to receiving waters.
d. Spill prevention and response procedures to ensure effective response to spills and leaks if or when they occur.
e. Erosion and sediment controls designed to stabilize exposed areas and contain runoff using structural and/or non-structural control measures to minimize onsite erosion and sedimentation, and the resulting discharge of pollutants.
f. Runoff management practices to divert, infiltrate, reuse, contain, or otherwise reduce stormwater runoff.
g. Proper handling procedures for salt or materials containing chlorides that are used for snow and ice control.
h. Sector specific BMPs included in Sector P - Land Transportation and Warehousing, Subsector P1 - Railroad Transportation.

5. All areas with industrial materials or activities exposed to stormwater and all structural control used to comply with effluent limits in this permit shall be inspected, at least once per quarter, by qualified personnel with one or more members of the stormwater pollution prevention team. Inspections shall begin during the 1^{st} full quarter after the effective date of this permit. EPA considers quarters as follows: January to March; April to June; July to September; and October to December. Each inspection must include a visual assessment of stormwater samples (from each outfall), which shall be collected within the first 30 minutes of discharge from a storm event, stored in a clean, clear glass or plastic container, and examined in a well-lit area for the following water quality characteristics: color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of pollution. The permittee shall document the following information for each inspection and maintain the records along with the SWPPP:

a. The date and time of the inspection and at which any samples were collected;
b. The name(s) and signature(s) of the inspector(s)/sample collector(s);
c. If applicable, why it was not possible to take samples within the first 30 minutes;
d. Weather information and a description of any discharges occurring at the time of the inspection;
e. Results of observations of stormwater discharges, including any observed discharges of pollutants and the probable sources of those pollutants;
f. Any control measures needing maintenance, repairs or replacement; and,
g. Any additional control measures needed to comply with the permit requirements.

6. The permittee shall amend and update the SWPPP within 14 days of any changes at the facility that result in a significant effect on the potential for the discharge of pollutants to the waters of the United States. Such changes may include, but are not limited to: a change in design, construction, operation, or maintenance, materials storage, or activities at the facility; a release of a reportable quantity of pollutants as described in 40 CFR §302; or a determination by the permittee or EPA that the BMPs included in the SWPPP appear to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with industrial activity.

7. Any amended, modified, or new versions of the SWPPP shall be re-certified and signed by the permittee in accordance with the requirements identified in 40 CFR §122.22. The permittee shall also certify, at least annually, that the previous year's inspections and maintenance activities were conducted, results recorded, records maintained, and that the facility is in compliance with this permit. If the facility is not in compliance with any aspect of this permit, the annual certification shall state the non-compliance and the remedies which are being undertaken. Such annual certifications also shall be signed in accordance with the requirements identified in 40 CFR §122.22. The permittee shall maintain at the facility a copy of its current SWPPP and all SWPPP certifications (the initial certification, re-certifications, and annual certifications) signed during the effective period of this permit, and shall make these available for inspection by EPA and MassDEP. In addition, the permittee shall document in the SWPPP any violation of numerical or non-numerical stormwater effluent limits with a date and description of the corrective actions taken.

8. Additionally, the draft permit requires development and implementation of the following site-specific BMPs, at a minimum:
   a. Perform regular inspections and maintenance of the booms at Outfalls 001 and 002, at a minimum frequency of 1/month, to ensure any accumulated oil, scum, debris, or trash collected around the booms is regularly removed and disposed of properly.
   b. Perform regular inspections and maintenance of the absorbent track-matting, at a minimum frequency of 1/month.
   c. Perform regular inspections and maintenance of the treatment systems (both the WWTF and the SWTF), at a minimum frequency of 1/month, to ensure that all treatment units are properly functioning.
   d. Ensure no discharge of floating solids, visible foam, debris, or oil sheen occurs from Outfalls 001 and 002.
   e. To the extent practicable, the permittee shall protect all raw materials with weather-resistant covers to minimize exposure to stormwater. Raw materials stored outside that have the potential to contribute pollutants to the stormwater runoff include scrap metal piles and new railroad ties.
   f. Develop and implement a Source Identification and Reduction Plan (SIRP) to identify and eliminate the use of surfactants onsite. If elimination of surfactants is not practicable, the permittee shall provide documentation citing the reasons elimination is infeasible and develop and implement a plan to minimize the use of surfactants onsite, to the maximum extent practicable.
   g. Develop and implement a Source Identification and Reduction Plan (SIRP) to eliminate or reduce the discharge of bacteria through the facility's storm water system. In the event the source(s) of bacteria cannot be eliminated, Best Management Practices (BMPs) shall be developed to significantly reduce or eliminate the bacteria loading to the receiving water.
   h. ~~***Develop and implement a Source Identification and Reduction Plan (SIRP) to eliminate or reduce the discharge of phosphorus through the facility's storm water system. In the event the source(s) of phosphorus cannot be eliminated, Best Management Practices (BMPs) shall be developed to significantly reduce or eliminate the phosphorus loading to the receiving water.***~~

h. Provide annual certification to EPA and MassDEP that the site does not discharge stormwater associated with industrial activity to the drainage line which discharges through Outfall 002A.

i. Address any other potential sources of pollutants in the rail yard through site-specific BMPs. Specific activities occurring within the facility drainage area that have a potential to introduce pollutants to the storm water include the following:

   i. Fueling (ASTs and fueling fill ports are located within secondary containment. Vehicle fueling areas are located within secondary containment. Locomotive fueling, using #2 diesel fuel, is done on fuel spill containment pans that discharge to the WWTF for treatment;

   ii. Hazardous Waste Storage (waste oil and hazardous waste shall be stored in designated hazardous waste storage containers);

   iii. Sodium Hydroxide Storage (NaOH shall be stored in an above ground storage tank with secondary containment);

   ii. New and/or used materials (materials shall be stored on pallets, concrete pads, under cover, or in staging areas to minimize exposure to storm water);

   iii. Petroleum product storage (shall be stored in above ground storage tanks with secondary containment);

   iv. Storage and unloading of solid waste (dumpsters at the facility shall be closed top and/or covered to prevent contact with storm water);

   v. Transformers (both active and inactive transformers shall be inspected periodically as a preventative maintenance measure);

   vi. Vehicle and equipment maintenance (storm water from the Car Shop, where vehicle and equipment maintenance is conducted, shall be directed to the WWTF. Various track maintenance materials stored at the facility shall be kept in secondary containment);

   vii. Locomotive Maintenance shall be done on spill pans, to the extent practicable.

9. Additionally, the permit requires development and implementation of the following site-specific BMPs for phosphorus:

a. The permittee shall estimate the average annual phosphorus load to the permitted outfall using the provided export rates as provided in Attachment 1, Method to Calculate Baseline Watershed Phosphorus Load.

b. The permittee shall develop a Phosphorous Control Plan (PCP) and update the PCP in annual reports. The PCP shall describe measures the permittee will undertake to reduce the average annual baseline phosphorus load (calculated above in Part I.C.9.a, via Attachment 1) by 62%.

   i. Non-structural controls: The permittee shall describe the non-structural stormwater control measures to be implemented to support the achievement of the required phosphorus reductions. The description of non-structural controls shall include the planned measures, the areas where the measures will be implemented, and the annual phosphorus reductions that are expected to result from their implementation. Annual phosphorus reduction from non-structural BMPs shall be calculated consistent with Attachment 2, Phosphorus Reduction Credits for Selected Enhanced Non-Structural BMPs in the Watershed.

   ii. Planned structural controls: The permittee shall describe the structural stormwater control practices necessary to support achievement of the required phosphorus

reduction. The description of structural controls shall include the planned controls, the drainage areas tributary to where the controls will be implemented, and the annual phosphorus reductions in units of mass per year that are expected to result from their implementation. Annual phosphorus reduction from structural BMPs shall be calculated consistent with Attachment 3, Methods to Calculate Phosphorus Load Reductions for Structural BMPs in the Watershed

c. Within one year of the effective date of the permit, the permittee shall complete the PCP. Within 2 years of the effective date of the permit, the permittee shall complete implementation of the identified non-structural practices. Within 3 years of the effective date of the permit, the permittee shall complete construction/installation/inspection of the structural practices. Within four years of the effective date of the permit, the permittee shall begin certification of annual inspection and O&M.

D. MONITORING AND REPORTING

1. **For a period of one year from the effective date of the permit**, the permittee may either submit monitoring data and other reports to EPA in hard copy form or report electronically using NetDMR, a web-based tool that allows permittees to electronically submit discharge monitoring reports (DMRs) and other required reports via a secure internet connection. **Beginning no later than one year after the effective date of the permit**, the permittee shall begin reporting using NetDMR, unless the facility is able to demonstrate a reasonable basis that precludes the use of NetDMR for submitting DMRs and reports. Specific requirements regarding submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

a. Submittal of Reports Using NetDMR

NetDMR is accessed from: http://www.epa.gov/netdmr. **Within one year of the effective date of this permit**, the permittee shall begin submitting DMRs and reports required under this permit electronically to EPA using NetDMR, unless the facility is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports ("opt out request").

DMRs shall be submitted electronically to EPA no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA, including the MassDEP Monthly Operations and Maintenance Report, as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees shall continue to send hard copies of reports other than DMRs (including Monthly Operation and Maintenance Reports) to MassDEP until further notice from MassDEP.

b. Submittal of NetDMR Opt Out Requests

Opt out requests must be submitted in writing to EPA for written approval at least sixty (60) days prior to the date a facility would be required under this permit to begin using NetDMR. This demonstration shall be valid for twelve (12) months from the date of EPA approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to EPA unless the permittee submits a renewed opt out request and such request is approved by EPA. All opt out requests should be sent to the following addresses:

Attn: NetDMR Coordinator
U.S. Environmental Protection Agency, Water Technical Unit
5 Post Office Square, Suite 100 (OES04-4)
Boston, MA 02109-3912

and

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

c. Submittal of Reports in Hard Copy Form

Monitoring results shall be summarized for each calendar month and reported on separate hard copy Discharge Monitoring Report Form(s) (DMRs) postmarked no later than the 15th day of the month following the completed reporting period. MassDEP Monthly Operation and Maintenance Reports shall be submitted as an attachment to the DMRs. Signed and dated originals of the DMRs, and all other reports or notifications required herein or in Part II shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Water Technical Unit (OES04-SMR)
5 Post Office Square - Suite 100
Boston, MA 02109-3912

Duplicate signed copies of all reports or notifications required above shall be submitted to the State at the following address:

Massachusetts Department of Environmental Protection - NERO
Bureau of Waste Prevention
205B Lowell Street
Wilmington, MA 01887

Any verbal reports, if required in **Parts I** and/or **II** of this permit, shall be made to both EPA and to MassDEP.

E. STATE PERMIT CONDITIONS

~~1. This discharge permit is issued jointly by the EPA and the MassDEP 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 MassDEP pursuant to M.G.L. Chap. 21, §43 and 314 C.M.R. 3.00. All of the requirements contained in this authorization, as well as the standard conditions contained in 314 CMR 3.19, are hereby incorporated by reference into this state surface water discharge permit.~~

1. This authorization to discharge includes two separate and independent permit authorizations. The two permit authorizations are (i) a federal National Pollutant Discharge Elimination System permit issued by the U.S. Environmental Protection Agency (EPA) pursuant to the Federal Clean Water Act, 33 U.S.C. §§1251 et seq.; and (ii) an identical state surface water discharge permit issued by the Commissioner of the Massachusetts Department of Environmental Protection (MassDEP) pursuant to the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53, and 314 C.M.R. 3.00. All of the requirements contained in this authorization, as well as the standard conditions contained in 314 CMR 3.19, are hereby incorporated by reference into this state surface water discharge permit.

2. This authorization also incorporates the state water quality certification issued by MassDEP under § 401(a) of the Federal Clean Water Act, 40 C.F.R. 124.53, M.G.L. c. 21, § 27 and 314 CMR 3.07. All of the requirements (if any) contained in MassDEP's water quality certification for the permit are hereby incorporated by reference into this state surface water discharge permit as special conditions pursuant to 314 CMR 3.11.

3. 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 a 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 1: ***Method to Calculate Baseline Watershed Phosphorus Load***

(NPDES Permit No. MA0025704 – CSX Transportation, Inc., Beacon Park Yard)

The methods and annual phosphorus export load rates presented in Attachments 1, 2 and 3 to the Final Permit are for the purpose of calculating load reductions for various stormwater BMPs treating runoff from different site conditions (i.e. impervious or pervious) and land uses (e.g. commercial, industrial). The estimates of annual phosphorus load and load reductions resulting from BMP implementation are intended for use by the permittee to measure compliance with its Phosphorus Reduction Requirement under the permit.

This attachment provides the method to calculate a baseline phosphorus load discharging in stormwater for the drainage area of the permitted outfall. This method shall be used to calculate the following annual phosphorus loads:

1) Watershed Phosphorus Load;
2) Watershed Phosphorus Pounds Reduction (Phosphorus Reduction Requirement); and
3) BMP Load.

The **Watershed Phosphorus Load** is a measure of the annual phosphorus load discharging in stormwater from the impervious and pervious areas of the contributing drainage area to the permitted outfall.

The **Watershed Phosphorus Pounds Reduction** referred to as the permittee's **Phosphorus Reduction Requirement** represents the required reduction in annual phosphorus load in stormwater to meet the WLA for the impaired watershed. The percent phosphorus reduction for the contributing drainage area to the permitted outfall is 62 % and is applied to the Watershed Phosphorus Load to calculate the Phosphorus Pounds Reduction.

The **BMP Load** is the annual phosphorus load from the drainage area to each proposed or existing BMP used by permittee to claim credit against its Phosphorus Reduction Requirement. The BMP Load is the starting point from which the permittee calculates the reduction in phosphorus load achieved by each existing and proposed BMP. Attachments 2 and 3 to the Permit provide the methods for calculating annual phosphorus load reductions for enhanced non-structural BMPs and structural BMPs, respectively.

Examples are provided to illustrate use of the methods. Table 1-1, below, provides annual phosphorus load export rates for commercial and industrial land use categories, for both impervious and pervious areas. For pervious areas, if the hydrologic soil group (HSG) is known, use the appropriate value. If the HSG is not known, assume HSG D conditions for the phosphorus load export rate.

Table 1-1. Annual phosphorus load export rates

Phosphorus Source Category by Land Use	Land Surface Cover	Phosphorus Load Export Rate, lbs/ac/yr	Phosphorus Load Export Rate, kg/ha/yr
Commercial (Com) and Industrial (Ind)	Impervious	1.8	2.0
	Pervious	See *DevPERV	See *DevPERV
*Developed Land Pervious (DevPERV)- HSG A/B	Pervious	0.2	0.2
*Developed Land Pervious (DevPERV) – HSG C	Pervious	0.4	0.5
*Developed Land Pervious (DevPERV) - HSG D	Pervious	0.7	0.8

Notes:

- For pervious areas, if the hydrologic soil group (HSG) is known, use the appropriate value from this table. If the HSG is not known, assume HSG D conditions for the phosphorus load export rate.

<u>(1) Watershed Phosphorus Load:</u> The permittee shall calculate the **Watershed Phosphorus Load** by the following procedure:

1) Determine the total area (acre) associated with the permitted discharge;

2) Sort the total area associated with the watershed into two categories: total impervious area (IA) and total pervious area (PA);

3) Calculate the annual phosphorus load associated with impervious area (Watershed P Load $_{IA}$) and the pervious area (Watershed P Load $_{PA}$) by multiplying the IA and PA by the appropriate land use-based phosphorus load export rate provided in Table 1-1; and

4) Determine the Watershed Phosphorus Load by adding the Watershed Site P Load $_{IA}$ to the Watershed Site P Load $_{PA}$.

<u>Example 1-1 to determine Watershed Phosphorus Load:</u>
Watershed A is 15.11 acres, with 11.0 acres of industrial impervious area (e.g. access drives, buildings, and parking lots), 3.0 acres of industrial pervious area (HSG unknown), and 4.0 acres of industrial pervious area (HSG C).

The **Watershed Phosphorus Load** = (Watershed Load $_{IA}$) + (Watershed Load $_{PA}$)

<u>Where:</u>
Watershed P Load $_{IA}$ = ($IA_{INDUSTRIAL}$) x (impervious cover phosphorus export loading rate for industrial use (Table 1-1))
= 11.0 acre x 1.8 lbs/acre/year
= 19.8 lbs P/year

Watershed P Load $_{PA}$ = ($PA_{INDUSTRIAL}$) x (pervious cover phosphorus export loading rate for HSG D (Table 1-1))
+ ($PA_{INDUSTRIAL}$) x (pervious cover phosphorus export loading rate for HSG C (Table 1-1))
= 3.0 acre x 0.7 lbs/acre/year + 4.0 acre x 0.4 lbs/acre/year
= 3.7 lbs P/year

The Baseline Watershed Phosphorus Load = 19.8 lbs P/year + 3.7 lbs P/year
= **23.5 lbs P/year**

<u>(2) Watershed Phosphorus Pounds Reduction (Phosphorus Reduction Requirement):</u> The Watershed Phosphorus Reduction requirement is the amount of reduction in annual phosphorus load (in pounds) that the permittee is required to achieve in the contributing drainage area. The permittee shall calculate the **Phosphorus Pounds Reduction** by multiplying the **Watershed Phosphorus Load** by 62 percent.

<u>Example 1-2 to determine Watershed Phosphorus Pounds Reduction:</u>
As identified above, Watershed A's percent phosphorus reduction is 62%; therefore the Watershed Phosphorus Pounds Reduction is:

Phosphorus Pounds Reduction	= (Watershed Phosphorus Load) x (0.62)
	= (23.5 lbs P/year) x (0.62)
	= **14.6 lbs P/year**

(3) BMP Load: To estimate the annual phosphorus load reduction that a storm water BMP can achieve, it is first necessary to estimate the amount of annual phosphorus load that the BMP will receive or treat (BMP Load).
For a given BMP:

1) Determine the total drainage area to the BMP;

2) Distribute the total drainage area into impervious and pervious subareas by land use category;

3) Calculate the phosphorus load for each land use-based impervious and pervious subarea by multiplying the subarea by the appropriate phosphorus load export rate provided in Table 1-1; and

4) Determine the total annual phosphorus load to the BMP by summing the calculated impervious and pervious subarea phosphorus loads.

Example 1-3 to determine phosphorus load to a proposed BMP: For the same 15.11 acre Watershed A as specified in Example 1-1, a permittee is proposing a storm water infiltration system that will treat runoff from 8.23 impervious acres, 1.51 acres of pervious area of an unknown hydrologic soil group (HSG) and 0.57 acres of the pervious area of HSG C. The drainage area information for the proposed BMP is:

BMP Subarea ID	Land Use Category	Cover Type	Area (acre)	P export rate (lbs P/acre/year)*
1	industrial	impervious	8.23	1.8
2	industrial	Pervious (HSG D)	1.51	0.7
3	industrial	Pervious (HSG C)	0.57	0.4

*From Table 1-1

The phosphorus load to the proposed BMP (BMP Load) is calculated as:

BMP Load = ($IA_{INDUSTRIAL}$ (acre) x P export rate) + (PA_{MDR} x P export rate) + (PA_{FOREST} x P export rate)
= (8.23 x 1.8) + (1.51 x 0.7) + (0.57 x 0.4)
= 16.1 lbs P/year

Attachment 2: ***Phosphorus Reduction Credits for Selected Enhanced Non-Structural BMPs in the Watershed***

(NPDES Permit No. MA0025704 – CSX Transportation, Inc., Beacon Park Yard)

The permittee shall use the following methods to calculate phosphorus load reduction credits for the following enhanced non-structural control practices implemented in the Watershed:

1) Enhanced Sweeping Program;
2) Catch Basin Cleaning.

The methods include the use of default phosphorus reduction factors that EPA has determined are acceptable for calculating phosphorus load reduction credits for these practices.

The methods and annual phosphorus export load rates presented in this attachment are for the purpose of counting load reductions for various BMPs treating storm water runoff from varying site conditions (i.e., impervious or pervious surfaces) and different land uses (e.g. industrial and commercial) within the impaired watershed. Table 2-1 below provides annual phosphorus load export rates by land use category for impervious and pervious areas. The estimates of annual phosphorus load and load reductions resulting from BMP implementation are intended for use by the permittee to measure compliance with its Phosphorus Reduction Requirement under the permit.

<u>Alternative Methods and/or Phosphorus Reduction Factors</u>: A permittee may propose alternative methods and/or phosphorus reduction factors for calculating phosphorus load reduction credits for these non-structural practices. EPA will consider alternative methods and/or phosphorus reduction factors, provided that the permittee submits adequate supporting documentation to EPA. At a minimum, supporting documentation shall consist of a description of the proposed method, the technical basis of the method, identification of alternative phosphorus reduction factors, supporting calculations, and identification of references and sources of information that support the use of the alternative method and/or factors in the Watershed. If EPA determines that the alternative methods and/or factors are not adequately supported, EPA will notify the permittee and the permittee may receive no phosphorus reduction credit other than a reduction credit calculated by the permittee using the default phosphorus reduction factors provided in this attachment for the identified practices.

Table 2-1. Phosphorus load export rates by land cover

Phosphorus Source Category by Land Use	Land Surface Cover	Phosphorus Load Export Rate, lbs/ac/yr	Phosphorus Load Export Rate, kg/ha/yr
Commercial (Com) and Industrial (Ind)	Impervious	1.8	2.0
	Pervious	See *DevPERV	See *DevPERV
*Developed Land Pervious (DevPERV)- HSG A/B	Pervious	0.2	0.2
*Developed Land Pervious (DevPERV) – HSG C	Pervious	0.4	0.5
*Developed Land Pervious (DevPERV) - HSG D	Pervious	0.7	0.8
Notes: • For pervious areas, if the hydrologic soil group (HSG) is known, use the appropriate value from this table. If the HSG is not known, assume HSG D conditions for the phosphorus load export rate.			

<u>(1) Enhanced Sweeping Program</u>: The permittee may earn a phosphorus reduction credit for conducting an enhanced sweeping program of impervious surfaces. Table 2-2 below outlines the default phosphorus removal factors for enhanced sweeping programs. The credit shall be calculated by using the following equation:

$$\text{Credit}_{\text{sweeping}} = \text{IA}_{\text{swept}} \times \text{PLE}_{\text{IC-land use}} \times \text{PRF}_{\text{sweeping}} \qquad \textbf{(Equation 2-1)}$$

<u>Where:</u>

$\text{Credit}_{\text{sweeping}}$ = Amount of phosphorus load removed by enhanced sweeping program (lbs/year)

IA_{swept} = Area of impervious surface that is swept under the enhanced sweeping program (acres)

$\text{PLE}_{\text{IC-land use}}$ = Phosphorus Load Export Rate for impervious cover and specified land use (lbs/acre/yr) (see Table 2-1)

$\text{PRF}_{\text{sweeping}}$ = Phosphorus Reduction Factor for sweeping based on sweeper type and frequency (see Table 2-2).

As an alternative, the permittee may apply a credible sweeping model of the Watershed and perform continuous simulations reflecting build-up and wash-off of phosphorus using long-term local rainfall data.

Table 2-2. Phosphorus reduction efficiency factors ($PRF_{sweeping}$) for sweeping impervious areas

Frequency[1]	Sweeper Technology	$PRF_{sweeping}$
2/year (spring and fall)[2]	Mechanical Broom	0.01
2/year (spring and fall)[2]	Vacuum Assisted	0.02
2/year (spring and fall)[2]	High-Efficiency Regenerative Air-Vacuum	0.02
Monthly	Mechanical Broom	0.03
Monthly	Vacuum Assisted	0.04
Monthly	High Efficiency Regenerative Air-Vacuum	0.08
Weekly	Mechanical Broom	0.05
Weekly	Vacuum Assisted	0.08
Weekly	High Efficiency Regenerative Air-Vacuum	0.10

[1] For full credit for monthly and weekly frequency, sweeping must be conducted year round. Otherwise, the credit should be adjusted proportionally based on the duration of the sweeping season.
[2] In order to earn credit for semi-annual sweeping the sweeping must occur in the spring following snow-melt and road sand applications to impervious surfaces and in the fall after leaf-fall and prior to the onset to the snow season.

Example 2-1: Calculation of enhanced sweeping program credit ($Credit_{sweeping}$): A permittee proposes to implement an enhanced sweeping program and perform weekly sweeping from April 1 – December 1 (9 months) on site, using a vacuum assisted sweeper on 20.3 acres of parking lots and roadways in an industrial area (impervious). For this site the needed information is:

IA_{swept} = 20.3 acres
$PLE_{IC\text{-}INDUSTRIAL}$ = 1.8 lbs/acre/yr (from Table 2-1)
$PRF_{sweeping}$ = 0.08 (from Table 2-2) x (9 months / 12 months)
= 0.06

Substitution into equation 2-1 yields a $Credit_{sweeping}$ of 2.2 pounds of phosphorus removed per year.

$Credit_{sweeping}$ = IA_{swept} x $PLE_{land\ use}$ x $PRF_{sweeping}$
= 20.3 acres x 1.8 lbs/acre/yr x 0.06
= 2.2 lbs/yr

(2) Catch Basin Cleaning: The permittee may earn a phosphorus reduction credit, Credit $_{CB}$, by removing accumulated materials from catch basins (i.e., catch basin cleaning) in the Watershed such that a minimum sump storage capacity of 50% is maintained throughout the year. The credit shall be calculated by using the following equation:

$$Credit_{CB} = IA_{CB} \times PLE_{IC\text{-land use}} \times PRF_{CB}$$ **(Equation 2-2)**

Where:

$Credit_{CB}$ = Amount of phosphorus load removed by catch basin cleaning (lbs/year)

IA_{CB} = Impervious drainage area to catch basins (acres)

$PLE_{IC\text{-land use}}$ = Phosphorus Load Export Rate for impervious cover and specified land use (lbs/acre/yr) (see Table 2-1)

PRF_{CB} = Phosphorus Reduction Factor for catch basin cleaning (see Table 2-3)

Table 2-3. Phosphorus reduction efficiency factor (PRF_{CB}) for semi-annual catch basin cleaning.

Frequency	Practice	PRF_{CB}
Semi-annual	Catch Basin Cleaning	0.02

Example 2-2: Calculation for catch basin cleaning credit ($Credit_{CB}$):

A permittee proposes to clean catch basins on their site (i.e., remove accumulated sediments and contaminants captured in the catch basins) that drain runoff from 15.3 acres of industrial impervious area. For this site the needed information is:

IA_{CB} = 15.3 acres
$PLE_{IC\text{-INDUSTRIAL}}$ = 1.8 lbs/acre/yr (from Table 2-1)
PRF_{CB} = 0.02 (from Table 2-3)

Substitution into equation 2-2 yields a $Credit_{CB}$ of 0.55 pounds of phosphorus removed per year:

$$\begin{aligned} Credit_{CB} &= IA_{CB} \times PLE_{IC\text{-MDR}} \times PRF_{CB} \\ &= 15.3 \text{ acres} \times 1.8 \text{ lbs/acre/yr} \times 0.02 \\ &= \mathbf{0.55\ lbs/yr} \end{aligned}$$

Attachment 3: ***Methods to Calculate Phosphorus Load Reductions for Structural Storm Water Best Management Practices in the Watershed***

(NPDES Permit No. MA0025704 – CSX Transportation, Inc., Beacon Park Yard)

This attachment provides methods to determine design storage volume capacities and to calculate phosphorus load reductions for the following structural Best Management Practices (structural BMPs) for a Watershed:

1) Infiltration Trench;
2) Infiltration Basin or other surface infiltration practice;
3) Bioretention Practice;
4) Gravel Wetland System;
5) Porous Pavement;
6) Wet Pond or wet detention basin;
7) Dry Pond or detention basin; and
8) Water Quality Swale.

Methods and examples are provided in this Attachment to calculate phosphorus load reductions for structural BMPs for the four following purposes:

1) To determine the design volume of a structural BMP to achieve a known phosphorus load reduction target when the contributing drainage area is 100% impervious;
2) To determine the phosphorus load reduction for a structural BMP with a known design volume when the contributing drainage area is 100% impervious;
3) To determine the design volume of a structural BMP to achieve a known phosphorus load reduction target when the contributing drainage area has impervious and pervious surfaces; and
4) To determine the phosphorus load reduction for a structural BMP with a known design volume when the contributing drainage area has impervious and pervious surfaces.

The methods and annual phosphorus export load rates presented in this attachment are for the purpose of counting load reductions for various BMPs treating storm water runoff from varying site conditions (i.e., impervious or pervious surfaces) and different land uses (e.g. commercial and institutional). The estimates of annual phosphorus load and load reductions by BMPs are to demonstrate compliance with the permittee's Phosphorus Reduction Requirement under the permit.

For each structural BMP type identified above, long-term cumulative performance information is provided to calculate phosphorus load reductions or to determine needed design storage volumes to achieve a specified reduction target (e.g., 62% phosphorus load reduction). The performance information is expressed as cumulative phosphorus load removed (% removed) depending on the physical storage capacity of the structural BMP (expressed as inches of runoff from impervious area) and is provided at the end of this Attachment (see Tables 3-1 through 3-18 and performance curves Figures 3-1 through 3-17). Multiple tables and performance curves are provided for the infiltration practices to represent cumulative phosphorus load reduction performance for six infiltration rates (IR), 0.17, 0.27, 0.53, 1.02, 2.41, and 8.27 inches/hour. The permittee may use the performance curves provided in this attachment to interpolate phosphorus load removal reductions for field measured infiltration rates that are different than the infiltration rates used to develop the performance curves. Otherwise, the permittee shall use the performance curve for the IR that is nearest, but less than, the field measured rate.

EPA will consider phosphorus load reductions calculated using the methods provided below to be valid for the purpose of complying with the terms of this permit for BMPs that have not been explicitly modeled if the desired BMP has functionality that is similar to one of the simulated BMP types. Please note that only the surface infiltration and the infiltration trench BMP types were simulated to direct storm water runoff into the ground (i.e., infiltration). All of the other simulated BMPs represent practices that have either under-drains or impermeable liners and therefore, are not hydraulically connected to the sub-surface soils (i.e., no infiltration). Following are some simple guidelines for selecting the BMP type and/or determining whether the results of any of the BMP types provided are appropriate for another BMP of interest.

Infiltration Trench is a practice that provides temporary storage of runoff using the void spaces within the soil/sand/gravel mixture that is used to backfill the trench for subsequent infiltration into the surrounding sub-soils. Performance results for the infiltration trench can be used for all subsurface infiltration practices including systems that include pipes and/or chambers that provide temporary storage. Also, the results for this BMP type can be used for bio-retention systems that rely on infiltration when the majority of the temporary storage capacity is provided in the void spaces of the soil filter media and porous pavements that allow infiltration to occur.

Surface Infiltration represents a practice that provides temporary surface storage of runoff (e.g., ponding) for subsequent infiltration into the ground. Appropriate practices for use of the surface infiltration performance estimates include infiltration basins, infiltration swales, rain gardens and bio-retention systems that rely on infiltration and provide the majority of storage capacity through surface-ponding.

Bio-filtration is a practice that provides temporary storage of runoff for filtering through an engineered soil media. The storage capacity is typically made of void spaces in the filter media and temporary ponding at the surface of the practice. Once the runoff has passed through the filter media it is collected by an under-drain pipe for discharge. Depending on the design of the filter media manufactured or packaged bio-filter systems such as tree box filters may be suitable for using the bio-filtration performance results.

Gravel Wetland performance results should be used for practices that have been designed in accordance or share similar features with the design specifications for gravel wetland systems provided in the most recent version of *the Massachusetts Stormwater Handbook* (http://www.mass.gov/eea/agencies/massdep/water/regulations/massachusetts-stormwater-handbook.html)

Porous Pavement performance results represent systems with an impermeable under-liner and an under-drain. *If porous pavement systems do not have an impermeable under-liner so that filtered* *runoff can infiltrate into sub-soils then the performance results for an infiltration trench may be used for these systems.*

Extended Dry Detention Basin performance results should only be used for practices that have been designed in accordance with the design specifications for extended dry detention basins provided in the most recent version of *the Massachusetts Stormwater Handbook* (http://www.mass.gov/eea/agencies/massdep/water/regulations/massachusetts-stormwater-handbook.html).

Water Quality Wet Swale performance results should only be used for practices that have been designed in accordance with the design specifications for a water quality wet swale provided in the most recent version of *the Massachusetts Stormwater Handbook* (http://www.mass.gov/eea/agencies/massdep/water/regulations/massachusetts-stormwater-handbook.html).

Alternative Methods:

A permittee may propose alternative long-term cumulative performance information or alternative methods to calculate phosphorus load reductions for the structural BMPs identified above or for other structural BMPs not identified in this Attachment.

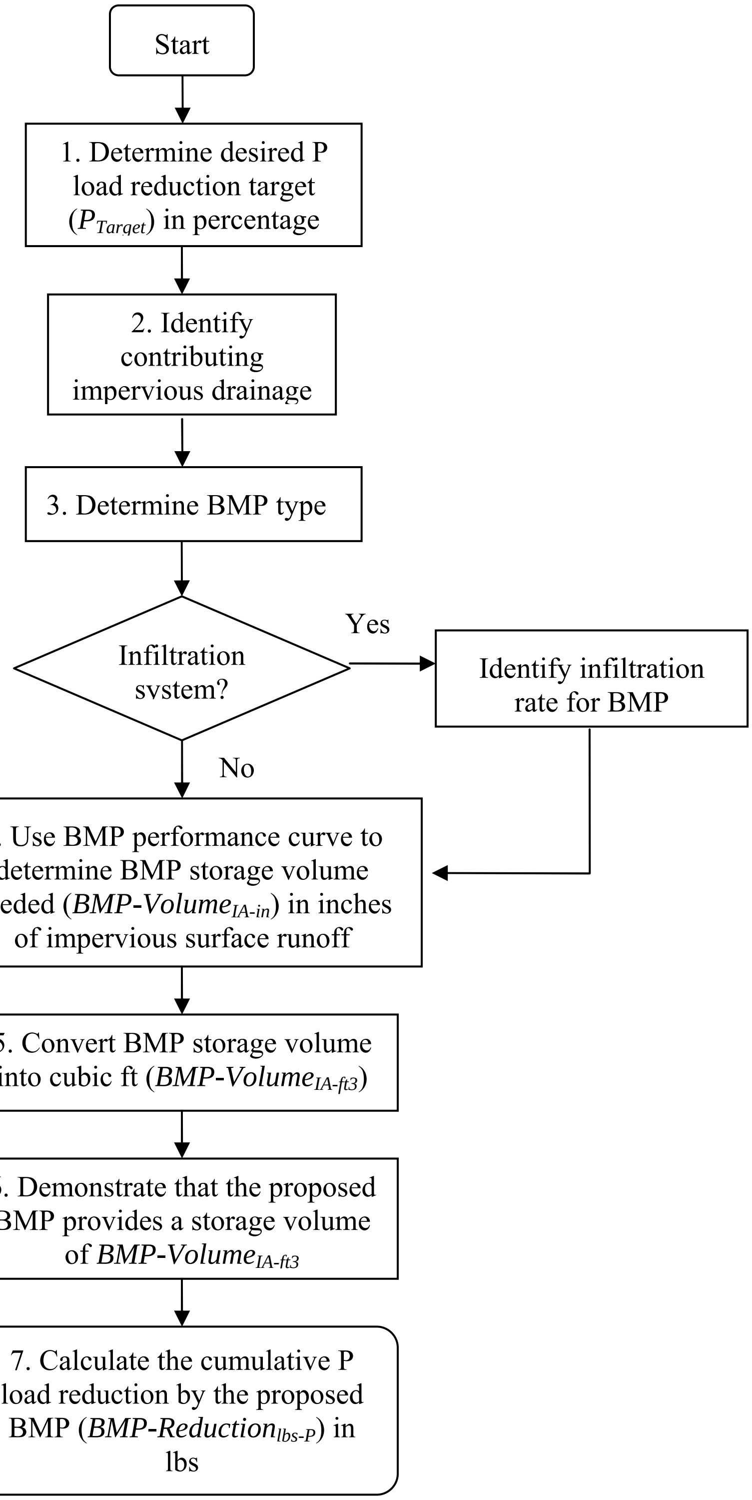
EPA will consider alternative long-term cumulative performance information and alternative methods to calculate phosphorus load reductions for structural BMPs provided that the permittee provides EPA with adequate supporting documentation. At a minimum, the supporting documentation shall include:

1) Results of continuous BMP model simulations representing the structural BMP, using a verified BMP model and representative long-term (i.e., 10 years) climatic data including hourly rainfall data;
2) Supporting calculations and model documentation that justify use of the model, model input parameters, and the resulting cumulative phosphorus load reduction estimate; and
3) Identification of references and sources of information that support the use of the alternative information and method.

If EPA determines that the long-term cumulative phosphorus load reductions developed based on alternative information are not adequately supported, EPA will notify the permittee in writing, and the permittee may receive no phosphorus reduction credit other than a reduction credit calculated by the permittee using the default phosphorus reduction factors provided in this attachment for the identified practices. The permittee is required to submit to EPA valid phosphorus load reductions for structural BMPs in the Watershed in accordance with the submission schedule requirements specified in the permit and Appendix F.

(1) Method to determine the design volume of a structural BMP to achieve a known phosphorus load reduction target when the contributing drainage area is 100% impervious:

Flow Chart 1 illustrates the steps to determine the design volume of a structural BMP to achieve a known phosphorus load reduction target when the contributing drainage area is 100% impervious.



Flow Chart 1. Method to determine BMP design volume to achieve a known phosphorous load reduction when contributing drainage area is 100% impervious.

1) Determine the desired cumulative phosphorus load reduction target (P_{target}) in percentage for the structural BMP;

2) Determine the contributing impervious drainage area (IA) in acres to the structural BMP;

3) Determine the structural BMP type (e.g., infiltration trench, gravel wetland). For infiltration systems, determine the appropriate infiltration rate for the location of the BMP in the Watershed;

4) Using the cumulative phosphorus removal performance curve for the selected structural BMP (Figures 3-1 through 3-18), determine the storage volume for the BMP (BMP-Volume $_{IA\text{-}in}$), in inches of runoff, needed to treat runoff from the contributing IA to achieve the reduction target;

5) Calculate the corresponding BMP storage volume in cubic feet (BMP-Volume $_{IA\text{-}ft^3}$) using BMP-Volume $_{IA\text{-}in}$ determined from step 4 and equation 3-1:

BMP-Volume $_{IA\text{-}ft^3}$ = IA (ac) x BMP-Volume $_{IA\text{-}in}$ x 3630 ft^3/ac-in **(Equation 3-1)**

6) Provide supporting calculations using the dimensions and specifications of the proposed structural BMP showing that the necessary storage volume, BMP-Volume $_{IA\text{-}ft^3}$, determined from step 5 will be provided to achieve the P_{Target}; and

7) Calculate the cumulative phosphorus load reduction in pounds of phosphorus (BMP-Reduction $_{lbs\text{-}P}$) for the structural BMP using the BMP Load (as calculated from the procedure in Attachment 1 to Appendix F) and P_{target} by using equation 3-2:

BMP-Reduction $_{lbs\text{-}P}$ = BMP Load x (P_{target} /100) **(Equation 3-2)**

Example 3-1: Determine design volume of a structural BMP with a 100% impervious drainage area to achieve a known phosphorus load reduction target:

A permittee is considering a surface infiltration practice to capture and treat runoff from 2.57 acres of impervious area that will achieve a 70% reduction in annual phosphorus load. The infiltration practice would be located adjacent to the impervious area. The permittee has measured an infiltration rate (IR) of 0.39 inches per hour (in/hr) in the vicinity of the proposed infiltration practice. Determine the:

A) Design storage volume needed for an surface infiltration practice to achieve a 70% reduction in annual phosphorus load from the contributing drainage area (BMP-Volume $_{IA\text{-}ft^3}$); and

B) Cumulative phosphorus reduction in pounds that would be accomplished by the BMP (BMP-Reduction $_{lbs\text{-}P}$)

Solution:

1) Contributing impervious drainages area (IA) = 2.57 acres

2) BMP type is a surface infiltration practice (i.e., basin) with an infiltration rate (IR) of 0.39 in/hr

3) Phosphorus load reduction target (P_{target}) = 70%

4) The performance curve for the infiltration basin (i.e., surface infiltration practice), Figure 3-8, IR = 0.27 in/hr is used to determine the design storage volume of the BMP (BMP-Volume $_{IA\text{-}in}$) needed to treat runoff from the contributing IA and achieve a P_{target} = 70%. The curve for an infiltration rate of 0.27 in/hr is chosen because 0.27 in/hr is the nearest simulated IR that is less than the field measured IR of 0.39 in/hr. From Figure 3-8, the BMP-Volume $_{IA\text{-}in}$ for a P_{target} = 70% is 0.36 in.

5) The BMP-Volume $_{IA\text{-}in}$ is converted to cubic feet (BMP-Volume $_{IA\text{-}ft^3}$) using Equation 3-1:

BMP-Volume $_{IA\text{-}ft^3}$ = IA (acre) x BMP-Volume $_{IA\text{-}in}$ x 3,630 ft^3/acre-in
BMP-Volume $_{IA\text{-}ft^3}$ = 2.57 acre x 0.36 in x 3,630 ft^3/acre-in
= **3,359 ft^3**

6) A narrow trapezoidal infiltration basin with the following characteristics is proposed to achieve the P_{Target} of 70%:

Length (ft)	Design Depth (ft)	Side Slopes	Bottom area (ft^2)	Pond surface area (ft^2)	Design Storage Volume (ft^3)
355	1.25	3:1	1,387	4,059	3,404

The volume of the proposed infiltration practice, 3,404 ft^3, exceeds the BMP-Volume $_{IA\text{-}ft^3}$ needed, 3,359 ft^3 and is sufficient to achieve the P Target of 70%.

7) The cumulative phosphorus load reduction in pounds of phosphorus for the infiltration practice (BMP-Reduction $_{lbs\text{-}P}$) is calculated using Equation 3-2. The BMP Load is first determined using the method in Attachment 1 to Appendix F.

BMP Load = IA x impervious cover phosphorus export loading rate for commercial use (see Table 1-1 from Attachment 1 to Appendix F)
= 2.57 acres x 1.8 lbs/acre/yr
= 4.63 lbs/yr

BMP-Reduction $_{lbs\text{-}P}$ = BMP Load x (P_{target} /100)
BMP-Reduction $_{lbs\text{-}P}$ = 4.63 lbs/yr x (70/100)
= **3.24 lbs/yr**

<u>Alternate Solution:</u> Alternatively, the permittee could determine the design storage volume needed for an IR = 0.39 in/hr by performing interpolation of the results from the surface infiltration performance curves for IR = 0.27 in/hr and IR = 0.52 in/hr as follows (replacing steps 3 and 4 on the previous page):

4 alternative) Using the performance curves for the infiltration basin (i.e., surface infiltration practice), Figures 3-8, IR = 0.27 in/hr and 3-9, IR = 0.52 in/hr, interpolate between the curves to determine the design storage volume of the BMP (BMP-Volume $_{IA\text{-}in}$) needed to treat runoff from the contributing IA and achieve a P $_{target}$ = 70%.

First calculate the interpolation adjustment factor (IAF) to interpolate between the infiltration basin performance curves for infiltration rates of 0.27 and 0.52 in/hr:

$$IAF = (0.39 - 0.27)/ (0.52 – 0.27) = 0.48$$

From the two performance curves, develop the following table to estimate the general magnitude of the needed storage volume for an infiltration swale with an IR = 0.39 in/hr and a P $_{target}$ of 70%.

Table Example 3-1. Interpolation Table for determining design storage volume of infiltration basin with IR = 0.39 in/hr and a phosphorus load reduction target of 70%.

BMP Storage Volume	% Phosphorus Load Reduction IR = 0.27 in/hr ($PR_{IR=0.27}$)	% Phosphorus Load Reduction IR = 0.52 in/hr ($PR_{IR=0.52}$)	Interpolated % Phosphorus Load Reduction IR = 0.39 in/hr ($PR_{IR=0.39}$) **$PR_{IR=0.39}$= IAF($PR_{IR=0.52}$ – $PR_{IR=0.27}$) + $PR_{IR=0.27}$**
0.3	64%	67%	65%
0.4	74%	77%	75%
0.5	79%	82%	80%

As indicated from Table Example 3-1, the BMP-Volume $_{IA\text{-}in}$ for $PR_{IR=0.39}$ of 70% is between 0.3 and 0.4 inches and can be determined by interpolation:

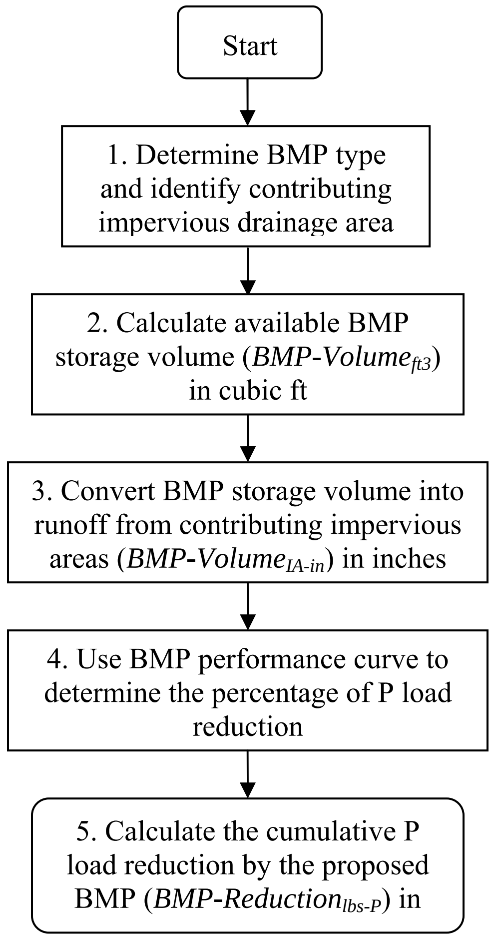
$$\text{BMP-Volume}_{IA\text{-}in} = (70\% - 65\%)/ (75\% - 65\%) \times (0.4 \text{ in} – 0.3 \text{ in}) + 0.3 \text{ in} = 0.35 \text{ inches}$$

5 alternative) Convert the resulting BMP-Volume $_{IA\text{-}in}$ to cubic feet (BMP-Volume $_{IA\text{-}ft^3}$) using equation 3-1:

$$\text{BMP-Volume}_{IA\text{-}ft^3} = 2.57 \text{ acre} \times 0.35 \text{ in} \times 3{,}630 \text{ ft}^3/\text{acre-in} = 3{,}265 \text{ ft}^3$$

(2) <u>Method to determine the phosphorus load reduction for a structural BMP with a known design volume when the contributing drainage area is 100% impervious:</u>

Flow Chart 2 illustrates the steps to determine the phosphorus load reduction for a structural BMP with a known design volume when the contributing drainage area is 100% impervious.



Flow Chart 2. Method to determine the phosphorus load reduction for a BMP with a known design volume when contributing drainage area is 100% impervious.

1) Identify the structural BMP type and contributing impervious drainage area (IA);

2) Document the available storage volume (ft^3) of the structural BMP (BMP-Volume $_{ft^3}$) using the BMP dimensions and design specifications (e.g., maximum storage depth, filter media porosity);

3) Convert BMP-Volume $_{ft^3}$ into inches of runoff from the contributing impervious area (BMP-Volume $_{IA\text{-}in}$) using equation 3-3:

BMP-Volume $_{IA\text{-}in}$ = BMP-Volume $_{ft^3}$/ IA (acre) x 12 in/ft x 1 acre/43560 ft^2
(Equation 3-3)

4) Determine the % phosphorus load reduction for the structural BMP (BMP Reduction $_{\%\text{-P}}$) using the appropriate BMP performance curve (Figures 3-1 through 3-18) and the BMP-Volume $_{\text{IA-in}}$ calculated in step 3; and

5) Calculate the cumulative phosphorus load reduction in pounds of phosphorus for the structural BMP (BMP Reduction $_{\text{lbs-P}}$) using the BMP Load as calculated from the procedure in Attachment 1 to Appendix F and the percent phosphorus load reduction (BMP Reduction $_{\%\text{-P}}$) determined in step 4 by using equation 3-4:

BMP Reduction $_{\text{lbs-P}}$ = BMP Load x (BMP Reduction $_{\%\text{-P}}$/100) **(Equation 3-4)**

Example 3-2: Determine the phosphorus load reduction for a structural BMP with a known storage volume capacity when the contributing drainage area is 100% impervious:

A permittee is considering a bioretention system to treat runoff from 1.49 acres of impervious area. Site constraints would limit the bioretention system to have a surface area of 1200 ft^2 and the system would have to be located next to the impervious drainage area to be treated. The design parameters for the bioretention system are presented in Table Example 3-2.

Table Example 3-2. Design parameters for bioretention system for Example 3-2

Components of representation	Parameters	Value
Ponding	Maximum depth	6 in
	Surface area	1200 ft^2
	Vegetative parameter[a]	85-95%
Soil mix	Depth	30 in
	Porosity	40%
	Hydraulic conductivity	4 inches/hour
Gravel layer	Depth	8 in
	Porosity	40%
	Hydraulic conductivity	14 inches/hour
Orifice #1	Diameter	6 in

[a] Refers to the percentage of surface covered with vegetation

Determine the:

A) Percent phosphorus load reduction (BMP Reduction $_{\%\text{-P}}$) for the specified bioretenion system and contributing impervious drainage area; and

B) Cumulative phosphorus reduction in pounds that would be accomplished by the bioretention system (BMP-Reduction $_{\text{lbs-P}}$)

Solution:

1) The BMP is a bioretention system that will treat runoff from 1.49 acres of impervious area (IA = 1.49 acre);

2) The available storage volume capacity (ft^3) of the bioretention system (BMP-Volume $_{\text{BMP-ft}^3}$) is determined using the surface area of the system, depth of ponding, and the porosity of the filter media:

Solution continued:

$BMP\text{-}Volume_{BMP\text{-}ft^3}$ = (surface area x pond maximum depth) + ((soil mix depth + gravel layer depth)/12 in/ft) x surface area x gravel layer porosity)
= (1,200 ft^2 x 0.5 ft) + ((38/12) x 1,200 ft^2 x 0.4)
= 2,120 ft^3

3) The available storage volume capacity of the bioretention system in inches of runoff from the contributing impervious area ($BMP\text{-}Volume_{IA\text{-}in}$) is calculated using equation 3-3:

$BMP\text{-}Volume_{IA\text{-}in}$ = ($BMP\text{-}Volume_{ft^3}$/ IA (acre) x 12 in/ft x 1 acre/43560 ft^2
$BMP\text{-}Volume_{IA\text{-}in}$ = (2120 ft^3/1.49 acre) x 12 in/ft x 1 acre/43560 ft^2
= 0.39 in

4) Using the bioretention performance curve shown in Figure 3-13, a **51%** phosphorus load reduction (BMP Reduction %-P) is determined for a bioretention system sized for 0.39 in of runoff from 1.49 acres of impervious area; and

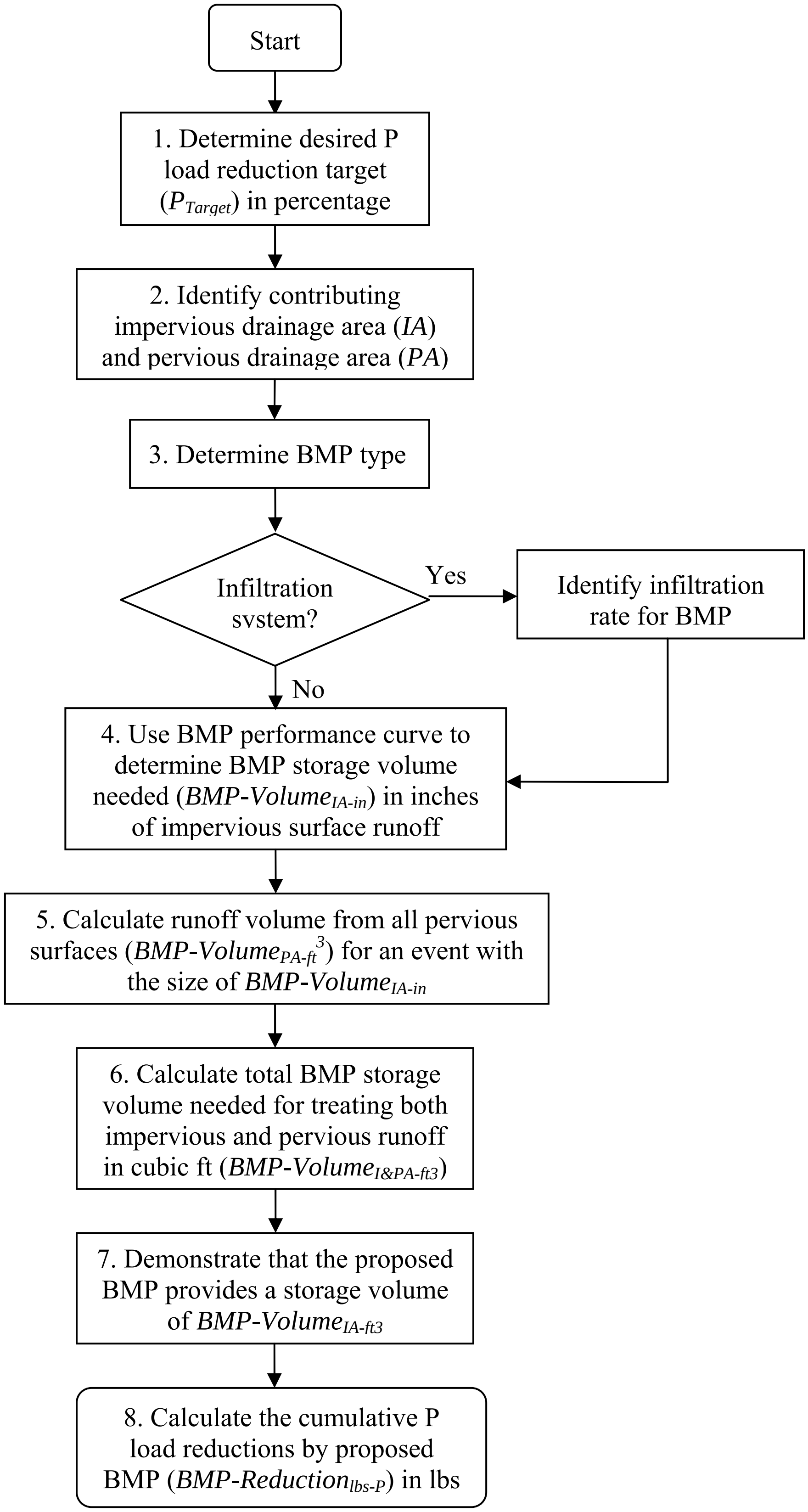
5) Calculate the cumulative phosphorus load reduction in pounds of phosphorus for the bioretention system ($BMP\ Reduction_{lbs\text{-}P}$) using the BMP Load as calculated from the procedure in Attachment 1 to Appendix F and the $BMP\ Reduction_{\%\text{-}P}$ determined in step 4 by using equation 3-4. First, the BMP Load is determined as specified in Attachment 1:

BMP Load = IA (acre) x impervious cover phosphorus export loading rate for industrial use (see Table 1-1 from Attachment 1 to Appendix F)
= 1.49 acres x 1.8 lbs/acre/yr
= 2.68 lbs/yr

$BMP\ Reduction_{lbs\text{-}P}$ = BMP Load x ($BMP\ Reduction_{\%\text{-}P}$/100)
$BMP\ Reduction_{lbs\text{-}P}$ = 2.68 lbs/yr x (51/100)
= **1.37 lbs/yr**

(3) Method to determine the design storage volume of a structural BMP to achieve a known phosphorus load reduction target when the contributing drainage area has impervious and pervious surfaces:

Flow Chart 3 illustrates the steps to determine the design storage volume of a structural BMP to achieve a known phosphorus load reduction target when the contributing drainage area has impervious and pervious surfaces.



Flow Chart 3. Method to determine the design storage volume of a BMP to reach a known P load reduction when both impervious and pervious drainage areas are present.

1) Determine the desired cumulative phosphorus load reduction target (P_{target}) in percentage for the structural BMP;

2) Characterize the contributing drainage area to the structural BMP by identifying the following information for the impervious and pervious surfaces:

Impervious area (IA) - Area (acre) and land use (e.g., commercial)

Pervious area (PA) – Area (acre) and runoff depths based on hydrologic soil group (HSG) and rainfall depth. Table 3-3-1 provides values of runoff depth from pervious areas for various rainfall depths and HSGs. Soils are assigned to an HSG on the basis of their permeability. HSG A is the most permeable, and HSG D is the least permeable. HSG categories for pervious areas in the Watershed shall be estimated by consulting local soil surveys prepared by the National Resource Conservation Service (NRCS) or by a storm water professional evaluating soil testing results from the Watershed. If the HSG condition is not known, a HSG D soil condition should be assumed.

Table 3-3-1. Developed Land Pervious Area Runoff Depths based on Precipitation depth and Hydrological Soil Groups (HSGs)

Rainfall Depth, Inches	Runoff Depth, inches		
	Pervious HSG A/B	**Pervious HSG C**	**Pervious HSG D**
0.10	**0.00**	**0.00**	**0.00**
0.20	**0.00**	**0.01**	**0.02**
0.40	**0.00**	**0.03**	**0.06**
0.50	**0.00**	**0.05**	**0.09**
0.60	**0.01**	**0.06**	**0.11**
0.80	**0.02**	**0.09**	**0.16**
1.00	**0.03**	**0.12**	**0.21**
1.20	**0.04**	**0.14**	**0.39**
1.50	**0.11**	**0.39**	**0.72**
2.00	**0.24**	**0.69**	**1.08**

Notes: Runoff depths derived from combination of volumetric runoff coefficients from Table 5 of *Small Storm Hydrology and Why it is Important for the Design of Stormwater Control Practices*, Pitt, 1999 and using the Stormwater Management Model (SWMM) in continuous model mode for hourly precipitation data for Boston, MA, 1998-2002.

C) Determine the structural BMP type (e.g., infiltration trench, gravel wetland). For infiltration systems, determine the appropriate infiltration rate for the location of the BMP in the Watershed.

D) Using the cumulative phosphorus removal performance curve for the selected structural BMP, determine the storage volume capacity of the BMP in inches needed to treat runoff from the contributing impervious area (BMP-Volume $_{IA-in}$);

E) Using Equation 3-5 below and the pervious area runoff depth information from Table 3-3-1, determine the total volume of runoff from the contributing pervious drainage area in cubic feet (BMP Volume $_{PA-ft^3}$) for a rainfall size equal to the sum of BMP Volume $_{IA-in}$, determined in step 4. The runoff volume for each distinct pervious area must be determined.

BMP-Volume $_{PA\ ft^3} = \sum$ (PA x (runoff depth) x 3,630 ft^3/acre-in)$_{(PA1,\ldots PAn)}$ **(Equation 3-5)**

F) Using equation 3-6 below, calculate the BMP storage volume in cubic feet (BMP-Volume $_{IA\&PA-ft^3}$) needed to treat the runoff depth from the contributing impervious (IA) and pervious areas (PA).

BMP-Volume $_{IA\&PA-ft^3}$ = BMP Volume $_{PA-ft^3}$ + (BMP Volume $_{IA-in}$ x IA (acre) x 3,630 ft^3/acre-in) **(Equation 3-6)**

G) Provide supporting calculations using the dimensions and specifications of the proposed structural BMP showing that the necessary storage volume determined in step 6, BMP- Volume $_{I\&PA-ft^3}$, will be provided to achieve the P $_{Target}$; and

H) Calculate the cumulative phosphorus load reduction in pounds of phosphorus (BMP-Reduction $_{lbs-P}$) for the structural BMP using the BMP Load (as calculated from the procedure in Attachment 1 to Appendix F) and the P $_{target}$ by using equation 3-2:

BMP-Reduction $_{lbs-P}$ = BMP Load x (P $_{target}$ /100) **(Equation 3-2)**

<u>Example 3-3: Determine the design storage volume of a structural BMP to achieve a known phosphorus load reduction target when the contributing drainage area has impervious and pervious surfaces</u>

A permittee is considering a gravel wetland system to treat runoff from a high-density residential site. The site is 7.50 acres of which 4.00 acres are impervious surfaces and 3.50 acres are pervious surfaces. The pervious area is made up of 2.5 acres of lawns in good condition surrounding cluster housing units and 1.00 acre of stable unmanaged woodland. Soils information indicates that all of the woodland and 0.50 acres of the lawn is hydrologic soil group (HSG) B and the other 2.00 acres of lawn are HSG C. The permittee wants to size the gravel wetland system to achieve a cumulative phosphorus load reduction (P $_{Target}$) of 55% from the entire 7.50 acres. Determine the:

A) Design storage volume needed for a gravel wetland system to achieve a 55% reduction in annual phosphorus load from the contributing drainage area (BMP-Volume $_{IA\&PA-ft^3}$); and

B) Cumulative phosphorus reduction in pounds that would be accomplished by the BMP (BMP-Reduction $_{lbs-P}$)

.
Solution:

1) The BMP type is gravel wetland system.

2) The phosphorus load reduction target (P_{Target}) = 55%.

Solution continued:

3) Using the cumulative phosphorus removal performance curve for the gravel wetland system shown in Figure 3-14, the storage volume capacity in inches needed to treat runoff from the contributing impervious area (BMP Volume $_{IA-in}$) is 0.71 in;

4) Using equation 3-5 and the pervious runoff depth information from Table 3-3-1, the volume of runoff from the contributing pervious drainage area in cubic feet (BMP Volume $_{PA-ft^3}$) for a rainfall size equal to 0.71 in is summarized in Table Example 3-3-B.

As indicated from Table 3-3-1, the runoff depth for a rainfall size equal to 0.71 inches is between 0.6 and 0.8 inches and can be determined by interpolation (example shown for runoff depth of HSG C):

Runoff depth (HSG C) = (0.71 – 0.6)/(0.8 – 0.6) x (0.09 in – 0.06 in) + 0.06 in
= 0.07 inches

Table Example 3-3-B. Runoff contributions from pervious areas for high density residential site

ID	Type	Pervious Area (acre)	HSG	Runoff (in)	Runoff = (runoff) x PA (acre-in)	Runoff = Runoff (acre-in) x 3630 ft^3/acre-in (ft^3)
PA1	Grass	2.00	C	0.07	0.14	508
PA2	Grass	0.50	B	0.01	0.0	0.0
PA3	Woods	1.00	B	0.01	0.0	0.0
Total	-----	**3.50**	-----	-----	**0.14**	**508**

5) Using equation 3-6, determine the BMP storage volume in cubic feet (BMP-Volume $_{IA\&PA-ft^3}$) needed to treat 0.71 inches of runoff from the contributing impervious area (IA) and the runoff of 0.14 acre-in from the contributing pervious areas, determined in step 5 is:

BMP Volume$_{IA\&PA-ft^3}$ = BMP Volume $_{PA\ ac-in}$ + (BMP Volume $_{IA-in}$ x IA (acre)) x 3,630 ft^3/acre-in)

BMP Volume$_{IA\&PA-ft^3}$ = (508 ft^3+ (0.71 in x 4.00 acre)) x 3,630 ft^3/acre-in
= 10,817 ft^3

6) Table Example 3-3-C provides design details for of a potential gravel wetland system (based on Volume 2, Chapter 2 of the Massachusetts Stormwater Handbook).

Solution continued:

Table Example 3-3-C. Design details for gravel wetland system

Gravel Wetland System Components	Design Detail	Depth (ft)	Surface Area (ft^2)	Volume (ft^3)
Sediment Forebay	**10% of Treatment Volume**			
Pond area	----	1.33	896	1,192
Wetland Cell #1	**45% of Treatment Volume**	---------------	-------------------	---------------
Pond area	----	2.00	1,914	3,828
Gravel layer	porosity = 0.4	2.00	1,914	1,531
Wetland Cell #2	**45% of Treatment Volume**	---------------	------------------	---------------
Pond area	----	2.00	1,914	3,828
Gravel layer	porosity = 0.4	2.00	1,914	1,531

The total design storage volume for the proposed gravel wetland system identified in Table Example 3-3-C is 11,910 ft^3. This volume is greater than 11,834 ft^3 ((BMP-Volume $_{IA\&PA-ft^3}$), calculated in step 6) and is therefore sufficient to achieve a P $_{Target}$ of 55%.

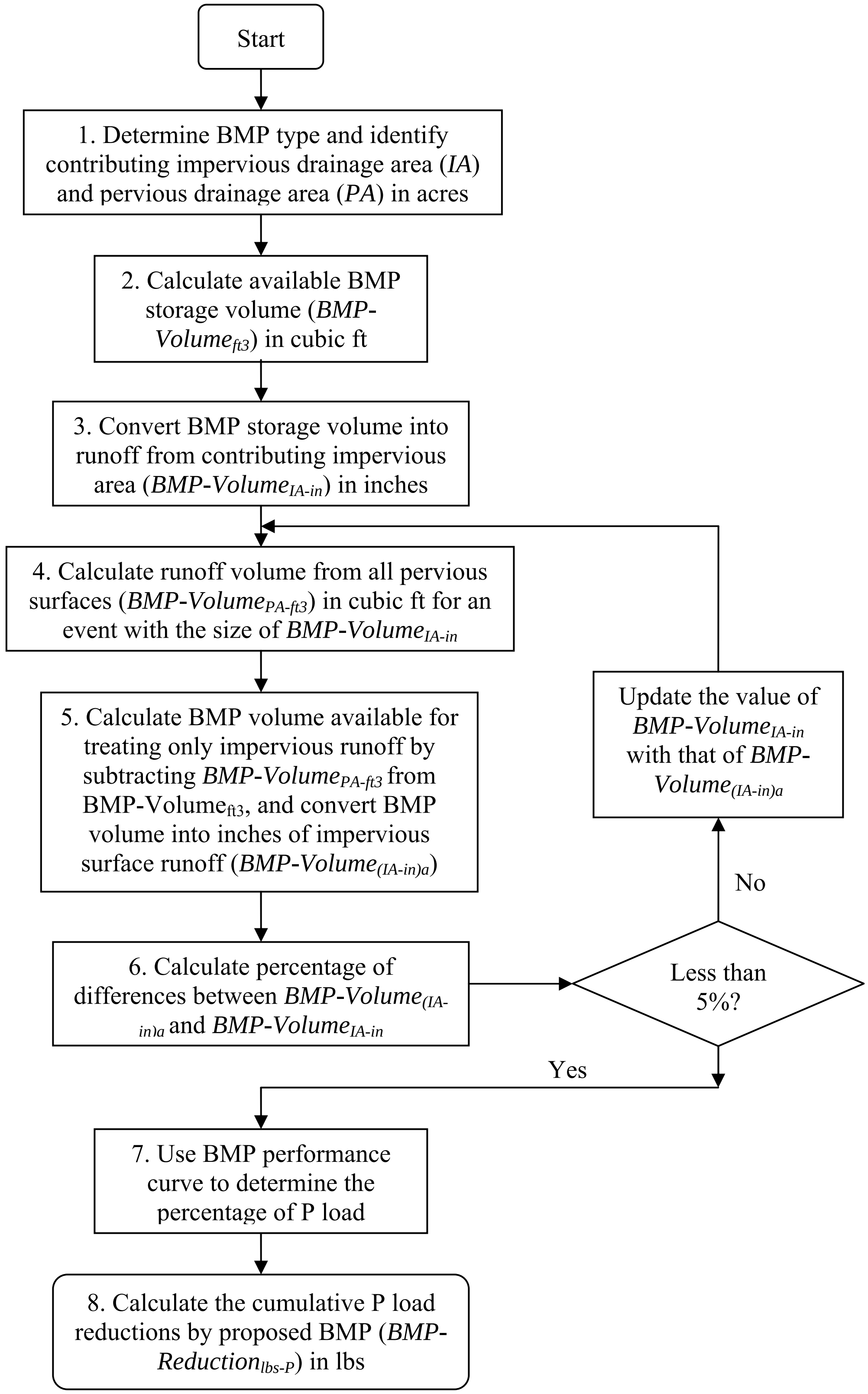
7) The cumulative phosphorus load reduction in pounds of phosphorus (BMP-Reduction $_{lbs-P}$) for the proposed gravel wetland system is calculated by using equation 3-2 with the BMP Load (as determined by the procedure in Attachment 1 to Appendix F) and the P $_{target}$ = 55%.

BMP-Reduction $_{lbs-P}$ = BMP Load x (P $_{target}$ /100) (**Equation 3-2**)

Using Table 1-1 from Attachment 1 to Appendix F, the BMP Load is calculated:
BMP Load = (IA x impervious cover phosphorus export loading rate for HDR)
+ (PA $_{HSG\ B}$ x pervious cover phosphorus export loading rate for HSG B)
+ (PA $_{HSG\ C}$ x pervious cover phosphorus export loading rate for HSG C)
= (4.00 acre x 2.3 lbs/acre/yr) + (1.50 acre x 0.2 lbs/acre/yr) + (2.00 acre x 0.5 lbs/acre/yr)
= 9.69 lbs/yr
BMP-Reduction $_{lbs-P}$ = BMP Load x (P $_{target}$ /100)
BMP-Reduction $_{lbs-P}$ = 10.5 lbs/yr x 55/100
= **5.78 lbs**

(4) Method to determine the phosphorus load reduction for a structural BMP with a known storage volume when the contributing drainage area has impervious and pervious surfaces:

Flow Chart 4 illustrates the steps to determine the phosphorus load reduction for a structural BMP with a known storage volume when the contributing drainage area has impervious and pervious surfaces.



Flow Chart 4. Method to determine the phosphorus load reduction for a BMP with known storage volume when both pervious and impervious drainage areas are present.

1) Identify the type of structural BMP and characterize the contributing drainage area to the structural BMP by identifying the following information for the impervious and pervious surfaces:

Impervious area (IA) – Area (acre) and land use (e.g., commercial)

Pervious area (PA) – Area (acre) and runoff depth based on hydrologic soil group (HSG) and size of rainfall event. Table 3-3-1 provides values of runoff depth for various rainfall depths and HSGs. Soils are assigned to an HSG based on their permeability. HSG categories for pervious areas in the Watershed shall be estimated by consulting local soil surveys prepared by the National Resource Conservation Service (NRCS) or by a storm water professional evaluating soil testing results from the Watershed. If the HSG condition is not known, a HSG D soil condition should be assumed.

2) Determine the available storage volume (ft^3) of the structural BMP (BMP-Volume $_{ft^3}$) using the BMP dimensions and design specifications (e.g., maximum storage depth, filter media porosity);

3) To estimate the phosphorus load reduction of a BMP with a known storage volume capacity, it is first necessary to determine the portion of available BMP storage capacity (BMP-Volume $_{ft^3}$) that would treat the runoff volume generated from the contributing impervious area (IA) for a rainfall event with a depth of *i* inches (in). This will require knowing the corresponding amount of runoff volume that would be generated from the contributing pervious area (PA) for the same rainfall event (depth of *i* inches). Using equation 3-6a below, solve for the BMP capacity that would be available to treat runoff from the contributing imperious area for the unknown rainfall depth of *i* inches (see equation 3-6b):

$$\text{BMP-Volume}_{ft^3} = \text{BMP-Volume}_{(IA\text{-}ft^3)i} + \text{BMP-Volume}_{(PA\text{-}ft^3)i}$$ **(Equation 3-6a)**

Where:

BMP-Volume $_{ft^3}$	=	the available storage volume of the BMP
BMP-Volume $_{(IA\text{-}ft^3)i}$	=	the available storage volume of the BMP that would fully treat runoff generated from the contributing impervious area for a rainfall event of size *i* inches
BMP-Volume $_{(PA\text{-}ft^3)i}$	=	the available storage volume of the BMP that would fully treat runoff generated from the contributing pervious area for a rainfall event of size *i* inches

Solving for BMP-Volume $_{(IA\text{-}ft^3)i}$:

$$\text{BMP-Volume}_{(IA\text{-}ft^3)i} = \text{BMP-Volume}_{ft^3} - \text{BMP-Volume}_{(PA\text{-}ft^3)i}$$ **(Equation 3-6b)**

To determine BMP-Volume $_{(IA\text{-}ft^3)i}$, requires performing an iterative process of refining estimates of the rainfall depth used to calculate runoff volumes until the rainfall depth used results in the sum of runoff volumes from the contributing IA and PA equaling the available BMP storage capacity (BMP-Volume $_{ft^3}$). For the purpose of estimating BMP performance, it will be considered adequate when the IA runoff depth (in) is within 5% IA runoff depth used in the previous iteration.

For the first iteration (1), convert the BMP-Volume $_{ft^3}$ determined in step 2 into inches of runoff from the contributing impervious area (BMP Volume $_{(IA\text{-}in)1}$) using equation 3-7a.

BMP-Volume $_{(IA\text{-}in)1}$ = (BMP-Volume$_{ft^3}$/ IA (acre)) x (12 in/ft /43,560 ft^2/acre) **(Equation 3-7a)**;

For iterations 2 through n (2…n), convert the BMP Volume $_{(IA\text{-}ft^3)2...n}$, determined in step 5a below, into inches of runoff from the contributing impervious area (BMP Volume $_{(IA\text{-}in)2...n}$) using equation 3-7b.

BMP-Volume $_{(IA\text{-}in)2...n}$ = (BMP-Volume $_{(IA\text{-}ft^3)2...n}$ / IA (acre)) x (12 in/ft /43,560 ft^2/acre) **(Equation 3-7b)**;

4) For 1 to n iterations, use the pervious runoff depth information from Table 3-3-1 and equation 3-8 to determine the total volume of runoff (ft^3) from the contributing PA (BMP Volume $_{PA\text{-}ft^3}$) for a rainfall size equal to the sum of BMP-Volume $_{(IA\text{-}in)1}$, determined in step 3. The runoff volume for each distinct pervious area must be determined.

BMP Volume $_{(PA\text{-}ft^3)1...n}$ = ∑ ((PA x (runoff depth)$_{(PA1,\ PA2..PAn)}$ x (3,630 ft^3/acre-in) **(Equation 3-8)**

5) For iteration 1, estimate the portion of BMP Volume that is available to treat runoff from only the IA by subtracting BMP-Volume $_{PA\text{-}ft^3}$, determined in step 4, from BMP-Volume $_{ft^3}$, determined in step 2, and convert to inches of runoff from IA (see equations 3-9a and 3-9b):

BMP-Volume $_{(IA\text{-}ft^3)2}$ = ((BMP-Volume$_{ft^3}$- BMP Volume $_{(PA\text{-}ft^3)1}$) **(Equation 3-9a)**

BMP-Volume $_{(IA\text{-}in)2}$ = (BMP-Volume $_{(IA\text{-}ft^3)2}$/IA (acre)) x (12 in/ft x 1 acre/43,560 ft^2) **(Equation 3-9b)**

If additional iterations (i.e., 2 through n) are needed, estimate the portion of BMP volume that is available to treat runoff from only the IA (BMP-Volume $_{(IA\text{-}in)3..n+1}$) by subtracting BMP Volume $_{(PA\text{-}ft^3)2..n}$, determined in step 4, from BMP Volume $_{(IA\text{-}ft^3)3..n+1}$, determined in step 5, and by converting to inches of runoff from IA using equation 3-9b):

6) For iteration a (an iteration between 1 and n+1), compare BMP Volume $_{(IA\text{-}in)a}$ to BMP Volume $_{(IA\text{-}in)a-1}$ determined from the previous iteration (a-1). If the difference in these values is greater than 5% of BMP Volume $_{(IA\text{-}in)a}$ then repeat steps 4 and 5, using BMP Volume $_{(IA\text{-}in)a}$ as the new starting value for the next iteration (a+1). If the difference is less than or equal to 5 % of BMP Volume $_{(IA\text{-}in)a}$ then the permittee may proceed to step 7.

7) Determine the % phosphorus load reduction for the structural BMP (BMP Reduction $_{\%\text{-}P}$) using the appropriate BMP performance curve and the BMP-Volume $_{(IA\text{-}in)n}$ calculated in the final iteration of step 5; and

8) Calculate the cumulative phosphorus load reduction in pounds of phosphorus for the structural BMP (BMP Reduction $_{lbs-P}$) using the BMP Load as calculated from the procedure in Attachment 1 to Appendix F and the percent phosphorus load reduction (BMP Reduction $_{\%-P}$) determined in step 7 by using equation 3-4:

BMP Reduction $_{lbs-P}$ = BMP Load x (BMP Reduction $_{\%-P}$/100) **(Equation 3-4)**

Example 3-4: Determine the phosphorus load reduction for a structural BMP with a known design volume when the contributing drainage area has impervious and pervious surfaces

A permittee is considering an infiltration basin to capture and treat runoff from a portion of the Watershed draining to the impaired waterbody. The contributing drainage area is 16.55 acres and is 71% impervious. The pervious drainage area (PA) is 80% HSG D and 20% HSG C. An infiltration basin with the following specifications can be placed at the down-gradient end of the contributing drainage area where soil testing results indicates an infiltration rate (IR) of 0.28 in/hr:

Structure	Bottom area (acre)	Top surface area (acre)	Maximum pond depth (ft)	Design storage volume (ft^3)	Infiltration Rate (in/hr)
Infiltration basin	0.65	0.69	1.65	48,155	0.28

Determine the:

A) Percent phosphorus load reduction (BMP Reduction $_{\%-P}$) for the specified infiltration basin and the contributing impervious and pervious drainage area; and

B) Cumulative phosphorus reduction in pounds that would be accomplished by the BMP (BMP-Reduction $_{lbs-P}$)

Solution:

1) A surface infiltration basin is being considered. Information for the contributing impervious (IA) and pervious (PA) areas are summarized in Tables Example 3-4-A and Example 3-4-B, respectively.

Table Example 3-4-A Impervious area characteristics

ID	Land use	Area (acre)
IA1	Industrial	11.75

Table Example 3-4-B Pervious area characteristics

ID	Area (acre)	Hydrologic Soil Group (HSG)
PA1	3.84	D
PA2	0.96	C

Solution continued:

2) The available storage volume (ft^3) of the infiltration basin (BMP-Volume $_{ft^3}$) is determined from the design details and basin dimensions; BMP-Volume $_{ft^3}$ = 48,155 ft^3.

3) To determine what the BMP design storage volume is in terms of runoff depth (in) from IA, an iterative process is undertaken:

Solution Iteration 1

For the first iteration (1), the BMP-Volume$_{ft^3}$ is converted into inches of runoff from the contributing impervious area (BMP Volume $_{(IA\text{-}in)1}$) using equation 3-5a.

BMP Volume $_{(IA\text{-}in)1}$ = (48,155 ft^2/ 11.75 acre) x (12 in/ft /43,560 ft^2/acre)
= 1.13 in

4-1) The total volume of runoff (ft^3) from the contributing PA (BMP Volume $_{PA\text{-}ft^3}$) for a rainfall size equal to the sum of BMP Volume $_{(IA\text{-}in)1}$ determined in step 3 is determined for each distinct pervious area identified in Table Example 3-4-B using the information from Table 3-3-1 and equation 3-5. Interpolation was used to determine runoff depths.

BMP Volume $_{(PA\text{-}ft^3)1}$ = ((3.84 acre x (0.33 in) + (0.96 acre x (0.13 in)) x 3,630 ft^3/acre-in
= 5052 ft^3

5-1) For iteration 1, the portion of BMP Volume that is available to treat runoff from only the IA is estimated by subtracting the BMP Volume $_{(PA\text{-}ft^3)1}$, determined in step 4-1, from BMP Volume$_{ft^3}$, determined in step 2, and converted to inches of runoff from IA:

BMP Volume $_{(IA\text{-}ft^3)\,2}$ = 48,155 ft^3 – 5052 ft^3
= 43,103 ft^3

BMP Volume $_{(IA\text{-}in)\,2}$ = (43,103 ft^3/11.75 acre) x (12 in/ft x 1 acre/43,560 ft^2)
= 1.01 in

6-1) The % difference between BMP Volume $_{(IA\text{-}in)\,2}$, 1.01 in, and BMP Volume $_{(IA\text{-}in)1}$, 1.13 in is determined and found to be significantly greater than 5%:

% Difference = ((1.13 in – 1.01 in)/1.01 in) x 100
= 12%

Therefore, steps 4 through 6 are repeated starting with BMP Volume $_{(IA\text{-}in)\,2}$ = 1.01 in.

Solution Iteration 2

4-2) BMP-Volume $_{(PA\text{-}ft^3)2}$ = ((3.84 acre x 0.21 in) + (0.96 acre x 0.12 in)) x 3,630 ft^3/acre-in
= 3,358 ft^3

5-2) BMP-Volume $_{(IA\text{-}ft^3)\,3}$ = 48,155 ft^3 – 3,358 ft^3
= 44,797 ft^3

BMP-Volume $_{(IA\text{-}in)\,3}$ = (44,797 ft^3/11.75 acre) x (12 in/ft x 1 acre/43,560 ft^2)
= 1.05 in

Solution continued:

6-2) % Difference = ((1.05 in – 1.01 in)/1.05 in) x 100
= 4%

The difference of 4% is acceptable.

7) The % phosphorus load reduction for the infiltration basin (BMP Reduction $_{\%\text{-P}}$) is determined by using the infiltration basin performance curve for an infiltration rate of 0.27 in/hr and the treatment volume (BMP-Volume $_{\text{Net IA-in}}$ = 1.05 in) calculated in step 5-2 and is **BMP Reduction $_{\%\text{-P}}$ = 93%**.

The performance curve for IR = 0.27 is used rather than interpolating between the performance curves for IR = 0.27 in/hr and 0.52 in/hr to estimate performance for IR = 0.28 in/hr. An evaluation of the performance curves for IR = 0.27 in/hr and IR = 0.52 in/hr for a design storage volume of 1.05 in indicate a small difference in estimated performance (BMP Reduction $_{\%\text{-P}}$ = 93% for IR = 0.27 in/hr and BMP Reduction $_{\%\text{-P}}$ = 95% for IR = 0.52 in/hr).

8) The cumulative phosphorus load reduction in pounds of phosphorus (BMP-Reduction $_{\text{lbs-P}}$) for the proposed infiltration basin is calculated by using equation 3-2 with the BMP Load (as determined by the procedure in Attachment 1 to Appendix F) and the P $_{\text{target}}$ of 93%.

BMP-Reduction $_{\text{lbs-P}}$ = BMP Load x (P $_{\text{target}}$ /100) **(Equation 3-2)**

Using Table 1-1 from Attachment 1, the BMP load is calculated:

BMP Load = (IA x impervious cover phosphorus export loading rate for industrial)
+ (PA $_{\text{HSG D}}$ x pervious cover phosphorus export loading rate for HSG D)
+ (PA $_{\text{HSG C}}$ x pervious cover phosphorus export loading rate for HSG C)
= (11.75 acre x 1.8 lbs/acre/yr) + (3.84 acre x 0.7 lbs/acre/yr)
+ (0.96 acre x 0.4 lbs/acre/yr)
= 24.22 lbs/yr

BMP-Reduction $_{\text{lbs-P}}$ = 24.22 lbs/yr x 93/100 = **22.52 lbs**

Table 3-1

Infiltration Trench (IR = 0.17 in/hr) BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Runoff Volume Reduction	14.7%	27.6%	48.6%	64.1%	74.9%	82.0%	91.6%	95.4%
Cumulative Phosphorus Load Reduction	18%	33%	57%	73%	83%	90%	97%	99%

Figure 3-1

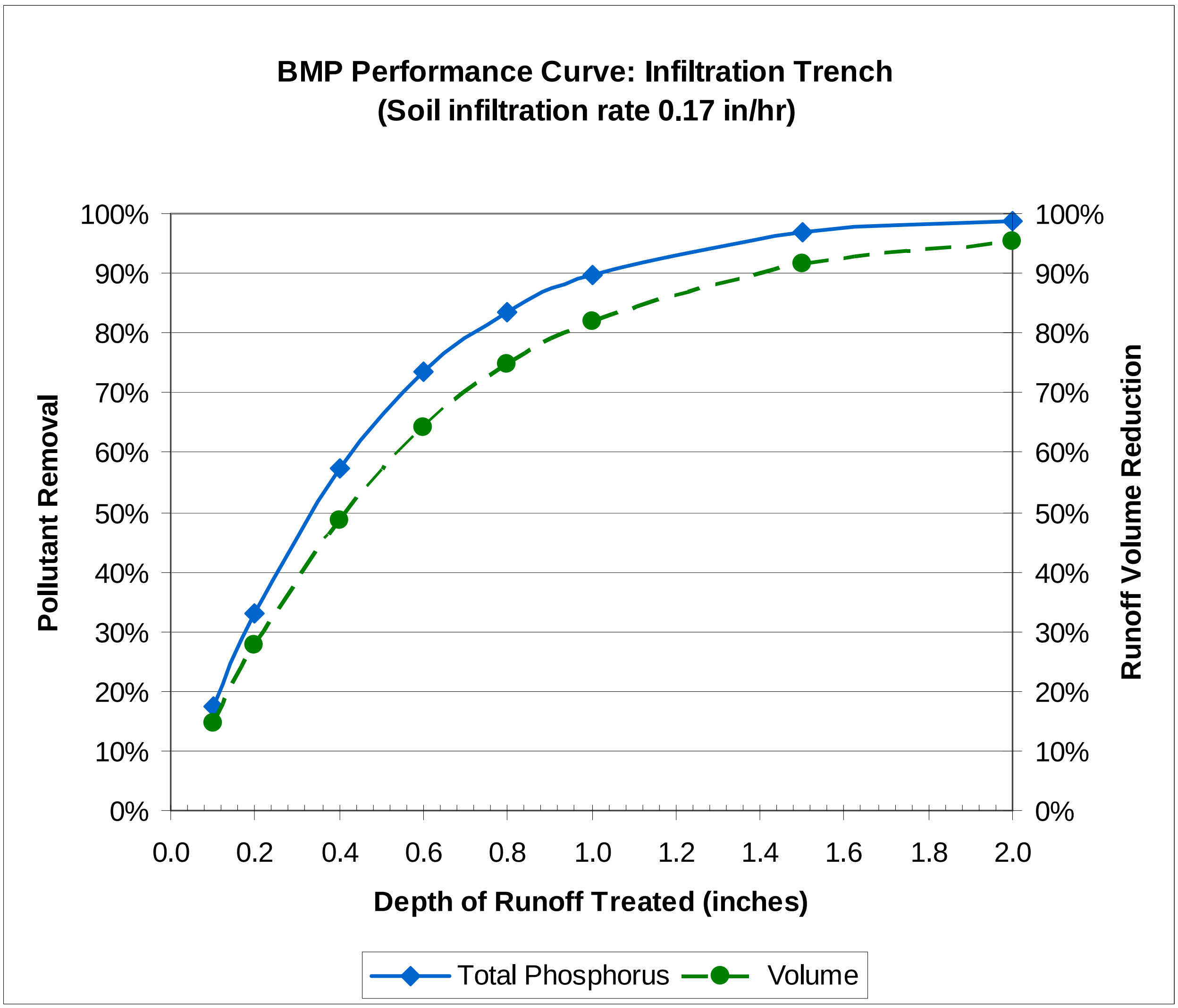


Table 3-2

Infiltration Trench (IR = 0.27 in/hr) BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Runoff Volume Reduction	17.8%	32.5%	55.0%	70.0%	79.3%	85.2%	93.3%	96.3%
Cumulative Phosphorus Load Reduction	20%	37%	63%	78%	86%	92%	97%	99%

Figure 3-2

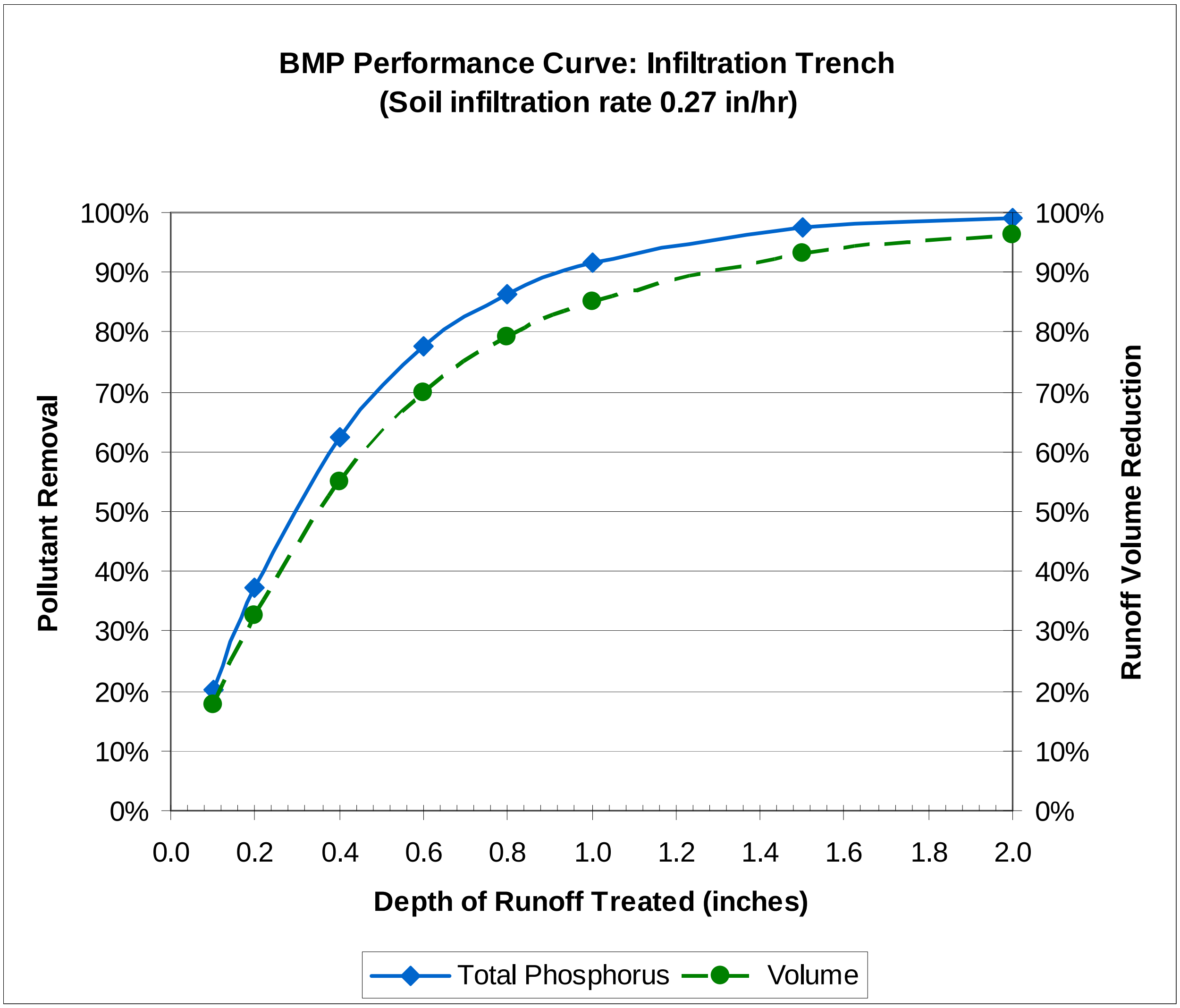


Table 3-3

Infiltration Trench (IR = 0.52 in/hr) BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Runoff Volume Reduction	22.0%	38.5%	61.8%	75.7%	83.7%	88.8%	95.0%	97.2%
Cumulative Phosphorus Load Reduction	23%	42%	68%	82%	89%	94%	98%	99%

Figure 3-3

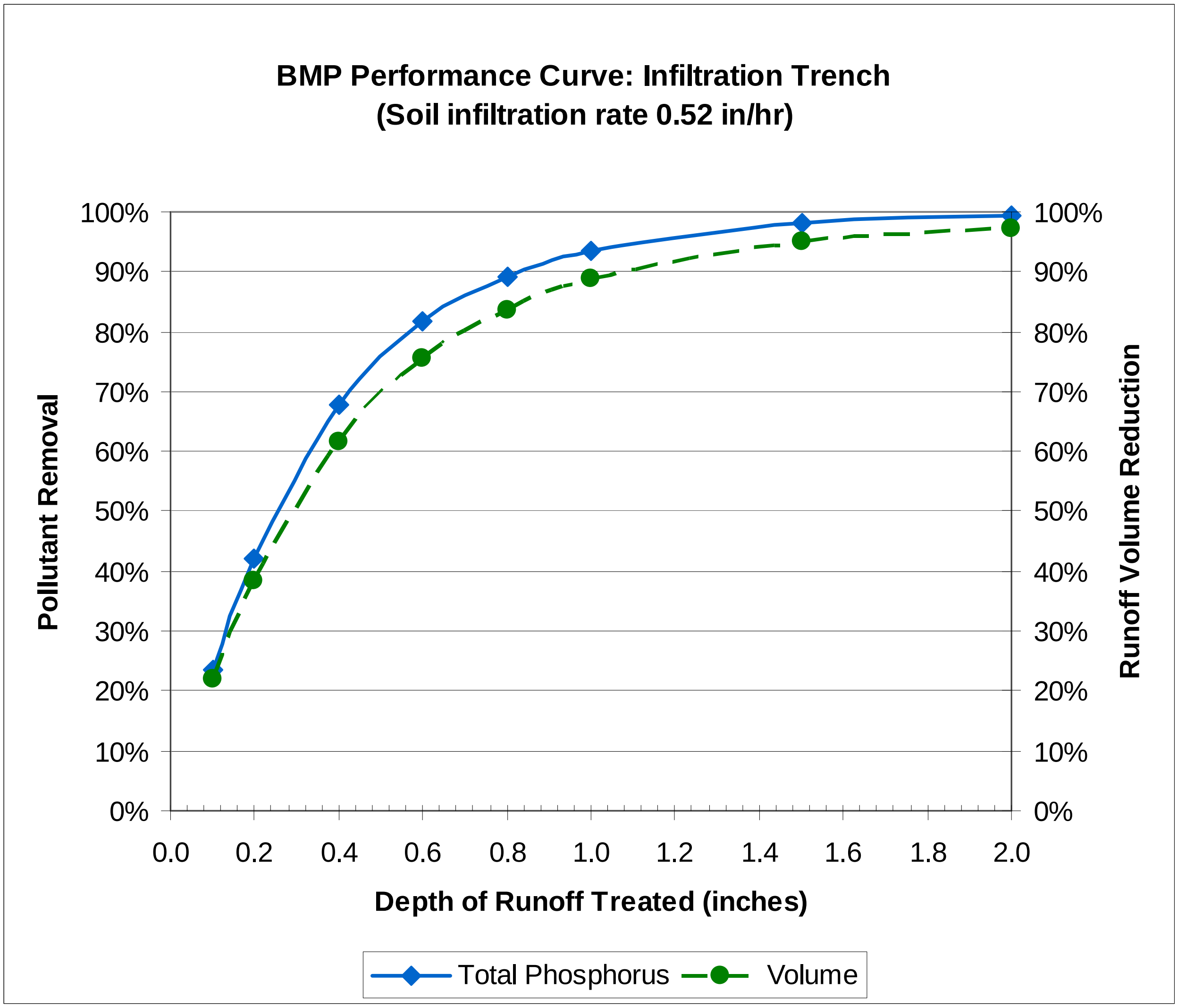


Table 3-4

Infiltration Trench (IR = 1.02 in/hr) BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Runoff Volume Reduction	26.3%	44.6%	68.2%	81.0%	88.0%	92.1%	96.5%	98.3%
Cumulative Phosphorus Load Reduction	27%	47%	73%	86%	92%	96%	99%	100%

Figure 3-4

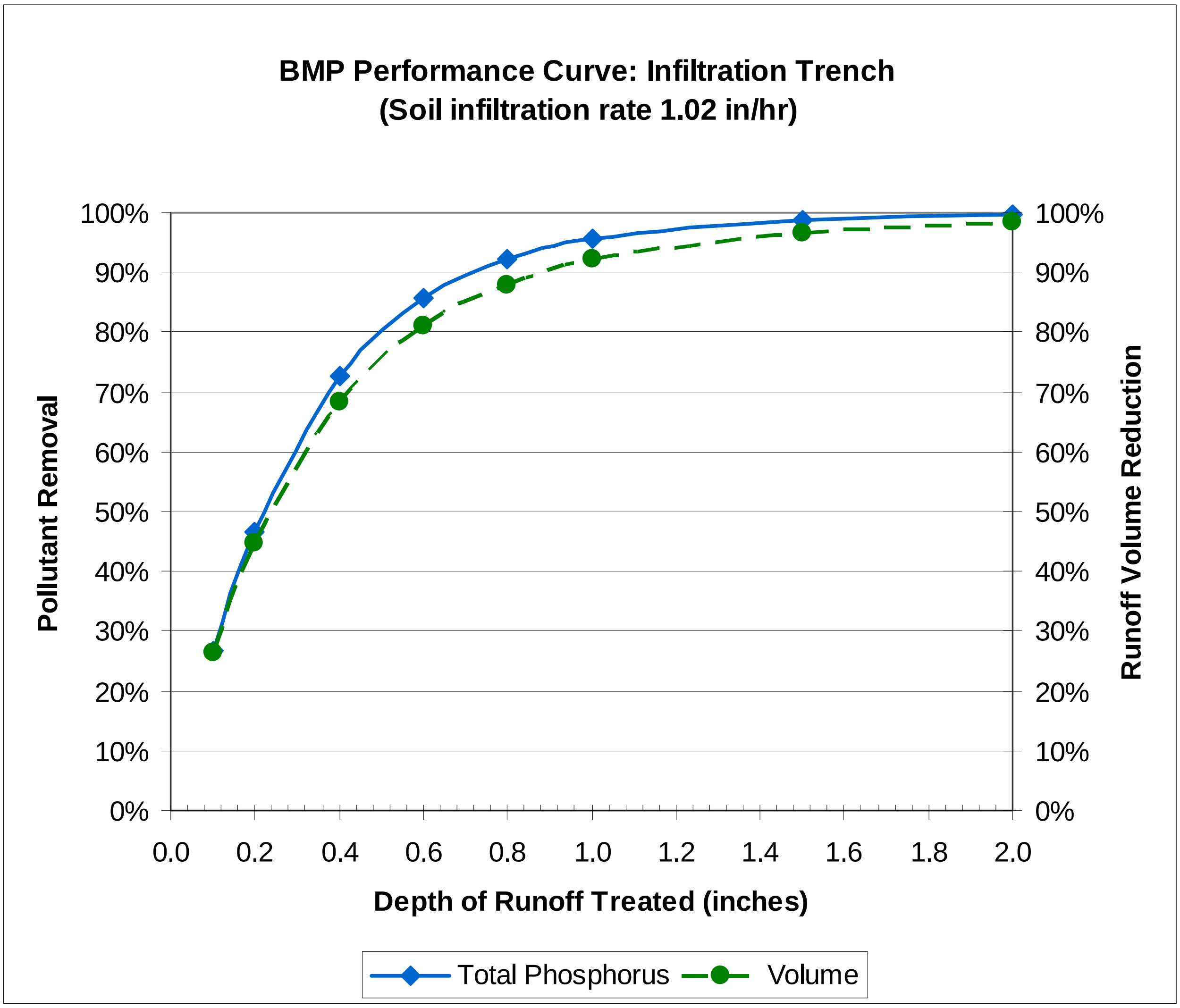


Table 3-5

Infiltration Trench (IR = 2.41 in/hr) BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Runoff Volume Reduction	34.0%	54.7%	78.3%	88.4%	93.4%	96.0%	98.8%	99.8%
Cumulative Phosphorus Load Reduction	33%	55%	81%	91%	96%	98%	100%	100%

Figure 3-5

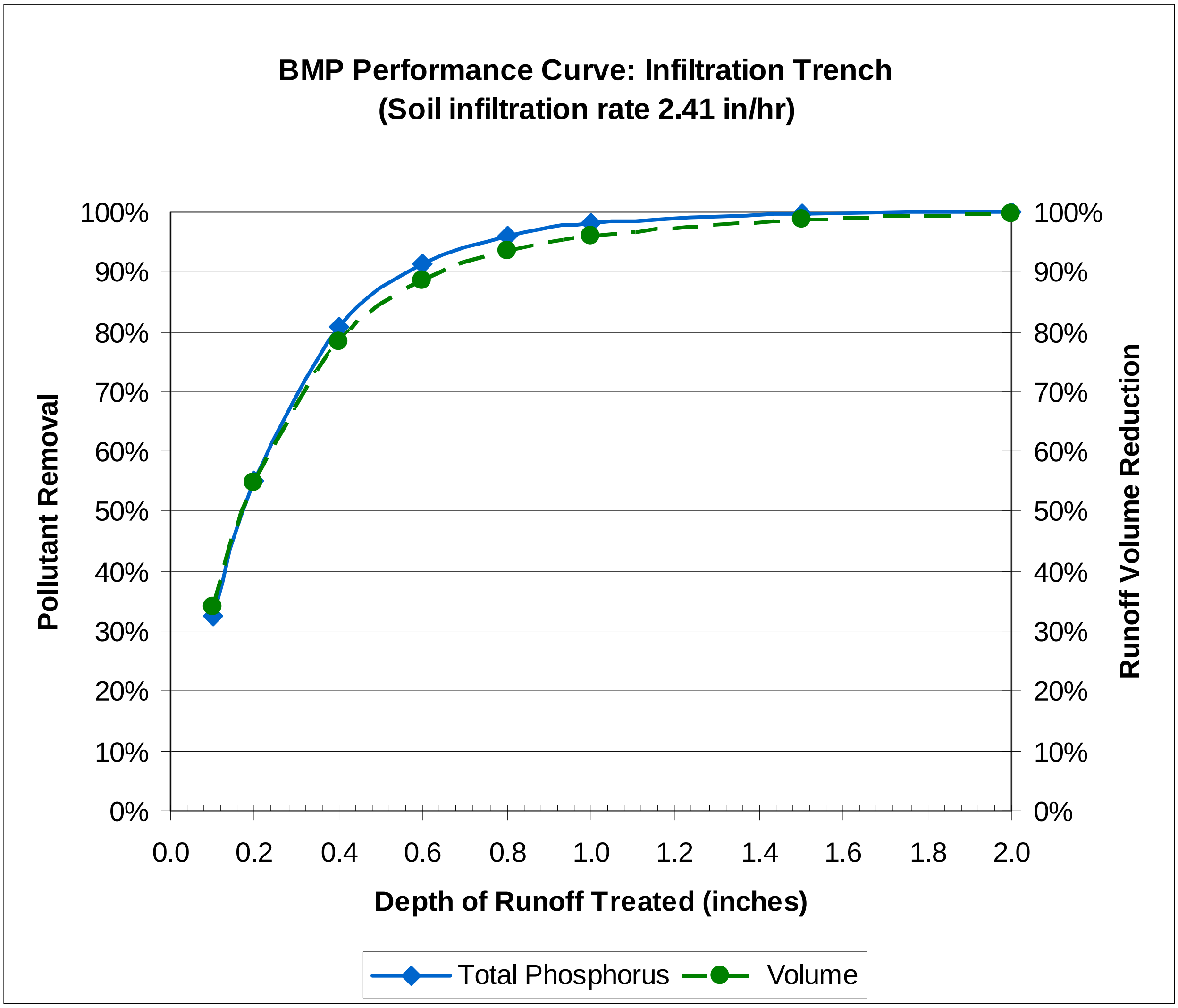


Table 3-6

Infiltration Trench (8.27 in/hr) BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Runoff Volume Reduction	53.6%	76.1%	92.6%	97.2%	98.9%	99.5%	100.0%	100.0%
Cumulative Phosphorus Load Reduction	50%	75%	94%	98%	99%	100%	100%	100%

Figure 3-6

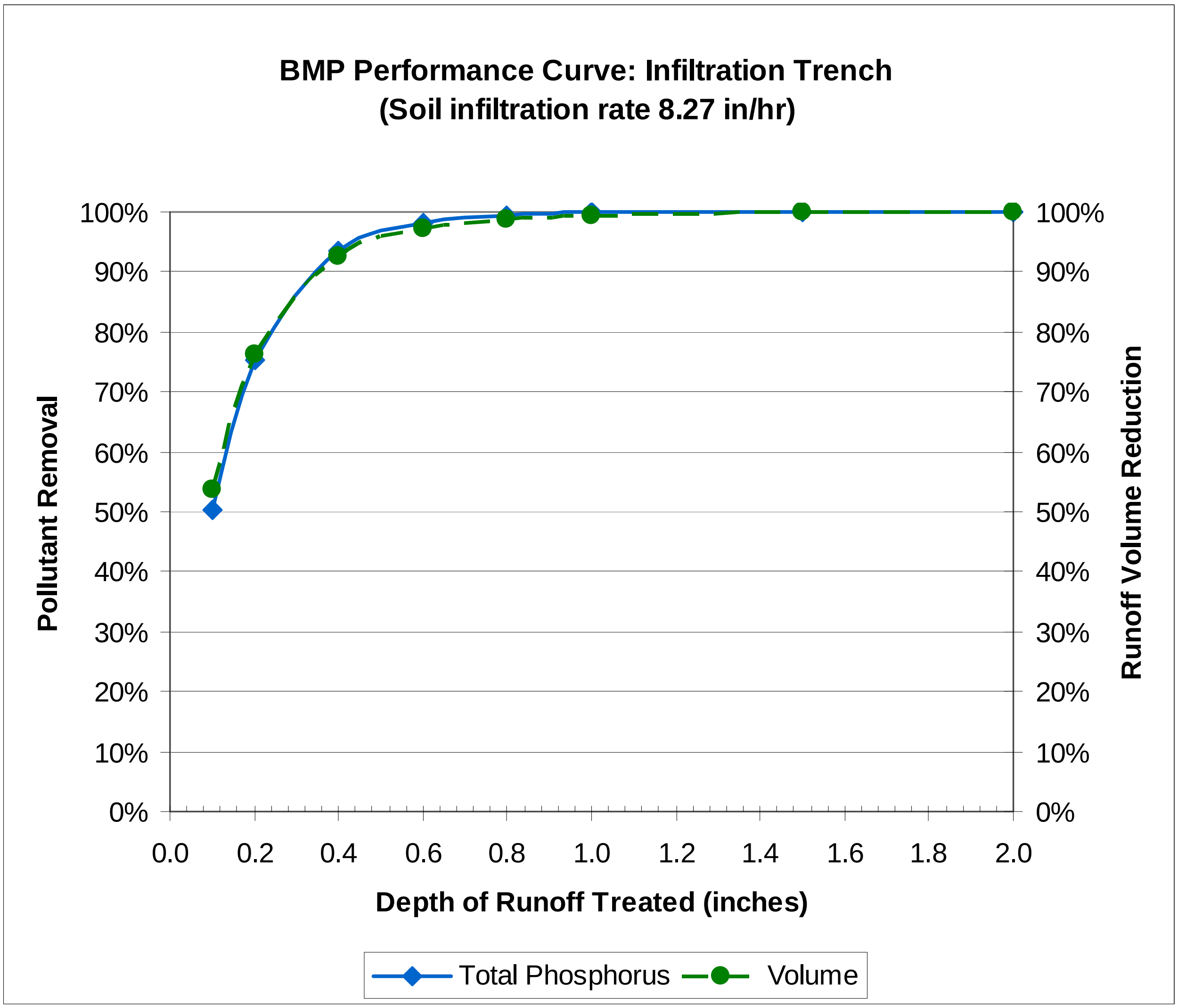


Table 3-7

Infiltration Basin (0.17 in/hr) BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Runoff Volume Reduction	13.0%	24.6%	44.2%	59.5%	70.6%	78.1%	89.2%	93.9%
Cumulative Phosphorus Load Reduction	35%	52%	72%	82%	88%	92%	97%	99%

Figure 3-7

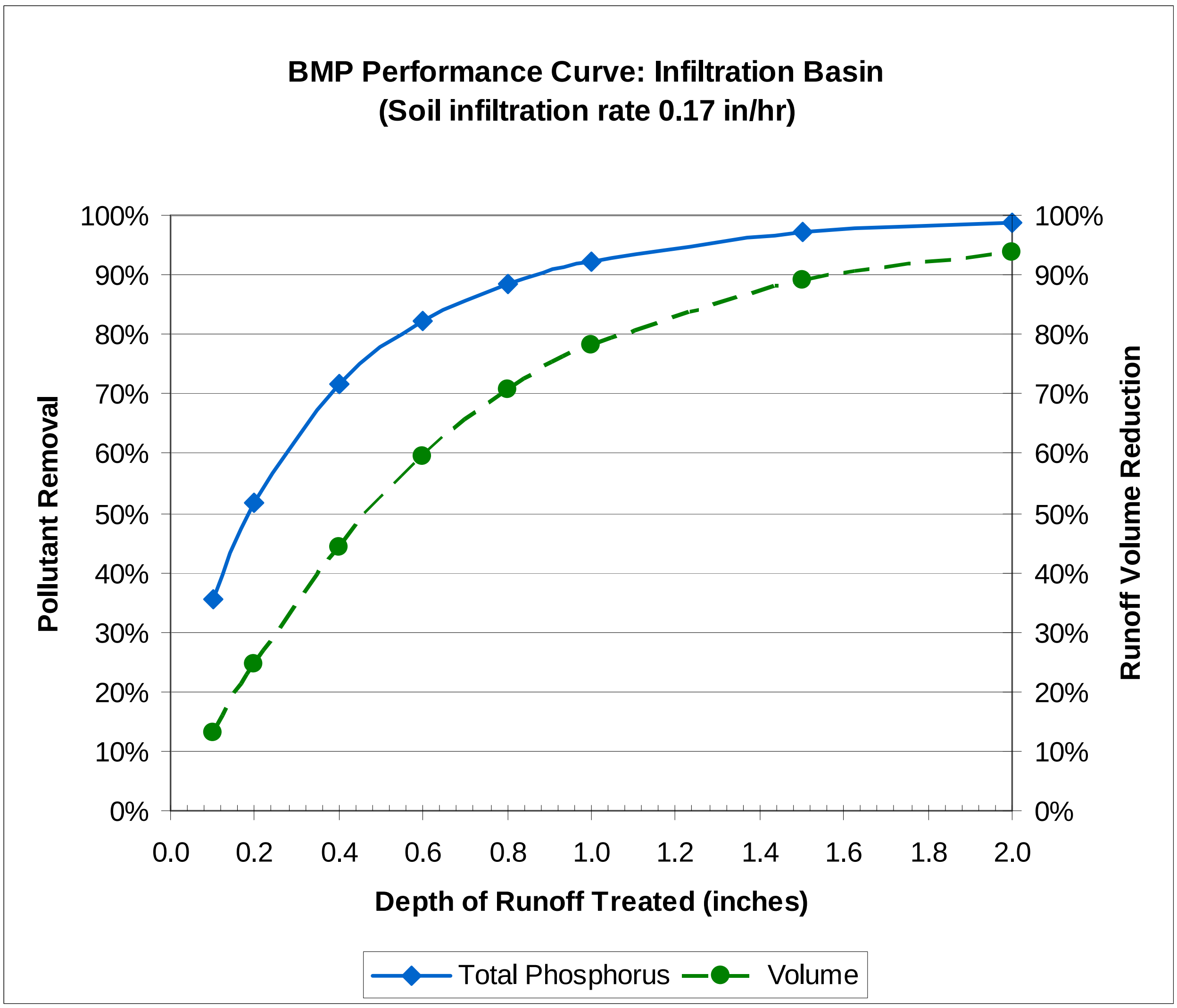


Table 3-8

Infiltration Basin (0.27 in/hr) BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Runoff Volume Reduction	16.3%	29.8%	51.0%	66.0%	76.0%	82.4%	91.5%	95.2%
Cumulative Phosphorus Load Reduction	37%	54%	74 %	85%	90%	93%	98%	99%

Figure 3-8

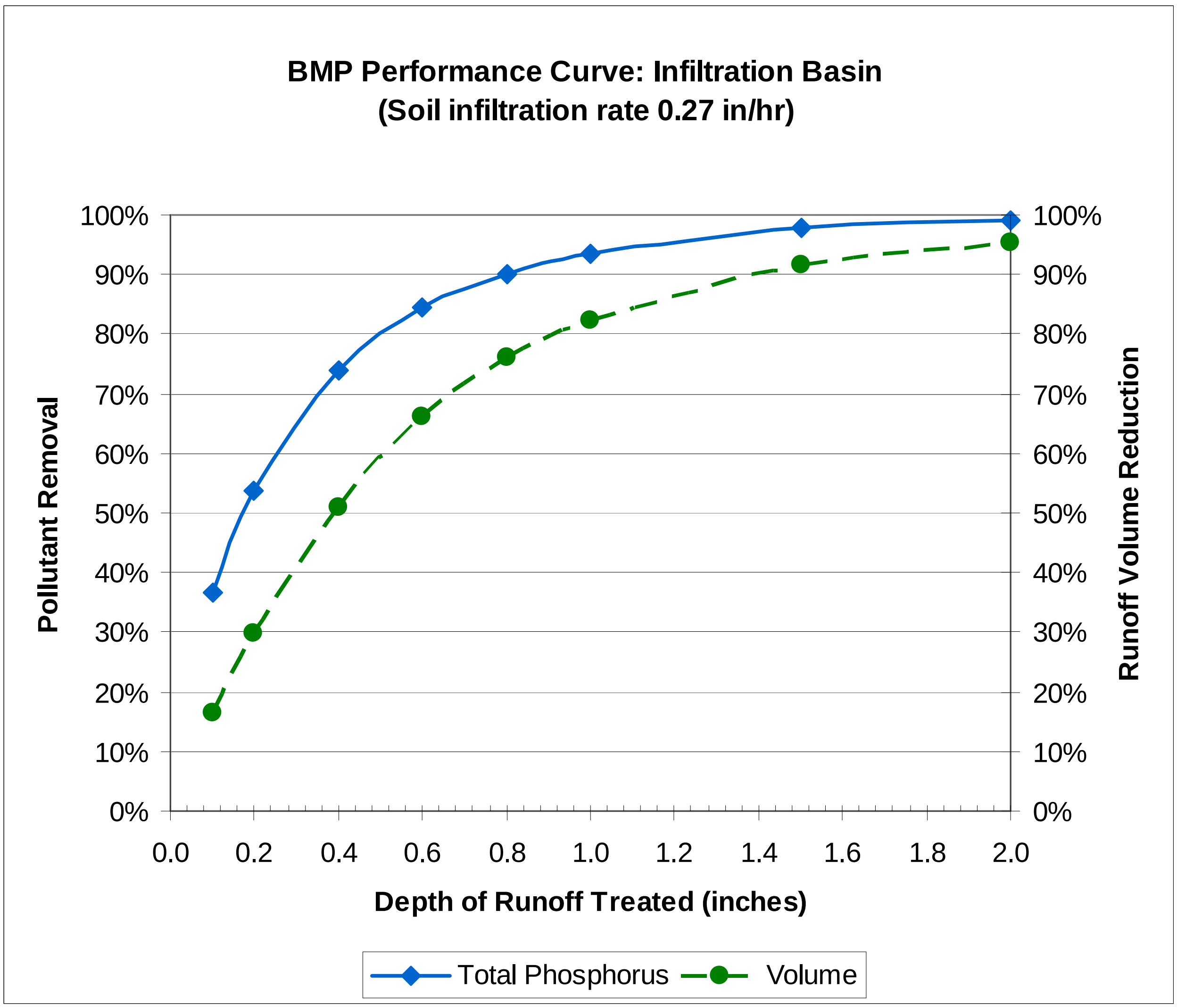


Table 3-9

Infiltration Basin (0.52 in/hr) BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Runoff Volume Reduction	20.2%	35.6%	58.0%	72.6%	81.3%	86.9%	94.2%	96.7%
Cumulative Phosphorus Load Reduction	38%	56%	77%	87%	92%	95%	98%	99%

Figure 3-9

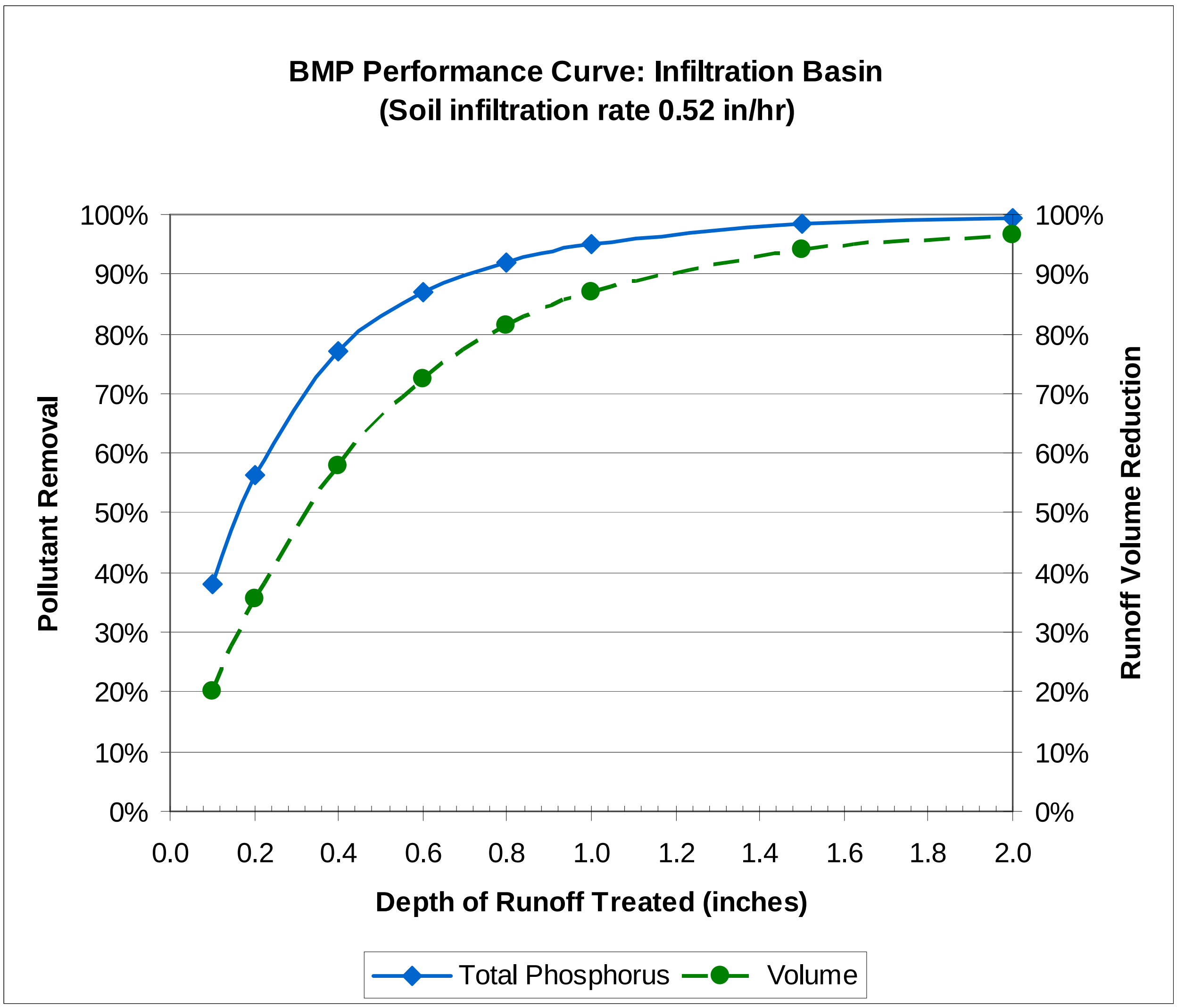


Table 3-10

Infiltration Basin (1.02 in/hr) BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Runoff Volume Reduction	24.5%	42.0%	65.6%	79.4%	86.8%	91.3%	96.2%	98.1%
Cumulative Phosphorus Load Reduction	41%	60%	81%	90%	94%	97%	99%	100%

Figure 3-10

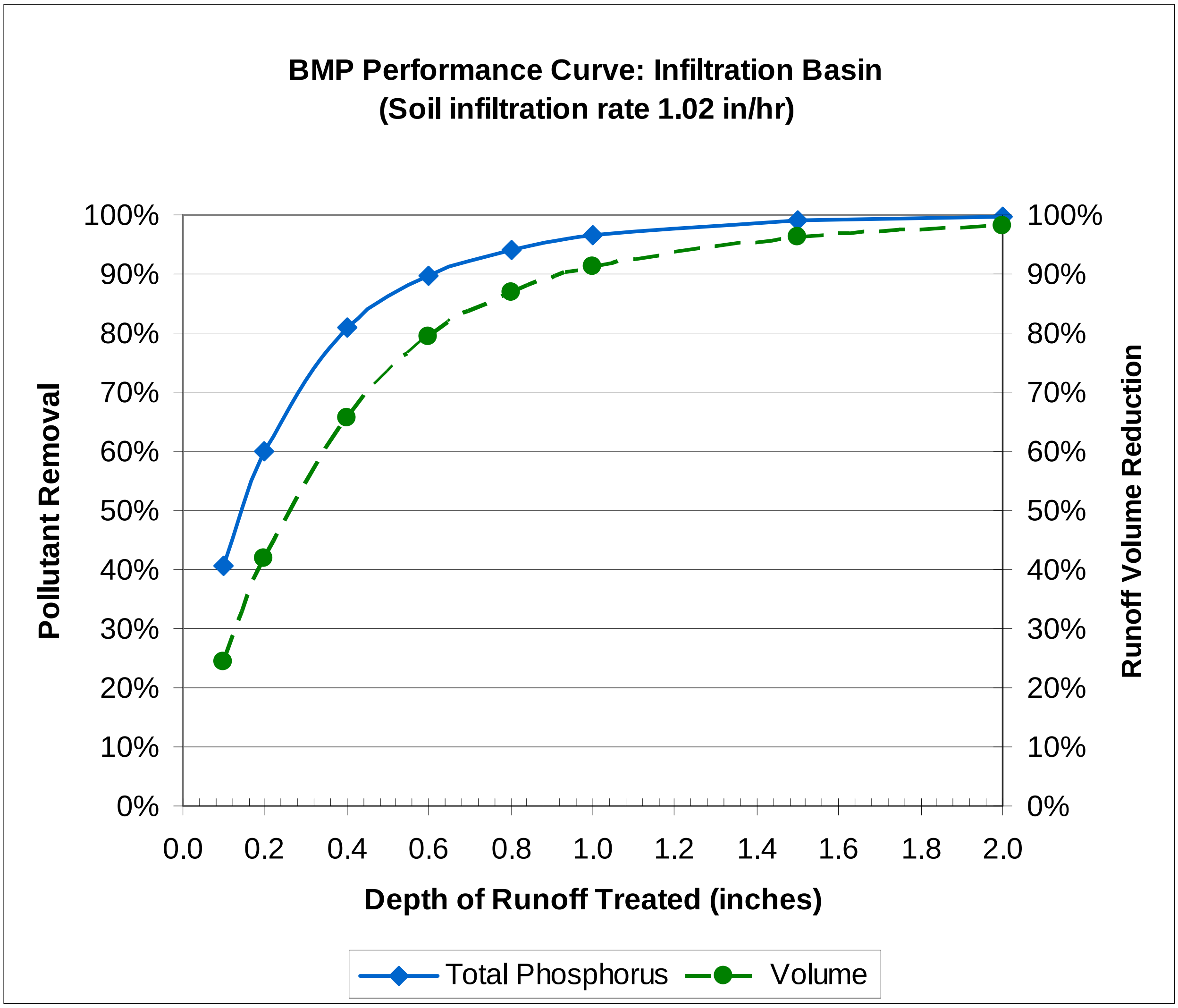


Table 3-11

Infiltration Basin (2.41 in/hr) BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Runoff Volume Reduction	32.8%	53.8%	77.8%	88.4%	93.4%	96.0%	98.8%	99.8%
Cumulative Phosphorus Load Reduction	46%	67%	87%	94%	97%	98%	100%	100%

Figure 3-11

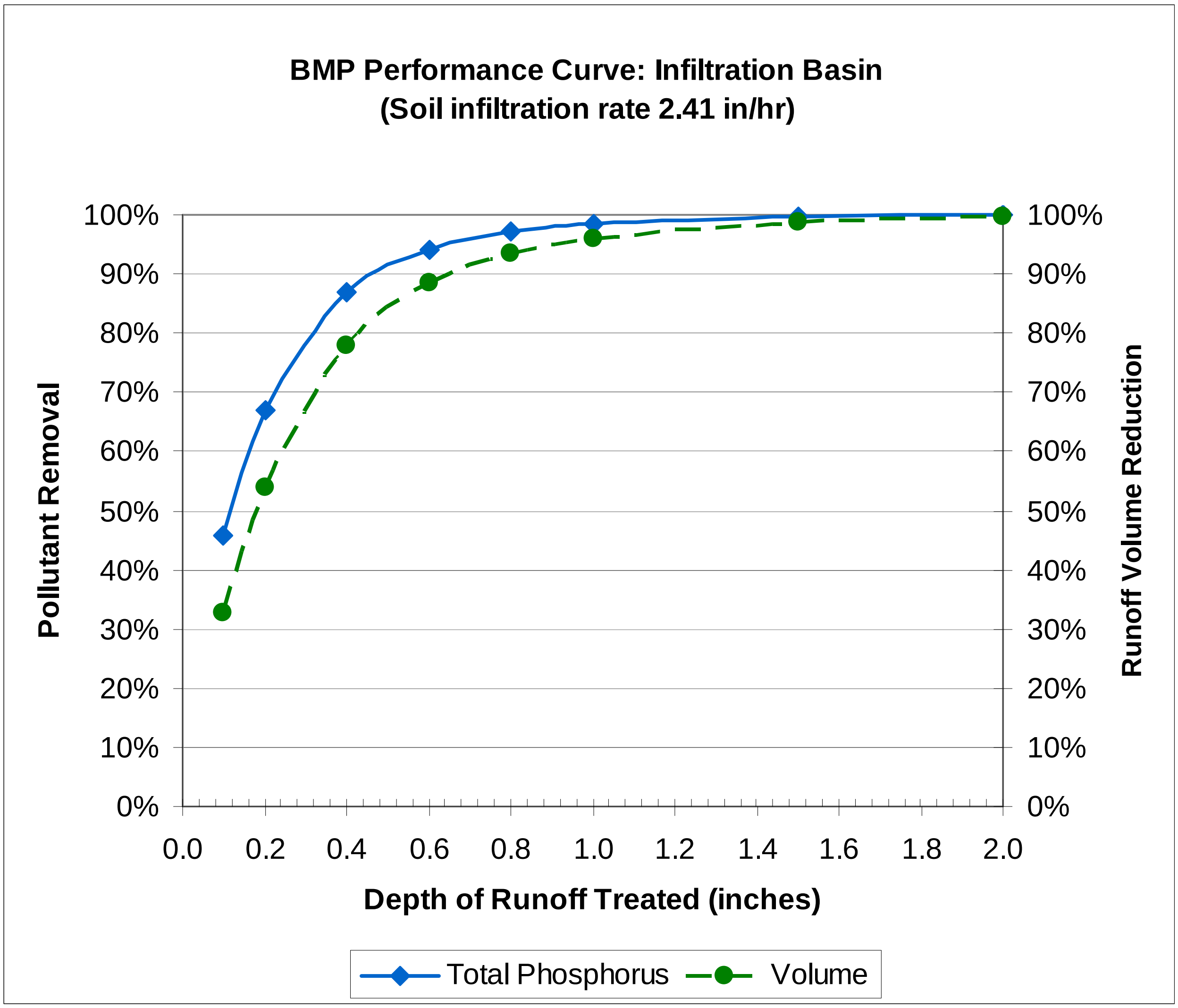


Table 3-12

Infiltration Basin (8.27 in/hr) BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Runoff Volume Reduction	54.6%	77.2%	93.4%	97.5%	99.0%	99.6%	100.0%	100.0%
Cumulative Phosphorus Load Reduction	59%	81%	96%	99%	100%	100%	100%	100%

Figure 3-12

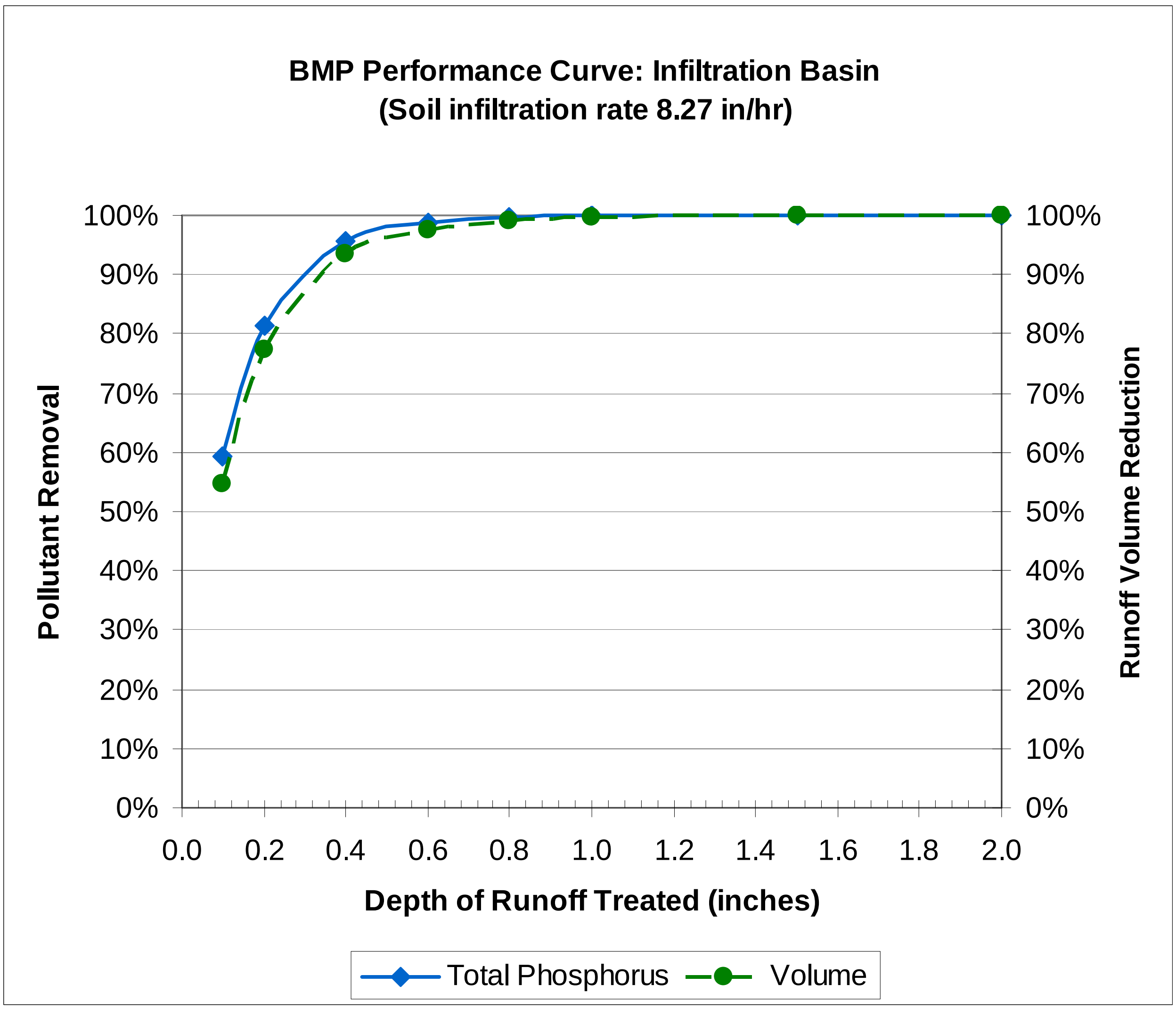


Table 3-13

Bioretention BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Cumulative Phosphorus Load Reduction	19%	34%	53%	64%	71%	76%	84%	89%

Figure 3-13

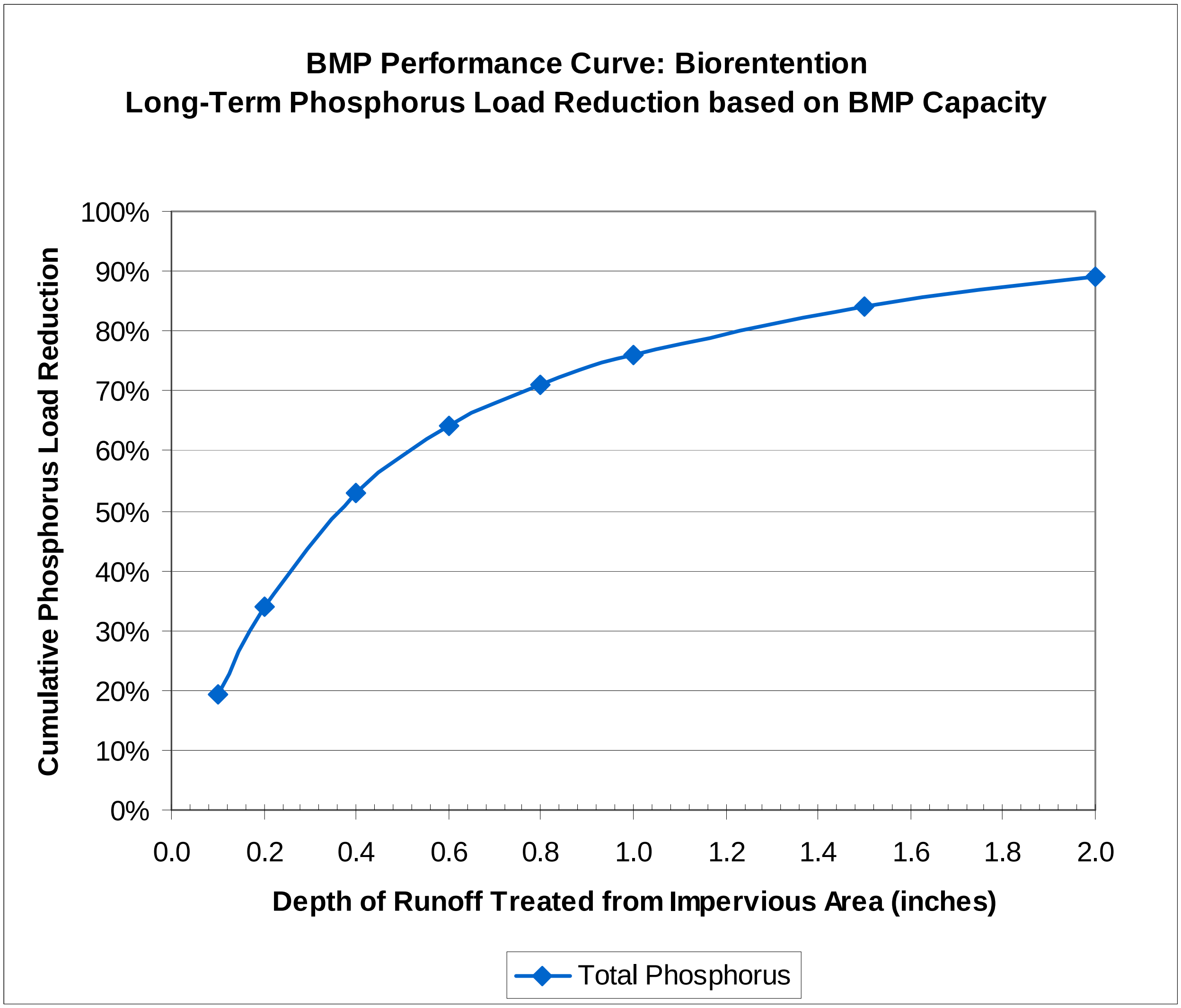


Table 3-14

Gravel Wetland BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Cumulative Phosphorus Load Reduction	19%	26%	41%	51%	57%	61%	65%	66%

Figure 3-14

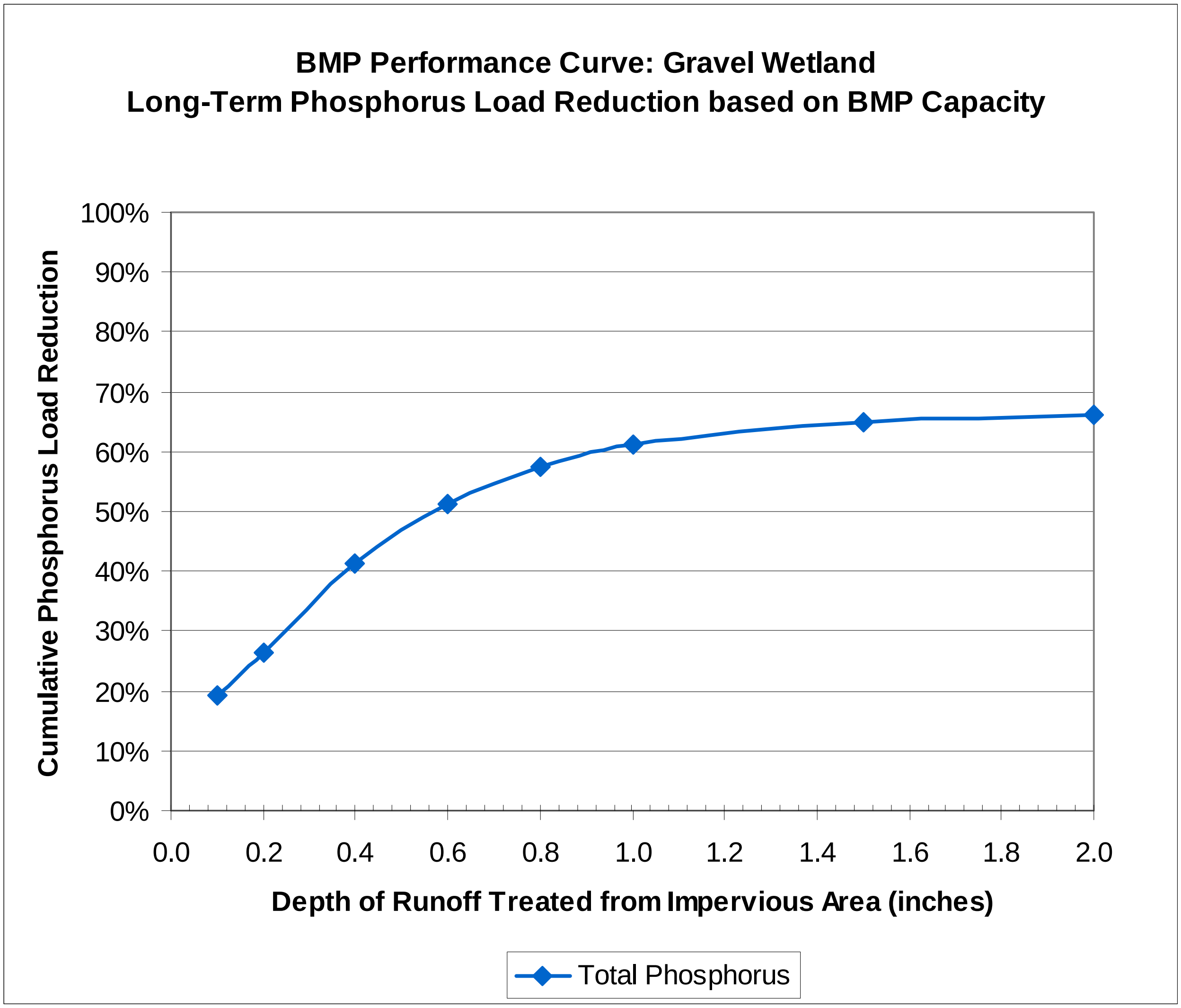


Table 3-15

Porous Pavement BMP Performance Table: Long-Term Phosphorus Load Reduction				
BMP Capacity: Depth of Filter Course Area (inches)	12.0	18.0	24.0	32.0
Cumulative Phosphorus Load Reduction	62%	70%	75%	78%

Figure 3-15

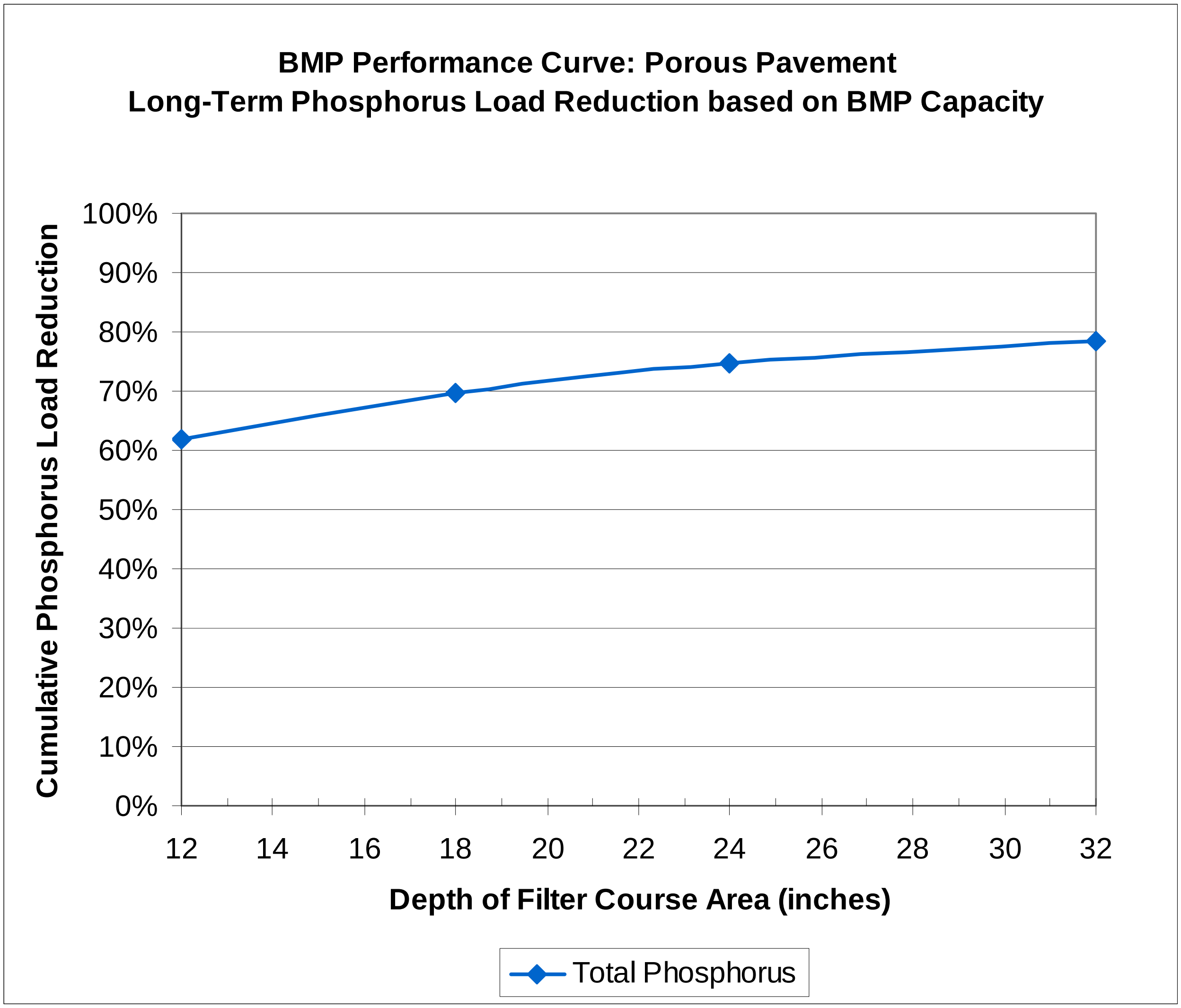


Table 3-16

Wet Pond BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Cumulative Phosphorus Load Reduction	14%	25%	37%	44%	48%	53%	58%	63%

Table 3-17

Dry Pond BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Cumulative Phosphorus Load Reduction	3%	6%	8%	9%	11%	12%	13%	14%

Figure 3-16

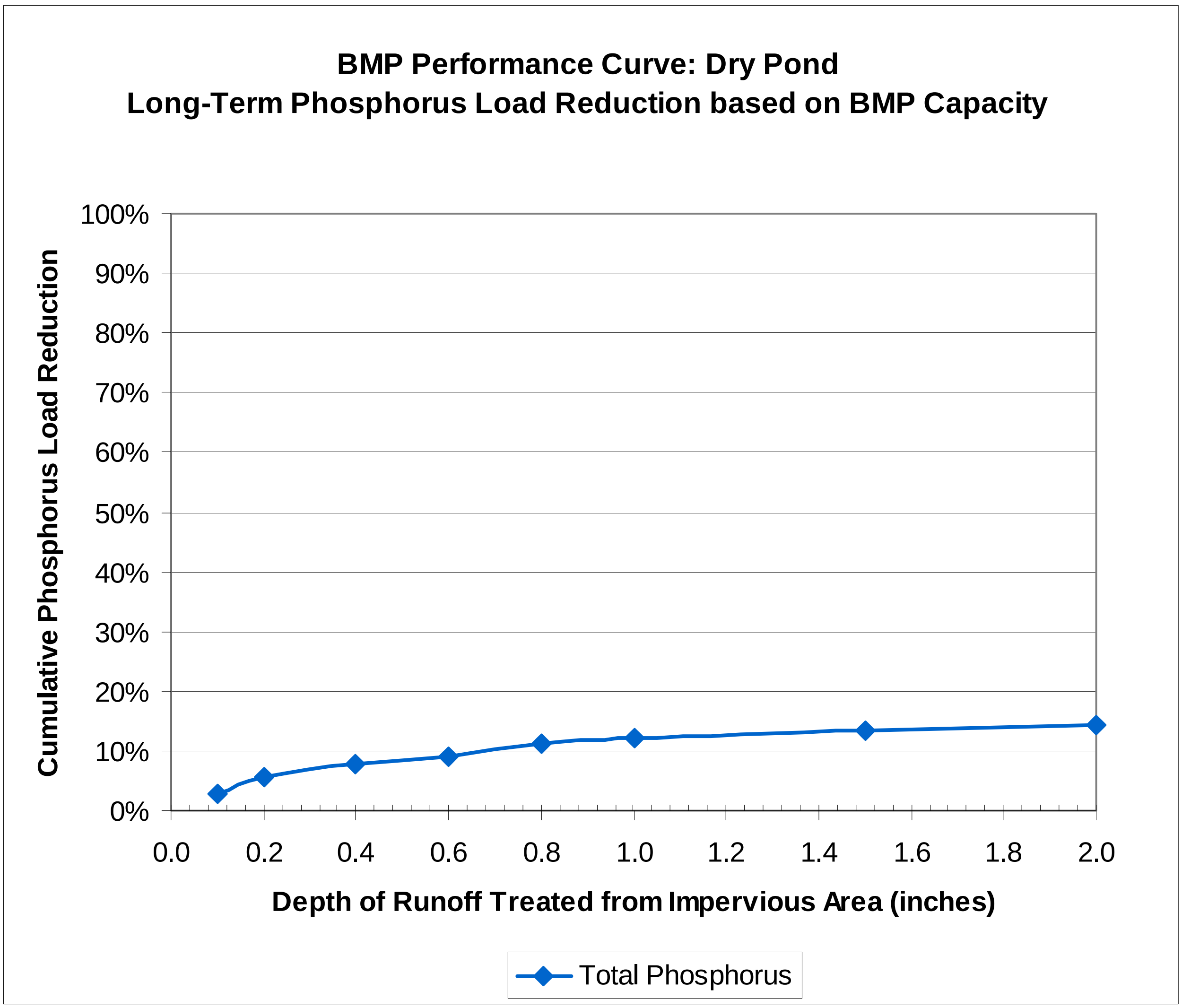
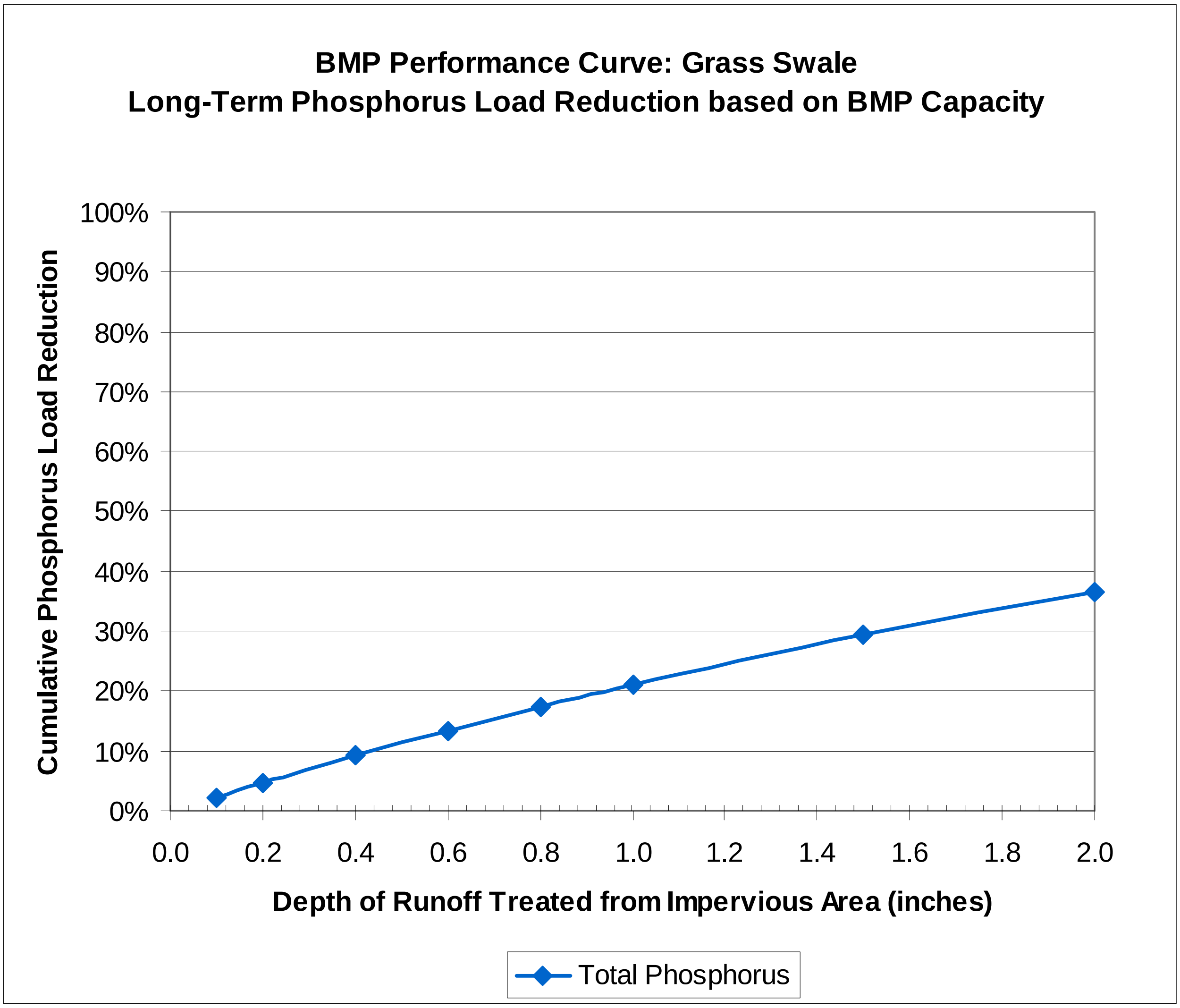


Table 3-18

Grass Swale BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Cumulative Phosphorus Load Reduction	2%	5%	9%	13%	17%	21%	29%	36%

Figure 3-17



NPDES PART II STANDARD CONDITIONS
(January, 2007)

TABLE OF CONTENTS

PART II. A. GENERAL REQUIREMENTS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

a. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.

b. The CWA provides that any person who violates Section 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any of such sections in a permit issued under Section 402, or any requirement imposed in a pretreatment program approved under Section 402 (a)(3) or 402 (b)(8) of the CWA is subject to a civil penalty not to exceed $25,000 per day for each violation. Any person who negligently violates such requirements is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates such requirements is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both.

c. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318, or 405 of the CWA, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the CWA. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

Note: See 40 CFR §122.41(a)(2) for complete "Duty to Comply" regulations.

2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or notifications of planned changes or anticipated noncompliance does not stay any permit condition.

3. Duty to Provide Information

The permittee shall furnish to the Regional Administrator, within a reasonable time, any information which the Regional Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Regional Administrator, upon request, copies of records required to be kept by this permit.

4. Reopener Clause

The Regional Administrator reserves the right to make appropriate revisions to this permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA in order to bring all discharges into compliance with the CWA.

For any permit issued to a treatment works treating domestic sewage (including "sludge-only facilities"), the Regional Administrator or Director shall include a reopener clause to incorporate any applicable standard for sewage sludge use or disposal promulgated under Section 405 (d) of the CWA. The Regional Administrator or Director may promptly modify or revoke and reissue any permit containing the reopener clause required by this paragraph if the standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or contains a pollutant or practice not limited in the permit.

Federal regulations pertaining to permit modification, revocation and reissuance, and termination are found at 40 CFR §122.62, 122.63, 122.64, and 124.5.

5. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from responsibilities, liabilities or penalties to which the permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

6. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges.

7. Confidentiality of Information

a. In accordance with 40 CFR Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR Part 2 (Public Information).

b. Claims of confidentiality for the following information will be denied:

(1) The name and address of any permit applicant or permittee;
(2) Permit applications, permits, and effluent data as defined in 40 CFR §2.302(a)(2).

c. Information required by NPDES application forms provided by the Regional Administrator under 40 CFR §122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

8. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after its expiration date, the permittee must apply for and obtain a new permit. The permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Regional Administrator. (The Regional Administrator shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

9. State Authorities

Nothing in Part 122, 123, or 124 precludes more stringent State regulation of any activity covered by these regulations, whether or not under an approved State program.

10. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, nor does it relieve the permittee of its obligation to comply with any other applicable Federal, State, or local laws and regulations.

PART II. B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

(1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

(2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can be reasonably expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of Paragraphs B.4.c. and 4.d. of this section.

c. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (Twenty-four hour reporting).

d. Prohibition of bypass

Bypass is prohibited, and the Regional Administrator may take enforcement action against a permittee for bypass, unless:

(1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and

(3) i) The permittee submitted notices as required under Paragraph 4.c. of this section.
ii) The Regional Administrator may approve an anticipated bypass, after considering its adverse effects, if the Regional Administrator determines that it will meet the three conditions listed above in paragraph 4.d. of this section.

5. <u>Upset</u>

a. Definition. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph B.5.c. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated;
(3) The permittee submitted notice of the upset as required in paragraphs D.1.a. and 1.e. (Twenty-four hour notice); and
(4) The permittee complied with any remedial measures required under B.3. above.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

PART II. C. MONITORING REQUIREMENTS

1. Monitoring and Records

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Except for records for monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application except for the information concerning storm water discharges which must be retained for a total of 6 years. This retention period may be extended by request of the Regional Administrator at any time.

c. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;
(2) The individual(s) who performed the sampling or measurements;
(3) The date(s) analyses were performed;
(4) The individual(s) who performed the analyses;
(5) The analytical techniques or methods used; and
(6) The results of such analyses.

d. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.

e. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

The permittee shall allow the Regional Administrator or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

PART II. D. REPORTING REQUIREMENTS

1. Reporting Requirements

a. Planned Changes. The permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR§122.29(b); or
(2) The alteration or addition could significantly change the nature or increase the quantities of the pollutants discharged. This notification applies to pollutants which are subject neither to the effluent limitations in the permit, nor to the notification requirements at 40 CFR§122.42(a)(1).
(3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition or change may justify the application of permit conditions different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

b. Anticipated noncompliance. The permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

c. Transfers. This permit is not transferable to any person except after notice to the Regional Administrator. The Regional Administrator may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the CWA. (See 40 CFR Part 122.61; in some cases, modification or revocation and reissuance is mandatory.)

d. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.

(2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of the monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

e. Twenty-four hour reporting.

(1) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances.

A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(2) The following shall be included as information which must be reported within 24 hours under this paragraph.

(a) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR §122.41(g).)
(b) Any upset which exceeds any effluent limitation in the permit.
(c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Regional Administrator in the permit to be reported within 24 hours. (See 40 CFR §122.44(g).)

(3) The Regional Administrator may waive the written report on a case-by-case basis for reports under Paragraph D.1.e. if the oral report has been received within 24 hours.

f. Compliance Schedules. Reports of compliance or noncompliance with, any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

g. Other noncompliance. The permittee shall report all instances of noncompliance not reported under Paragraphs D.1.d., D.1.e., and D.1.f. of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph D.1.e. of this section.

h. Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, it shall promptly submit such facts or information.

2. <u>Signatory Requirement</u>

   a. All applications, reports, or information submitted to the Regional Administrator shall be signed and certified. (See 40 CFR §122.22)

   b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.

3. <u>Availability of Reports</u>.

   Except for data determined to be confidential under Paragraph A.8. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

PART II. E. DEFINITIONS AND ABBREVIATIONS

1. <u>Definitions for Individual NPDES Permits including Storm Water Requirements</u>

   Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

   Applicable standards and limitations means all, State, interstate, and Federal standards and limitations to which a “discharge”, a “sewage sludge use or disposal practice”, or a related activity is subject to, including “effluent limitations”, water quality standards, standards of performance, toxic effluent standards or prohibitions, “best management practices”, pretreatment standards, and “standards for sewage sludge use and disposal” under Sections 301, 302, 303, 304, 306, 307, 308, 403, and 405 of the CWA.

Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in "approved States", including any approved modifications or revisions.

Average means the arithmetic mean of values taken at the frequency required for each parameter over the specified period. For total and/or fecal coliforms and Escherichia coli, the average shall be the geometric mean.

Average monthly discharge limitation means the highest allowable average of "daily discharges" over a calendar month calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Average weekly discharge limitation means the highest allowable average of "daily discharges" measured during the calendar week divided by the number of "daily discharges" measured during the week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Best Professional Judgment (BPJ) means a case-by-case determination of Best Practicable Treatment (BPT), Best Available Treatment (BAT), or other appropriate technology-based standard based on an evaluation of the available technology to achieve a particular pollutant reduction and other factors set forth in 40 CFR §125.3 (d).

Coal Pile Runoff means the rainfall runoff from or through any coal storage pile.

Composite Sample means a sample consisting of a minimum of eight grab samples of equal volume collected at equal intervals during a 24-hour period (or lesser period as specified in the section on Monitoring and Reporting) and combined proportional to flow, or a sample consisting of the same number of grab samples, or greater, collected proportionally to flow over that same time period.

Construction Activities - The following definitions apply to construction activities:

(a) Commencement of Construction is the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.

(b) Dedicated portable asphalt plant is a portable asphalt plant located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR Part 443.

(c) Dedicated portable concrete plant is a portable concrete plant located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

(d) Final Stabilization means that all soil disturbing activities at the site have been complete, and that a uniform perennial vegetative cover with a density of 70% of the cover for unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.

(e) Runoff coefficient means the fraction of total rainfall that will appear at the conveyance as runoff.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a "discharge" which occurs without interruption throughout the operating hours of the facility except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended by Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, and Pub. L. 97-117; 33 USC §§1251 et seq.

Daily Discharge means the discharge of a pollutant measured during the calendar day or any other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Director normally means the person authorized to sign NPDES permits by EPA or the State or an authorized representative. Conversely, it also could mean the Regional Administrator or the State Director as the context requires.

Discharge Monitoring Report Form (DMR) means the EPA standard national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by permittees. DMRs must be used by "approved States" as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA's.

Discharge of a pollutant means:

(a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source", or

(b) Any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation (See "Point Source" definition).

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances leading into privately owned treatment works.

This term does not include an addition of pollutants by any "indirect discharger."

Effluent limitation means any restriction imposed by the Regional Administrator on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States", the waters of the "contiguous zone", or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under Section 304(b) of CWA to adopt or revise "effluent limitations".

EPA means the United States "Environmental Protection Agency".

Flow-weighted composite sample means a composite sample consisting of a mixture of aliquots where the volume of each aliquot is proportional to the flow rate of the discharge.

Grab Sample – An individual sample collected in a period of less than 15 minutes.

Hazardous Substance means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the CWA.

Indirect Discharger means a non-domestic discharger introducing pollutants to a publicly owned treatment works.

Interference means a discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

(a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(b) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act (CWA), the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

Large and Medium municipal separate storm sewer system means all municipal separate storm sewers that are either: (i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and 40 CFR Part 122); or (ii) located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships, or towns within such counties (these counties are listed in Appendices H and I of 40 CFR 122); or (iii) owned or operated by a municipality other than those described in Paragraph (i) or (ii) and that are designated by the Regional Administrator as part of the large or medium municipal separate storm sewer system.

Maximum daily discharge limitation means the highest allowable "daily discharge" concentration that occurs only during a normal day (24-hour duration).

Maximum daily discharge limitation (as defined for the Steam Electric Power Plants only) when applied to Total Residual Chlorine (TRC) or Total Residual Oxidant (TRO) is defined as "maximum concentration" or "Instantaneous Maximum Concentration" during the two hours of a chlorination cycle (or fraction thereof) prescribed in the Steam Electric Guidelines, 40 CFR Part 423. These three synonymous terms all mean "a value that shall not be exceeded" during the two-hour chlorination cycle. This interpretation differs from the specified NPDES Permit requirement, 40 CFR § 122.2, where the two terms of "Maximum Daily Discharge" and "Average Daily Discharge" concentrations are specifically limited to the daily (24-hour duration) values.

Municipality means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribe organization, or a designated and approved management agency under Section 208 of the CWA.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an "approved program".

New Discharger means any building, structure, facility, or installation:

(a) From which there is or may be a "discharge of pollutants";

(b) That did not commence the "discharge of pollutants" at a particular "site" prior to August 13, 1979;

(c) Which is not a "new source"; and

(d) Which has never received a finally effective NPDES permit for discharges at that "site".

This definition includes an "indirect discharger" which commences discharging into "waters of the United States" after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a "site" for which it does not have a permit; and any offshore rig or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a "site" under EPA's permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Regional Administrator in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Regional Administrator shall consider the factors specified in 40 CFR §§125.122 (a) (1) through (10).

An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a "new discharger" only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants", the construction of which commenced:

(a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or

(b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means "National Pollutant Discharge Elimination System".

Owner or operator means the owner or operator of any "facility or activity" subject to regulation under the NPDES programs.

Pass through means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved" State.

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to any pipe ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 CFR §122.2).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. §§2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

(b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Primary industry category means any industry category listed in the NRDC settlement agreement (Natural Resources Defense Council et al. v. Train, 8 E.R.C. 2120 (D.D.C. 1976), modified 12 E.R.C. 1833 (D. D.C. 1979)); also listed in Appendix A of 40 CFR Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operation is not the operator of the treatment works or (b) not a "POTW".

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly Owned Treatment Works (POTW) means any facility or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a "State" or "municipality".

This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary Industry Category means any industry which is not a "primary industry category".

Section 313 water priority chemical means a chemical or chemical category which:

(1) is listed at 40 CFR §372.65 pursuant to Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986);

(2) is present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and

(3) satisfies at least one of the following criteria:

- (i) are listed in Appendix D of 40 CFR Part 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols), or Table V (certain toxic pollutants and hazardous substances);
- (ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the CWA at 40 CFR §116.4; or
- (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

Septage means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

Sewage Sludge means any solid, semisolid, or liquid residue removed during the treatment of municipal wastewater or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced wastewater treatment, scum, septage, portable toilet pumpings, Type III Marine Sanitation Device pumpings (33 CFR Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials, fuels, materials such as solvents, detergents, and plastic pellets, raw materials used in food processing or production, hazardous substance designated under section 101(14) of CERCLA, any chemical the facility is required to report pursuant to EPCRA Section 313, fertilizers, pesticides, and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 CFR §110.10 and §117.21) or Section 102 of CERCLA (see 40 CFR § 302.4).

Sludge-only facility means any "treatment works treating domestic sewage" whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to Section 405(d) of the CWA, and is required to obtain a permit under 40 CFR §122.1(b)(3).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands.

Storm Water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. (See 40 CFR §122.26 (b)(14) for specifics of this definition.

Time-weighted composite means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

Toxic pollutants means any pollutant listed as toxic under Section 307 (a)(1) or, in the case of "sludge use or disposal practices" any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or wastewater treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, "domestic sewage" includes waste and wastewater from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Regional Administrator may designate any person subject to the standards for sewage sludge use and disposal in 40 CFR Part 503 as a "treatment works treating domestic sewage", where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 CFR Part 503.

Waste Pile means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of tide;

(b) All interstate waters, including interstate "wetlands";

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands", sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

(1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;

(2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in Paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in Paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds as defined in 40 CFR §423.11(m) which also meet the criteria of this definition) are not waters of the United States.

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test. (See Abbreviations Section, following, for additional information.)

2. <u>Definitions for NPDES Permit Sludge Use and Disposal Requirements</u>.

Active sewage sludge unit is a sewage sludge unit that has not closed.

Aerobic Digestion is the biochemical decomposition of organic matter in sewage sludge into carbon dioxide and water by microorganisms in the presence of air.

Agricultural Land is land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture.

Agronomic rate is the whole sludge application rate (dry weight basis) designed:

(1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and

(2) To minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

Air pollution control device is one or more processes used to treat the exit gas from a sewage sludge incinerator stack.

Anaerobic digestion is the biochemical decomposition of organic matter in sewage sludge into methane gas and carbon dioxide by microorganisms in the absence of air.

Annual pollutant loading rate is the maximum amount of a pollutant that can be applied to a unit area of land during a 365 day period.

Annual whole sludge application rate is the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period.

Apply sewage sludge or sewage sludge applied to the land means land application of sewage sludge.

Aquifer is a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding ground water to wells or springs.

Auxiliary fuel is fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of the sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel.

Base flood is a flood that has a one percent chance of occurring in any given year (i.e. a flood with a magnitude equaled once in 100 years).

Bulk sewage sludge is sewage sludge that is not sold or given away in a bag or other container for application to the land.

Contaminate an aquifer means to introduce a substance that causes the maximum contaminant level for nitrate in 40 CFR §141.11 to be exceeded in ground water or that causes the existing concentration of nitrate in the ground water to increase when the existing concentration of nitrate in the ground water exceeds the maximum contaminant level for nitrate in 40 CFR §141.11.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 CFR §501.2, required to have an approved pretreatment program under 40 CFR §403.8 (a) (including any POTW located in a state that has elected to assume local program responsibilities pursuant to 40 CFR §403.10 (e) and any treatment works treating domestic sewage, as defined in 40 CFR § 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved state programs, the Regional Administrator in conjunction with the State Director, because of the potential for sewage sludge use or disposal practice to affect public health and the environment adversely.

Control efficiency is the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator.

Cover is soil or other material used to cover sewage sludge placed on an active sewage sludge unit.

Cover crop is a small grain crop, such as oats, wheat, or barley, not grown for harvest.

Cumulative pollutant loading rate is the maximum amount of inorganic pollutant that can be applied to an area of land.

Density of microorganisms is the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge.

Dispersion factor is the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack.

Displacement is the relative movement of any two sides of a fault measured in any direction.

Domestic septage is either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant.

Domestic sewage is waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.

Dry weight basis means calculated on the basis of having been dried at 105 degrees Celsius (°C) until reaching a constant mass (i.e. essentially 100 percent solids content).

Fault is a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to the strata on the other side.

Feed crops are crops produced primarily for consumption by animals.

Fiber crops are crops such as flax and cotton.

Final cover is the last layer of soil or other material placed on a sewage sludge unit at closure.

Fluidized bed incinerator is an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas.

Food crops are crops consumed by humans. These include, but are not limited to, fruits, vegetables, and tobacco.

Forest is a tract of land thick with trees and underbrush.

Ground water is water below the land surface in the saturated zone.

Holocene time is the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present.

Hourly average is the arithmetic mean of all the measurements taken during an hour. At least two measurements must be taken during the hour.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Industrial wastewater is wastewater generated in a commercial or industrial process.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land with a high potential for public exposure is land that the public uses frequently. This includes, but is not limited to, a public contact site and reclamation site located in a populated area (e.g., a construction site located in a city).

Land with low potential for public exposure is land that the public uses infrequently. This includes, but is not limited to, agricultural land, forest and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area).

Leachate collection system is a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit.

Liner is soil or synthetic material that has a hydraulic conductivity of 1×10^{-7} centimeters per second or less.

Lower explosive limit for methane gas is the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 degrees Celsius and atmospheric pressure.

Monthly average (Incineration) is the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month.

Monthly average (Land Application) is the arithmetic mean of all measurements taken during the month.

Municipality means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management agency under section 208 of the CWA, as amended. The definition includes a special district created under state law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

Other container is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton or less.

Pasture is land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover.

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permitting authority is either EPA or a State with an EPA-approved sludge management program.

Person is an individual, association, partnership, corporation, municipality, State or Federal Agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration; a measure of the acidity or alkalinity of a liquid or solid material.

Place sewage sludge or sewage sludge placed means disposal of sewage sludge on a surface disposal site.

Pollutant (as defined in sludge disposal requirements) is an organic substance, an inorganic substance, a combination or organic and inorganic substances, or pathogenic organism that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, could on the basis on information available to the Administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction) or physical deformations in either organisms or offspring of the organisms.

Pollutant limit (for sludge disposal requirements) is a numerical value that describes the amount of a pollutant allowed per unit amount of sewage sludge (e.g., milligrams per kilogram of total solids); the amount of pollutant that can be applied to a unit of land (e.g., kilograms per hectare); or the volume of the material that can be applied to the land (e.g., gallons per acre).

Public contact site is a land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.

Qualified ground water scientist is an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in ground water hydrology and related fields, as may be demonstrated by State registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding ground water monitoring, pollutant fate and transport, and corrective action.

Range land is open land with indigenous vegetation.

Reclamation site is drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites.

Risk specific concentration is the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of a site where the sewage sludge incinerator is located.

Runoff is rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off the land surface.

Seismic impact zone is an area that has 10 percent or greater probability that the horizontal ground level acceleration to the rock in the area exceeds 0.10 gravity once in 250 years.

Sewage sludge is a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to:, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in treatment works.

Sewage sludge feed rate is either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365 day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 CFR §122.2.

Sewage sludge unit boundary is the outermost perimeter of an active sewage sludge unit.

Specific oxygen uptake rate (SOUR) is the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in sewage sludge.

Stack height is the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 meters. When the difference is greater than 65 meters, stack height is the creditable stack height determined in accordance with 40 CFR §51.100 (ii).

State is one of the United States of America, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands, the Commonwealth of the Northern Mariana Islands, and an Indian tribe eligible for treatment as a State pursuant to regulations promulgated under the authority of section 518(e) of the CWA.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

Total hydrocarbons means the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane.

Total solids are the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 degrees Celsius.

Treat or treatment of sewage sludge is the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge.

Treatment works is either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature.

Unstable area is land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement.

Unstabilized solids are organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Volatile solids is the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 degrees Celsius in the presence of excess air.

Wet electrostatic precipitator is an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

Wet scrubber is an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

3. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl_2	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)

TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont. (Continuous)	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M^3/day	Cubic meters per day
DO	Dissolved oxygen
kg/day	Kilograms per day
lbs/day	Pounds per day
mg/l	Milligram(s) per liter
ml/l	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH_3-N	Ammonia nitrogen as nitrogen
NO_3-N	Nitrate as nitrogen
NO_2-N	Nitrite as nitrogen
NO_3-NO_2	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
pH	A measure of the hydrogen ion concentration. A measure of the acidity or alkalinity of a liquid or material
Surfactant	Surface-active agent

Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
ug/l	Microgram(s) per liter
WET	"Whole effluent toxicity" is the total effect of an effluent measured directly with a toxicity test.
C-NOEC	"Chronic (Long-term Exposure Test) – No Observed Effect Concentration". The highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.
A-NOEC	"Acute (Short-term Exposure Test) – No Observed Effect Concentration" (see C-NOEC definition).
LC_{50}	LC_{50} is the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 100% is defined as a sample of undiluted effluent.
ZID	Zone of Initial Dilution means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
5 POST OFFICE SQUARE, SUITE 100 (OEP06-4)
BOSTON, MASSACHUSETTS 02109-3912

REVISED FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO THE CLEAN WATER ACT (CWA)

NPDES PERMIT # MA0025704

PUBLIC NOTICE DATES: May 29, 2013 – June 27, 2013

NAME AND ADDRESS OF APPLICANT:

CSX Transportation, Inc.
500 Water Street – J275
Jacksonville, FL 32202

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

CSX Transportation, Inc.
Beacon Park Yard
170 Cambridge Street
Allston, MA 02134

RECEIVING WATERS: Charles River Basin (MA72-36)

CLASSIFICATION: Class B - CSO, warm water fishery

SIC CODE: 4011

TABLE OF CONTENTS

I. PROPOSED ACTION

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) for the re-issuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge process water and stormwater into the designated receiving water.

The current permit was issued to CSX Transportation, Inc. (CSXT) on July 1, 2005. The permit became effective on November 18, 2005, was modified on February 2, 2006, and expired November 18, 2010. EPA received a permit renewal application from CSXT on May 20, 2010. Since the permit renewal application was deemed timely and complete by EPA, the permit has been administratively continued.

The CSX Transportation, Beacon Park Yard, Draft Permit was public noticed on January 25, 2013 and at the request of the Charles River Watershed Association (CRWA), the public comment period was extended from the original end date of February 23, 2013 until March 8, 2013. Comments on the draft permit were received from the Charles River Watershed Association (CRWA) and CSXT.

EPA's knowledge of the facility has benefited from the various comments and additional information submitted, and the information and arguments presented raised substantial new questions concerning the phosphorus requirements in the permit. Therefore, EPA is seeking public comment on the revised phosphorus requirements of the permit by re-opening the public notice period for Sections I.C.9 of the permit. The following Fact Sheet includes the basis for the revised phosphorus requirements and supplements the original Fact Sheet which accompanied the Draft Permit.

II. TYPE OF FACILITY

Refer to original Fact Sheet.

III. SUMMARY OF MONITORING DATA

Refer to original Fact Sheet.

IV. PERMIT BASIS AND EXPLANATION OF EFFLUENT LIMITS

Refer to original Fact Sheet.

A. General Requirements

Refer to original Fact Sheet.

1. Technology-Based Requirements

Refer to original Fact Sheet.

2. Water Quality-Based Requirements

Refer to the original Fact Sheet, except concerning phosphorus requirements, which have been revised in response to Charles River Watershed Association's comment (see Attachment 1 to this revised Fact Sheet) as follows:

EPA has re-evaluated the WLAs established in the Lower Charles River phosphorus TMDL and agrees that the WLA for "Other drainage areas" covers the permittee's outfall. Consequently, the final permit includes phosphorus reduction requirements that are consistent with the established WLA of a 62% reduction in average annual phosphorus load.

EPA has determined that this requirement to calculate the baseline phosphorus loading and implement controls to achieve the 62% reduction requirements will ensure compliance with the nutrient TMDL, therefore the Draft Permit requirement to develop a Source Identification and Reduction Plan (SIRP) and monitor the discharge for phosphorus have been replaced by this requirement.

Therefore the revised Draft Permit includes a requirement to develop a Phosphorus Control Plan (PCP) to reduce the average annual baseline phosphorus load by 62%, as discussed in detail below. The PCP shall include a description of planned structural and non-structural controls necessary to achieve the required phosphorus reductions.

3. Anti-Backsliding

Refer to original Fact Sheet.

4. Anti-Degradation

Refer to original Fact Sheet.

B. Description of the Facility

Refer to original Fact Sheet.

C. Description of Discharge

Refer to original Fact Sheet

1. Outfall 001A

Refer to original Fact Sheet.

2. Outfall 002A

Refer to original Fact Sheet.

D. Discharge Location

Refer to original Fact Sheet.

E. Proposed Permit Effluent Limitations and Conditions

Refer to original Fact Sheet.

1. Outfall 001A

a. Flow

Refer to original Fact Sheet.

b. Oil & Grease (O&G)

Refer to original Fact Sheet.

c. pH

Refer to original Fact Sheet.

d. Benzene

Refer to original Fact Sheet.

e. Total Suspended Solids (TSS)

Refer to original Fact Sheet.

f. Surfactants

Refer to original Fact Sheet.

g. Priority Pollutants (PPs)

Refer to original Fact Sheet.

h. Phosphorus

A Final Phosphorus TMDL exists for the Lower Charles River Basin. EPA has re-evaluated the WLAs established in the Lower Charles River phosphorus TMDL and agrees that the WLA for "Other drainage areas" covers the permittee's outfall. Consequently, the final permit includes phosphorus reduction requirements that are consistent with the established WLA of a 62% reduction in average annual phosphorus load.

EPA is applying a phosphorus effluent limitation that is expressed as a 62% reduction in average annual phosphorus load to be calculated in accordance with the methodologies provided in the attachments (see Attachments 1,2, and 3) to the revised Draft Permit. Demonstration of the 62% phosphorus reduction through the methodologies provided by EPA is consistent with the TMDL; therefore, no monitoring or effluent limitation is being required at this time. Additionally, the Draft Permit requirement to develop and implement a Source Identification and Reduction Plan (SIRP) to reduce and/or eliminate the concentration of Phosphorus in the discharge has been removed in favor of the development and implementation of a PCP, as outlined in Part I.C.9 of the revised Draft Permit.

i. Escherichia coli (*E. coli*)

Refer to original Fact Sheet.

Control measures to reduce phosphorus are in line with those that would reduce bacteria; therefore, EPA believes that these control measures will also ensure reduction of bacteria levels. Sampling of the effluent for bacteria is expected to be sufficient to determine compliance with the TDML, therefore sampling of the receiving water is not being required at this time.

<u>2. Stormwater Pollution Prevention Plan (SWPPP)</u>

Refer to original Fact Sheet, except concerning phosphorus requirements, which have been revised as follows:

Part I.C.8.h of the Draft Permit to develop and implement a Source Identification and Reduction Plan (SIRP) to eliminate or reduce the discharge of phosphorus through the facility's storm water system has been removed in place of the revised requirement to development and implementation of the following site-specific BMPs for phosphorus, at Part I.C.9 of the revised Draft Permit, as follows:

a. The permittee shall estimate the average annual phosphorus load to the permitted outfall using the provided export rates as provided in Attachment 1, *Method to Calculate Baseline Watershed Phosphorus Load*.
b. The permittee shall develop a Phosphorous Control Plan (PCP) and update the PCP in annual reports. The PCP shall describe measures the permittee will undertake to reduce the average annual baseline phosphorus load (calculated above in Part a, via Attachment 1) by 62%.
    i. Non-structural controls: The permittee shall describe the non-structural stormwater control measures to be implemented to support the achievement of the required phosphorus reductions. The description of non-structural controls shall include the planned measures, the areas where the measures will be implemented, and the annual phosphorus reductions that are expected to result from their implementation. Annual phosphorus reduction from non-structural BMPs shall be

calculated consistent with Attachment 2, *Phosphorus Reduction Credits for Selected Enhanced Non-Structural BMPs in the Watershed*.

ii. Planned structural controls: The permittee shall describe the structural stormwater control practices necessary to support achievement of the required phosphorus reduction. The description of structural controls shall include the planned controls, the drainage areas tributary to where the controls will be implemented, and the annual phosphorus reductions in units of mass per year that are expected to result from their implementation. Annual phosphorus reduction from structural BMPs shall be calculated consistent with Attachment 3, *Methods to Calculate Phosphorus Load Reductions for Structural BMPs in the Watershed.*

c. Within one year of the effective date of the permit, the permittee shall complete the PCP. Within 2 years of the effective date of the permit, the permittee shall complete implementation of the identified non-structural practices. Within 3 years of the effective date of the permit, the permittee shall complete construction/installation/inspection of the structural practices. Within four years of the effective date of the permit, the permittee shall begin certification of annual inspection and O&M.

V. ENDANGERED SPECIES ACT

Refer to original Fact Sheet.

VI. ESSENTIAL FISH HABITAT

Refer to original Fact Sheet.

VII. MONITORING AND REPORTING

Refer to original Fact Sheet.

VIII. STATE CERTIFICATION REQUIREMENTS

Refer to original Fact Sheet.

IX. ADMINISTRATIVE RECORD, PUBLIC COMMENT PERIOD, HEARING REQUESTS, AND PROCEDURES FOR FINAL DECISION

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to Nicole Aquillano, U.S. EPA, Office of Ecosystem Protection**,** Industrial Permits Branch, 5 Post Office Square, Suite 100 (OEP06-4), Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public meeting may be held if the criteria stated in 40 C.F.R. §124.12 are satisfied. In reaching a decision on the final permit, the EPA will respond to all significant comments and make these responses available to the public on EPA's website and at EPA's Boston office.

Following the close of the comment period, and after any public hearings, if such hearings are held, the EPA will issue a Final Permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the Final Permit decision, any interested person may submit a petition for review of the permit to EPA's Environmental Appeals Board consistent with 40 C.F.R. §124.19.

X. EPA & MassDEP CONTACTS

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays, from the EPA and MassDEP contacts below:

Mark Voorhees, EPA New England – Region 1
5 Post Office Square, Suite 100 (OEP06-1)
Boston, Massachusetts 02109-3912
Telephone: (617) 918-1537 FAX: (617) 918-0746
email: voorhees.mark@epa.gov

Cathy Vakalopoulos, Massachusetts Department of Environmental Protection
Division of Watershed Management, Surface Water Discharge Permit Program
One Winter Street
Boston, MA 02108
Telephone: (617) 348-4026 FAX: (617) 292-5696
email: catherine.vakalopoulos@state.ma.us

May 2013
____
Date

Ken Moraff, Acting Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

XI. ATTACHMENTS

Refer to original Fact Sheet.

1. Comments from Charles River Watershed Association (CRWA)

2. Comments from CSX.

Attachment 1 – Comments from Charles River Watershed Association (CRWA)

CRWA

Charles River Watershed Association

Via Fax and Mail

March 8, 2013

U.S. EPA, Office of Ecosystem Protection
Five Post Office Square
Suite 100 (OEP06-4)
Boston, Massachusetts 02109-3912

Re: CSX Transportation, Inc., NPDES Permit MA0025704

Dear Sir or Madam:

Charles River Watershed Association (CRWA) has reviewed the above draft NPDES permit for CSX Transportation, Inc. (CSTX) Beacon Park Yard, 170 Cambridge Street, Allston, MA 02134 and submits the following comments on the draft permit, Request for State Certification under Section 401 of the Clean Water Act, and on the Fact Sheet. The CSXT NPDES permit to discharge process water and storm water expired on November 18, 2010 and has been administratively continued. Coverage is being sought for discharges to Outfall 001A only.

Polluted stormwater runoff is the leading cause of water quality impairments in the Charles River. This segment of the Charles where the discharge occurs is listed as impaired under the 2010 Integrated List of Waters (section 303(d) of the federal Clean Water Act) for among other impairments: Chlorophyll-a, Nutrient/Eutrophication Biological Indicators, Escherichia coli, dissolved oxygen, and Phosphorus (total). Last summer, as during most recent summers, there was a large toxic blue green algae bloom (cyanobacteria) in the Charles Lower Basin. A major cause of these blooms is high phosphorus concentrations. Cyanobacteria poses a risk to public health and the environment, and in the Lower Basin significantly impairs, and for certain users even eliminates, recreation, an existing use. The blue-green algae bloom in the Charles River is a clear indication that nutrient loads in the Charles are harming the river. In addition, this section of the Charles River regularly violates swimming and boating water quality standards based on exceedences of the bacteria standard. CSXT's discharges will cause or contribute to an instream exceedance of MA surface water quality standards and outbreaks of toxic blue-green algae.

Total Maximum Daily Loads

Although a Final Pathogen Total Maximum Daily Load for the Charles River Watershed (MassDEP 2007) and Final Total Maximum Daily Load for Nutrients in the Lower Charles River Basin (EPA 2007) (collectively, Charles' TMDLs) have been developed, the draft permit fails to incorporate these TMDLs. No average monthly or maximum daily discharge limitations are established for either pollutant. *See,* Draft Permit part 1.A. at p. 3.

Parts 1.C. 8.g. and h. of the Draft Permit also lack clear and enforceable standards that are consistent with the TMDLs.[1] While the permittee is required in Part 1.C. 7 of the Draft Permit to "document in the SWPPP any violation of numerical or non-numerical stormwater effluent limits with a date and description of the corrective actions taken[,]" nothing in the Draft Permit informs the permittee of the effluent limits for bacteria and phosphorus.

Indeed, there is no mention of the Charles' TMDLs in this individual permit. Notably, the Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP) at 2.2.2.1 provides:

> ***Existing Discharge to an Impaired Water with an EPA Approved or Established TMDL.*** If you discharge to an impaired water with an EPA approved or established TMDL, EPA will inform you if any additional limits or controls are necessary for your discharge to be consistent with the assumptions of any available wasteload allocation in the TMDL, or if coverage under an individual permit is necessary in accordance with Part 1.6.1.[2]

"EPA regulations require that point sources of pollution (those discharges from discrete pipes or conveyances) subject to NPDES permits receive waste load allocations (WLA) specifying the amount of a pollutant they can release to the water body."[3] Furthermore, "[t]he allocations for the non-CSO drainage areas in the Lower Charles River watershed include point and nonpoint nutrient sources that discharge to the major tributaries and other smaller drainage systems."[4]
Clearly this outfall has a phosphorus WLA, established in the TMDL, and the permit must reflect and be consistent with this WLA.

---

[1] Draft Permit Part 1.C. 8.:

> g. Develop and implement a Source Identification and Reduction Plan (SIRP) to eliminate or reduce the discharge of bacteria through the facility's storm water system. In the event the source(s) of bacteria cannot be eliminated, Best Management Practices (BMPs) shall be developed to significantly reduce or eliminate the bacteria loading to the receiving water
> h. Develop and implement a Source Identification and Reduction Plan (SIRP) to eliminate or reduce the discharge of phosphorus through the facility's storm water system. In the event the source(s) of phosphorus cannot be eliminated, Best Management Practices (BMPs) shall be developed to significantly reduce or eliminate the phosphorus loading to the receiving water.

Absent elimination of the discharge of these pollutants from the facility's storm water system, the alternative requirement to "significantly reduce" their loading provides no guidance and certainly is not consistent with the Charles' TMDLs .

[2] Under the MSGP "Existing Discharge to an Impaired Water <u>without</u> an EPA Approved or Established TMDL" requires compliance with Part 2.2.1 (Water Quality-Based Effluent Limitations, Water Quality Standards) and the monitoring requirement of Part 6.2.4.

[3] Final Total Maximum Daily Load for Nutrients in the Lower Charles River Basin, Massachusetts CN 301.0, June 2007 . (Nutrient TMDL) at p. 87.

[4] Nutrient TMDL at p. 85.

190 Park Road, Weston, MA 02493, Telephone (781) 788-0007 Fax (781) 788-0057

The outfall has a total phosphorus WLA that has been assigned to all outfalls in the "other drainage areas" in the Lower Charles Basin. For reasons described in the Nutrient TMDL, phosphorus WLAs are best expressed as annual load reduction requirements. However, the TMDL does establish both an annual and a maximum daily load. The annual phosphorus WLA is expressed in the TMDL as a percent reduction; for this outfall, the WLA requires a 62% annual phosphorus load reduction. The maximum daily WLA requires consistency with the frequency distribution curve for the TMDL condition. Figure 5.2 and Table 5.2 in the Nutrient TMDL at p. 83-84 present the maximum daily load applicable to this outfall. The permit should be modified to add an effluent limitation for phosphorus that is consistent with the Nutrient TMDL and reflects this annual and daily load limit.

The requirements to demonstrate compliance with the numeric effluent limit established in the nutrient TMDL for this facility, or any permit holder, have been laid out in detail by EPA Region 1 in the Upper and Lower Charles River Nutrient TMDLs, as well as in many supporting documents and draft permit materials that EPA has prepared since the nutrient TMDLs were approved in 2007 and 2010, including, most recently, the draft New Hampshire MS4 General Permit. The permit should reflect these TMDL compliance requirements, rather than the non-specific assumption that "the development and implementation of a Source Identification and Reduction Plan (SIRP), along with other requirements of the SWPPP, aimed at phosphorous reductions represent a phosphorous control plan (PCP) required to achieve the WLA of the TMDL."[5] Part 1.C.8.h of the Draft Permit should specify compliance with the annual and daily phosphorus reductions required in the TMDL.

The permit should also be revised to comply with the Final Pathogen TMDL for the Charles River Watershed. We understand this facility discharges into river segment MA-72-08 through BOS035 (referred to in the draft permit as Outfall 001), a "high priority outfall" for bacteria as identified in the Pathogen TMDL. The facility should therefore have a rigorous bacteria elimination and monitoring program to ensure compliance with the pathogen TMDL, and achievement of water quality standards.

The pathogen TMDL WLA is expressed as a daily fecal coliform concentration target (expressed in CFU/100mL) at the point of discharge: not to exceed a geometric mean of 200 organisms in any set of representative samples, nor shall 10% of the samples exceed 400 organisms. The TMDL was expected to be updated to reflect Massachusetts' revised indicator organisms from fecal coliform to *E. coli*, so it is appropriate to use *E. coli* as the indicator organism here. The expectation is that the WLA will be achieved through the implementation of BMPs and other controls. However, as stated in the pathogen TMDL, "[c]onformance with the TMDL will be determined through a sufficient number of valid samples from the receiving water."[6] To ensure that the SIRP, and any additional BMPs that are constructed to reduce pathogen loads, are in compliance with the pathogen TMDL, the permittee should monitor receiving waters as well as the facility outfall. Receiving water monitoring should occur at the same frequency as proposed for the outfall: monthly dry weather monitoring, and quarterly wet weather monitoring. Conformance with the pathogen TMDL can be demonstrated by achieving the water quality standard at the end of the pipe and/or in the receiving water body.

---

[5] Draft Permit Fact Sheet at p. 7, and 17-18.

[6] Page 49, Final Pathogen TMDL for the Charles River Watershed January 2007 (Control Number: CN 0156.0)

190 Park Road, Weston, MA 02493, Telephone (781) 788-0007 Fax (781) 788-0057

Monitoring
The phosphorus monitoring requirements should be modified to reflect the WLA and the required effluent limitations. Monthly dry weather monitoring, and quarterly wet weather monitoring, following the monitoring protocol for bacteria, is a minimum monitoring frequency that can ensure compliance with the nutrient TMDL, and is not a significant additional burden on the permittee since it is already collecting water quality samples for *E. coli* at this frequency. As stated above, *E. coli* monitoring should be conducted at the receiving water as well as at the outfall.

CWA Section 401 Water Quality Certification
Although EPA states in the Fact Sheet at p. 25 that MassDEP has advised EPA that the permit limitations are adequate to protect water quality, in fact, the Draft Permit will fail to ensure that the MA Surface Water Quality Standards, 314 CMR 4.00 *et seq.* are met. Consequently, MassDEP cannot lawfully issue a Section 401 Water Quality Certification unless it specifically requires TMDL compliance. The Water Quality Standards at 314 CMR 4.05(5) provide additional minimum criteria applicable to all surface waters:

> Nutrients. Unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses and shall not exceed the site specific criteria developed in a TMDL or as otherwise established by the Department pursuant to 314 CMR 4.00.

(emphasis added). *See also*, the aesthetics standard in 314 CMR 4.05(5).

This discharge has site-specific WLA, both under the aggregated WLA assigned to all outfalls in the "other drainage areas" in the Nutrient TMDL, and as a specific drainage area outfall that was modeled in the development of the Nutrient TMDL.[7] Similarly, the pathogen TMDL is set at the water quality standard for bacteria.

Fact Sheet
1) Cover sheet: The Charles is not been classified as Class B-CSO. It is a Class B receiving water.
2) p. 23: American shad should be listed as an anadromous species that could be affected by the CSX discharge. An initiative by the U.S. Fish and Wildlife Service and MA Division of Fish and Wildlife (MA DFW) to restore American shad to the Charles is ongoing and this past summer, MA DFW documented that shad introduced as fry in the Lakes District were returning to spawn.
3) pp. 7 and 17-18: The Fact Sheet recognizes that there is a WLA for "other drainage areas" of the Charles Lower Basin; however, as discussed above, it incorrectly states "There is no numerical WLA for this facility in the TMDL." It also incorrectly uses broad guidance language from the TMDL implementation plan ("the Final Phosphorus TMDL recommends that owners of stormwater drainage system discharges to the Charles River undertake an iterative approach of managing their discharges") as the basis for assuming that "the development and implementation of a Source Identification and Reduction Plan (SIRP), along with other requirements of the SWPPP, aimed at these phosphorous reductions represent a phosphorous control plan (PCP) required to achieve the WLA of the TMDL." Instead, the Fact Sheet should reflect the detailed nutrient TMDL compliance requirements established in EPA Region 1's MS4 and other stormwater permit programs.

[7] *See*, A Hydrodynamic and Water Quality Model for the Lower Charles River Basin, Massachusetts, March 2006.

190 Park Road, Weston, MA 02493, Telephone (781) 788-0007 Fax (781) 788-0057
Website: www.charlesriver.org Email: charles@crwa.org

Permit Coverage Area

Although Outfall 001A is the only discharge covered by the draft permit, we note that the parking lot and "peripheral areas" of the facility discharge to a drainage line owned by MassDOT to the Charles through Outfall 002A. In ultra-urban environments, all impervious surfaces carry high volumes of storm water runoff and generate significant loads of major storm water-related pollutants, including phosphorus and bacteria. MassDOT's storm water discharges are currently covered under Part V of the 2003 General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems, which expired in 2008 and has been administratively continued. The new Massachusetts MS4 permit is expected to be issued in draft this Spring.

MassDOT will either be required to obtain an individual permit or will be covered under the new MS4 general permit. Although Outfall 002A is not part of this permit proceeding, it is prudent for CSX to confer with MassDOT about storm water runoff from the parking lot and peripheral areas.

Booms

The Draft Permit and Fact Sheet do not clarify why booms are still in place at outfalls 001 and 002. The Draft Permit appears to indicate the booms are a permanent BMP. We do not believe that the permanent placement of booms in the receiving water as a BMP is allowable under state and federal law. If the booms are considered a temporary protective measure until a permanent solution is implemented, the Fact Sheet and Permit should be clarified to indicate this, and to lay out an expected final implementation plan.

Sincerely,

Kate Bowditch

Kate Bowditch
Director of Projects

Margaret Van Deusen

Margaret Van Deusen
Deputy Director and General Counsel

cc: via email
Stephen Perkins, U.S. EPA
Ken Moraff, U.S. EPA
Damien Houlihan, U.S. EPA
David Ferris, MassDEP
Bethany Card, MassDEP
Cathy Vakalopoulos, MassDEP
Kevin Walsh, MassDOT
CSX Transportation, Inc. (via mail)

190 Park Road, Weston, MA 02493 Telephone (781) 788-0007 Fax (781) 788-0057

Attachment 2 – Comments from CSX

CSX TRANSPORTATION
Karen A. Adams
Manager Environmental Programs

500 Water Street J-275
Jacksonville, FL 32202-4422
(904)359-3457
Fax (904)306-5051
karen_adams@csx.com

March 4, 2013

Ms. Nicole Aquillano
U.S. Environmental Protection Agency
5 Post Office Square – Suite 100 (OEP06-4)
Boston, MA 02109-3912

Re: Comments to Draft NPDES Permit MA0025704 at CSX Transportation, Inc. in Allston, MA.

Dear Ms. Aquillano,

The purpose of this letter is to provide comments regarding the draft National Pollution Discharge Elimination System (NPDES) proposed for comments on January 25, 2013. Comments were originally due February 22, 2013, but a request for extension was granted and the new date was moved to March 8, 2013. We have one comment regarding the sampling requirement for Escherichia coli (*E. coli*). The permit requires monthly dry weather analysis and quarterly wet weather analysis. The background information states that the Charles River Basin is impaired by *E. coli* from domestic and wildlife animal fecal matter. For this reason, the State Quality Standards requires sampling for *E. coli*.

CSX requests that EPA reduce the sampling frequency from monthly to quarterly for dry weather *E. coli* analysis and semi-annually for wet weather *E. coli* analysis. If EPA will not make this change in the final permit, then we request that a clause be inserted that if the sample results are less than 126 colonies per 100 ml after one (1) year of analyses, that the sampling frequency be reduced to quarterly for dry weather and semi-annually for wet weather. If after a second year of analyses, the sample results demonstrate that the results do not indicate *E. coli* contamination from CSX Transportation, Inc. the frequency be reduced to semi-annually for the dry weather analysis and annually for the wet weather analysis.

Also, note that on page 10 of 27, paragraph 2 in the fact sheet, EPA states that CSX Intermodal, Inc. operates on a portion of the yard. CSX Intermodal moved out Allston at the end of January 2013.

Thank you for this opportunity to comment on the draft permit. CSX is committed to environmentally sound and sustainable business practices. If you have any questions, please call me at 904-359-3457.

Sincerely,

Karen A Adams

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
COMMONWEALTH OF MASSACHUSETTS
1 WINTER STREET
BOSTON, MASSACHUSETTS 02108

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION 1
OFFICE OF ECOSYSTEM PROTECTION
5 POST OFFICE SQ. SUITE 100 (OEP06-4)
BOSTON, MASSACHUSETTS 02109-3912

JOINT PUBLIC NOTICE OF TARGETED PORTIONS OF A REVISED DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) FOR DISCHARGES INTO THE WATERS OF THE UNITED STATES UNDER SECTION 301 AND 402 OF THE CLEAN WATER ACT (THE "ACT"), AS AMENDED, AND REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE ACT.

DATE OF NOTICE: May 29, 2013

PERMIT NUMBER: MA0025704

PUBLIC NOTICE NUMBER: MA-013-13

NAME AND MAILING ADDRESS OF APPLICANT:

CSX Transportation, Inc.
500 Water Street J-275
Jacksonville, FL 32202

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

CSX Transportation, Inc.
Beacon Park Yard
170 Cambridge Street
Allston, MA 02134

RECEIVING WATER(S): Charles River Basin

RECEIVING WATER CLASSIFICATION(S): Class B (Warm Water Fishery)

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) have cooperated in the development of a permit for the above identified facility. The effluent limits and permit conditions imposed have been drafted to assure that State Water Quality Standards and provisions of the Clean Water Act will be met. EPA has formally requested that the State certify this draft permit pursuant to Section 401 of the Clean Water Act and expects that the draft permit will be certified.

INFORMATION ABOUT THE DRAFT PERMIT:

A revised fact sheet (describing the type of facility; type and quantities of wastes; a brief summary of the basis for the draft permit conditions; and significant factual, legal and policy questions considered in preparing this draft permit) and the revised draft permit may be obtained at no cost at http://www.epa.gov/region1/npdes/draft_permits_listing_ma.html or by writing or calling EPA's contact person named below:

Mark Voorhees
U.S. EPA
5 Post Office Square – Suite 100 (OEP06-4)
Boston, MA 02109-3912
Telephone: (617) 918-1537

The administrative record containing all documents relating to this revised draft permit is on file and may be inspected at the EPA Boston office mentioned above between 9:00 a.m. and 5:00 p.m., Monday through Friday, except holidays.

ORIGINAL PUBLIC COMMENT PERIOD:

EPA and MassDEP originally released a draft NPDES Permit MA0025704 on January 25, 2013 and accepted public comment on the draft permit until March 8, 2013, which was an extension from the original end date of February 23, 2013.

TARGETED, RE-OPENED PUBLIC COMMENT PERIOD:

Based on significant comments and new information concerning phosphorus (included in Attachments 1 and 2 to the revised fact sheet), EPA has re-opened the public comment period to receive additional comment on a limited set of provisions included in the revised draft permit. **Comments that will be accepted and considered by EPA and MassDEP will be limited to only those related to provisions included in Part I.C.9. (Phosphorus requirements in the SWPPP) and Attachments 1, 2, and 3 (Baseline Phosphorus Load Calculations and Phosphorus Load Reduction Calculations) of the revised draft permit.**

All persons, including applicants, who believe any provision included in Part I.C.9 or Attachments 1, 2 or 3 of this revised draft permit are inappropriate, must raise all issues and submit all available arguments and all supporting material for their arguments in full by **June 27, 2013** to the U.S. EPA, Office of Ecosystem Protection, Five Post Office Square – Suite 100 (OEP06-4), Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing to EPA and the State Agency for a public hearing to consider this revised draft permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on this revised draft permit the Regional Administrator will respond to all significant comments and make the responses available to the public at EPA's Boston office.

FINAL PERMIT DECISION:

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice.

DAVID FERRIS, DIRECTOR
MASSACHUSETTS WASTEWATER MANAGEMENT PROGRAM
DEPARTMENT OF ENVIRONMENTAL PROTECTION

KEN MORAFF, ACTING DIRECTOR
OFFICE OF ECOSYSTEM PROTECTION
ENVIRONMENTAL PROTECTION AGENCY – REGION 1