

Phosphorus Management Plan

Facility name:	Date:
Preparer:	Telephone:

Step 1: Facility Description and Flow Schematic

1. Facility description from NPDES permit or engineering design documents.
2. Flow schematic from engineering design documents or sketch (include or attach).
3. Design data from NPDES permit or engineering design documents.
 - Average wet weather flow or average annual flow.
 - BOD design capacity.
 - TSS design capacity.

Step 2: WWTF's Influent and Effluent Phosphorus Concentrations

☐ Used the Excel spreadsheet for Tables 1A or 1B to record data.

Table 1A: Mechanical System

WWTF Calendar Month Average Influent and Effluent Data for Years _____ and _____

	Year:						Year:					
	Influent			Effluent			Influent			Effluent		
	Flow (MGD)	Conc. (mg/L)	Mass (kg/day)	Flow (MGD)	Conc. (mg/L)	Mass (kg/day)	Flow (MGD)	Conc. (mg/L)	Mass (kg/day)	Flow (MGD)	Conc. (mg/L)	Mass (kg/day)
Jan												
Feb												
Mar												
Apr												
May												
Jun												
Jul												
Aug												
Sep												
Oct												
Nov												
Dec												
Annual average												

Summary Data		Formula
Annual influent flow	MG/year	Annual average influent flow (MGD) x 365
Annual effluent flow	MG/year	Annual average effluent flow (MGD) x 365 (if available)
Annual influent phosphorus load	kg/year	Annual influent flow (MG) x Annual average influent phosphorus concentration (mg/L) x 3.785

Annual effluent phosphorus load	kg/year	Annual effluent flow (MG) x Annual average effluent phosphorus concentration (mg/L) x 3.785
Phosphorus percent removal	%	[Annual average concentration (mg/L) - Annual average effluent concentration (mg/L)] / Annual average influent concentration (mg/L) x 100

Table 1B: Pond System

WWTF Calendar Month or Quarter Average Influent and Effluent Data for Years _____ and _____

	Year:						Year:					
	Influent			Effluent			Influent			Effluent		
	Flow (MGD)	Conc. (mg/L)	Mass (kg/day)	Flow (MG)	Conc. (mg/L)	Mass (kg/mo)	Flow (MGD)	Conc. (mg/L)	Mass (kg/day)	Flow (MG)	Conc. (mg/L)	Mass (kg/mo)
Jan												
Feb												
Mar												
Apr												
May												
Jun												
Jul												
Aug												
Sep												
Oct												
Nov												
Dec												
Annual average												

Summary Data			Formula	
Annual influent flow	MG/year		Annual average flow (MGD) x 365	
Annual effluent flow	MG/year		Sum of monthly effluent flow values (MG)	
Annual influent phosphorus load	kg/year		Total annual flow (MG) x Annual average influent phosphorus concentration (mg/L) x 3.785	
Annual effluent phosphorus load	kg/year		Total annual flow (MG) x Annual average effluent phosphorus concentration (mg/L) x 3.785	
Phosphorus percent removal	%		[Annual average concentration (mg/L) - Annual average effluent concentration (mg/L)] / Annual average influent concentration (mg/L) x 100	

Step 3: WWTF's Phosphorus Reduction Potential

Patterns and trends.

Evaluation of past and present WWTF operations to determine the operating procedures that maximize phosphorus removal.

Recommended action for WWTF based on treatment at comparable facilities.

Effluent Phosphorus Levels: Average Annual Concentration

My WWTF	Comparable WWTF Systems (from Tables 2A or 2B)	Recommended action
mg/L	mg/L	

Influent Phosphorus Levels: Average Annual Concentration

My WWTF	Comparable WWTF Systems (from Tables 2A or 2B)	Recommended action
mg/L	mg/L	

Step 4: Phosphorus Reduction Goals for WWTF

WWTF effluent reduction goal.

Concentration (mg/L)		Mass load (kg/day)
The wastewater treatment plant will meet: _____ mg/L discharge by _____ (year) from all sources.	and/ or	Given current flow data, the plant will meet: _____ kg/day discharge by _____ (year) from all sources.

Mass load using kg/day is not necessarily relevant for ponds.



WWTF influent reduction goal.

Concentration (mg/L)		Mass load (kg/day)
The wastewater treatment plant will meet: _____ mg/L by _____ (year) from all sources.	and/ or	Given current flow data, the plant will meet: _____ kg/day by _____ (year) from all sources.

Step 5: Optimizing the WWTF: WWTF percent removal goal.

WWTF will achieve annual average _____ % removal by _____ (year).

Step 6: Phosphorus Reduction Potential of Users

☐ Used the Excel spreadsheet for Table 3 to record data.

Table 3: Summary of Phosphorus Sources

Year:	Walk-through inventory	Sampling results				Assessment
Businesses (industrial, commercial, institutional)	Phosphorus sources	G or C* Manhole #	Flow (MGD)	Phosphorus (mg/L)	Total mass load (kg/day)	Reduction potential high, medium or low
Municipal sources	Phosphorus sources	G or C* Manhole #	Flow (MGD)	Phosphorus (mg/L)	Total mass load (kg/day)	Reduction potential high, medium or low
Satellite communities	Phosphorus sources	G or C* Manhole #	Flow (MGD)	Phosphorus (mg/L)	Total mass load (kg/day)	Reduction potential high, medium or low
Domestic (population served #)	Phosphorus sources	G or C* Manhole #	Flow (MGD)	Phosphorus (mg/L)	Total mass load (kg/day)	Reduction potential high, medium or low
		Total all				

*Grab (G) or composite (C). Manhole # if one applies.

Effluent goals for either one or multiple industrial, commercial and institutional users.

1. Effluent goal for one industrial, commercial or institutional user		
Concentration (mg/L) By ____ (year), this business will meet an individual allocation of ____ mg/L total phosphorus discharge to the city sewer, a goal that is expected to help the WWTF meet its influent goal previously set.	and/or	Mass load (kg/day) By ____ (year), this business will meet an individual allocation of ____ kg/day to the city sewer, a goal that is expected to help the WWTF meet its influent goal previously set.
-OR-		
2. Effluent goal for multiple industrial, commercial and institutional users		
Concentration (mg/L) By ____ (year), businesses will meet individual allocations ranging between ____ mg/L and ____ mg/L total phosphorus discharge to the sewer, a range that is expected to meet a total allowable phosphorus of ____ mg/L.	and/or	Mass load (kg/day) By ____ (year), businesses will meet individual allocations ranging between ____ and ____ kg/day to the city sewer, a range that is expected to meet a total allowable phosphorus of ____ kg/day.

Step 7: Implementation Plan to Meet Phosphorus Reduction and Removal Goals

Phosphorus Reduction Strategies

1. Businesses—industrial, commercial and institutional users:

Past five years: _____

Next five years: _____

2. Municipal sources:

Past five years: _____

Next five years: _____

3. Satellite communities:

Past five years: _____

Next five years: _____

4. Domestic:

Past five years: _____

Next five years: _____

Phosphorus Removal Strategies

My WWTF.

Past five years: _____

Next five years: _____

Signature of preparer

Date

Signature of principle executive officer or authorized agent

Date
