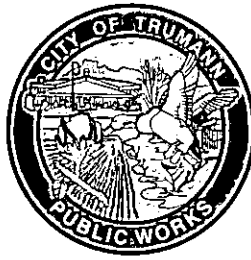


CITY OF TRUMANN  
PUBLIC WORKS  
106 East Main Street  
Trumann, AR 72472



SCOTTY L. JONES  
*Public Works Director*  
Phone (870) 483-6343  
Fax (870) 483-6525

February 23, 2015

Arkansas Department of Environmental Quality  
Enforcement Branch, Water Division  
5301 Northshore Drive  
North Little Rock, Arkansas 72118-5317

RECEIVED  
FEB 26 2015  
Kn 128

Subject: City of Trumann  
Permit Number: AR0035602  
AFIN: 56-00047  
BMP to Reduce Total Phosphorus

Dear Sir:

In accordance with Section B of Part IB and Item 10 of Part II of the NPDES permit, please find attached for your review and comment the Best Management Practices to reduce the levels of Total Phosphorus in the effluent of the treated sewer.

Please feel free to contact me with any question or concern.

Sincerely,  
City of Trumann

A handwritten signature in black ink, appearing to read "Scotty Jones", is written over the typed name below.

Scotty Jones  
Public Works Director

Enclosures: BMP to Reduce Total Phosphorus

**CITY OF TRUMANN, ARKANSAS**

**BEST MANAGEMENT PRACTICES**

**TO REDUCE**

**TOTAL PHOSPHORUS**

**DATE: FEBRUARY 23, 2015**

**PREPARED FOR:**

City of Trumann  
Trumann Water Works  
106 East Main Street  
Trumann, Arkansas 72472

**PREPARED BY:**



Crist Engineers, Inc.  
1405 North Pierce Street, Suite 301  
Little Rock, Arkansas 72207

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# SECTION 1

## INTRODUCTION

### 1.1 PURPOSE AND SCOPE

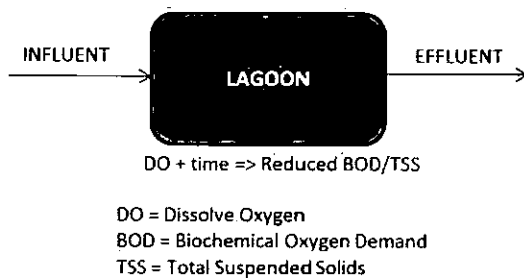
The City of Trumann is authorized to discharge treated sewer through the National Pollutant Discharge Elimination System (NPDES) administered by the Arkansas Department of Environmental Quality (ADEQ). The City of Trumann received a new NPDES permit (Permit No.: AR0035602, effective January 1, 2015) that requires the development and implementation of a Best Management Practices (BMP's) to reduce the levels of Total Phosphorus (TP) in the effluent of the treated sewer.

Section B of Part I and Item 10 of Part II of the NPDES permit requires the City of Trumann to submit documentation to ADEQ for review within 60 days of the effective date of the permit. This document is submitted to ADEQ as Best Management Practices (BMP) to reduce the levels of Total Phosphorus (TP) in the effluent of the treated sewer.

### 1.2 PHOSPHORUS TREATMENT

#### 1.2.1 BACKGROUND

The existing treatment facility is not designed to remove TP. The treatment process is designed to reduce the biochemical oxygen demand (BOD) and total suspended solids (TSS) via an aerated (partial mix) lagoon. **Figure 1-1** below demonstrates the existing system.



**Figure 1-1: Existing Biological Treatment System**

### 1.2.2 PHOSPHORUS

Phosphorus can be removed by two methods. The first is providing chemical enhancement of the wastewater to coagulate particulate solids and settle them in a clarification process. Iron salts are the most common chemical used for coagulation. The second method is a biological process requiring an activated sludge process which the City of Trumann does not have. Neither method is currently available for the City to adjust or maintain as an operational BMP.

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## SECTION 2

# ANALYSIS AND LOADING

### 2.1 ANALYSIS AND LOADING

From a standpoint of treatment processes, one of the most serious deficiencies in process design results when design parameters are based upon limited influent characterization. An adequate determination of nutrient characterization can only be achieved through influent sampling to arrive at appropriate peak and sustained mass loadings that will be utilized to determine the ability to remove phosphorus in the existing process. Based upon discussion in **Section 1**, either modification to the existing process or capital improvements to achieve further reduction of phosphorus will be necessary. Without accurate influent characterization, an analysis cannot be reliably achieved.

Random modification of process parameters without proper analysis could be detrimental to the existing process potentially causing an excursion or process upset. As such, the diligent review of influent characterization is needed to ascertain and further refine best management practices that can be applied without detrimentally affecting process.

Recommended Standards for Wastewater Facilities 2004 Edition (Ten States Standards) stipulates under Paragraph 11.12 that the anticipated design average and design peak flows and waste load for the existing and ultimate conditions must be established. The City of Trumann does not currently sample influent characterization; therefore, there is a lack of appropriate data to ascertain the current effective removal rate of Total Phosphorus through the wastewater process. Such data should capture seasonal variation, and is typically at least one year data with a minimum of twelve data points for statistical evaluation.

#### 2.1.1 SAMPLING PLAN

Since wastewater characterization is essential to fully design and evaluate performance of a treatment process, the City of Trumann will require additional sampling prior to further evaluation of phosphorus removal. The City of Trumann will collect samples as outlined in **Table 2-1** below.



Parameter	Location	Frequency	Sample Type
BOD <sub>5</sub>	Influent	2 / Month	Grab
TSS	Influent	2 / Month	Grab
Total Phosphorus	Influent	2 / Month	Grab
BOD <sub>5</sub>	Transfer Structure	2 / Month	Grab
TSS	Transfer Structure	2 / Month	Grab
Total Phosphorus	Transfer Structure	2 / Month	Grab
pH	Transfer Structure	2 / Month	Grab
Alkalinity	Transfer Structure	2 / Month	Grab
BOD <sub>5</sub>	Effluent	2 / Month	Composite
TSS	Effluent	2 / Month	Composite
Total Phosphorus	Effluent	2 / Month	Grab
pH	Effluent	2 / Month	Grab
Alkalinity	Effluent	2 / Month	Grab

**Table 2-1: BMP Sampling Plan**

## 2.2 MANAGEMENT PRACTICE GOALS

ADEQ has not communicated to the City of Trumann the anticipated permit requirements for Total Phosphorus (TP). Removal management practices can vary widely based upon the target removal limit. The current receiving stream is not impaired for nutrients. Regulation 2.509 requires point sources that discharge into waters that are officially listed on Arkansas' impaired water body list (303d) with phosphorus as the major cause shall have a discharge limit of 2.0 mg/L for a facility with design flow up to 3 MGD. This facility is designed for 1.78 MGD. Without other documentation, the best management practice to reduce levels of Total Phosphorus is shown in **Table 2-2** below.

Parameter	BMP Goal
Total Phosphorus	2.0 mg/L

**Table 2-2: BMP Goals**

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## SECTION 3

# IMPLEMENTATION PLAN

### 3.1 BMP PROCESS EVALUATION

Once one year of data is acquired the City of Trumann will evaluate alternatives to remove phosphorus in the wastewater process. A process evaluation will be conducted to evaluate alternatives for phosphorus removal. The City of Trumann anticipates the process evaluation to require eight months from the completion of the sampling program. The process evaluation will be submitted under separate cover to ADEQ to update the BMP. The evaluation will include an updated implementation schedule based upon the recommended practices to remove phosphorus.

### 3.2 BMP IMPLEMENTATION

Based upon the recommendations set forth in the BMP Process Evaluation, the City of Trumann will institute the schedule set forth in the BMP Process Evaluation.

### 3.3 SCHEDULE

Description	Begin Date	End Date
Sampling Plan	April 1, 2015	April 1, 2016
BMP Process Evaluation	April 1, 2016	January 1, 2017
Process Implementation	TBD	TBD

TBD = To Be Determined

**Table 3-1: BMP Schedule**