ATTACHMENT G

TREATMENT PROCESS DESCRIPTION AND SIZING

NEW BRAUNFELS UTILITIES
GRUENE ROAD WATER RECLAMATION FACILITY

APRIL 2025

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Registration Nos. F-23290 & 10046100
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SUPPLEMENTAL TECHNICAL REPORT

FOR THE WASTEWATER TREATMENT PLANT

DOMESTIC WASTEWATER PERMIT

FOR

NEW BRAUNFELS UTILITIES

GRUENE ROAD WATER RECLAMATION FACILITY

IN

COMAL COUNTY, TEXAS

MARCH 2025

QE Job No. 05487-0035-01

QUIDDITY

Texas Board of Professional Engineers Registration No. F-23290 | Texas Board of Professional Land Surveying Registration No. 10046100

I. INTRODUCTION

The purpose of this report is to provide additional information pertaining to items in the Domestic Administrative Report and The Domestic Technical Report for the permit application to the Gruene Wastewater Treatment Facility in Comal County. This facility is permitted through the Texas Pollutant Discharge Elimination System (TPDES) permit WQ10232002. The current permit contains flow phases of 2.5 million gallons per day (MGD) and 4.9 MGD.

II. LOCATION INFORMATION

Please see Section 10 of the Domestic Admin. Report 1.0 for specific location information. The facility is located at 1322 Loop 337, New Braunfels, TX 78130.

INTERIM PHASE– 2.50 MGD

I. SCOPE

The existing Interim Phase– 2.5 MGD facility is a permanent concrete plant operating as an enhanced biological phosphorus removal anaerobic-oxic (A-O) process with an anoxic selector. Preliminary treatment units include the existing headworks with mechanical screens, an existing grit removal system, and a submersible lift station. The existing secondary treatment unit (Plant No. 1) consists of two treatment trains, a common influent channel and a rapid mix basin. Each treatment train consists of one anaerobic basin, one anoxic basin, one aeration basin, and one secondary clarifier operating as an enhanced biological phosphorus removal (EBPR) process. The tertiary treatment unit includes one multi-compartmented, low-head, automatically backwashing filter. The solids treatment units include two aerobic digesters with two-stage membrane thickening units and one belt filter press. The disinfection unit includes a two-channel basin with in-channel UV disinfection equipment. Final effluent from the plant is measured by a Parshall flume and is aerated to increase the dissolved oxygen concentration prior to release at the permitted discharge locations.

II. EXISTING WASTEWATER TREATMENT PLANT DESIGN

A. EXISTING TREATMENT FACILITIES

1. Process Equipment

   a. Raw Wastewater Lift Station

      i. Existing Volume = 7,130 ft^3

   b. Aerated Grit Basin

      i. Existing Volume = 9,476 ft^3

   c. Rapid Mix Basin

      i. Existing Volume = 4,943 ft^3

   d. Anoxic Basin

      i. Existing Volume = 8,550 ft^3

   e. Anaerobic Basin

      i. Existing Volume = 23,552 ft^3

f. Aeration Basin

i. Existing Volume = 200,403 ft^3

g. Clarifiers

i. Existing Surface Area = 9,320 ft^2

h. Tertiary Filters

i. Existing Surface Area = 1,376 ft^2

i. UV Disinfection

i. Existing Number of Modules = 8

j. Aerobic Digesters

i. Existing Volume = 59,744 ft^3

FINAL PHASE– 4.9 MGD

III. SCOPE

The Final Phase – 4.9 MGD facility will be a permanent concrete plant operating as an enhanced biological phosphorus removal anaerobic-oxic (A-O) process with an anoxic selector. The existing 2.5 MGD main process unit (Plant No. 1) will still be sized for 2.5 MGD but will only receive 2.45 MGD of flow at average daily flow (ADF) in this phase. The Final Phase facility will include the existing 2.45 MGD Plant No. 1, existing facilities, and a proposed 2.45 MGD main process unit (Plant No. 2). Preliminary treatment units include the expanded headworks, an existing grit removal system, and an expanded submersible lift station. The existing tertiary dual-media filters and aerobic digesters will also be expanded. The existing UV disinfection channels will be utilized, and additional UV treatment modules will be installed. No changes are proposed for the existing belt filter press facility. Final Phase Construction will include the addition of one (1) flow splitting structure, one (1) rapid Mix basin, two (2) anoxic basins, two (2) anaerobic basins, two (2) aeration basins, two (2) round clarifiers, two (2) tertiary filters, thee (3) aerobic digesters, and blowers.

IV. WASTEWATER TREATMENT PLANT DESIGN

A. TREATMENT FACILITIES

1. Process Equipment

a. Raw Wastewater Lift Station

i. Existing Volume = 7,130 ft^3

b. Rapid Mix Basin

i. Existing Volume = 4,943 ft^3

ii. Proposed Volume = 4,943 ft^3

iii. Total Volume = 9,886 ft^3

c. Aerated Grit Basin

i. Existing Volume = 9,476 ft^3

d. Anoxic Basin

i. Existing Volume = 8,550 ft^3

ii. Proposed Volume = 8,550 ft^3

iii. Total Volume = 17,101 ft^3

e. Anaerobic Basin

i. Existing Volume = 23,552 ft^3

ii. Proposed Volume = 23,552 ft^3

iii. Total Volume = 48,134 ft^3

f. Aeration Basin

i. Existing Volume = 200,403 ft^3

ii. Proposed Volume = 200,403 ft^3

iii. Total Volume = 400,806 ft^3

g. Clarifiers

i. Existing Surface Area = 9,320 ft^2

ii. Proposed Surface Area = 8,836 ft^3

iii. Total Surface Area = 18,156 ft^3

h. Tertiary Filters

i. Existing Surface Area = 1,376 ft^2

ii. Proposed Surface Area = 2,752 ft^2

iii. Total Surface Area = 4,128 ft^2

i. UV Disinfection

iv. Existing Number of Modules = 8

v. Proposed Number of Modules = 4

vi. Total Number of Modules = 12

i. Aerobic Digesters

i. Existing Volume = 59,744 ft^3

ii. Proposed Volume = 84,064 ft^3

iii. Total Volume = 143,808 ft^3