## City of Kyle

## Kyle Reclaimed Water Master Plan

## **Preliminary Engineering Report**

August 2023

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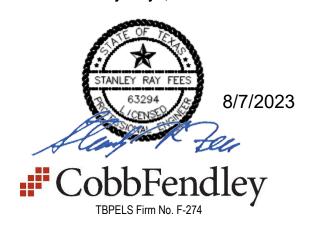
# CITY OF KYLE KYLE RECLAIMED WATER MASTER PLAN

### PRELIMINARY ENGINEERING REPORT

#### FOR SUBMITTAL TO:

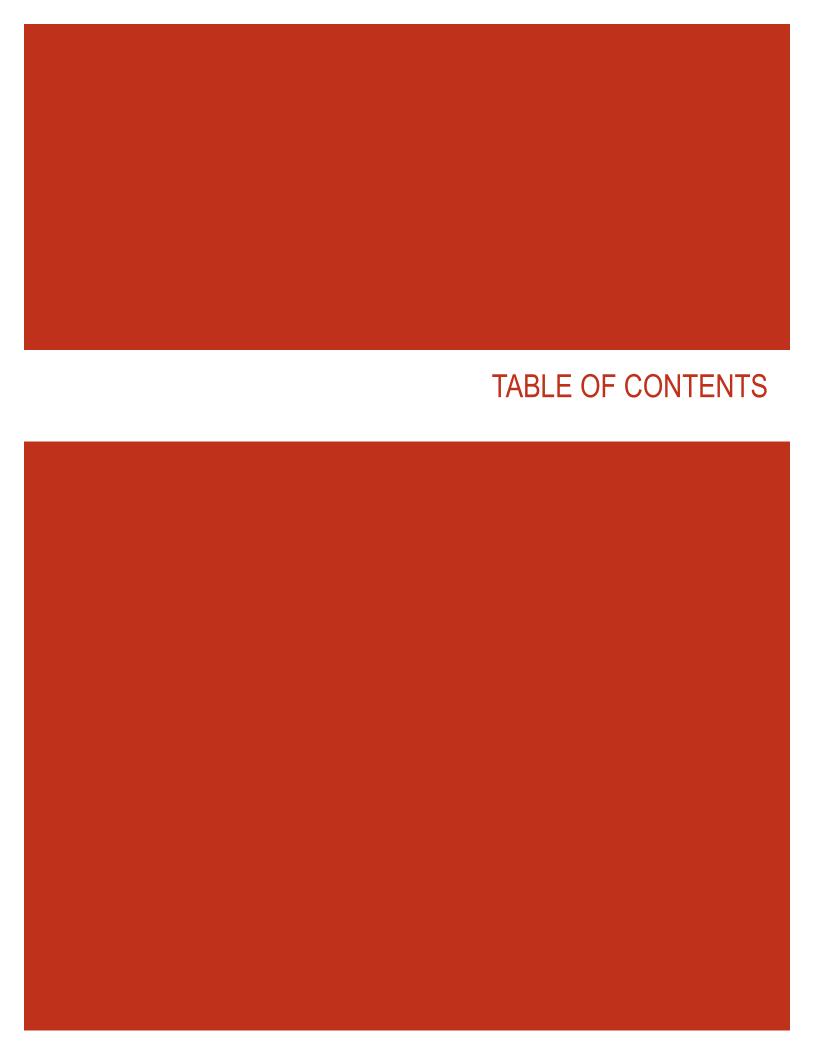


City of Kyle, TX



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#### 1 EXECUTIVE SUMMARY

The Central Texas Region, which includes the City of Kyle (City), is experiencing rapid population growth, causing an increase in potable water consumption demand and prompting the City to find ways to reduce consumption for non-personal use. The City identified wastewater recycling and reuse as a promising strategy to reduce potable water demands placed upon the existing supply and production facilities. The City has retained the services of CobbFendley to develop a Reclaimed Water Master Plan. The purpose of the Master Plan is to evaluate the feasibility of providing reclaimed water to customers including, but not limited to, potential landscape irrigation customers located within and adjacent to the corporate limits of the City.

The contents of the Master Plan include:

- Identification of potential landscape irrigation customers located within and adjacent to the City and estimated landscape irrigation demands.
- Evaluation of the existing City reclaimed water supply available from the existing Wastewater Treatment Plant (WWTP).
- Layout of the proposed Reclaimed Water Distribution System pipeline routes and hydraulic evaluation of the proposed distribution system.
- Review of reclaimed water quality requirements and recommended WWTP improvements addressed in the 2012 RPS/Espey Feasibility Study to meet quality limits.
- Presentation of a proposed implementation plan including an Engineer's Opinion of Probable Construction Costs for the Implementation Plan.
- Providing a determination of a proposed fee for reclaimed water utilizing research of rates being charged by communities in the Central Texas Region

The improvements will need to be constructed in phases due to the size of the proposed reclaimed water system. The project will consist of four phases (see Section 4 for a detailed Exhibit of all four phases). Phases One and Two will be located on the east side of IH-35 and Phases Three and Four will be located on the west side of IH-35. Estimated cost for the first phase of the improvements is \$42,026,392.85. This total includes the cost of demolition, site work, renovation, distribution pipeline installation, and new construction. This Master Plan includes a detailed discussion of the improvements necessary to meet the needs of the City as well as additional details on the phasing and costs associated with the proposed improvements. The cost for all four phases of the proposed reclaimed water improvements is \$110,172,192.30. A detailed cost estimate is provided within Section 5, Tables 17-1 through 17-4 of this Master Plan.

A Plan View Layout of the proposed Reclaimed Water System located within the City is provided below:

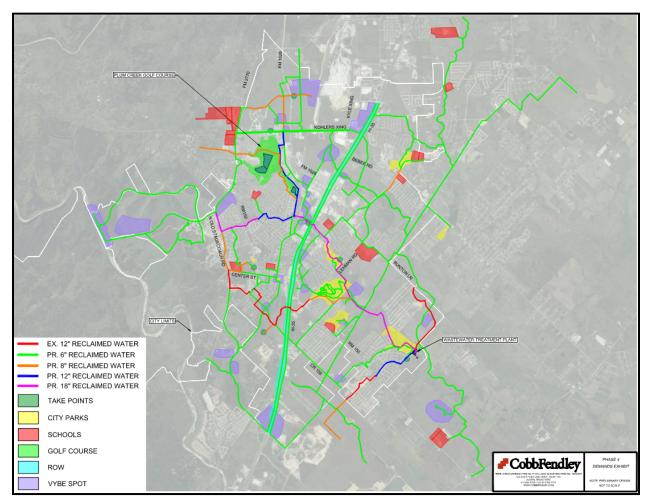
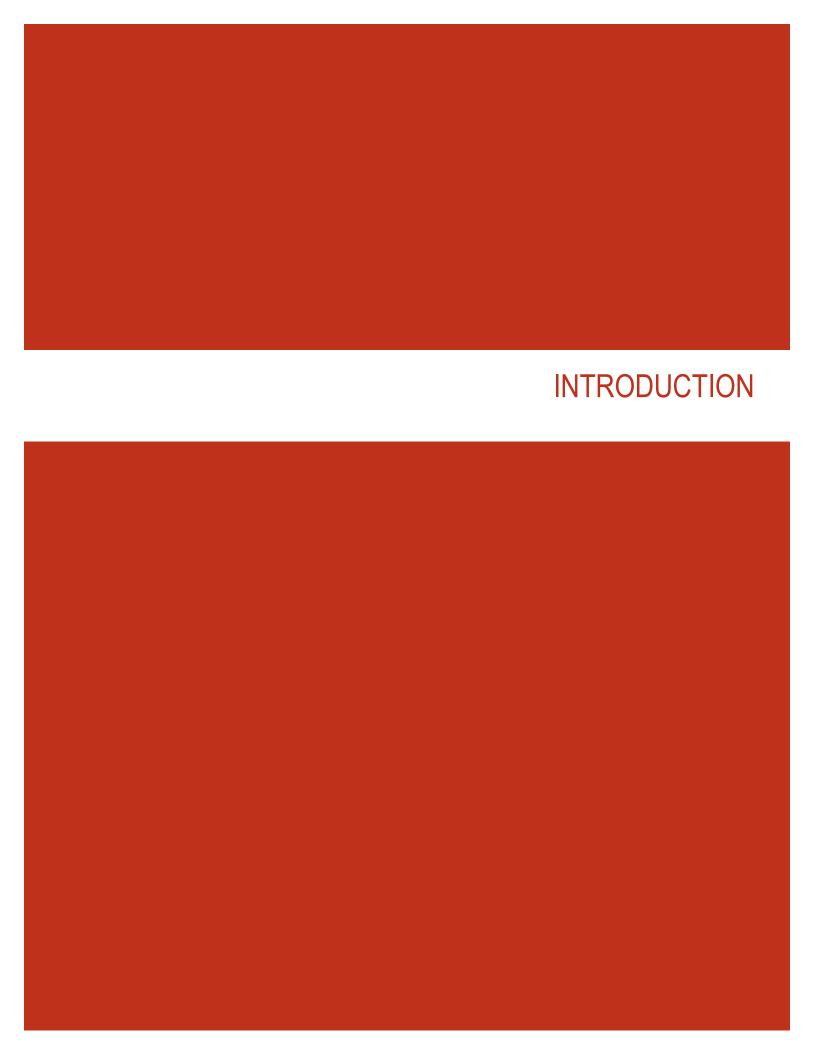


Figure ES-1 – Reclaimed Water Distribution System



#### 2 INTRODUCTION

Implementation of a reclaimed water production and distribution system expansion project would allow the City to replace a sizable portion of potable water currently used for landscape irrigation with reclaimed water to preserve drinking water supply.

The existing reclaimed water system for the City originated in 1998 with the Plum Creek Golf Course, constructing a distribution line from the wastewater treatment plant to the golf course for landscape irrigation.

The proposed expansion of the existing Reclaimed Water production and distribution system will reduce demand on the City potable water system by replacing potable water with reclaimed water. Potential Reclaimed Water landscape irrigation areas located within the corporate limits of the City include recreational sports facilities, schools, parks, road medians, boulevards, parkways, commercial buildings with landscaped areas, multi-use areas, and other areas.

The proposed City Reclaimed Water System Implementation Plan consists of four phases, with each phase expanding the reclaimed water system to a new area of the City. Phase 1 should include construction of new operational storage and high-service booster pumping facilities at the WWTP, and installation of approximately 183,000 LF of reclaimed water distribution piping for connection and supply to 22 new landscape irrigation meters located adjacent to and surrounding the WWTP. The 22 meters connected for Phase 1 will be City-owned meters providing landscape irrigation to parks and Vybe Trails along Lehman Road and other locations including Waterleaf Park, Lake Kyle Park, and Steeplechase Park. The Peak Hour Demand value from the reclaimed water landscape irrigation meters installed and connected in Phase 1 is anticipated to be approximately 1,377 gpm, or 1.98 MGD.

The Reclaimed Water Distribution System will be expanded in Phase 2 to include new landscape irrigation meters on properties along Dacy Lane, Windy Hill Road, and Bebee Road. Approximately 11 new landscape irrigation meters will be connected to the distribution system within Phase 2 and the Peak Hour Demand will increase from 1.98 MGD in Phase 1 to a cumulative demand of 2.22 MGD in Phase 2.

The third phase will expand the Reclaimed Water Distribution System to additional properties along Kohlers Crossing and Jack C. Hays Trail between Veterans Drive and Mountain City Drive. Approximately 133,222 LF of pipe will be added to the system to include 19 additional landscape irrigation meters. The cumulative Peak Hour Demand will increase from 2.22 MGD in Phase 2 to 3.02 MGD in Phase 3.

The fourth and final phase of the plan will extend reclaimed water service along Old Stagecoach Road between Six Creeks Boulevard and Roland Lane and will also connect the Downtown Business District to the distribution system to form multiple landscape irrigation loops within the Reclaimed Water Distribution System. This area on the west and southwest side of the City is predominately undeveloped. There are 14 proposed landscape irrigation meters in this area; together they increase the Peak Hour Demand by only an additional 0.75 MGD for a grand total of 3.77 MGD in Phase 4 of the project; however, significant growth in the future is anticipated within this area. It is recommended for the City to delay Phase 4 implementation until significant demand is present within the service area to generate revenue after construction of the proposed distribution system expansion.

The process diagram below summarizes the steps that have been taken to develop this Master Plan.

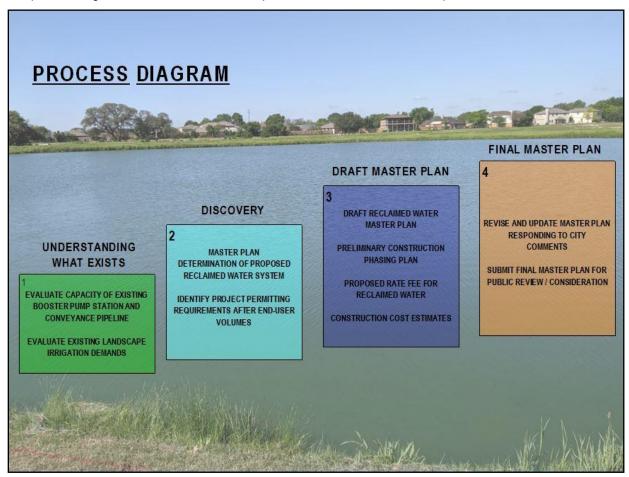
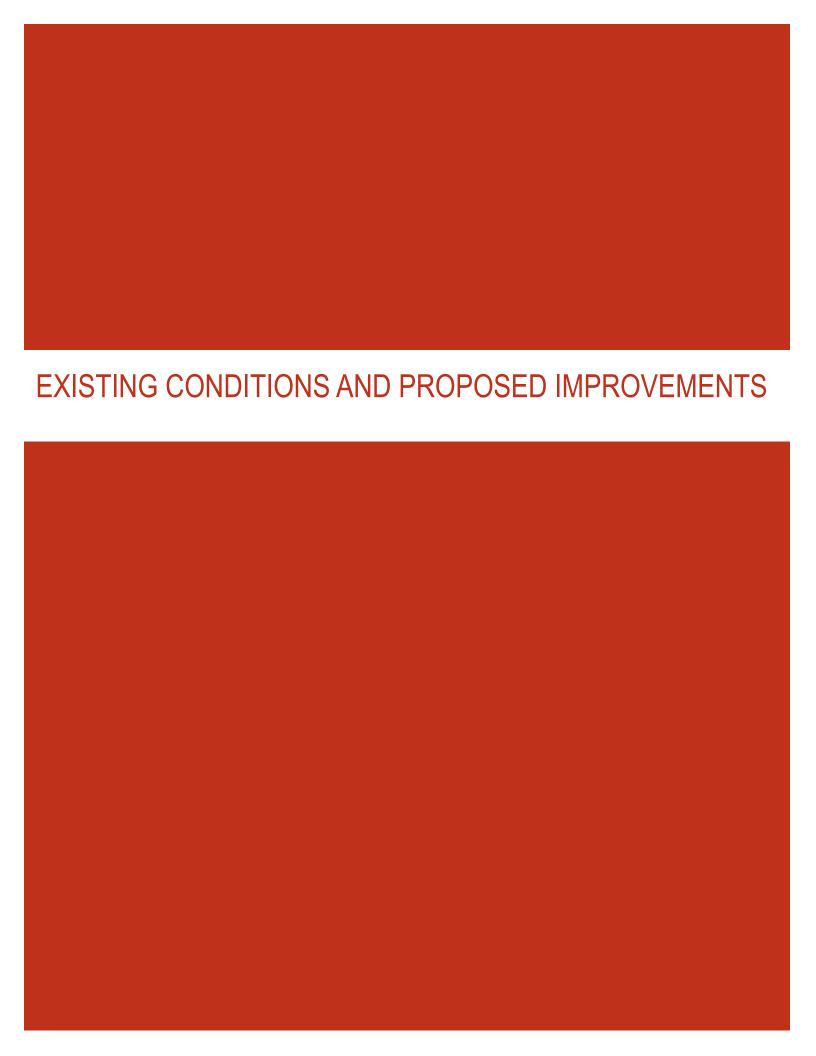


Figure 2.1: Process Diagram



#### 3 EXISTING CONDITIONS AND PROPOSED IMPROVEMENTS

#### 3.1 Data Collection and Review

Various sources of data, including reports, geographic information system electronic files, and record drawings from completed land development and sanitary sewer infrastructure construction projects were provided to CobbFendley by the City for use within the hydraulic model used to analyze system performance as a major component of the Reclaimed Water Master Plan.

#### 3.2 Reports, Studies, and Record Drawings

The City provided the following reports, studies, and record drawings to CobbFendley for review and use in the preparation of the Reclaimed Water Master Plan:

- Bunton Creek Reserve Subdivision Phase 1;
- Bunton Creek Interceptor Sewer Phase 2;
- Cool Springs Subdivision Phase 1;
- Cool Springs Subdivision Phase 2;
- Elliott Branch Wastewater Interceptor Sewer (Phase 1);
- Elliott Branch Wastewater and Reclaimed Waterline Improvements (Phase 2);
- Kyle Direct Water Reuse Feasibility Study (2012);
- Kyle Heroes Memorial Park;
- Kyle Plum Creek Phase 3 Sewer Line;
- Kyle Wastewater Treatment Plant Expansion;
- Lehman Road Reconstruction (FM 150 to Goforth Road);
- North Trails Wastewater Interceptor Sewer Improvements;
- Southside Wastewater Improvements;
- Stagecoach Subdivision Phase 1;
- Stagecoach Subdivision Phase 1A;
- Waterleaf Subdivision Phase A, Section 1;
- Waterleaf Subdivision Phase A, Section 2.

#### 3.3 Site Visits

Site Visits were made on May 6, 2021, May 13, 2021, and December 14, 2022, to observe and evaluate potential storage tank/booster station/storage pond location(s) and determine site(s) that would be appropriate for the location of Reclaimed Water storage infrastructure.

#### 3.4 Geographic Information System (GIS) Data

GIS data utilized for the Reclaimed Water Master Plan is listed for reference within Table 3.1. GIS data is maintained typically by wastewater agencies and cities as a mapping and data management tool for sanitary sewer and reclaimed water assets. It provides good data for developing the pipe network within the hydraulic model, including pipe alignments, pipe diameters, and manhole locations; however, additional data is needed to accurately represent how wastewater moves through the system (e.g., invert elevations and pipe to manhole connectivity), which is often incomplete or inaccurate within a typical GIS. For those areas, the GIS data was supplemented with additional information, described further within this Master Plan.

File Name	File Description	File Source
Parks.shp	Has boundaries of public and HOA parks within the City.	City GIS Staff
Trails.shp	Has lines of Vybe Trails within the City.	City GIS Staff
VybeSpots.shp	Has boundaries of the 25 Vybe Spots within the City.	City GIS Staff
KyleCity&ETJ.shp	Was public and has boundary of City limits for the City.	City GIS Data Downloads
KyleParcels-Nov2020.shp	Was public and has parcel lines in the City.	City GIS Data Downloads

Table 3.1 - GIS Data Sources

#### 3.5 Hydraulic Model Utilized for Analysis

Storage sizes of facilities, pumps, transmission piping, and distribution piping for the proposed Reclaimed Water Distribution System were developed utilizing a computer model of the existing Reclaimed Water System using WaterCAD® software.

WaterCAD® software by Bentley was employed to model from within the AutoCAD drawing software by Autodesk. WaterCAD® provided model layout tools, multiple backgrounds support, conversion utilities from CAD, GIS, and databases. When modeling from within AutoCAD, users built and laid out models with engineering precision.

Geospatial modules included with WaterCAD® helped to allocate water demands and node elevations based upon geospatial data found in shapefiles, digital elevation models (DEMs), and CAD drawings, avoiding potential manual-input mistakes and speeding up the model-building process. WaterCAD® was also able to utilize CAD drawings to directly create hydraulically connected models; import topology and data from GIS; and create persistent, bidirectional connections between shapefiles, databases, spreadsheets, and the WaterCAD® model.

#### 3.6 Preliminary Reclaimed Water System Plan View layout

A Plan View Layout of the existing and proposed Reclaimed Water System customers that are located within and adjacent to the City is provided for review as Exhibit Number 1 shown below. See **Appendix D** to view this exhibit in full-scale.

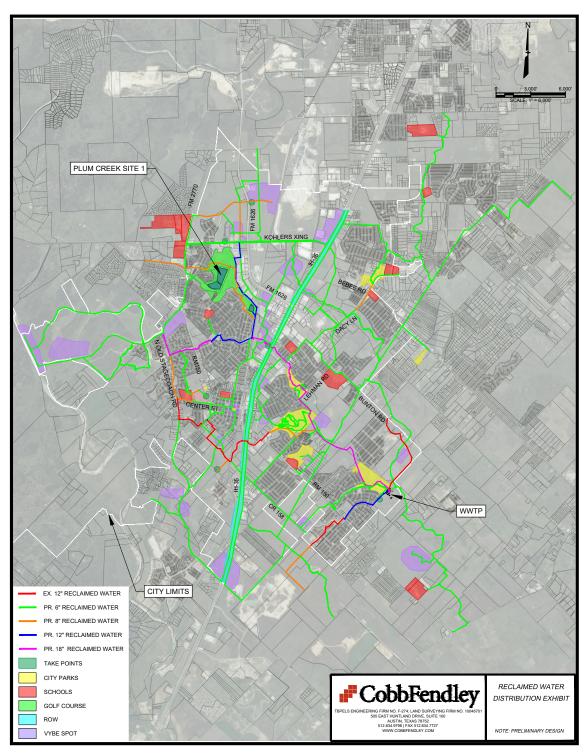


Exhibit No. 1 - Existing and Proposed Reclaimed Water Distribution System Customers

#### 3.7 Analysis of Existing Reclaimed Water System

Per the Kyle Direct Water Reuse Feasibility Study (RPS / Espey, 2012), the Reclaimed Water System was built in 1998 by the developer of the Plum Creek Golf Course (PCGC) and included approximately 11,000 linear feet (LF) of eightinch diameter pipeline with a duplex booster pump station at the Kyle Municipal WWTP. In 1998, the City WWTP was located at FM 150 near Lehman Road near what is now the Public Works Building. In 2001, approximately 5,300 LF of the original pipeline was abandoned. Subsequently, a new Reclaimed Water Booster Pump Station and approximately 13,650 LF of new 8-inch diameter pipeline was constructed when the old FM 150 WWTP was abandoned and the new (currently operating) WWTP was built at the New Bridge Street location.

In 2004, the Plum Creek Homeowners Association (HOA) secured the right to utilize an existing Soil Conservation Service (SCS) dam and reservoir (referred to as, Plum Creek Site 1," within the RPS / Espey Feasibility Study) for inplace recreational purposes. It has an approximate volumetric capacity of 140.5 Acre-feet (45.8 million gallons of conservation storage capacity) and an approximate surface area of 39.34 Acres. The reservoir is bounded on the north by Kohler's Crossing (Hays County Road 171), on the east by Farm-to-Market Road 1626, and on the west by Farm-to-Market Road 2770. The Plum Creek HOA's Water Use Permit Number 5839 authorizes it to use the reservoir for in-place recreational purposes, but with no right of diversion from it.

The current Reclaimed Water Distribution System configuration includes approximately 24,055 LF of eight-inch diameter pipeline fed by a duplex booster pump station that contains two 40-Hp vertical turbine pumps. Additionally, approximately 46,661 LF of twelve-inch diameter pipeline has either been installed, or is planned for installation, but is not yet connected to the existing transmission and distribution system for reclaimed water. The City previously has required the installation of this unused reclaimed water distribution piping as a utility component of property development and subdivision in anticipation of the improvement and expansion of the reclaimed water pumping and storage infrastructure capacity that is described within this Master Plan document.

The existing Reclaimed Water line from the WWTP to the Plum Creek Golf Course and the existing 12-inch Reclaimed Water line in the Cool Springs Phase 2 Subdivision are located in a utility easement. The existing wastewater line entering the WWTP from the west side of IH-35 is located in a utility easement.

A map of the existing Reclaimed Water Distribution System including the Duplex Booster Pump Station, the transmission pipeline, and the Storage Pond with PCGC Irrigation Pump Station at the Golf Course is provided for review as Exhibit Number 2 shown below. See **Appendix D** to view this exhibit in full-scale.

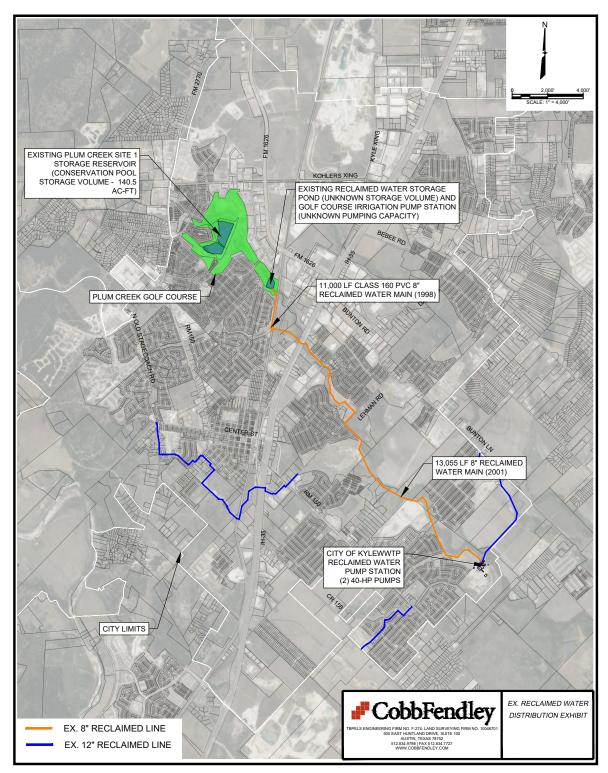


Exhibit No. 2 – Existing Reclaimed Water Distribution System Map

The Reclaimed Water System is currently configured to meet the peak irrigation demand of the golf course at 756,000 gallons per day (gpd) with one 525-gpm booster pump in operation. An evaluation of the system documented within the RPS / Espey Feasibility Study indicates the pressure rating of the PVC pipe would be exceeded if both pumps were operated simultaneously; however, even with the current configuration, a small amount of additional volumetric flow capacity exists currently within the system.

Reclaimed effluent from the WWTP supplied by the existing system meets the state regulatory criteria for Type 2 reclaimed water. The Texas Commission on Environmental Quality (TCEQ) states two quality categories for reclaimed water depending on use (Type 1 and Type 2), each with different quality limits. Type 1 reclaimed water can be used for irrigation in areas with the potential for public contact with the water, such as in public parks or on athletic fields. Type 2 reclaimed water can be used only in areas where public contact is unlikely, such as on land with restricted access; therefore, Type 1 has stricter water quality limits than does Type 2.

#### 3.8 Analysis of Existing Pumping Facilities

The existing Reclaimed Water Pump Station at the WWTP is composed of two precast reinforced concrete cylindrical wet well structures located adjacent to one another on the northeast side of the original wastewater treatment plant package units. The wet wells operate hydraulically in parallel and are fed treated (UV Light disinfected) WWTP effluent flow from a 12-inch diameter gravity sewer pipe that extends from a pipe tee fitting and branch lateral pipeline on the discharge side of the Post-Aeration Basins with gravity flow of the treated effluent to the southernmost wet well structure.

An aerial photo of the existing WWTP and Duplex Booster Pump Station for the reclaimed effluent is provided for review as Exhibit Number 3 shown below.



Exhibit No. 3 – Reclaimed Water System Duplex Booster Pump Station at City of Kyle WWTP

Each wet well structure has the following approximate physical dimensions:

- Sidewall depth = 14 feet 10 inches;
- Sidewall thickness = 8 inches:
- Roof thickness = 12 inches;
- External diameter = 11 feet 4 inches;
- Internal diameter = 10 feet 0 inches;
- Static depth of Reclaimed Water in wet well = 9 feet 8 inches.

A single, 40-Horsepower vertical turbine pump is mounted to the roof of each wet well structure. Each pump has six stages (bowls) and discharges into a common header pipe connected to the eight-inch diameter forced main pipe extending from the Reclaimed Water Pump Station to the Storage Pond at the southeast end of the PCGC. The duty point for each vertical turbine pump is 350 gallons per minute at 324 feet of Total Dynamic Head (approximately 140 psig discharge pressure measured at the pump discharge header).

During normal WWTP operations during the winter months, the pump discharge manifold is valved and operated so flow is segregated – one pump provides discharge flow to the Storage Pond, and the other pump provides non-potable water flow for distribution and use within the WWTP complex. During the summer months, however, the discharge from both pumps can be re-aligned and combined to provide maximum flow of all Reclaimed Water towards the Storage Pond at the PCGC. Currently, a wireless trail camera that is mounted in a tree adjacent to the Pond is used to remotely monitor the level of water against a measuring stick that is sunk into the bed of the Pond. When it is determined that reclaimed water is needed to fill the Storage Pond, the vertical turbine pumps are operated in "Hand" mode and energized to fill the Pond to the desired level. Concurrent with the pumping action, liquid sodium hypochlorite (bleach) is dosed into the wet well structure so that the reclaimed water flowing to the Pond through the existing transmission main has a residual disinfectant content of approximately 1.0 mg/l (1.0 ppm). The bleach disinfectant helps to control the growth of slime on the interior walls of the transmission pipeline.

Note: During a site visit to the WWTP in December of 2022, it was observed that a single vertical turbine pump was configured and energized to provide Reclaimed Water flow to the Storage Pond. The pump was determined to have an approximate discharge flow rate of 580 gpm at a discharge pressure of approximately 47 psig (108 vertical feet of Total Dynamic Head). Although this operating point is at the extreme right-hand side of the pump's characteristic curve (allowable operating range), there was no discernible "chattering" noise or other signs of distress as the pump operated in the "runout" condition. Plant Operations Personnel indicated previously that, when both pumps are configured to pump reclaimed water up to the Storage Pond, the combined discharge pressures within the common header reach a value of approximately 130 psi and the total discharge flow rate from the Pump Station varies between 680 to 780 gpm.

#### 3.9 Analysis of Existing Transmission / Distribution System

The Reclaimed Water Pump Station above-grade discharge header pipe is composed of carbon steel pipe (Schedule Wall Thickness unknown), and no Record Drawing or other installation data is available to determine the materials of construction for the eight-inch diameter force main pipe that extends between the Pump Station and the PCGC Storage Pond. The RPS / Espey Feasibility Study makes the following reference to the pressure rating capacity of the existing force main pipe: An evaluation of the system indicates that the pressure rating of the PVC pipe would be exceeded if both pumps are operated simultaneously." Additionally, the Feasibility Study notes that, "...the existing 8-inch pipeline can accommodate flows up to 770 gpm without exceeding the Class 160 PVC pressure rating." Using this information, it can be concluded that some of the buried portions of the force main pipe are composed of Class 160 PVC pressure pipe, which has a Standard Dimension Ratio (SDR) of 26.

#### 3.10 Analysis of Existing Storage Facilities

Reclaimed Water currently pumped from the WWTP is conveyed through an existing eight-inch diameter transmission pipeline that empties into a small Storage Pond that is located at the PCGC Hole Number 14, approximately 3,800 linear feet downstream and to the southeast of the Plum Creek Site 1 Reservoir. It has a surface area of approximately four and a half acres in size; however, its approximate average depth is unknown. Anecdotal evidence suggests it has an average depth of about six vertical feet, but that must be confirmed with depth sounding measurements in the future. Assuming the Storage Pond has an approximate depth of six vertical feet, its available storage volume would be approximately 27 Acre-feet, or 8.8 million gallons of liquid volume.

The Storage Pond receives ephemeral flow from a small creek bed that meanders through the Golf Course downstream of the Site 1 Reservoir, and then discharges its storage overflow into a small plastic spillway inlet pipe that conveys the overflow quantity into a much smaller, "water hazard," pond at Hole Number 14. Surface water flows from the water hazard and then drains into an open channel that runs parallel to the railroad tracks that are located adjacent to the east side of the Storage Pond.

Located at the northeast side of the Storage Pond, an Irrigation Pump Station for the PCGC takes suction from the Storage Pond and distributes the raw water for landscape irrigation throughout the Golf Course complex. The landscape irrigation system is owned privately and operated by the PCGC; specific details of its conveyance capacity are unknown and are not referenced within this Master Plan document.

An Exhibit Drawing that displays the relative proximity of the Storage Pond to the Site 1 Reservoir and the Plum Creek Golf Course is provided for review as Exhibit Number 4 shown below.

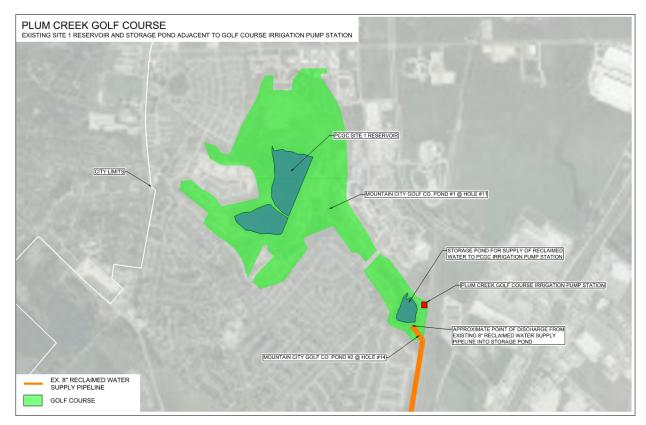


Exhibit No. 4 – Reservoir and Storage Pond at the Plum Creek Golf Course

#### 3.11 Analysis of Existing Reclaimed Water End-User Demands

The City provided CobbFendley with Consumption History Reports for 18 existing potable water service and landscape irrigation meters throughout Kyle. Upon review of the Consumption History Reports, it was determined that 8 of the 18 meters were associated strictly with landscape irrigation and not conventional potable water service. The possibility exists that some or all 8 landscape irrigation meters (as displayed within Exhibit Number 5) could be designated for connection to a future Reclaimed Water Distribution System. Most of the land within the City is zoned as residential or agricultural; however, significant areas within the City are zoned for retail services or commercial facilities. A detailed zoning map for the City is provided for review within Appendix A. The multiple zone types have been combined into three main categories: Agricultural, Commercial, and Residential, as shown within Table 3.2.

The approximate land area and number of water service and landscape irrigation meters (for which consumption history data is available in each zone) are also presented within Table 3.2.

Table 3.2 - Simplified Zoning Divisions

Simplified Zone Description	Number of Existing Meter Address Locations with Consumption History Data Available	Simplified Zone Aggregate Land Area (Acres) Served by Water Service and Landscape Irrigation Meters	City of Kyle Zoning Map Designation
Agricultural	4	319	Agricultural Plum Creek Open Space
Commercial	8	33	Commercial Billboard Industrial Construction / Manufacturing Central Business District Hospital Services Plum Creek Employment Retail Services Transportation and Utilities Warehouse
Residential	6	65	Mixed Use Multi-Family Manufactured Homes Single Family Plum Creek Residential Residential Condo Residential Townhome Planned Unit Development
Combined	18	417	•

Approximate locations of the existing potable water landscape irrigation meters within the City Municipal Zoning Areas are presented for review within Exhibit Number 5 shown below and referred to in Appendix A.

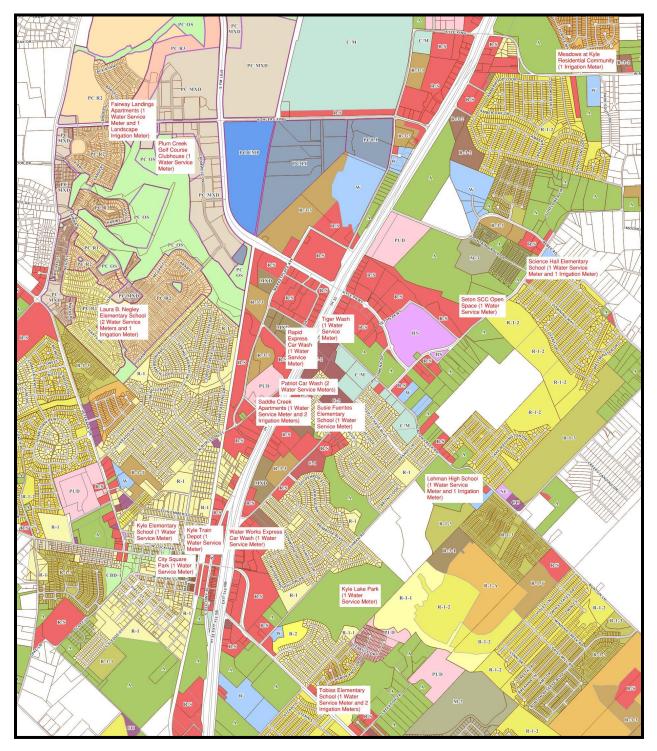


Exhibit No. 5 – Approximate Locations of Existing Landscape Irrigation Meters shown upon City Zoning Map

It is likely that future development within the City could significantly increase the reclaimed water demand. The following paragraphs within this Master Plan describe an estimate of the reclaimed water demands from existing areas that are currently serviced by dedicated potable water landscape irrigation meters in addition to future areas within the City that are not yet serviced.

Historical monthly meter consumption data were collected for the eight existing landscape irrigation meters and then analyzed to estimate the future reclaimed water demands from them (see the Monthly Meter Consumption Data sheets within Appendix B). Monthly consumption data can be used to estimate the average monthly demand for the proposed reclaimed water system, but they do not provide information regarding changes in demand throughout the month or within any given day. The proposed reclaimed water conveyance equipment and infrastructure will be designed to meet the Peak Hour and Peak Day Demands. Further data analysis and assumptions are required to estimate the Peak Hour Demand from monthly consumption data. For reference purposes, the following definitions are used to quantify demands:

- Peak Month: The historical month with the greatest total water demand.
- Peak Month Demand: Total water demand during the Peak Month. This value is available from monthly consumption data provided by the City of Kyle.
- Peak Day: The day in the Peak Month with the greatest water demand.
- Peak Day Demand: Total water demand during Peak Day.
- Peak Day Factor: Peak Day Demand divided by the Peak Month Demand.
- Peak Hour: The hour on Peak Day with the greatest water demand.
- Peak Hour Demand: Total water demand for the Peak Hour. The reclaimed water conveyance infrastructure will be designed to operate at the Peak Hour Demand.
- Peak Hour Factor: Peak Hour Demand divided by Peak Day Demand.

Peak Month Demand for the future reclaimed water system was estimated using the monthly consumption data for the landscape irrigation meters provided to CobbFendley by the City. Available monthly consumption data between January of 2020 and September of 2022 was evaluated for each meter. The Peak Month Demand per meter was assumed to be equal to the highest month of consumption from historical data. The Peak Month Demand for each meter was added together to estimate the Peak Month Demand for the eight landscape irrigation meters served currently from the potable water system (see Table 3.3). Available monthly data for each meter was gathered to calculate an average demand per meter. The average demands for each meter were added together to determine the estimated average demand for the eight landscape irrigation meters served currently from the potable water system (see Table 3.3).

The conveyance infrastructure will be designed to meet projected peak demands, but the projected average demands can be used to estimate system revenues and operational costs. This means the system will be built to handle the highest amount of reclaimed water expected to be used at any given time, but the average use will be calculated to determine how much revenue the system will generate and how much it will cost to operate. For example, if a city expects to use 100,000 gallons of reclaimed water per day on average, but the peak demand is 200,000 gallons per day, the system will be built to convey and deliver 200,000 gallons per day. However, the city will pay only for the water used, which is 100,000 gallons per day. The city also must pay only for the operational costs of the system, such as for storing, treating and pumping the reclaimed water, for the amount used. This is important because it helps to prevent overbuilding of the system, which would be an unnecessary capital expenditure. It also helps to prevent a situation where the city is paying for more reclaimed water than it uses, which could lead to higher reclaimed water bills for its residents.

Table 3.3 – Peak and Average Consumption Data Calculations per Landscape Irrigation Meter

Current Zoning Classification	Landscape Irrigation Meter Customer Name	Peak Monthly Demand (Gal.)		Approximate Land Area Associated with Meter (Acres)	Depth of Irrigation Applied During Peak Month (In.)
Residential	Meadows at Kyle =	1,052,300	August	2	19.4
Residential	Fairway Landings Apartments =	546,100	July	14	1.4
Residential	Tobias Elementary Meter #1 =	153,100	August	7	8.0
Residential	Tobias Elementary Meter #2 =	110,100	August	7	0.6
Commercial	Science Hall Elementary =	37,500	June	11	0.1
Agricultural	Lehman High School =	101,100	July	53	0.1
Residential	L.B. Negley Elementary =	270,100	August	11	0.9
Residential	Saddle Creek Apartments =	175,700	Octobe r	13	0.5
	Total Peak Monthly Demand for 8 Meters =	2,446,000			
	Measured Peak Demand Per Day from Monthly Demand for 8 Meters =	80,408	gpd		
	Month to Day Factor (Assumed) =	2.0			
	Factored Peak Daily Demand for 8 Meters =	160,815	gpd		
	Day to Hour Factor (Assumed) =	4.0			
	Factored Peak Hourly Demand for 8 Meters =	643,261	gpd		
	Factored Peak Hourly Demand for Meters Zoned Residential =	606,811	gpd	54 Acres	
	Factored Peak Hourly Demand for Meters Zoned Commercial =	9,862	gpd	11 Acres	
	Factored Peak Hourly Demand for Meters Zoned Agricultural =	26,588	gpd	53 Acres	
	Total =	643,261	gpd	118 Acres	

Current Zoning Classification	Landscape Irrigation Meter Customer Name	Average Monthly Demand (Gal.)
Residential	Meadows at Kyle =	222,430
Residential	Fairway Landings Apartments =	237,445
Residential	Tobias Elementary Meter #1 =	62,090
Residential	Tobias Elementary Meter #2 =	47,880
Commercial	Science Hall Elementary =	18,833
Agricultural	Lehman High School =	36,621
Residential	L.B. Negley Elementary =	34,400
Residential	Saddle Creek Apartments =	93,862
	Total Average Monthly Demand for 8 Meters =	753,561
	Calculated Average Demand Per Day for 8 Meters =	24,772 gpd

The peak month for each landscape irrigation meter occurs during July and August, as shown by the highest irrigation demand from the eight landscape irrigation meters served from the potable water system.

The City does not employ Advanced Metering Infrastructure (AMI) for the identified eight landscape irrigation meters within the potable water distribution system; therefore, no data were made available for the determination of daily and hourly potable water consumption rates from those specific water meters. Accordingly, assumptions were made to assign a value of 2.0 for the Peak Day Factor, and a value of 4.0 for the Peak Hour Factor.

The purpose of the Peak Day Factor is to calculate Peak Day Demand from Peak Month Demand since landscape irrigation does not occur every day within a given month. A simplified assumption would be that an individual user might irrigate their property every other day during a low precipitation, elevated temperature period. Irrigating every other day represents a Peak Day Factor of 2.0. Peaking factors can vary by the type of landscape irrigation (such as golf courses, municipal parks, commercial facilities, residential applications, etc.) but values typically range between 1.0 and 3.0. A Peak Day Factor of 2.0 was selected for this evaluation. Using this factor, the calculated Peak Day Demand from the eight landscape irrigation meters served currently by the potable water system is 0.161 million gallons per day (MGD). This value is determined by multiplying the Calculated Peak Demand per Calendar Day for the eight landscape irrigation meters by the Peak Day Factor (80,408 gallons per day x 2.0 = 160,816 gpd = 0.161 MGD).

The Peak Hour Factor calculates the Peak Hour Demand from the Peak Day Demand, assuming a landscape irrigation user does not typically irrigate their property 24 hours a day. Rather, landscape irrigation may be accomplished within a six-hour window, which represents a Peak Hour Factor of 4.0. Using the assumed peaking factors, the estimated Peak Hour Demand from the eight landscape irrigation meters served currently by the potable water system is 0.643 MGD. This value is determined by multiplying the calculated Peak Day Demand by the Peak Hour Factor (160,816 gpd x 4.0 = 643,264 gpd = 0.643 MGD). The average demand per day from the eight landscape irrigation meters served currently by the potable water system was calculated to be 24,772 gpd or 0.025 MGD.

A summary of the calculated existing landscape irrigation water demands used within this evaluation is presented for review within Table 3.4 below.

Table 3.4 – Summary of Existing and Calculated Landscape Irrigation Meter Demands

Demand Type	Value
Measured Peak Monthly Demand per Day from 8 Meters	80,408 gpd = 0.08 MGD
Month to Day Factor	2.0
Factored Peak Daily Demand from 8 Meters	160,816 gpd = 0.161 MGD
Day to Hour Factor	4.0
Factored Peak Hourly Demand from 8 Meters	643,264 gpd = 0.643 MGD
Measured Average Demand	24,772 gpd = 0.025 MGD

#### 3.12 Determination of Proposed Reclaimed Water System

The City owns and operates an existing WWTP undergoing an expansion to increase capacity for the supply of treated and chlorinated water to the future Reclaimed Water Distribution System. Once the current expansion is completed (Interim Phase 1), the plant will have a permitted annual average effluent flow capacity limit of 4.5 MGD and a two-hour peak effluent flow capacity limit of 12,500 gpm (18.0 MGD). A second phase of plant expansion (Interim Phase 2) will have a permitted annual average effluent flow capacity limit of 9.0 MGD and a two-hour peak effluent flow capacity limit of 25,000 gpm (36.0 MGD). A Final Phase will have a permitted annual average effluent flow capacity limit of 12.0 MGD and a two-hour peak effluent flow capacity limit of 39,344 gpm (56.66 MGD).

Historical WWTP effluent flow data collected between 2019 and 2020 was analyzed to determine the amount of reclaimed water currently available from the WWTP. The determination from the data was that the WWTP produces at least 2.5 MG per day consistently and 3.8 MG per day on average. Minimum effluent flow of 2.5 MG over a day represents the limitation for supplying reclaimed water to the distribution system if no additional operational storage is constructed.

The City currently provides Type 2 reclaimed water to PCGC as permitted by TCEQ to produce and distribute Type 2 reclaimed water. Effluent water quality data from the existing WWTP were collected and analyzed to determine if treatment process improvements would be required to meet Type 1 reclaimed water quality limits.

Information in Table 3.5 and Figure 3.1 shows that the WWTP produces at least 2.5 million gallons (MG) per day consistently and 3.8 MG of reclaimed water per day on average.

Table 3.5 – Historical Effluent Flows from WWTP (2019 – 2020)

Month	Minimum Effluent Flow from WWTP (MGD)	Average Effluent Flow from WWTP (MGD)	2-Hour Maximum Effluent Flow from WWTP (MGD)
Jan 2019	3.8	4.9	10.1
Feb 2019	3.5	3.8	4.2
Mar 2019	3.1	3.5	4.1
Apr 2019	3.2	4.1	5.2
May 2019	3.5	4.7	7.6
Jun 2019	3.2	3.8	6.5
Jul 2019	2.5	3.3	3.8
Aug 2019	2.8	3.3	4.0
Sep 2019	2.8	3.2	4.2
Oct 2019	2.7	3.3	4.9
Nov 2019	2.5	3.4	4.2
Dec 2019	3.0	3.4	4.2
Jan 2020	3.1	3.5	4.3
Feb 2020	3.3	3.7	4.5
Mar 2020	3.3	3.8	4.3
Apr 2020	3.3	4.4	7.0
May 2020	3.3	5.1	9.5
Jun 2020	3.5	4.0	5.4
Jul 2020	3.5	3.7	4.2
Aug 2020	3.1	3.6	4.0
Sep 2020	3.4	4.1	5.7
Oct 2020	3.2	3.6	4.3
Nov 2020	3.3	3.6	4.4
Dec 2020	3.3	3.8	4.7
	Min. Flow During Months Observed =	2.5	
	Avg. Flow During Months Observed =	3.8	
	2-Hr. Max. Flow During Months Observed =	10.1	

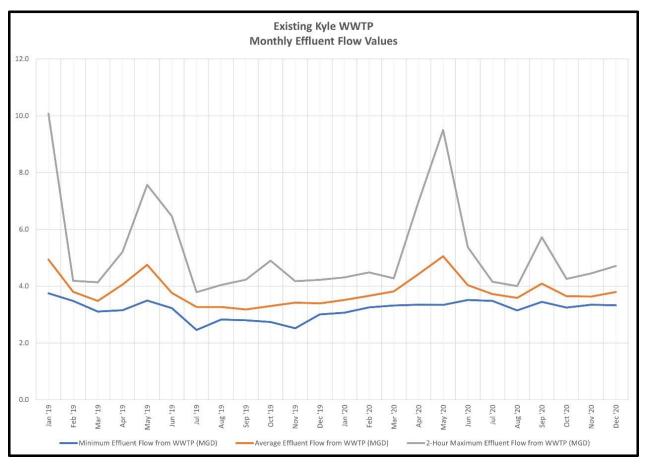


Figure 3.1 – Chart of Historical Month Effluent Flows from WWTP (2019 – 2020)

The minimum effluent flow of 2.5 MG over a day represents the limitation for supplying reclaimed water to the distribution system if no additional operational storage is constructed. See Section 3.15 - Conveyance Sizing and Section 3.17 - Operational Storage Volume for more information and an expanded explanation of this limitation within the proposed Reclaimed Water Distribution System.

A simplified approximation of typical diurnal changes in wastewater flow throughout the day is provided for review below as shown within Figure 3.2.

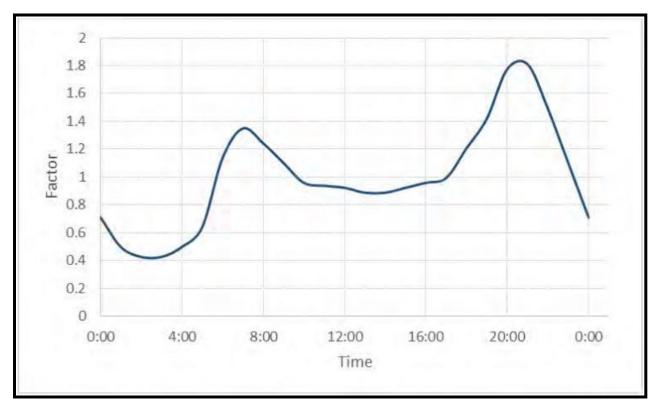


Figure 3.2 – Wastewater Flow Diurnal Curve (Typical)

Residential areas within any city tend to follow typical daytime dry weather flow patterns. A residential pattern has a raw sewage flow peak in the morning and a secondary raw sewage flow peak in the evening. Commercial diurnal profiles tend to have a peak during the day. Typically, peak sewage flows are higher on weekdays, while the sewage flows on weekends are a bit more attenuated.

#### 3.13 Reclaimed Water Quality Criteria

The TCEQ specifies quality of treatment requirements for reclaimed water used for non-potable purposes, such as landscape irrigation. In the following paragraphs, effluent quality from the City WWTP is compared with mandated reclaimed water quality requirements, and proposed improvements to the treatment plant are recommended.

The existing WWTP consists of a conventional activated sludge treatment process that operates in the complete mix mode with nitrification. Treatment units to be installed and constructed within the Interim Phase 1 upgrade will include two bar screens at the plant headworks, four lift station pumps, four aeration basins, four final clarifiers, two post-aeration basins, four aerobic sludge digestors, and two ultraviolet light disinfection systems. Treatment units to be installed and constructed within the Interim Phase 2 will include four bar screens at the plant headworks, six lift station pumps, ten aeration basins, nine final clarifiers, four post-aeration basins, four aerobic sludge digestors, and three ultraviolet light disinfection systems. (Note: Plant additions during Interim Phase 2 are approximate and will be confirmed during design. A Disc Filtration System is also planned for installation upstream of the existing Ultraviolet Light Disinfection System). Treatment units to be installed and constructed within the Final Phase will include six bar screens at the plant headworks, six lift station pumps, twelve aeration basins, twelve final clarifiers, four tertiary filters, ten post-aeration basins, six aerobic sludge digestors, and four ultraviolet light disinfection systems.

The City TPDES (Texas Pollutant Discharge Elimination System) Permit limits for the Interim Phase 1 upgrade are summarized and provided below for review within Table 3.6.

Table 3.6 – City of Kyle WWTP TPDES Permit Limitations (Interim Phase 1)

Effluent Characteristic	Units	Daily Average	7-Day Average	Daily Maximum
CBOD₅	mg/L (lbs./day)	10 (375)	15	25
TSS	mg/L (lbs./day)	15 (563)	25	40
NH <sub>3</sub> -N	mg/L (lbs./day)	2 (75)	5	10
E. coli	MPN/100 mL	126	N/A	399

Due to the publicly accessible nature of some properties irrigated within City jurisdiction, reclaimed water produced from the City WWTP must meet the Type 1 quality limits, provided below within Table 3.7.

Table 3.7 - Type 1 Reclaimed Water Quality Limits

Parameter	Units	Quality Limit <sup>1</sup>
CBOD₅	mg/L	5
Turbidity	NTU	3
C coli or Cool Coliform	CFU/100 mL	202
E. coli or Fecal Coliform		75³

<sup>1.</sup> Measured as 30-Day Average, unless noted otherwise

At this time, the City provides Type 2 reclaimed water to just one customer (the Plum Creek Golf Course), as permitted by previous acquisition of the necessary authorization from the TCEQ to produce and distribute Type 2 reclaimed water. Type 2 quality limits are provided below for review within Table 3.8. The City reclaimed water authorization letter from the TCEQ is included for review within Appendix C.

Table 3.8 – Type 2 Reclaimed Water Quality Limits

Parameter	Units	Quality Limit <sup>1</sup>
CBOD₅	mg/L	15
BOD₅	mg/L	20
C. coli or Cocal Coliform	CELI/100 ml	2002
E. coli or Fecal Coliform	CFU/100 mL	800 <sup>3</sup>

<sup>1.</sup> Measured as 30-Day Average, unless noted otherwise

<sup>2. 30-</sup>Day Geometric Mean

<sup>3.</sup> Single Grab Sample

<sup>2. 30-</sup>Day Geometric Mean

<sup>3.</sup> Single Grab Sample

Effluent water quality data from the City existing WWTP was collected and analyzed to determine if treatment process improvements would be required to meet Type 1 reclaimed water quality limits. Monthly Discharge Monitoring Reports (DMRs) for the WWTP indicate that the average effluent concentrations of five-day carbonaceous biochemical oxygen demand (CBOD5) and E. coli have indeed exceeded their respective Type 1 average limits several times over the two-year period that was reviewed (see Figure 3.3a and Figure 3.3b). The existing WWTP will require treatment process improvements to produce effluent that meets the Type 1 reclaimed water quality limits. The limit on CBOD5 at 5 mg/L is anticipated to be achieved once the Final Phase of WWTP expansion is completed at some point in the future; however, it is expected that additional filtration and disinfection capabilities will have to be incorporated into the Final Phase treatment process to achieve the Type 1 limits of 3 NTU Turbidity and 20 CFU/100 mL for E. coli, which is much more restrictive than the permitted allowance of 126 CFU/100 mL for E. coli that is listed within the TPDES Permit for the expanded WWTP. (Note: NTU stands for Nephelometric Turbidity unit - the unit used to measure the turbidity of a fluid or the presence of suspended particles in water.)

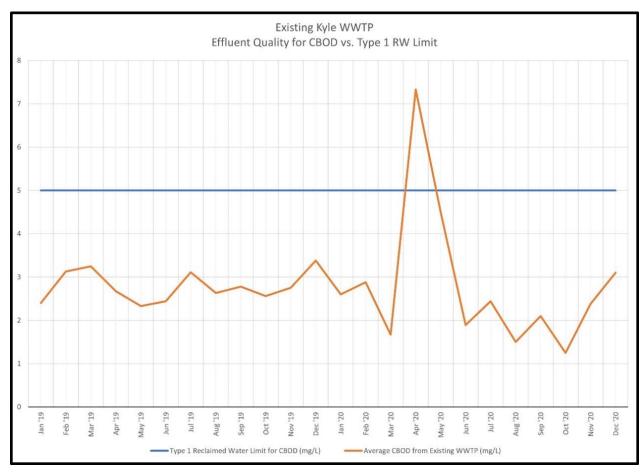


Figure 3.3a – Effluent Quality for CBOD versus Type 1 Reclaimed Water Limit

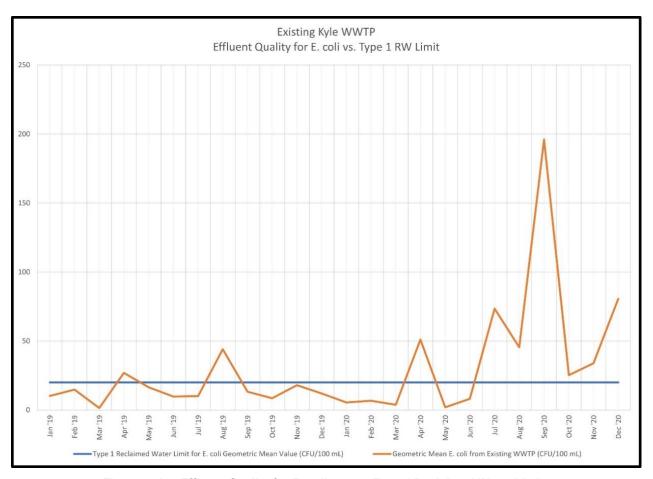


Figure 3.3b - Effluent Quality for E. coli versus Type 1 Reclaimed Water Limit

TCEQ requires the measured turbidity of Type 1 reclaimed water to be less than three NTU on a 30-day average; however, turbidity test data is not currently collected at the WWTP since it is not included as a measurement of effluent quality within the existing TPDES permit. To overcome this quality monitoring deficiency, the City will need to begin collecting turbidity test data when deemed appropriate to determine when treatment process improvements (tertiary filtration) will be required to meet Type 1 reclaimed water quality requirements.

In the same manner, effluent water quality data from the City existing WWTP were collected and analyzed to determine if treatment process improvements would be required to meet Type 2 reclaimed water quality limits. Monthly DMRs for the WWTP indicate that the average effluent concentrations of CBOD5 and E. coli have not exceeded their respective Type 2 average limits over the two-year period reviewed (see Figure 3.4a and Figure 3.4b); therefore, the existing WWTP will not require any treatment process improvements to produce effluent that meets the Type 2 reclaimed water quality limits.

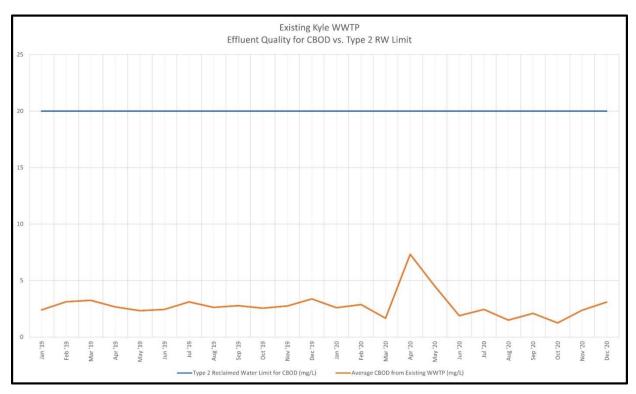


Figure 3.4a – Effluent Quality for CBOD versus Type 2 Reclaimed Water Limit

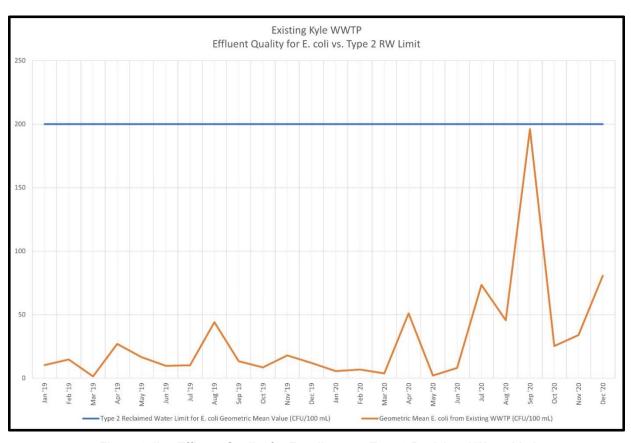


Figure 3.4b – Effluent Quality for E. coli versus Type 2 Reclaimed Water Limit

#### 3.14 Infrastructure Sizing Assumptions

The City future Reclaimed Water Distribution System facilities have been sized based upon the projected landscape irrigation demands and infrastructure sizing criteria as presented below within Table 3.9. The criteria were developed based on industry standards and experience with similar distribution systems. Several of the criteria listed within Table 3.9 represent conservative planning assumptions. During future phases of design, and as the commitment of potential reclaimed water customers becomes more certain, planning and evaluation criteria should be further refined.

Table 3.9 – Infrastructure Sizing Criteria

Category	Criteria
Storage	
Operational Storage Volume (See Note Below)	(Peak Hour Demand converted to MGD - Maximum Day Demand converted to MGD) x (6 Hours) x (1 Day / 24 Hours)
Pipelines	
Maximum Velocity of Flow	8 feet per second
Hazen-Williams Pipe Roughness Coefficient	150
Typical Pipeline Diameters within Proposed Distribution System	6-inch, 8-inch, 12-inch, and 18-inch
Service Pressures	
Minimum Pressure allowed during Peak Hour Demand	40 psi
Maximum Pressure allowed during Peak Hour Demand	100 psi
Peaking Factors	
Maximum Day Peaking Factor during Landscape Irrigation	2.0
Hourly Peaking Factor during Landscape Irrigation	4.0

landscape irrigation pattern throughout the distribution system.

#### **Conveyance Sizing**

The Reclaimed Water system pumping and piping components should be sized to supply the Peak Hour Demand of the Reclaimed Water system. The Peak Hour Demand could be supplied from the High-Service Reclaimed Water Pump Station at the WWTP, or from a combination of the WWTP's Pump Station and a Storage Tank or Tanks located at the WWTP or somewhere within the distribution system. If storage is present, the Pump Station at the WWTP should be sized to meet the Maximum Day Demand of the distribution system and the supply more than Maximum Day Demand that is required for Peak Hour Demand would come from an operational storage volume. If no operational storage volume is present, the Pump Station at the WWTP should be sized to meet the system's Peak Hour Demand.

#### 3.16 Determination of Proposed Pumping Facilities

For reliability, it is desirable that the High-Service Reclaimed Water Pump Station's firm pumping capacity be able to meet the Maximum Daily Demand. The firm capacity of the Pump Station will be the total capacity minus the capacity of the largest single pump out of service.

#### 3.17 Operational Storage Volume

Operational Storage Volume is the amount required to provide the difference in quantity between the customers' peak demands and the system's firm supply capacity for Reclaimed Water. Operational Storage Volume is used to mitigate demand fluctuations under Maximum Daily Demand conditions. The volume required for this storage component can be highly dependent upon the hourly variation of the customer's demand and the variation of effluent flow from the WWTP.

Operational storage of reclaimed water requires the construction of either steel or reinforced concrete tanks, with capacities ranging from tens of thousands to several million gallons of storage volume. Siting of the storage tank reservoir can be difficult as available sites within the urban areas of the City and sites within a reasonable distance of the Reclaimed Water Distribution System are limited. Proposals for above-ground storage tanks may encounter local opposition, who may have aesthetic and/or safety concerns about the project. Unless the storage tank reservoir is at a sufficient elevation, repumping of the stored water and its attendant cost may be required.

Finally, storage of reclaimed water requires dosing with additional chlorine to prevent slime growth that occurs in water lines of all types. Slime within the Reclaimed Water Distribution System can clog up meters, sprinkler heads and other appurtenances or interfere with industrial processes at the customer's end point facilities. It is not known for certain if an accumulation of slime growth is present within the existing Reclaimed Water Distribution System, so dosing with chlorine within the proposed storage facility should be conducted as a preventive measure prior to pumping the reclaimed water through the proposed transmission and irrigation system.

#### 3.18 Peaking Factors

Peaking Factors represent the seasonal and daily variations in reclaimed water use, above or below the average day reclaimed water demand. The peaking conditions significant for Reclaimed Water Distribution System planning include the Maximum Daily Demand and the Peak Hour Demand. Peaking Factors for expressing these demands as a function of the average seasonal demand were developed based upon the criteria summarized within this section of the Master Plan.

A maximum day landscape irrigation peaking factor of 2.0 was assumed for all reclaimed water landscape irrigation system customers. A 6-hour nighttime landscape irrigation pattern (12 AM – 6 AM) was assumed for all reclaimed water landscape irrigation system customers.

#### 3.19 Determination of Proposed Pipeline Sizes for Transmission/Distribution System

A hydraulic evaluation of the proposed Reclaimed Water Distribution System was performed using the Bentley WaterCAD® hydraulic model software program. The hydraulic modeling was conducted to size appropriately the pipelines within the proposed Reclaimed Water Distribution System and to determine the resulting operational water pressures throughout the distribution system. The following describe the model development, performance criteria, and model results:

The hydraulic model contains both existing (i.e., the Plum Creek Golf Course) and estimated future demands for Reclaimed Water. The Peak Hour Demand for each of the proposed landscape irrigation meters was placed into the model where they were located within the distribution system, as displayed for review within Exhibit Number 1. Total reclaimed water demand for the Peak Hour was determined to be 2,615 gpm (3.77 MGD). The unfactored Peak Hour Demand value results in a Peak Day Demand value of 654 gpm (0.943 MGD). The unfactored Peak Day Demand value results in an Average Day Demand value of 327 gpm (0.472 MGD).

A summary of the existing and future Peak Day, Peak Hour, and Average Demands included within the hydraulic model are provided for review within Table 3.10.

Demand Type	Units	Existing	Future (Full Distribution System Build-Out)	Total
Peak Day Demand	MGD	0.161	0.943	1.10
Peak Hour Demand	MGD	0.643	3 77	4.41

Table 3.10 – Summary of Reclaimed Water System Existing and Future Demands

Standard hydraulic roughness coefficients based on PVC pipe in the distribution system were used in the model. The Peak Hour Demands included within the hydraulic model and the modeled pipeline sizes are presented for review within Figure 3.5. See **Appendix D** to view this exhibit in full-scale.

0.472

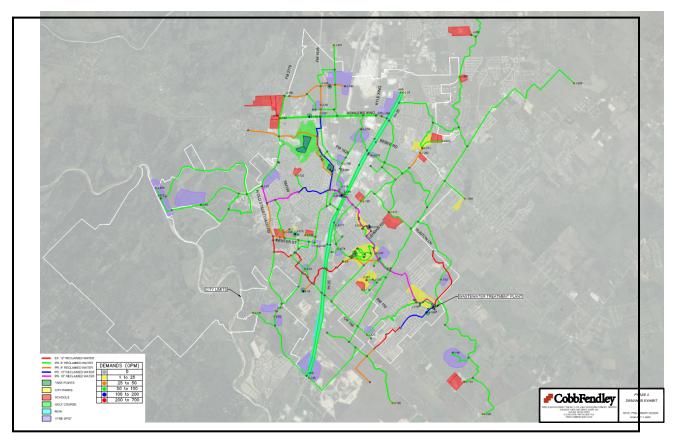


Figure 3.5 – Peak Hour Demands within the Hydraulic Model

Hydraulic model performance criteria shown below were developed as a component of the analysis process. The criteria specify the minimum/maximum allowable water pressures at landscape irrigation meters, and maximum allowable unit head losses as the reclaimed water transits through pipelines within the distribution system.

- Minimum pressure at any landscape irrigation meter required to be at or greater than 40 psi;
- Maximum pressure at any landscape irrigation meter required to be at or less than 100 psi;

**Average Demand** 

MGD

0.025

0.50

 Maximum Unit Head Loss within the distribution system to be at or less than 7 linear feet per 1,000 LF of transmission or distribution pipe.

Results from the hydraulic modeling analysis of the proposed Reclaimed Water System indicated that landscape irrigation meters located near the WWTP are only slightly above 100 psi while the meters at the western edge of the City are only slightly above 40 psi (see Figure 3.5). Residual pressures throughout the modeled Reclaimed Water Distribution System ranged from 36 psi to 103 psi. These residual pressure differences within the distribution system are due partly to the variation in elevation throughout the extents of the Reclaimed Water Distribution System. The topographic elevations at the northwestern edge of the City are about 256 vertical feet higher than its southeastern edge, resulting in a pressure differential value of about 111 psi due to static head loss alone. The remaining differences in pressure can be attributed to frictional head losses within the transmission and distribution pipelines. A summary of pipeline lengths by diameter is provided as follows: 481,504 LF of proposed 6-inch diameter pipe; 44,481 LF of proposed 8-inch diameter pipe; 27,438 LF of existing 12-inch diameter pipe; 19,123 LF of proposed 12-inch diameter pipe; and 28,829 LF of proposed 18-inch diameter pipe. The combined length of existing and proposed transmission and distribution pipelines is about 114 miles.

### 3.20 Determination of Proposed Reclaimed Water End-User Demands

Kyle has developed rapidly in recent years and is expected to continue growing. The demand for reclaimed water could increase significantly in the coming years as more schools, parks, industries, businesses, and residential developments are constructed. For this Master Plan document, future demands for reclaimed water within the City were estimated by calculating current peak hour unit demands (gpm/Acre) and then applying them to areas not yet serviced with dedicated reclaimed water landscape irrigation meters.

Current peak hour unit demands were calculated for each of the simplified zones (agricultural, commercial, residential) with the recognition that land which is zoned differently may have different landscape irrigation demands. The peak hour unit demands were then multiplied by the total area available for future development (by zone) to estimate future reclaimed water landscape irrigation demands. A summary listing of the projected demands from approximately 66 new Reclaimed Water Landscape Irrigation Meters is provided for review within Table 3.11 as shown below.

Table 3.11 – Reclaimed Water Demands by Phases

Customer Name	Node	Demand (gpm)	Physical Address
	Phase 1	pe Irrigation Meters)	
Plum Creek Golf Course	J-5	625.00	4301 Benner Road, Kyle, TX 78640
Burleson Take Point	J-111	100.00	1717 North Burleson Street, Kyle, TX 78640
WWTP Take Point	J-108	100.00	941 New Bridge Drive, Kyle, TX 78640
Steeplechase Park Take Point	J-107	100.00	295 Hallie Drive, Kyle, TX 78640
Lake Kyle Park	J-9	73.41	700 Lehman Road, Kyle, TX 78640
Vybe Spot 20	J-48	57.90	3280 Ranch to Market Road 150, Kyle, TX 78640
Waterleaf Park	J-102	57.06	628 Abundance Lane, Kyle, TX 78640
Lehman High School	J-217	33.21	5246, 1700 Lehman Rd, Kyle, TX 78640
Lineberger Lake Park	J-281	28.32	160 Lakeview Court, Kyle, TX 78640
Hemphill Elementary School	J-114	27.09	3995 Ranch to Market Road 150, Kyle, TX 78640
Steeplechase Park	J-101	24.55	295 Hallie Drive, Kyle, TX 78640

Customer Name	Node	Demand (gpm)	Physical Address
Vybe Spot 2	J-82	24.40	1717 North Burleson Street, Kyle, TX 78640
Vybe Trail	J-205	20.54	(Physical Address To Be Determined)
Vybe Trail	J-126	20.54	(Physical Address To Be Determined)
Vybe Spot 6	J-57	17.62	673 Ferrule Drive, Kyle, TX 78640
ROW - 35 Frontage from The Home Depot on 210 to Yarrington Road	J-65	14.70	35 Frontage from The Home Depot on 210 to Yarrington Road
Vybe Spot 7	J-52	11.70	200 Rubrum Road, Niederwald, TX 78640
Vybe Spot 24	J-271	10.06	200 Philomena Drive, Kyle, TX 78640
Vybe Spot 8	J-173	9.67	1181 County Road 158, Kyle, TX 78640
Tobias Elementary School	J-116	8.65	1005 East Ranch to Market Road 150, Kyle, TX 78640
Vybe Spot 23	J-78	7.58	550 Whispering Hollow Drive, Kyle, TX 78640
Vybe Spot 17	J-272	4.77	255 Creekside Trail, Kyle, TX 78640
Phase 1 Demand (Peak Hour)	=	1,377	gpm
Ph	ase 2 Add	itions (11 Lan	dscape Irrigation Meters)
McCormick Middle School	J-262	31.61	5700 Dacy Lane, Buda, TX 78610
Kyle Vista Park	J-231	26.15	455 Sunflower Circle, Kyle, TX 78640
Vybe Trail	J-228	20.54	(Physical Address To Be Determined)
Vybe Trail	J-230	20.54	(Physical Address To Be Determined)
ROW - 35 Frontage from The Home Depot on 210 to Yarrington Road	J-76	14.70	35 Frontage from The Home Depot on 210 to Yarrington Road
Chapa Middle School	J-232	15.32	3311 Dacy Lane, Kyle, TX 78640
Fuentes Elementary School	J-120	9.30	901 Philomena Drive, Kyle, TX 78640
Pfluger Elementary School	J-265	7.20	4951 Marsh Lane, Buda, TX 78610
NHO fields on Bebee Road	J-280	7.05	2880 Goforth Road, Kyle, TX 78640
Science Hall Elementary School	J-282	6.49	1510 Bebee Road, Kyle, TX 78640
Vybe Spot 4	J-274	5.19	20301 I-35, Kyle, TX 78640
Total Phase 2 Demand Addition	=	164	gpm
Phase 1 and 2 Demand (Peak Hour)	=	1,541	gpm
Ph	ase 3 Add	itions (19 Lan	dscape Irrigation Meters)
Soccer Fields Take Point	J-109	100.00	151 Rikardson, Kyle, TX 78640
Benner Take Point	J-110	100.00	4211 Benner Road, Kyle, TX 78640
Vybe Spot 9	J-193	66.90	151 Rikardson, Kyle, TX 78640
Hays High School	J-188	84.89	4800 Jack C. Hays Trail, Buda, TX 78610
Vybe Spot 16	J-268	41.05	19086 South I-35 Frontage Road, Kyle, TX 78640
Vybe Spot 18	J-214	32.36	1930 Kyle Crossing, Kyle, TX 78640

Customer Name	Node	Demand (gpm)	Physical Address
Vybe Spot 15	J-79	30.55	977 Sweet Gum Drive, Kyle, TX 78640
ROW - 35 Frontage from The Home Depot on 210 to Yarrington Road	J-85	14.70	35 Frontage from The Home Depot on 210 to Yarrington Road
Vybe Trail	J-201	20.54	(Physical Address To Be Determined)
Barton Middle School	J-88	18.47	4950 Jack C Hays Trail, Buda, TX 78610
Vybe Spot 14	J-39	12.77	979 Kohlers Crossing, Kyle, TX 78640
Vybe Spot 1	J-259	11.85	5029 Kyle Centre Drive, Kyle, TX 78640
Negley Elementary School	J-122	6.66	5940 McNaughton, Kyle, TX 78640
ROW - Kohlers Crossing from Kyle Crossing to 2770	J-90	3.42	Kohlers Crossing from Kyle Crossing to 2770
Vybe Spot 10	J-91	3.21	976 Kohlers Crossing, Kyle, TX 78640
ROW - Kohlers Crossing from Kyle Crossing to 2770	J-92	3.42	Kohlers Crossing from Kyle Crossing to 2770
Vybe Spot 19	J-269	2.21	20185 Marketplace Avenue, Kyle, TX 78640
Reclaimed Water Storage Tank (System Mid-Point)	J-315	500.00	(Location To Be Determined)
Total Phase 3 Demand Addition	=	1,053	gpm
Phase 1, 2 and 3 Demand (Peak Hour)	=	2,094	gpm
Ph	ase 4 Add	itions (14 Lan	dscape Irrigation Meters)
Opal Lane Take Point	J-19	100.00	210 Opal Lane, Kyle, TX 78640
Gregg-Clarke Park Take Point	J-273	100.00	1231 West Center Street, Kyle, TX 78640
Vybe Spot 22	J-59	83.28	24800 I-35, Kyle, TX 78640
Vybe Spot 12	J-80	67.33	3380 Cypress Road, Kyle, TX 78640
Vybe Spot 13	J-275	45.88	3380 Cypress Road, Kyle, TX 78640
Vybe Trail	J-131	20.54	(Physical Address To Be Determined)
Vybe Trail	J-276	20.54	(Physical Address To Be Determined)
Vybe Spot 11	J-61	19.42	2210 Old Stagecoach Road, Kyle, TX 78640
Gregg-Clarke Park	J-106	17.44	1231 West Center Street, Kyle, TX 78640
Wallace Middle School	J-115	11.80	1500 West Center Street, Kyle, TX 78640
Vybe Spot 21	J-62	11.82	Co Rd 136, Kyle, TX 78640
Vybe Spot 3	J-100	9.85	101 South Burleson Street, Kyle, TX 78640
Kyle Elementary School	J-112	6.69	500 Blanco Street, Kyle, TX 78640
Vybe Spot 5	J-63	7.50	350 West 3rd Street, Kyle, TX 78640
Total Phase 4 Demand Addition	=	522	gpm
Phase 1, 2, 3, and 4 Demand (Peak Hour)	=	2,616	gpm

Exhibit Number 6 displays areas currently serviced by landscape irrigation meters within the City along with proposed areas available for future landscape irrigation service (by zone). The Peak Day Demand in the Reclaimed Water System is anticipated to increase from 0.161 MGD to 1.10 MGD after the area becomes serviced completely. Table 3.12 shown below provides a detailed summary of existing and future Reclaimed Water demands.

Table 3.12 – Summary of Modeled Landscape Irrigation Meter Demands

Description					
Existing Peak Hour Demand, MGD	0.64				
Additional Future Peak Hour Demand, MGD					
Total Future Peak Hour Demand, MGD					
Existing Average Demand, MGD					
Additional Future Average Demand, MGD					
Total Future Average Demand, MGD	0.50				

#### 3.21 Determination of Proposed Storage Facilities

The estimated Peak Day Demand of 0.161 MGD for the existing 8 and 0.943 MGD for the proposed 66 landscape irrigation meters (for a combined total of 1.10 MGD) is below the typical amount of treated effluent produced by the WWTP per day. Out of the 730 days (about 2 years) of effluent flow data available, there were no days recorded where the WWTP produced less than 1.10 MGD of treated effluent (reclaimed water); however, landscape irrigation demand is not consistent throughout the day, but increases to a maximum in the nighttime hours and reduces to no demand during the daytime. The historical effluent data presented in Table 3.5 demonstrates 11 out of 24 months where effluent flow was greater than the reclaimed water projected Peak Hour Demand of 4.41 MGD; therefore, storage will be required either at the WWTP or within the distribution system to meet the reclaimed water Peak Hour Demand.

It is estimated within Table 3.13 shown below that approximately 1.0 MG of storage capacity will be required to meet the existing reclaimed water demand on a day where the WWTP produces at least 3.8 MG in a day, which was achieved on approximately 46% of days as evaluated from historical data.

Table 3.13 – Reclaimed Water Infrastructure Sizing Criteria

Reclaimed Water Infrastructure Sizing Criteria							
Category	Criteria						
Storage							
Operational Storage (See Note Below)	0.8	MG					
Pipelines							
Maximum Flow Velocity	8	fps					
Roughness Coefficient ("C")	150						
Typical Pipeline Sizes	6, 8, 12, and 18	in					
Service Pressure							
Minimum Pressure During Peak Hour Demand	40	psi					
Maximum Pressure During Peak Hour Demand	100	psi					
Landscape Irrigation Peaking Factors							
Maximum Day PF	2.0						
Maximum Hour PF	4.0						

Note: Operational Storage is determined by the relationship of (Peak Hour Demand in MGD – Maximum Day Demand in MGD) x (6 Hours) x (1 Day / 24 Hours) = Volume in MG Rounded Up to Nearest Whole Number

This criterion is used to approximate the storage requirement of various alternatives assuming a nighttime 6-hour landscape irrigation diurnal pattern.

It is recommended the City construct 1.0 MG of storage volume capacity either at the WWTP or within the distribution system to meet the projected reclaimed water Peak Day Demand of 1.10 MGD and the projected reclaimed water Peak Hour Demand of 4.41 MGD.

The required storage volume is calculated from existing and near-term proposed demands and does not account for future growth in the City reclaimed water service area. As additional users are connected to the distribution system, the required operational storage volume should be reevaluated. Additional storage may be necessary to accommodate future demand; however, as the City grows, wastewater flows to the WWTP will also rise, increasing the supply of reclaimed water and dampening the effect that additional growth will have on storage requirements. Additionally, reclaimed water users could be placed on an irrigation schedule in the future to manage peak demands and reduce storage requirements.

### 3.22 End-User Demand Management

Adjusting the time in which the reclaimed water is delivered to the customer can be used as an alternative or as a complement to daily Operational Storage Volume. The objective behind this strategy is to avoid having all end users apply the reclaimed water simultaneously when the WWTP effluent is at low flow. Some options available to accomplish this goal include the following:

- The City can work with large landscape irrigation customers, such as golf courses, to adjust their landscape irrigation schedules for different days of the week or different hours at night, to avoid overlapping and overtaxing the Reclaimed Water Distribution System.
- Some landscape irrigation customers could be transferred to daytime application schedules. These
  customers would be restricted to sites where public contact with the reclaimed water spray is limited, such as
  within commercial nurseries and landscaping along freeway right-of-way corridors. School athletic fields,
  which are not always in use during the peak summer seasonal demand, may also be amenable to such
  rescheduling of application times.
- The customer base for the Reclaimed Water Distribution System could be expanded to include industrial users who are not restricted to nighttime usage. Either the industrial facility operates on a single or double shift, which would require reclaimed water only outside the period of landscape irrigation usage, or on a continuous, 24-hour schedule, which would establish a consistent, baseline flow throughout the day. Dual plumbing of the lavatory facilities in new high-rise office buildings, which are occupied only during the day, could further offset peak demands on the reclaimed water supply. The addition of industrial and commercial customers also makes use of the underutilized reclaimed water winter flows when landscape irrigation is curtailed significantly.

#### 3.23 Determination of Proposed Fees for Reclaimed Water

There are many factors which affect the total cost of producing and delivering reclaimed water to customers within a utility's distribution system. Reclaimed water sales rates can offset these costs, but because the cost of treatment and distribution is higher for reclaimed water than it is for conventional water sources, reclaimed water sales rates are frequently set at a level that does not cover the full cost of those treatment and distribution expenses. Non-potable reclaimed water rates are set lower than conventional drinking water rates to encourage the use of reclaimed water, even though drinking water rates in many cases also do not cover the full cost of conventional water treatment, delivery, and infrastructure maintenance. According to a 2007 American Water Works Association survey of approximately 30 reclaimed water production facilities, more than one-third of those facilities stated that they recovered less than one-quarter of their operating costs from their reclaimed water sales rates, while approximately 25 percent of utilities surveyed reported that they recovered 100 percent of their operating costs; however, annualized capital costs for a reclaimed water system may be equal to or greater than its operating costs. Due to the driving motivation for water reclamation shifting away from environmentally sound wastewater disposal practices to water supply augmentation for water-limited regions of the country, reclaimed water sales rates are likely to climb in value so that reclaimed water resources are used as efficiently as the potable water supplies they are designed to augment.

Other revenue options can be considered when establishing reclaimed water sales rates, including standby fees, property taxes, monthly minimum fees, and utility subsidies that are derived from water and wastewater fees. A standby fee is a charge assessed to customers who have access to a service but do not use it. The function of a standby fee is to recover some of the costs associated with providing the service, even if the service is not being used. Standby fees can help to create a situation where reclaimed water is available to all customers, even those who do not use it frequently. However, standby fees can also be seen as unfair to customers who do not use reclaimed water, and the fees can discourage customers from connecting to the reclaimed water system altogether.

Organizations that provide both drinking water and sewage collection/treatment services can spread costs of the water reclamation program to wastewater treatment and/or drinking water programs, which sometimes have associated decreases in treatment and distribution costs with increased reclaimed water use. By sharing the costs, utilities can set a reclaimed water sales rate that is competitive with potable water and attractive enough to prospective customers to encourage them to invest into the infrastructure to connect to the non-potable, Reclaimed Water Distribution System. In some instances, even though a reclaimed water sales price may be significantly lower than the costs to purchase potable water supplies, it still may not be attractive enough if upfront costs for items such as pipeline installation fees, backflow prevention, and maintenance of the infrastructure components are more than customers are willing to spend. In those cases, utilities must balance the need to attract new customers to the system with the costs of further subsidizing the treatment and distribution of reclaimed water.

Special negotiated sales rates may also be considered for large customers who provide a guaranteed steady demand for reclaimed water over an extended period (e.g., large industries, healthcare facilities, etc.). These customers offer the advantage of constant demand throughout the year and guaranteed demand for reclaimed water from one year to the next; however, customers that require a reliable supply of reclaimed water always may lead to increased costs for the utility if additional infrastructure must be installed to provide uninterrupted service (e.g., a redundant distribution system or provision of an alternate water supply).

Current reclaimed water consumption rate pricing was determined for four separate municipalities within the Central Texas Region, and they are provided for review within Table 3.14 as shown below.

Table 3.14 – Reclaimed Water Unit Pricing for Utilities within the Central Texas Region

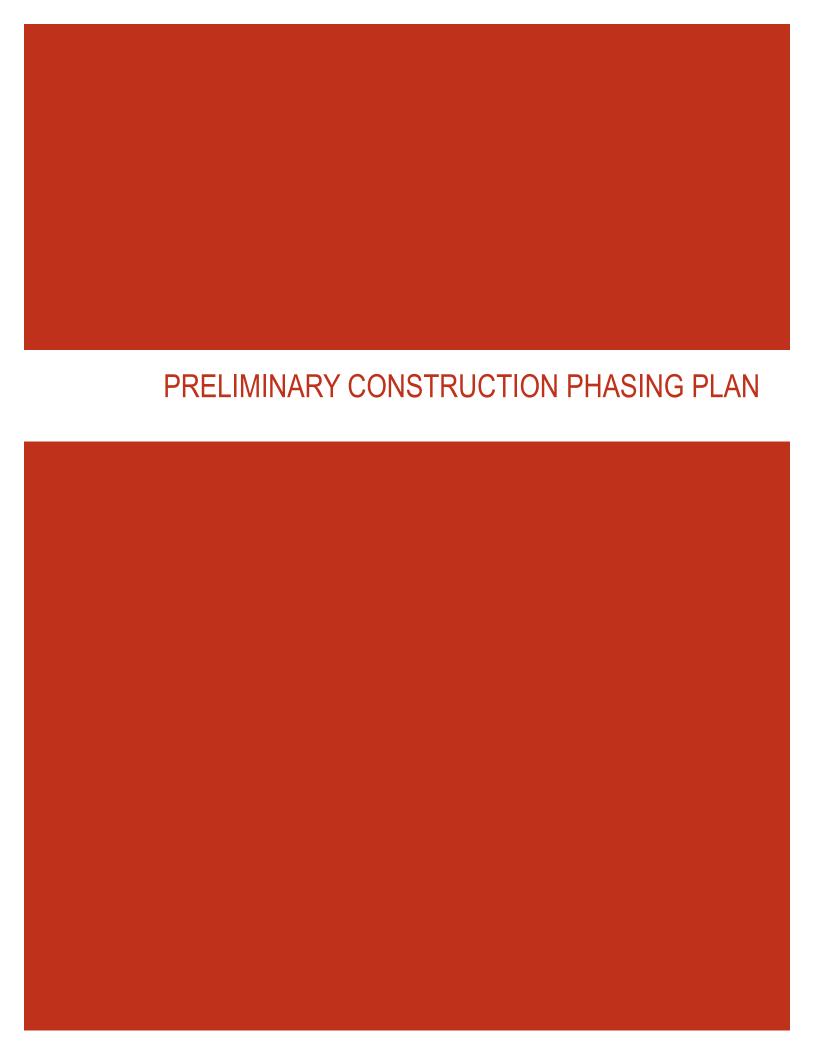
Name of Utility	Reclaimed Water Sales Price / Gallons	Notes				
San Antonio Water System (SAWS)	\$1.34 / 1,000	Rate structure is based upon the first 748,000 gallons and over; there is a seasonal and non-seasonal rate which varies by a few cents from the base rate.				
City of San Marcos, Texas	\$1.90 / 1,000	Minimum Charge is \$362.34				
City of Round Rock, Texas	\$1.92 / 1,000	Charge for Reclaimed Water is 75% of the First-Tier Water Rate at \$2.56 / 1,000 Gallons (Note: Fill Station at Old Settlers Park makes Reclaimed Water available free of charge for commercial irrigation, development, or construction uses only.)				
City of Buda, Texas	\$5.79 / 1,000	Non-Residential Meter; Inside Corporate Limits of City				
City of Buda, Texas	\$7.55 / 1,000	Non-Residential Meter; Outside Corporate Limits of City				
City of Buda, Texas	\$6.71 / 1,000	Construction Meter; Inside Corporate Limits of City				
City of Buda, Texas	\$8.75 / 1,000	Construction Meter; Outside Corporate Limits of City				
City of Buda, Texas	\$3.92 / 1,000	Take Point for Refill of Water Tanker Truck. Requires \$850 deposit payment to initiate service.				

As of Fiscal Year 2023, the City of Kyle charges \$10.81 per 1,000 gallons of potable water for irrigation of properties that are located within the corporate boundaries of the City, and \$14.54 per 1,000 gallons of potable water for irrigation of properties that are located outside the corporate boundaries of the City. The City of Buda has the highest sales rates for reclaimed water at \$5.79 / 1,000 gallons (inside the City Limits) and \$7.55 / 1,000 gallons (outside the City Limits) as listed above in Table 3.16, therefore, it could be assumed that the City of Kyle could establish a rate for the sale of reclaimed water that is equal to or slightly greater than what the City of Buda charges for an equivalent standard of reclaimed water service to its customer base, both inside and outside the corporate city limits. In this regard, the City of Kyle could consider establishing a retail sales rate for reclaimed water that is at least equivalent to what the City of Buda charges its customers currently for that type of service.

In support of this sales rate, consider the following: If reclaimed water is used for landscape irrigation purposes (through an inside City Limits irrigation meter), the rate of \$5.79 per 1,000 gallons will be about 54% of the City rate for landscape irrigation using the conventional potable water source. Similarly, if the reclaimed water is used for a non-potable water commercial process (such as for cooling tower make-up water, automated car wash supply, etc.), the proposed rate will be about 63% of the City current rate at \$9.25 per 1,000 gallons for commercial use of potable water within the City Limits.

A review of pricing data on reclaimed water rates that have been set by other communities within the Central Texas Region indicates that they range typically between 50% and 100% of the rates set for potable water consumption, so the sales rate for establishing a proposed reclaimed water rate at about 54% of the rate for irrigation with potable water would not be out of line with established precedence in this regard.

A 54% rate may be adequate to cover fully the operations and maintenance costs within the reclaimed water system, but it will cover only a small portion of infrastructure construction costs. Thus, a reclaimed water rate at 54% of the potable water rate offers compromise between the need to recover infrastructure costs and the need to create a meaningful financial incentive for customers to use reclaimed water for their landscape irrigation needs.



### 4 PRELIMINARY CONSTRUCTION PHASING PLAN

The primary goal for design when creating the phasing plan for the City of Kyle Reclaimed Water Master Plan is to phase the improvements and continuing operations without temporary displacements. The proposed phasing plan consists of four phases with the possibility of overlap.

A phased implementation plan is proposed for the reclaimed water system to manage capital expenditures and maximize revenue from the Reclaimed Water Distribution System. The phases were established based on proximity of potential customers to the WWTP and the projected amount of reclaimed water demand. Meters located close to the WWTP with high demand rates will be connected to the reclaimed water system in the early phases of project build out, and meters located far from the WWTP in undeveloped areas of the City will be connected during subsequent later phases of the build out project. While the City is developing rapidly, there remain some areas that may take longer; therefore, it would be advantageous for the City to wait until significant demands are present in those areas before extending the Reclaimed Water Distribution System to them.

Prior to commencement of the phased implementation plan, it is recommended that the City develop administrative documents and financial evaluations that will be required to provide reclaimed water to a future customer base. These administrative documents and financial evaluations include:

- 1. Rate Study: A financial evaluation to determine the rate structure for reclaimed water.
- Standard Contract for Customer: A contract between the City and each customer will be required. A standard
  contract can be developed before Phase 1 for all customers who connect to the reclaimed water system. The
  contract may include items such as: prohibited uses of reclaimed water; prices of reclaimed water; compliance
  with TCEQ rules and regulations; delivery of reclaimed water; quality of reclaimed water to be provided;
  obligations of the parties to the contract; etc.
- Reclaimed Water Policies and Procedures: Policies and procedures addressed typically by a reclaimed water program include technical design specifications, cross-connection control requirements, funding sources and rules, rate structures, site inspection authority, enforcement policies, reclaimed water user manual, and an emergency response plan.
- 4. Reclaimed Water Operations and Maintenance (O&M) Plan: A reclaimed water O&M Plan is required by TCEQ in the City's current reclaimed water authorization (see Appendix C). The O&M Plan must present a labeling and separation plan for the prevention of cross connections, procedures for monitoring of reclaimed water, schedules for routine maintenance, and other items.
- 5. Amendment of City Reclaimed Water Ordinance: Several aspects of the proposed reclaimed water expansion program may require modification of existing municipal ordinances or the creation of new ordinances. Some considerations relative to existing City ordinances include establishment of a pricing structure; potential restrictions on the use of potable water for landscape irrigation within the City Limits; or requirements for property developers to install dual distribution systems for new property developments within the City Limits.
- 6. <u>Public Outreach Program/Materials</u>: It is recommended that the City identify a Public Relations Coordinator to develop an awareness campaign for the reclaimed water system. Marketing efforts may include stakeholder workshops; news media articles; informational website pages; public television announcements; or public presentations at community events.

The proposed City of Kyle Reclaimed Water System Implementation Plan consists of four phases expanding the reclaimed water system to a new area of the City. The Implementation Plan is provided as a "thumbnail sketch" of the activities required to provide service to all areas of the City in a sequential manner. City Staff, Council Members, and others have full discretion to revise and / or augment this Plan in the future to allow for phasing of construction so that more high-end consumers (customers) can be brought on-line sooner and expedite revenue.

The proposed implementation plan is shown diagrammatically within Exhibit Number 7, and the following sections describe the scope of each phase. See **Appendix D** to view this exhibit in full-scale.

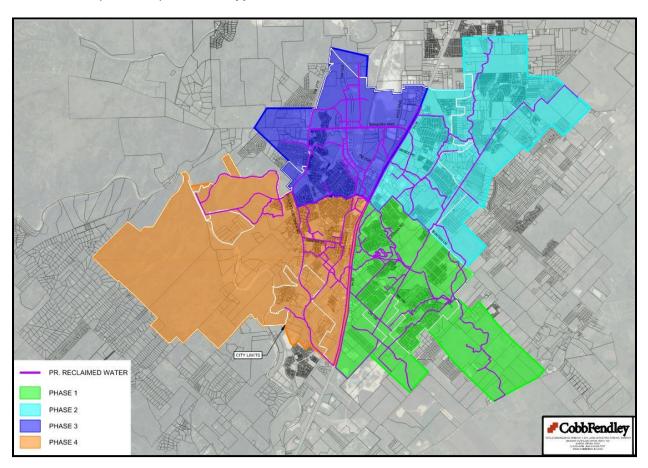


Exhibit No. 7 - Proposed Phases for Reclaimed Water Distribution System Construction

#### 4.1 Phase 1 (Southeast Quadrant of Proposed Reclaimed Water Service Area)

Phase 1 should include construction of new operational storage and high-service booster pumping facilities at the WWTP, and the installation of approximately 146,658 LF of 6-inch diameter and 20,015 LF of 18-inch diameter reclaimed water distribution piping for connection and supply to 22 new landscape irrigation meters located adjacent to and surrounding the WWTP. The 22 meters connected for Phase 1 will be City-owned meters providing landscape irrigation to parks and Vybe Trails along Lehman Road and other locations including Waterleaf Park, Lake Kyle Park, and Steeplechase Park. The Peak Hour Demand value from the reclaimed water landscape irrigation meters installed and connected in Phase 1 is anticipated to be approximately 1,377 gpm, or 1.98 MGD.

The Reclaimed Water Operational Storage Tank should have an approximate storage capacity of 1.0 MG and be constructed of either welded steel or wire wound prestressed concrete. A 2.0 MGD Reclaimed Water Transfer Pump Station and Sodium Hypochlorite Feed System should be constructed to convey gravity-fed effluent from the existing Post Aeration Basins to the Operational Storage Tank, which will serve as a supply reservoir for the proposed 3.0 MGD Reclaimed Water High-Service Booster Pump Station (See Exhibit Number 8). A preliminary conceptual configuration of the High-Service Booster Pump Station indicates it will include a cast-in-place concrete Dual Basin Wet Well Structure, two Vertical Turbine Pumps, Discharge Piping and Fittings, Valves, Jib Crane and Pedestal Base, Intruder-Resistant Security Fence and Gates, Pipe Bollards, a Pump Station Motor Control Center, Auto sensory Panel, Supervisory Control and Data Acquisition (SCADA) Circuitry, Conduits and Feeders, Junction Boxes, Equipment Support Racks, and Lighting. The Booster Pump Station will be constructed with additional space to accommodate more pumps when required to match demands from subsequent phases of distribution system construction.

A Plan View drawing to display one configuration of the Storage Tank and Pump Station Improvements at the existing WWTP is provided for review as Exhibit Number 8 shown below. See **Appendix D** to view this exhibit in full-scale.

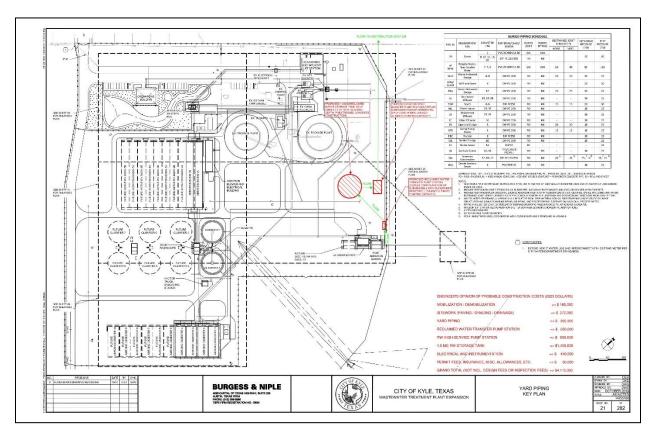


Exhibit No. 8 – Proposed GST and Pump Stations at Existing WWTP

### 4.2 Phase 2 (Northeast Quadrant of Proposed Reclaimed Water Service Area)

The Reclaimed Water Distribution System will be expanded in Phase 2 to include new landscape irrigation meters on properties along Dacy Lane, Windy Hill Road, and Bebee Road. Approximately 124,995 LF of 6-inch diameter reclaimed water distribution piping will be installed and 11 new landscape irrigation meters will be connected to the distribution system within Phase 2 and the Peak Hour Demand will increase from 1.98 MGD in Phase 1 to a cumulative demand of 2.22 MGD in Phase 2.

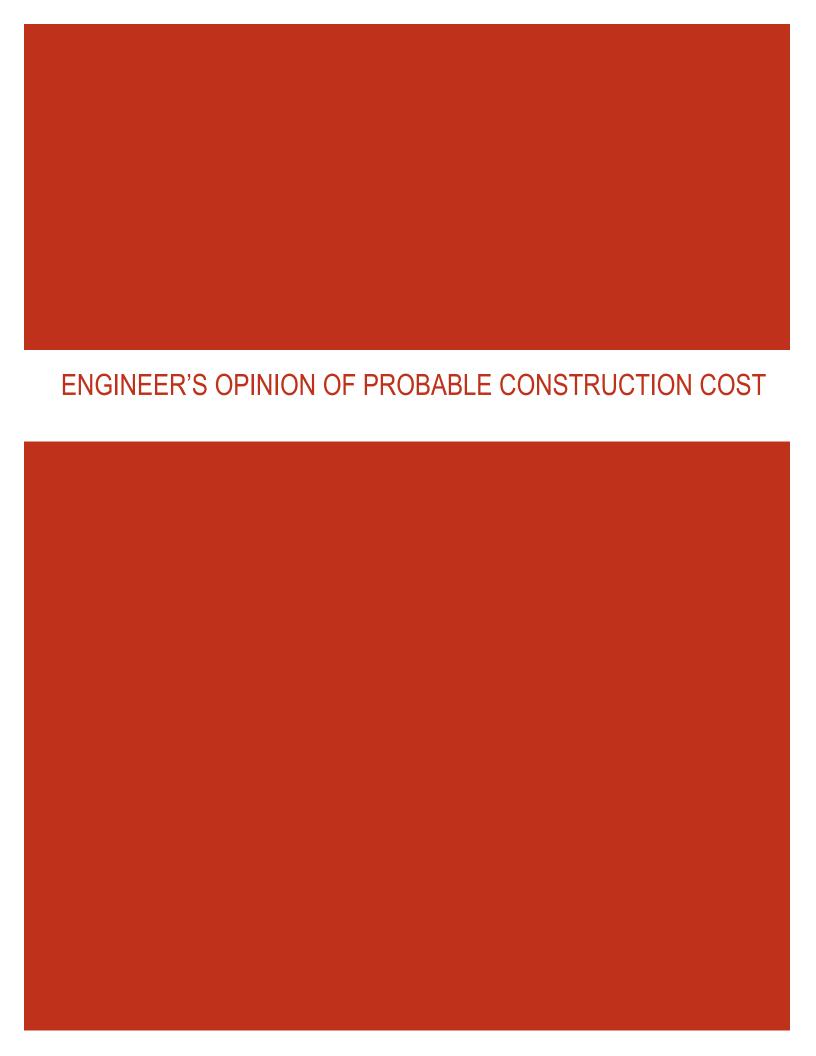
#### 4.3 Phase 3 (Northwest Quadrant of Proposed Reclaimed Water Service Area)

The third phase will expand the Reclaimed Water Distribution System to additional properties along Kohlers Crossing and Jack C. Hays Trail between Veterans Drive and Mountain City Drive. Approximately 88,793 LF of 6-inch diameter pipe and approximately 8,814 LF of 18-inch diameter pipe will be added to the system to include and provide reclaimed water service to 19 additional landscape irrigation meters. The cumulative Peak Hour Demand will increase from 2.22 MGD in Phase 2 to 3.02 MGD in Phase 3.

### 4.4 Phase 4 (Southwest Quadrant of Proposed Reclaimed Water Service Area)

The fourth and final phase of the implementation plan will extend reclaimed water service along Old Stagecoach Road between Six Creeks Boulevard and Roland Lane and will also connect the Downtown Business District to the distribution system to form multiple landscape irrigation loops within the Reclaimed Water Distribution System. This will include the installation of approximately 121,058 LF of 6-inch diameter pipe within the southwest quadrant of the proposed Reclaimed Water Service Area.

This area on the west and southwest side of the City is undeveloped predominantly. There are 14 proposed landscape irrigation meters in this area; together they increase the Peak Hour Demand by only an additional 0.75 MGD for a grand total of 3.77 MGD in Phase 4 of the project; however, significant growth in the future is anticipated within this area. It is recommended the City delay Phase 4 implementation until significant demand is present within the service area to generate revenue after construction of the proposed distribution system expansion.



## 5 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS (EOPCC)

The opinion of probable construction costs within this Master Plan document should be considered as order-of-magnitude estimates for planning purposes only. Total project costs consist of the construction cost, design and technical effort, construction management effort, and a contingency fund. Land acquisition and/or City degradation fees are not included within the estimates of probable construction costs.

Construction costs are based upon a "Class 5" (planning-level) estimate of probable costs as defined by the Association for the Advancement of Cost Engineering, International (AACE). AACE defines the "Class 5" estimate as follows:

Generally prepared with very limited information, where little more than proposed plan type, its location, and the capacity are known, and for strategic planning purposes such as (but not necessarily limited to) market studies, assessment of viability, evaluation of alternate schemes, project screening, location and evaluation of resource needs and budgeting, long-range capital planning, etc. Some examples of estimating methods used would include cost / capacity curves and factors, scale-up factors, and parametric and modeling techniques. Typically, very little time is expended in the development of this estimate. The typical expected accuracy ranges for this Class 5 estimate are -20% to -50% on the low side and +30% to +100% on the high side.

Construction costs associated with reclaimed water projects include typically the labor and materials for the following items:

- "Potholing" to identify existing utilities.
- Shoring and trench safety.
- Trench dewatering.
- Handling, treatment, and disposal of contaminated soil and groundwater.
- Construction of the new Reclaimed Water Distribution System with supporting infrastructures.
- Mobilization and demobilization.
- Temporary traffic controls.
- Erosion and sedimentation controls.

A summary of the estimated unit costs associated with each item listed above is presented within Table 5.1. The unit cost estimates are based upon previous project experience within the South-Central Texas area, and contractor / supplier-provided expense information.

Table 5.1 – Estimated Unit Costs for Construction

Item	Estimated Unit Cost
Potholing to Identify Existing Buried Utility Lines	\$15 / Vertical Foot
Shoring and Trench Safety	\$25 / Linear Foot
Trench Dewatering	\$45 / Linear Foot
Handling, Treatment, and Disposal of Contaminated Soil and Groundwater	\$12 / Linear Foot
Mobilization and Demobilization	6% of Construction Costs
Temporary Traffic Control	5% of Construction Costs
Erosion and Sedimentation Control	3% of Construction Costs
6-inch PVC (PC 200) Reclaimed Water Pipeline	\$115 / Linear Foot
8-inch PVC (PC 200) Reclaimed Water Pipeline	\$145 / Linear Foot
12-inch PVC (PC 200) Reclaimed Water Pipeline	\$200 / Linear Foot
18-inch PVC (PC 200) Reclaimed Water Pipeline	\$285 / Linear Foot
2.0 MGD Reclaimed Water Transfer Pump Station at WWTP	\$650,000
1.0 MGD Reclaimed Water Ground Storage Tank at WWTP	\$1,400,000
3.0 MGD Reclaimed Water Booster Pump Station at WWTP	\$850,000

Engineering design and technical efforts include the costs for the following items:

- Topographical surveys of properties and right-of-way corridors.
- Geotechnical investigations of properties and right-of-way corridors.
- Environmental reviews of properties and right-of-way corridors.
- Completing the designs for pipeline and infrastructure construction.
- Permitting (excluding permits associated with land acquisition).

The costs for the engineering design and technical efforts are estimated to be 25% of the construction costs based upon previous project experience of this type in the South-Central Texas area.

Construction management efforts include the costs for the following items:

- Site inspections.
- Project management.
- Engineering services during construction.

The costs for the construction management efforts are estimated to be 12% of the construction costs based upon previous project experience of this type in the South-Central Texas area.

Actual project costs can vary d policy, and material pricing. A estimate as a contingency to e	An additional 25 percent of	the construction cost is ac	e, market conditions, government dded to the overall projected cost ct by the City.

# 5.1 EOPCC for Phased Implementation Plan

An Engineer's Opinion of Probable Construction Costs (EOPCC) was developed for each phase of the Implementation Plan. The general scope and estimated costs of each phase are summarized below within Tables 5.2 through 5.5.

Table 5.2 - Phase 1

	City of Kyle Reclaimed Water Distribution System Implementation Plan - Phase 1						
Number	Description	Qty	Unit		Unit Price		Total Cost
1	Reclaimed Water Landscape Irrigation Meter and Box (Includes Backflow Preventer)	22	EA	\$	2,000.00	\$	44,000.00
2	Pipe, 6-inch Dia. PVC, AWWA C900 (All Depths), including Excavation and Backfill	146,658	LF	\$	115.00	\$	16,865,670.00
3	Pipe, 8-inch Dia. PVC, AWWA C900 (All Depths), including Excavation and Backfill	17,126	LF	\$	145.00	\$	2,483,270.00
4	Pipe, 12-inch Dia. PVC, AWWA C900 (All Depths), including Excavation and Backfill	5,113	LF	\$	200.00	\$	1,022,600.00
5	Pipe, 18-inch Dia. PVC, AWWA C900 (All Depths), Including Excavation and Backfill	20,015	LF	\$	285.00	\$	5,704,275.00
6	Reclaimed Water Transfer Pump Station at WWTP	1	LS	\$	650,000.00	\$	650,000.00
7	Reclaimed Water High-Service Pump Station at WWTP	1	LS	\$	850,000.00	\$	850,000.00
8	Reclaimed Water Storage Tank (1.0 MG Capacity)	1	LS	\$	1,400,000.00	\$	1,400,000.00
9	Miscellaneous WWTP Improvements (Sitework, Yard Piping, Electrical, Controls, etc.)	1	LS	\$	1,215,000.00	\$	1,215,000.00
	SUBTOTAL					\$	30,234,815.00
14% MC	14% MOBILIZATION, DEMOBILIZATION, TEMPORARY TRAFFIC CONTROL, EROSION AND SEDIMENTATION CONTROL					\$	4,232,874.10
		% CONTIN				\$	7,558,703.75
	PROJECT 1	HASE 1			\$	42,026,392.85	

Table 5.3 - Phase 2

	City of Kyle Reclaimed Water Distribution System Implementation Plan - Phase 2							
Number	Description	Qty	Unit		Unit Price		Total Cost	
1	Reclaimed Water Landscape Irrigation Meter and Box (Includes Backflow Preventer)	11	EA	\$	2,000.00	\$	22,000.00	
2	Pipe, 6-inch Dia. PVC, AWWA C900 (All Depths), including Excavation and Backfill	124,995	LF	\$	115.00	\$	14,374,425.00	
3	Pipe, 8-inch Dia. PVC, AWWA C900 (All Depths), including Excavation and Backfill	2,698	LF	\$	145.00	\$	391,210.00	
		SU	BTOTAL			\$	14,787,635.00	
14% N	14% MOBILIZATION, DEMOBILIZATION, TEMPORARY TRAFFIC CONTROL, EROSION AND SEDIMENTATION CONTROL					\$	2,070,268.90	
	25% CONTINGENCY					\$	3,696,908.75	
	PROJECT TOTAL - PHASE 2					\$	20,554,812.65	

Table 5.4 – Phase 3

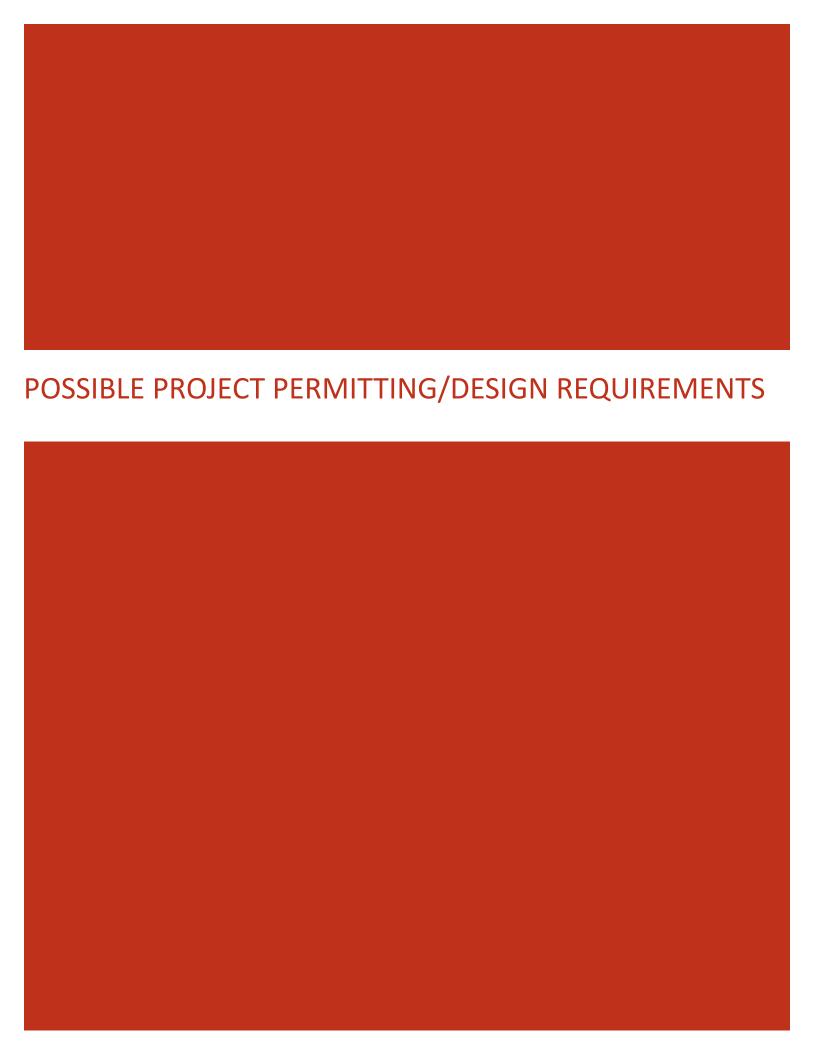
	City of Kyle Reclaimed Water Distribution System Implementation Plan - Phase 3						
Number	Description	Qty	Unit		Unit Price		Total Cost
1	Reclaimed Water Landscape Irrigation Meter and Box (Includes Backflow Preventer)	19	EA	\$	2,000.00	\$	38,000.00
2	Pipe, 6-inch Dia. PVC, AWWA C900 (All Depths), including Excavation and Backfill	88,793	LF	\$	115.00	\$	10,211,195.00
3	Pipe, 8-inch Dia. PVC, AWWA C900 (All Depths), including Excavation and Backfill	16,767	LF	\$	145.00	\$	2,431,215.00
4	Pipe, 12-inch Dia. PVC, AWWA C900 (All Depths), including Excavation and Backfill	14,010	LF	\$	200.00	\$	2,802,000.00
5	Pipe, 18-inch Dia. PVC, AWWA C900 (All Depths), Including Excavation and Backfill	8,814	LF	\$	285.00	\$	2,511,990.00
6	Reclaimed Water High-Service Pump Station at Mid-Point of System	1	LS	\$	400,000.00	\$	400,000.00
7	Reclaimed Water Storage Tank (0.5 MG Capacity) at Mid-Point of System	1	LS	\$	750,000.00	\$	750,000.00
	SUBTOTAL					\$	19,144,400.00
	14% MOBILIZATION, DEMOBILIZATION, TEMPORARY TRAFFIC CONTROL, EROSION AND SEDIMENTATION CONTROL					\$	2,680,216.00
	25% CONTINGENCY					\$	4,786,100.00
	PROJECT TOTAL - PHASE 3					\$	26,610,716.00

Table 5.5 - Phase 4

	City of Kyle Reclaimed Water Distribution System Implementation Plan - Phase 3										
Number	Description	Qty	Unit	Į	Unit Price		Total Cost				
1	Reclaimed Water Landscape Irrigation Meter and Box (Includes Backflow Preventer)	14	EA	\$	2,000.00	\$	28,000.00				
2	Pipe, 6-inch Dia. PVC, AWWA C900 (All Depths), including Excavation and Backfill	121,058	LF	\$	115.00	\$	13,921,670.00				
3	Pipe, 8-inch Dia. PVC, AWWA C900 (All Depths), including Excavation and Backfill	7,890	LF	\$	145.00	\$	1,144,050.00				
		SUB	TOTAL			\$	15,093,720.00				
14% M	DBILIZATION, DEMOBILIZATION, TEMP CONTROL, EROSION AND SEDIMENT			\$	2,113,120.80						
	25			\$	3,773,430.00						
	PROJECT			\$	20,980,270.80						

# **Reclaimed Water Timeline (Estimated)**

	\$1	10,3	172,	,192	.30 a	t \$3.4	4M p	er ye	ar							
Years	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32
Phase 1 - \$42.0 M																
Phase 2 - \$20.6 M																
Phase 3 - \$26.6 M																
Phase 4 - \$21.0 M																



### 6 POSSIBLE PROJECT PERMITTING / DESIGN REQUIREMENTS

The currently effective TPDES Permit for the expanded WWTP lists only one discharge point, where treated effluent is permitted to flow directly to Plum Creek in Segment Number 1810 of the Guadalupe River Basin (see a copy of the TPDES Permit within Appendix C). Since the discharge of Reclaimed Water to the PCGC Storage Pond will be regulated by TCEQ as an additional outfall of the City expanded WWTP, an amendment of the current TPDES Permit will be required in the future to allow for a second WWTP outfall discharge point.

The 2009 TCEQ Authorization Letter for Reclaimed Water states that Type 2 Reclaimed Water from the Kyle WWTP can be used for golf course irrigation, irrigation of medians and other landscaped areas, dust suppression, and soil compaction for construction. The authorized service area is shown within Attachment A of the Authorization Letter (see Appendix C). Although many of the now proposed areas of landscape irrigation that will utilize Reclaimed Water are located within the areas shown within Attachment A, many more are not; therefore, the Authorization Letter for Reclaimed Water must be amended in the future to include them within the authorized service area.

The RPS / Espey Feasibility Study indicated that a review of the United States Fish and Wildlife Service National Wetlands Inventory determined that wetland areas may exist along creeks and near Natural Resources Conservation Service impoundments within the City; therefore, it is recommended that a detailed delineation of wetland areas within the project area be conducted during the final design of a Reclaimed Water Transmission and Distribution System. Required utility crossings of wetland areas, roadways, or other at-grade obstructions will be designed to comply with applicable terms of the Nationwide Permit 12 relating to activities required for the construction, maintenance, and repair of utility pipelines and associated facilities within Waters of the United States. Waters of the United States and other wetland areas should be avoided, if possible, or mitigated both during initial construction and eventual operation of the proposed project facilities.

Permits that may be required from federal, state, and other local regulatory authorities for implementation of this project could potentially include the following:

- TxDOT (Horizontal Auger Bore crossings at IH-35, FM 150, FM 1626, and FM 2770 for installation of transmission and distribution piping for reclaimed water service to end users);
- Hays County (Installation of reclaimed water transmission and distribution piping within County Road right-ofway corridors);
- TCEQ (Installation of reclaimed water transmission and distribution piping within the Artesian, Recharge, and Contributing Zones of the Edwards Aquifer that are located to the south and west of the City of Kyle);
- U.S. Army Corps of Engineers (Installation of reclaimed water transmission and distribution piping within areas
  of the Plum Creek watershed that may be located beneath the base flood elevation floodplain).



#### 7 CONCLUSIONS AND RECOMMENDATIONS

As the City grows in population and commercial development, potable water demands will also increase. Mitigation of potential growth with irrigating parks, trails, athletic facilities, and other landscapes with reclaimed water instead of potable water will be an effective conservation strategy available to the City. The proximity of the Downtown Business District along with many parks, schools, and other recreational areas to the City's upgraded and expanded WWTP makes landscape irrigation with reclaimed water an attractive option for the City to consider. Furthermore, future development in this specific area of South-Central Texas is anticipated to increase the demand for potable water that could be used for landscape irrigation if no reclaimed water is made available for that purpose.

Significant storage and pumping infrastructure improvements will be required to deliver the reclaimed water to multiple landscape irrigation meters that will be located throughout the corporate limits of the City. The proposed infrastructure improvements will include: one reclaimed water transfer pump station; one operational storage tank; one high-service booster pump station; a chemical (disinfectant) feed system; and a tertiary filtration system at the WWTP, along with approximately 114 miles of pipeline installed throughout the City to deliver the reclaimed water to both existing and future wholesale and retail customers within the distribution network.

CobbFendley recommends the City develop a Reclaimed Water Distribution System to provide a drought-resistant and reliable source of landscape irrigation water for existing and future customers that will have substantial demands for reclaimed water. The Municipal WWTP discharges treated effluent currently at an average monthly flowrate of 3.8 MGD to Plum Creek. Flows are expected to increase in the future to a permitted limit of 12.0 MGD after the Final Phase expansion of the Municipal WWTP. Utilizing a sizable portion of that additional reclaimed water flow will reduce anticipated demands for potable water in the future and provide an enhanced revenue stream to the City from a presently underutilized and valuable resource. A detailed economic evaluation, and/or Rate Study, related to the production, distribution, and retail sales of reclaimed water was not included within the scope of this Master Plan. Should the City desire the development of a Reclaimed Water Distribution System within the corporate limits of the City, it is recommended that a Rate Study be completed to determine an appropriate rate structure for the sale of reclaimed water. Additional economic factors to consider when determining the economic feasibility of constructing the Reclaimed Water Distribution System may include state and federal agencies that have developed low-interest loan programs reserved specifically for projects that promote water conservation using reclaimed water. In some instances, grant funds are also made available to municipalities through these same programs.

Contingent upon the findings of a Rate Study, CobbFendley suggests that customers who receive reclaimed water from the City at least pay a rate at approximately 54% of the rate for potable water consumed for a similar landscape irrigation end-use. This rate level strikes a balance between the need to recover revenue for Reclaimed Water Distribution System construction, operation, and maintenance, and the need to provide incentive to customers for the use of reclaimed water instead of potable water to satisfy landscape irrigation needs.

It is also recommended that additional costs not recovered from rates charged to reclaimed water end users be covered by a combination of water system, "general facilities charges," that could be levied against new customer connections to the system and water consumption rates that are charged to all potable water customers. This is deemed appropriate due to the broad public benefits associated with a Reclaimed Water Distribution System. Dividing revenues between those sources balances the burden between new population growth and existing water utility customers, while also recognizing the benefits derived from the City's reclaimed water program to those groups of customers.

One other financing mechanism that the City could consider using for distribution system expansion is a Reclaimed Water Impact Fee. This is where the City would charge a property developer a Reclaimed Water Impact Fee to offset the City's cost for providing reclaimed water service to the property development in the following steps:

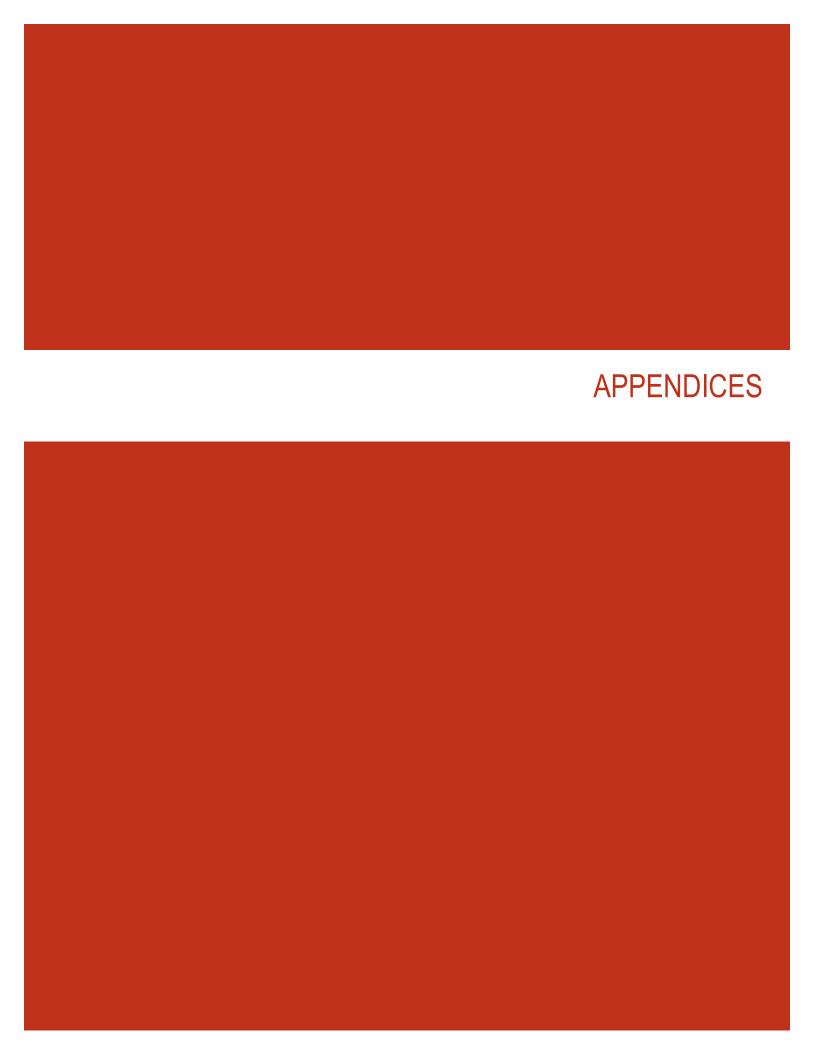
- 1. The City would first determine the amount of reclaimed water that will be needed by the property development. This would be done by calculating the expected water usage of the development, taking into account factors such as the number of units, the type of units, and the climate.
- 2. The City would then calculate the cost of providing reclaimed water service to the development. This would include the cost of operating and maintaining the reclaimed water system, as well as the cost of any capital improvements that may be needed.
- 3. The City would then divide the cost of providing reclaimed water service by the amount of reclaimed water that will be needed. This would give the City the per-unit cost of the Reclaimed Water Impact Fee.
- 4. The City would then bill the property developer for the Reclaimed Water Impact Fee. The fee would be due at the time of development permit issuance.

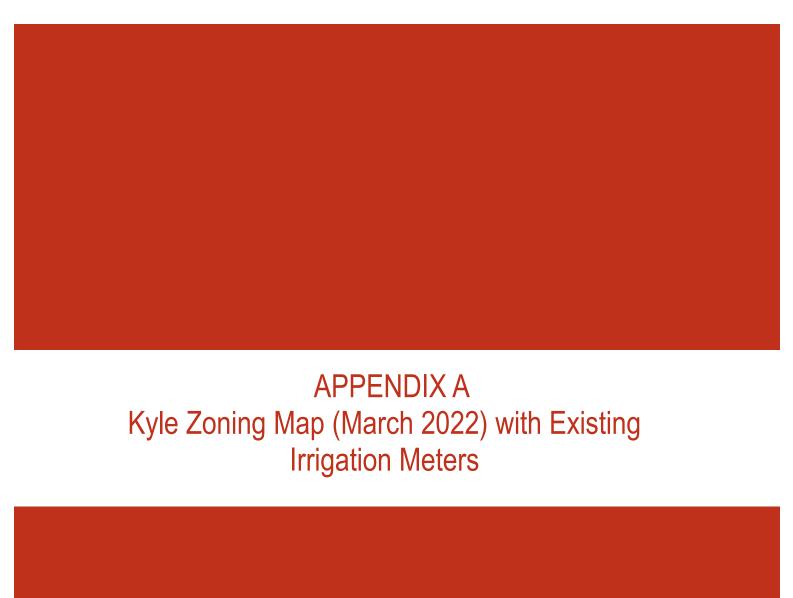
The Reclaimed Water Impact Fee is a one-time fee that is charged to property developers to offset the City's cost for providing reclaimed water service to the development. The fee is designed so that the cost of providing reclaimed water service is shared by all property owners, not just those who use reclaimed water.

The Reclaimed Water Impact Fee is a common practice in many cities that have reclaimed water systems. The fee helps to create a financial buffer where the city has the resources it needs to operate and maintain its reclaimed water system, and it helps to make reclaimed water a more affordable option for property owners.

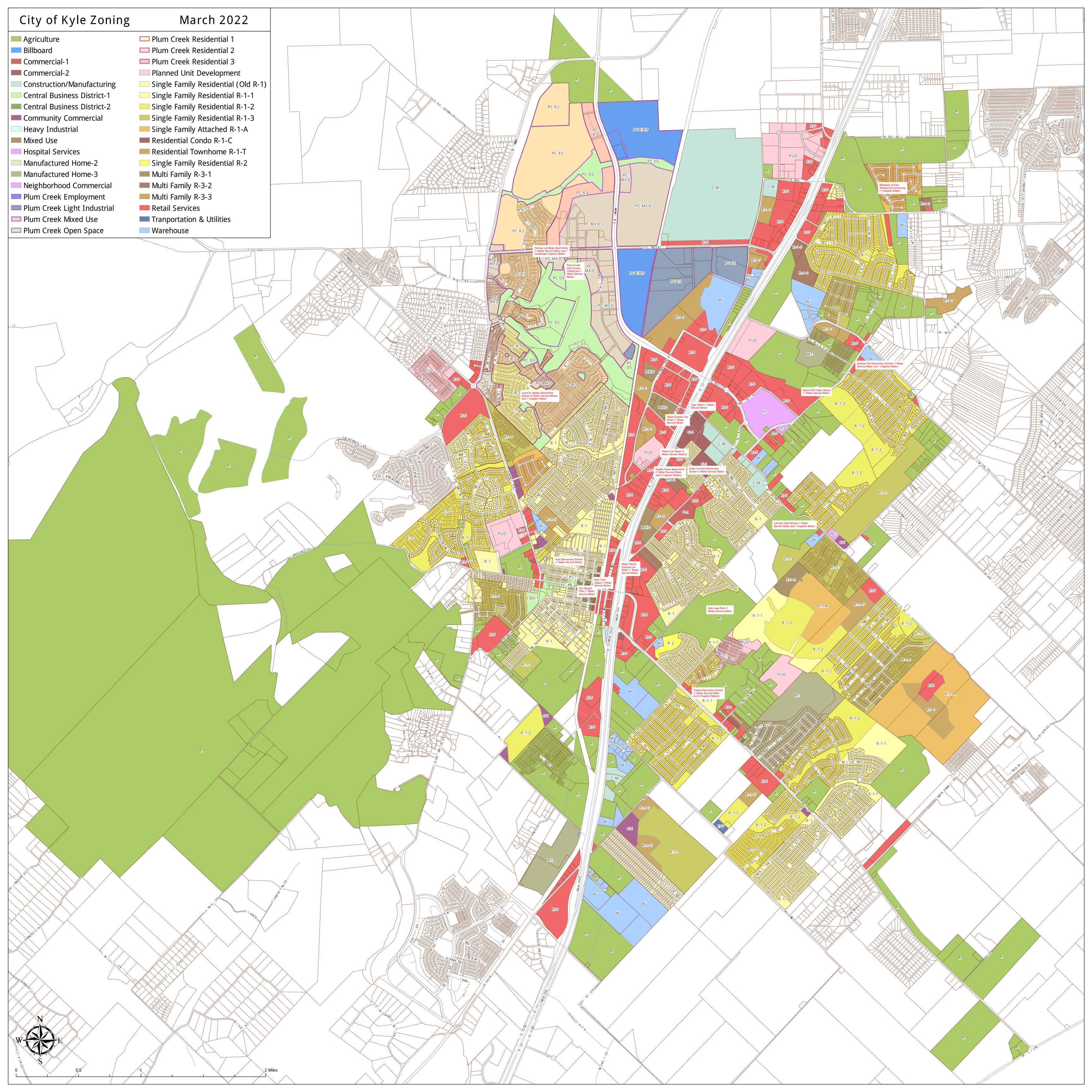
In summary, the following initial actions (in order of precedence) are recommended for the implementation of a plan to construct a Reclaimed Water Distribution System within the City:

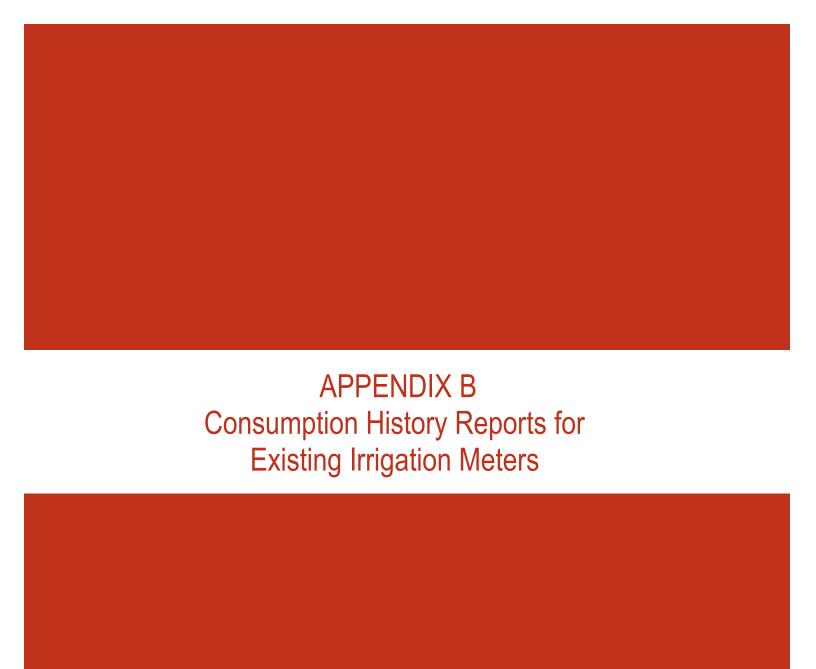
- 1. Conduct a Rate Study to establish an appropriate rate structure for the retail sale of reclaimed water within the City of Kyle.
- 2. Draft, develop, and implement a Standard Contract document for use with existing and new customers of the Reclaimed Water Distribution System.
- 3. Draft, develop, and implement Policies and Procedures for the distribution, sale, and use of reclaimed water within the City's service area.
- 4. Draft, develop, and implement a Reclaimed Water Operations and Maintenance Plan as required by the TCEQ within the Citv's current reclaimed water authorization document.
- 5. Amend the City's existing Reclaimed Water Ordinance to establish a rate pricing structure and to require property developers to install dual distribution systems (potable water and reclaimed water) for all new (future) property developments within the City's service area.
- 6. Develop and implement a Public Outreach Program to explain the resource conservation advantages and cost savings associated with the implementation of a Reclaimed Water Distribution System.
- 7. Investigate and pursue funding opportunities with State and Federal Agencies for construction and development of the Reclaimed Water Distribution System.
- 8. Design and implement construction of the Reclaimed Water Distribution System components that will be required for the production, storage, and delivery of treated effluent for use in landscape irrigation applications throughout the City's service area.









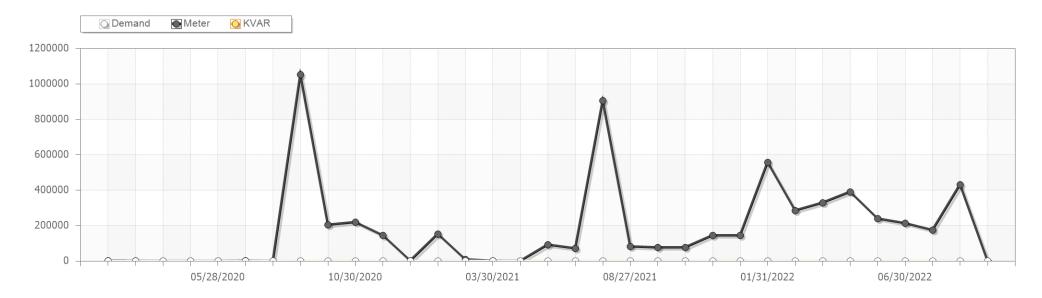


# **Consumption History Report**



Account: 031-0000168-001 Service Address: 160 NORTHERN FLICKER Service Category: MS - Metered Sewer

Meter Number: 31168001 Name: MEADOWS AT KYLE RESIDENTIAL COMMUNITY, INC



Year	Month	Bill Date	Begin Read	End Read	Billed Consumption	Metered Consumption	Demand	KVAR
2022	9	9/30/2022	93,959	93,959	0	0.00	0.00	0.00
	8	8/31/2022	89,648	93,959	431,100	431,100.00	0.00	0.00
	7	7/29/2022	87,900	89,648	174,800	174,800.00	0.00	0.00
	6	6/30/2022	85,766	87,900	213,400	213,400.00	0.00	0.00
	5	5/27/2022	83,369	85,766	239,700	239,700.00	0.00	0.00
	4	4/28/2022	79,466	83,369	390,300	390,300.00	0.00	0.00
	3	3/31/2022	76,176	79,466	329,000	329,000.00	0.00	0.00
	2	2/28/2022	73,328	76,176	284,800	284,800.00	0.00	0.00
	1	1/31/2022	67,758	73,328	557,000	557,000.00	0.00	0.00
2021	12	12/30/2021	66,308	67,758	145,000	145,000.00	0.00	0.00
	11	11/30/2021	64,859	66,308	144,900	144,900.00	0.00	0.00
	10	10/29/2021	64,091	64,859	76,800	76,800.00	0.00	0.00
	9	9/28/2021	63,323	64,091	76,800	76,800.00	0.00	0.00
	8	8/27/2021	62,503	63,323	82,000	82,000.00	0.00	0.00
	7	7/30/2021	53,450	62,503	905,300	905,300.00	0.00	0.00

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2021	6	6/30/2021	52,736	53,450	71,400	71,400.00	0.00	0.00
	5	5/27/2021	51,813	52,736	92,300	92,300.00	0.00	0.00
	4	4/30/2021	51,813	51,813	0	0.00	0.00	0.00
	3	3/30/2021	51,800	51,813	1,300	1,300.00	0.00	0.00
	2	2/26/2021	51,709	51,800	9,100	9,100.00	0.00	0.00
	1	1/29/2021	50,184	51,709	152,500	152,500.00	0.00	0.00
2020	12	12/30/2020	50,167	50,184	1,700	1,700.00	0.00	0.00
	11	11/30/2020	48,718	50,167	144,900	144,900.00	0.00	0.00
	10	10/30/2020	46,524	48,718	219,400	219,400.00	0.00	0.00
	9	9/30/2020	44,479	46,524	204,500	204,500.00	0.00	0.00
	8	8/28/2020	33,956	44,479	1,052,300	1,052,300.00	0.00	0.00
	7	7/29/2020	33,956	33,956	0	0.00	0.00	0.00
	6	6/30/2020	33,936	33,956	2,000	2,000.00	0.00	0.00
	5	5/28/2020	33,936	33,936	0	0.00	0.00	0.00
	4	4/30/2020	33,936	33,936	0	0.00	0.00	0.00
	3	3/30/2020	33,936	33,936	0	0.00	0.00	0.00
	2	2/28/2020	33,922	33,936	1,400	1,400.00	0.00	0.00
	1	1/29/2020	33,903	33,922	1,900	1,900.00	0.00	0.00

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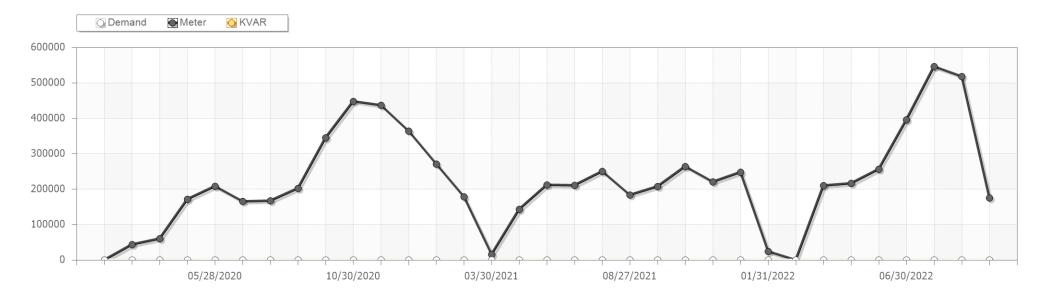
# **Consumption History Report**



Account: 009-0010001-000 Service Address: 510 KOHLERS CROSSING

Service Category: W - Water

Meter Number: 73959772 Name: PEDCOR INVESTMENTS



Year	Month	Bill Date	Begin Read	End Read	Billed Consumption	Metered Consumption	Demand	KVAR
2022	9	9/30/2022	162,194	163,947	175,300	175,300.00	0.00	0.00
	8	8/31/2022	157,013	162,194	518,100	518,100.00	0.00	0.00
	7	7/29/2022	151,552	157,013	546,100	546,100.00	0.00	0.00
	6	6/30/2022	147,593	151,552	395,900	395,900.00	0.00	0.00
	5	5/27/2022	145,029	147,593	256,400	256,400.00	0.00	0.00
	4	4/28/2022	142,865	145,029	216,400	216,400.00	0.00	0.00
	3	3/31/2022	140,764	142,865	210,100	210,100.00	0.00	0.00
	2	2/28/2022	140,764	140,764	0	0.00	0.00	0.00
	1	1/31/2022	140,521	140,764	24,300	24,300.00	0.00	0.00
2021	12	12/30/2021	138,043	140,521	247,800	247,800.00	0.00	0.00
	11	11/30/2021	135,837	138,043	220,600	220,600.00	0.00	0.00
	10	10/29/2021	133,197	135,837	264,000	264,000.00	0.00	0.00
	9	9/28/2021	131,121	133,197	207,600	207,600.00	0.00	0.00
	8	8/27/2021	129,285	131,121	183,600	183,600.00	0.00	0.00
	7	7/30/2021	126,782	129,285	250,300	250,300.00	0.00	0.00

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2021	6	6/30/2021	124,673	126,782	210,900	210,900.00	0.00	0.00
	5	5/27/2021	122,552	124,673	212,100	212,100.00	0.00	0.00
	4	4/30/2021	121,120	122,552	143,200	143,200.00	0.00	0.00
	3	3/30/2021	120,962	121,120	15,800	15,800.00	0.00	0.00
	2	2/26/2021	119,177	120,962	178,500	178,500.00	0.00	0.00
	1	1/29/2021	116,468	119,177	270,900	270,900.00	0.00	0.00
2020	12	12/30/2020	112,828	116,468	364,000	364,000.00	0.00	0.00
	11	11/30/2020	108,459	112,828	436,900	436,900.00	0.00	0.00
	10	10/30/2020	103,981	108,459	447,800	447,800.00	0.00	0.00
	9	9/30/2020	100,530	103,981	345,100	345,100.00	0.00	0.00
	8	8/28/2020	98,507	100,530	202,300	202,300.00	0.00	0.00
	7	7/29/2020	96,834	98,507	167,300	167,300.00	0.00	0.00
	6	6/30/2020	95,179	96,834	165,500	165,500.00	0.00	0.00
	5	5/28/2020	93,096	95,179	208,300	208,300.00	0.00	0.00
	4	4/30/2020	91,381	93,096	171,500	171,500.00	0.00	0.00
	3	3/30/2020	90,777	91,381	60,400	60,400.00	0.00	0.00
	2	2/28/2020	90,339	90,777	43,800	43,800.00	0.00	0.00
	1	1/29/2020	90,339	90,339	0	0.00	0.00	0.00

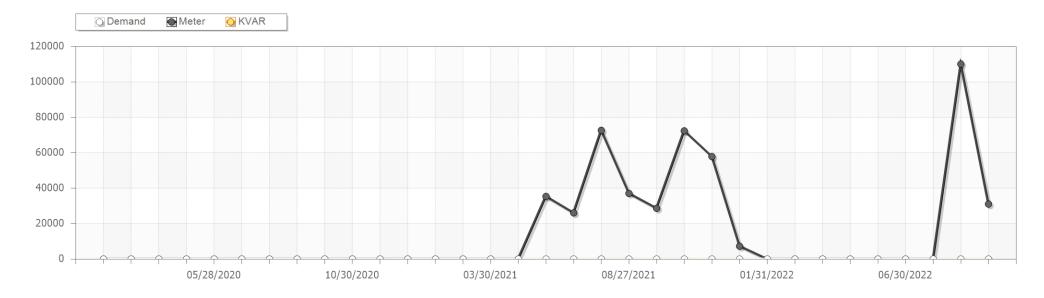
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# **Consumption History Report**



Account: 004-0004902-000 Service Address: 1005 E B FM 150 Service Category: W - Water

Meter Number: 69062413 Name: HCISD-ROSALIO TOBIAS



Year	Month	Bill Date	Begin Read	End Read	Billed Consumption	Metered Consumption	Demand	KVAR
2022	9	9/30/2022	980	1,291	31,100	31,100.00	0.00	0.00
	8	8/31/2022	9,879	980	110,100	110,100.00	0.00	0.00
	7	7/29/2022	9,879	9,879	0	0.00	0.00	0.00
	6	6/30/2022	9,879	9,879	0	0.00	0.00	0.00
	5	5/27/2022	9,879	9,879	0	0.00	0.00	0.00
	4	4/28/2022	9,879	9,879	0	0.00	0.00	0.00
	3	3/31/2022	9,879	9,879	0	0.00	0.00	0.00
	2	2/28/2022	9,879	9,879	0	0.00	0.00	0.00
	1	1/31/2022	9,879	9,879	0	0.00	0.00	0.00
2021	12	12/30/2021	9,806	9,879	7,300	7,300.00	0.00	0.00
	11	11/30/2021	9,227	9,806	57,900	57,900.00	0.00	0.00
	10	10/29/2021	8,503	9,227	72,400	72,400.00	0.00	0.00
	9	9/28/2021	8,216	8,503	28,700	28,700.00	0.00	0.00
	8	8/27/2021	7,845	8,216	37,100	37,100.00	0.00	0.00
	7	7/30/2021	7,118	7,845	72,700	72,700.00	0.00	0.00

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2021	6	6/30/2021	6,857	7,118	26,100	26,100.00	0.00	0.00
	5	5/27/2021	6,503	6,857	35,400	35,400.00	0.00	0.00
	4	4/30/2021	6,503	6,503	0	0.00	0.00	0.00
	3	3/30/2021	6,503	6,503	0	0.00	0.00	0.00
	2	2/26/2021	6,503	6,503	0	0.00	0.00	0.00
	1	1/29/2021	6,503	6,503	0	0.00	0.00	0.00
2020	12	12/30/2020	6,503	6,503	0	0.00	0.00	0.00
	11	11/30/2020	6,503	6,503	0	0.00	0.00	0.00
	10	10/30/2020	6,503	6,503	0	0.00	0.00	0.00
	9	9/30/2020	6,503	6,503	0	0.00	0.00	0.00
	8	8/28/2020	6,503	6,503	0	0.00	0.00	0.00
	7	7/29/2020	6,503	6,503	0	0.00	0.00	0.00
	6	6/30/2020	6,503	6,503	0	0.00	0.00	0.00
	5	5/28/2020	6,503	6,503	0	0.00	0.00	0.00
	4	4/30/2020	6,503	6,503	0	0.00	0.00	0.00
	3	3/30/2020	6,503	6,503	0	0.00	0.00	0.00
	2	2/28/2020	6,503	6,503	0	0.00	0.00	0.00
	1	1/29/2020	6,503	6,503	0	0.00	0.00	0.00

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## **Consumption History Report**

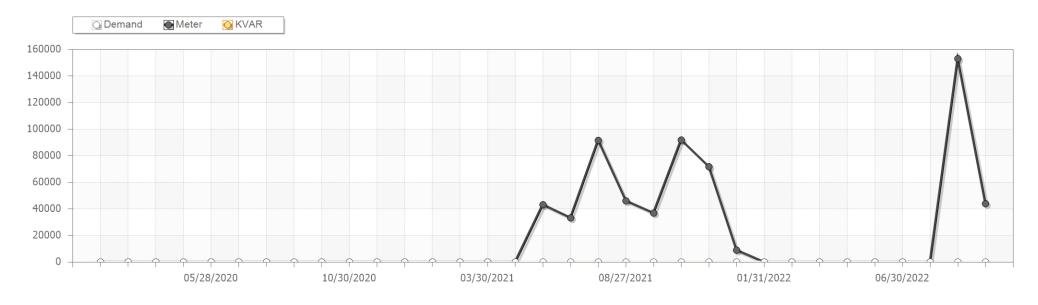


Account: 004-0004901-000

Service Address: 1005 E A FM 150

Service Category: W - Water

Meter Number: 73940638 Name: HCISD-ROSALIO TOBIAS



Year	Month	Bill Date	Begin Read	End Read	Billed Consumption	Metered Consumption	Demand	KVAR
2022	9	9/30/2022	508	948	44,000	44,000.00	0.00	0.00
	8	8/31/2022	8,977	508	153,100	153,100.00	0.00	0.00
	7	7/29/2022	8,977	8,977	0	0.00	0.00	0.00
	6	6/30/2022	8,977	8,977	0	0.00	0.00	0.00
	5	5/27/2022	8,977	8,977	0	0.00	0.00	0.00
	4	4/28/2022	8,977	8,977	0	0.00	0.00	0.00
	3	3/31/2022	8,977	8,977	0	0.00	0.00	0.00
	2	2/28/2022	8,977	8,977	0	0.00	0.00	0.00
	1	1/31/2022	8,977	8,977	0	0.00	0.00	0.00
2021	12	12/30/2021	8,887	8,977	9,000	9,000.00	0.00	0.00
	11	11/30/2021	8,169	8,887	71,800	71,800.00	0.00	0.00
	10	10/29/2021	7,250	8,169	91,900	91,900.00	0.00	0.00
	9	9/28/2021	6,881	7,250	36,900	36,900.00	0.00	0.00
	8	8/27/2021	6,420	6,881	46,100	46,100.00	0.00	0.00
	7	7/30/2021	5,504	6,420	91,600	91,600.00	0.00	0.00

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2021	6	6/30/2021	5,171	5,504	33,300	33,300.00	0.00	0.00
	5	5/27/2021	4,739	5,171	43,200	43,200.00	0.00	0.00
	4	4/30/2021	4,739	4,739	0	0.00	0.00	0.00
	3	3/30/2021	4,739	4,739	0	0.00	0.00	0.00
	2	2/26/2021	4,739	4,739	0	0.00	0.00	0.00
	1	1/29/2021	4,739	4,739	0	0.00	0.00	0.00
2020	12	12/30/2020	4,739	4,739	0	0.00	0.00	0.00
	11	11/30/2020	4,739	4,739	0	0.00	0.00	0.00
	10	10/30/2020	4,739	4,739	0	0.00	0.00	0.00
	9	9/30/2020	4,739	4,739	0	0.00	0.00	0.00
	8	8/28/2020	4,739	4,739	0	0.00	0.00	0.00
	7	7/29/2020	4,739	4,739	0	0.00	0.00	0.00
	6	6/30/2020	4,739	4,739	0	0.00	0.00	0.00
	5	5/28/2020	4,739	4,739	0	0.00	0.00	0.00
	4	4/30/2020	4,739	4,739	0	0.00	0.00	0.00
	3	3/30/2020	4,739	4,739	0	0.00	0.00	0.00
	2	2/28/2020	4,739	4,739	0	0.00	0.00	0.00
	1	1/29/2020	4,739	4,739	0	0.00	0.00	0.00

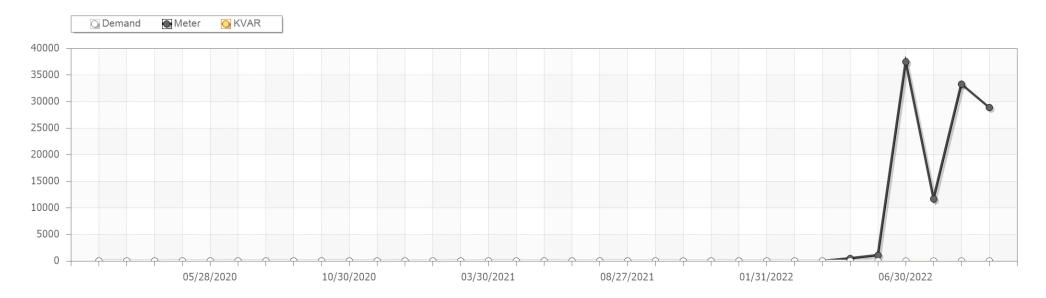
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# **Consumption History Report**



Account: 016-0000332-000 Service Address: 1510 BEBEE RD Service Category: W - Water

Meter Number: 73219297 Name: HCISD-SCIENCE HALL-IRRIG



Year	Month	Bill Date	Begin Read	End Read	Billed Consumption	Metered Consumption	Demand	KVAR
2022	9	9/30/2022	19,880	20,169	28,900	28,900.00	0.00	0.00
	8	8/31/2022	19,547	19,880	33,300	33,300.00	0.00	0.00
	7	7/29/2022	19,430	19,547	11,700	11,700.00	0.00	0.00
	6	6/30/2022	19,055	19,430	37,500	37,500.00	0.00	0.00
	5	5/27/2022	19,044	19,055	1,100	1,100.00	0.00	0.00
	4	4/28/2022	19,039	19,044	500	500.00	0.00	0.00
	3	3/31/2022	19,039	19,039	0	0.00	0.00	0.00
	2	2/28/2022	19,039	19,039	0	0.00	0.00	0.00
	1	1/31/2022	19,039	19,039	0	0.00	0.00	0.00
2021	12	12/30/2021	19,039	19,039	0	0.00	0.00	0.00
	11	11/30/2021	19,039	19,039	0	0.00	0.00	0.00
	10	10/29/2021	19,039	19,039	0	0.00	0.00	0.00
	9	10/28/2021	19,039	19,039	0	0.00	0.00	0.00
	8	8/27/2021	19,039	19,039	0	0.00	0.00	0.00
	7	7/30/2021	19,039	19,039	0	0.00	0.00	0.00

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6	6/30/2021	19,039	19,039	0	0.00	0.00	0.00
5	5/27/2021	19,039	19,039	0	0.00	0.00	0.00
4	4/30/2021	0	0	0	0.00	0.00	0.00
3	3/30/2021	0	0	0	0.00	0.00	0.00
2	2/26/2021	0	0	0	0.00	0.00	0.00
1	1/29/2021	0	0	0	0.00	0.00	0.00
12	12/30/2020	0	0	0	0.00	0.00	0.00
11	11/30/2020	0	0	0	0.00	0.00	0.00
10	10/30/2020	0	0	0	0.00	0.00	0.00
9	9/30/2020	0	0	0	0.00	0.00	0.00
8	8/28/2020	0	0	0	0.00	0.00	0.00
7	7/29/2020	0	0	0	0.00	0.00	0.00
6	6/30/2020	0	0	0	0.00	0.00	0.00
5	5/28/2020	0	0	0	0.00	0.00	0.00
4	4/30/2020	0	0	0	0.00	0.00	0.00
3	3/30/2020	0	0	0	0.00	0.00	0.00
2	2/28/2020	0	0	0	0.00	0.00	0.00
1	1/29/2020	0	0	0	0.00	0.00	0.00
	5 4 3 2 1 12 11 10 9 8 7 6	5 5/27/2021 4 4/30/2021 3 3/30/2021 2 2/26/2021 1 1/29/2021 12 12/30/2020 11 11/30/2020 10 10/30/2020 9 9/30/2020 8 8/28/2020 7 7/29/2020 6 6/30/2020 5 5/28/2020 4 4/30/2020 3 3/30/2020 2 2/28/2020	5       5/27/2021       19,039         4       4/30/2021       0         3       3/30/2021       0         2       2/26/2021       0         1       1/29/2021       0         12       12/30/2020       0         11       11/30/2020       0         10       10/30/2020       0         9       9/30/2020       0         8       8/28/2020       0         7       7/29/2020       0         6       6/30/2020       0         5       5/28/2020       0         4       4/30/2020       0         3       3/30/2020       0         2       2/28/2020       0	5       5/27/2021       19,039       19,039         4       4/30/2021       0       0         3       3/30/2021       0       0         2       2/26/2021       0       0         1       1/29/2021       0       0         12       12/30/2020       0       0         11       11/30/2020       0       0         10       10/30/2020       0       0         9       9/30/2020       0       0         8       8/28/2020       0       0         7       7/29/2020       0       0         6       6/30/2020       0       0         5       5/28/2020       0       0         4       4/30/2020       0       0         3       3/30/2020       0       0         2       2/28/2020       0       0	5       5/27/2021       19,039       19,039       0         4       4/30/2021       0       0       0         3       3/30/2021       0       0       0         2       2/26/2021       0       0       0         1       1/29/2021       0       0       0         12       12/30/2020       0       0       0         11       11/30/2020       0       0       0         10       10/30/2020       0       0       0         9       9/30/2020       0       0       0         8       8/28/2020       0       0       0         7       7/29/2020       0       0       0         6       6/30/2020       0       0       0         5       5/28/2020       0       0       0         4       4/30/2020       0       0       0         3       3/30/2020       0       0       0         2       2/28/2020       0       0       0	5         5/27/2021         19,039         19,039         0         0.00           4         4/30/2021         0         0         0         0.00           3         3/30/2021         0         0         0         0.00           2         2/26/2021         0         0         0         0.00           1         1/29/2021         0         0         0         0.00           12         12/30/2020         0         0         0         0.00           11         11/30/2020         0         0         0         0.00           10         10/30/2020         0         0         0         0.00           10         10/30/2020         0         0         0         0.00           9         9/30/2020         0         0         0         0.00           8         8/28/2020         0         0         0         0.00           7         7/29/2020         0         0         0         0.00           5         5/28/2020         0         0         0         0         0.00           4         4/30/2020         0         0         0         0	5         5/27/2021         19,039         19,039         0         0.00         0.00           4         4/30/2021         0         0         0         0.00         0.00           3         3/30/2021         0         0         0         0.00         0.00           2         2/26/2021         0         0         0         0.00         0.00           1         1/29/2021         0         0         0         0.00         0.00           12         12/30/2020         0         0         0         0.00         0.00           11         11/30/2020         0         0         0         0.00         0.00           10         10/30/2020         0         0         0         0.00         0.00           10         10/30/2020         0         0         0         0.00         0.00           9         9/30/2020         0         0         0         0.00         0.00           8         8/28/2020         0         0         0         0.00         0.00           7         7/29/2020         0         0         0         0.00         0.00           5

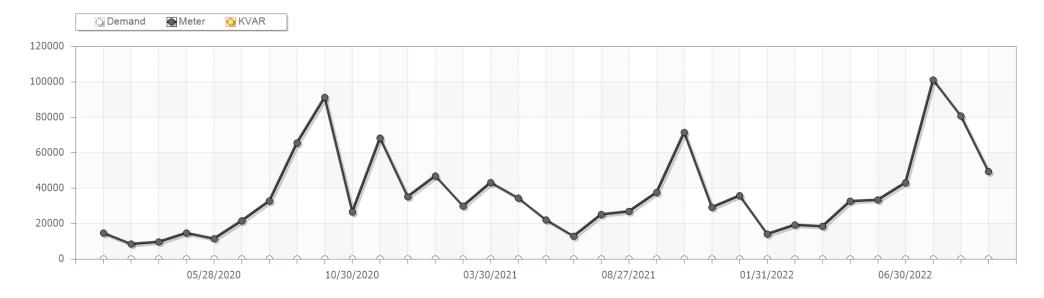
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## **Consumption History Report**



Account: 011-0000016-000 Service Address: 1700 LEHMAN RD Service Category: W - Water

Meter Number: 56130262 Name: HCISD-LEHMAN HS



Year	Month	Bill Date	Begin Read	End Read	Billed Consumption	Metered Consumption	Demand	KVAR
2022	9	9/30/2022	120,576	121,070	49,400	49,400.00	0.00	0.00
	8	8/31/2022	119,768	120,576	80,800	80,800.00	0.00	0.00
	7	7/29/2022	118,757	119,768	101,100	101,100.00	0.00	0.00
	6	6/30/2022	118,326	118,757	43,100	43,100.00	0.00	0.00
	5	5/27/2022	117,992	118,326	33,400	33,400.00	0.00	0.00
	4	4/28/2022	117,665	117,992	32,700	32,700.00	0.00	0.00
	3	3/31/2022	117,480	117,665	18,500	18,500.00	0.00	0.00
	2	2/28/2022	117,287	117,480	19,300	19,300.00	0.00	0.00
	1	1/31/2022	117,146	117,287	14,100	14,100.00	0.00	0.00
2021	12	12/30/2021	116,788	117,146	35,800	35,800.00	0.00	0.00
	11	11/30/2021	116,496	116,788	29,200	29,200.00	0.00	0.00
	10	10/29/2021	115,781	116,496	71,500	71,500.00	0.00	0.00
	9	9/28/2021	115,405	115,781	37,600	37,600.00	0.00	0.00
	8	8/27/2021	115,136	115,405	26,900	26,900.00	0.00	0.00
	7	7/30/2021	114,884	115,136	25,200	25,200.00	0.00	0.00

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2021	6	6/30/2021	114,755	114,884	12,900	12,900.00	0.00	0.00
	5	5/27/2021	114,534	114,755	22,100	22,100.00	0.00	0.00
	4	4/30/2021	114,190	114,534	34,400	34,400.00	0.00	0.00
	3	3/30/2021	113,758	114,190	43,200	43,200.00	0.00	0.00
	2	2/26/2021	113,459	113,758	29,900	29,900.00	0.00	0.00
	1	1/29/2021	112,990	113,459	46,900	46,900.00	0.00	0.00
2020	12	12/30/2020	112,638	112,990	35,200	35,200.00	0.00	0.00
	11	11/30/2020	111,955	112,638	68,300	68,300.00	0.00	0.00
	10	10/30/2020	111,689	111,955	26,600	26,600.00	0.00	0.00
	9	9/30/2020	110,776	111,689	91,300	91,300.00	0.00	0.00
	8	8/28/2020	110,120	110,776	65,600	65,600.00	0.00	0.00
	7	7/29/2020	109,792	110,120	32,800	32,800.00	0.00	0.00
	6	6/30/2020	109,576	109,792	21,600	21,600.00	0.00	0.00
	5	5/28/2020	109,461	109,576	11,500	11,500.00	0.00	0.00
	4	4/30/2020	109,314	109,461	14,700	14,700.00	0.00	0.00
	3	3/30/2020	109,217	109,314	9,700	9,700.00	0.00	0.00
	2	2/28/2020	109,132	109,217	8,500	8,500.00	0.00	0.00
	1	1/29/2020	108,985	109,132	14,700	14,700.00	0.00	0.00

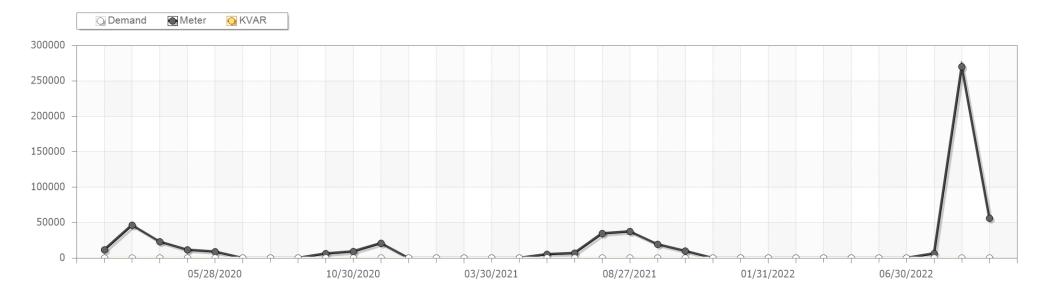
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## **Consumption History Report**



Account: 009-0002339-000 Service Address: 5940 MCNAUGHTON Service Category: W - Water

Meter Number: 59185190 Name: HCISD NEGLEY ELEM



Year	Month	Bill Date	Begin Read	End Read	Billed Consumption	Metered Consumption	Demand	KVAR
2022	9	9/30/2022	4,368	4,930	56,200	56,200.00	0.00	0.00
	8	8/31/2022	1,667	4,368	270,100	270,100.00	0.00	0.00
	7	7/29/2022	1,603	1,667	6,400	6,400.00	0.00	0.00
	6	6/30/2022	1,603	1,603	0	0.00	0.00	0.00
	5	5/27/2022	1,603	1,603	0	0.00	0.00	0.00
	4	4/28/2022	1,603	1,603	0	0.00	0.00	0.00
	3	3/31/2022	1,603	1,603	0	0.00	0.00	0.00
	2	2/28/2022	1,603	1,603	0	0.00	0.00	0.00
	1	1/31/2022	1,603	1,603	0	0.00	0.00	0.00
2021	12	12/30/2021	1,603	1,603	0	0.00	0.00	0.00
	11	11/30/2021	1,603	1,603	0	0.00	0.00	0.00
	10	10/29/2021	1,503	1,603	10,000	10,000.00	0.00	0.00
	9	9/28/2021	1,309	1,503	19,400	19,400.00	0.00	0.00
	8	8/27/2021	934	1,309	37,500	37,500.00	0.00	0.00
	7	7/30/2021	587	934	34,700	34,700.00	0.00	0.00

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2021	6	6/30/2021	517	587	7,000	7,000.00	0.00	0.00
	5	5/27/2021	464	517	5,300	5,300.00	0.00	0.00
	4	4/30/2021	464	464	0	0.00	0.00	0.00
	3	3/30/2021	464	464	0	0.00	0.00	0.00
	2	2/26/2021	464	464	0	0.00	0.00	0.00
	1	1/29/2021	464	464	0	0.00	0.00	0.00
2020	12	12/30/2020	464	464	0	0.00	0.00	0.00
	11	11/30/2020	255	464	20,900	20,900.00	0.00	0.00
	10	10/30/2020	162	255	9,300	9,300.00	0.00	0.00
	9	9/30/2020	99	162	6,300	6,300.00	0.00	0.00
	8	8/28/2020	99	99	0	0.00	0.00	0.00
	7	7/29/2020	99	99	0	0.00	0.00	0.00
	6	6/30/2020	99	99	0	0.00	0.00	0.00
	5	5/28/2020	9	99	9,000	9,000.00	0.00	0.00
	4	4/30/2020	9,893	9	11,600	11,600.00	0.00	0.00
	3	3/30/2020	9,662	9,893	23,100	23,100.00	0.00	0.00
	2	2/28/2020	9,198	9,662	46,400	46,400.00	0.00	0.00
	1	1/29/2020	9,082	9,198	11,600	11,600.00	0.00	0.00

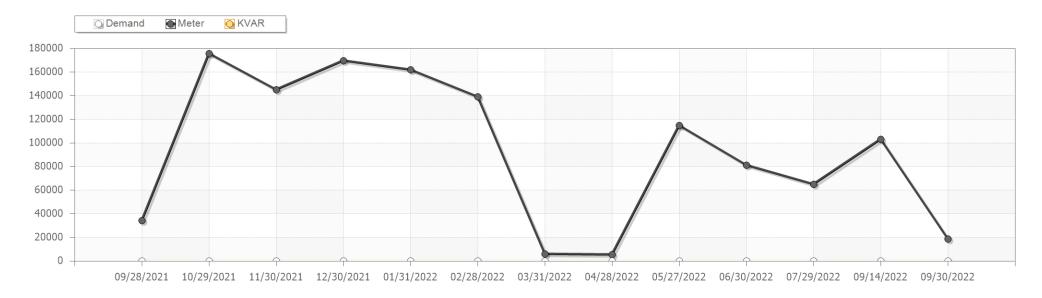
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### **Consumption History Report**



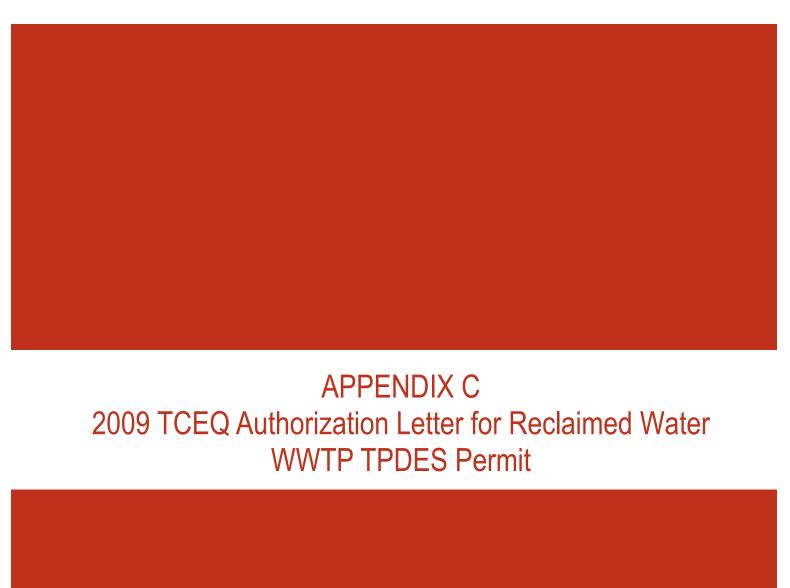
Account: 004-006322-001 Service Address: 21393 IH 35 Service Category: W - Water

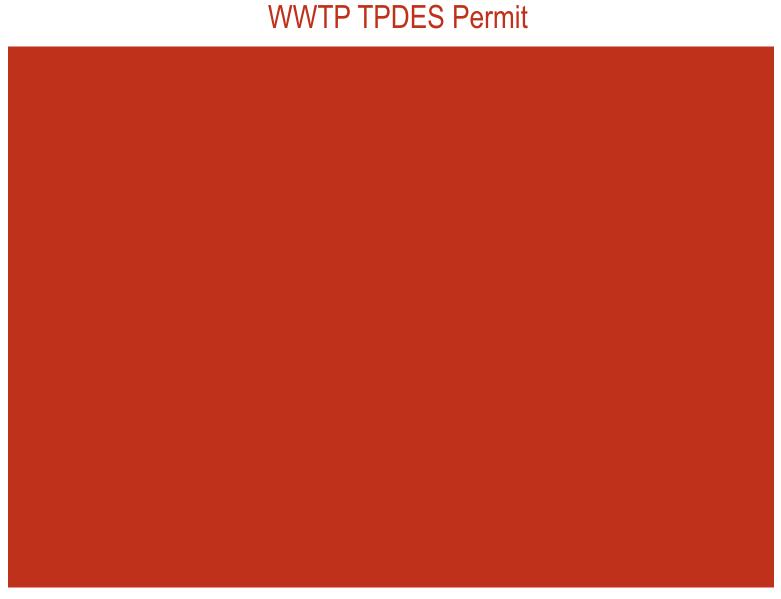
Meter Number: 74858143 Name: SADDLE CREEK OTM HARMONY LP



Year	Month	Bill Date	Begin Read	End Read	Billed Consumption	Metered Consumption	Demand	KVAR
2022	9	9/30/2022	93,041	93,228	18,700	18,700.00	0.00	0.00
	8	9/14/2022	92,010	93,041	103,100	103,100.00	0.00	0.00
	7	7/29/2022	91,360	92,010	65,000	65,000.00	0.00	0.00
	6	6/30/2022	90,548	91,360	81,200	81,200.00	0.00	0.00
	5	5/27/2022	89,400	90,548	114,800	114,800.00	0.00	0.00
	4	4/28/2022	89,345	89,400	5,500	5,500.00	0.00	0.00
	3	3/31/2022	89,285	89,345	6,000	6,000.00	0.00	0.00
	2	2/28/2022	87,894	89,285	139,100	139,100.00	0.00	0.00
	1	1/31/2022	86,274	87,894	162,000	162,000.00	0.00	0.00
2021	12	12/30/2021	84,577	86,274	169,700	169,700.00	0.00	0.00
	11	11/30/2021	83,126	84,577	145,100	145,100.00	0.00	0.00
	10	10/29/2021	81,369	83,126	175,700	175,700.00	0.00	0.00
	9	9/28/2021	81,026	81,369	34,300	34,300.00	0.00	0.00

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Bryan W. Shaw, Ph.D., Chairman
Buddy Garcia, Commissioner
Carlos Rubinstein, Commissioner
Mark R. Vickery, P.G., Executive Director



### TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

November 13, 2009

Mr. James R. Earp, CPM Assistant City Manager City of Kyle P.O. Box 40 Kyle, Texas 78640

Re:

City of Kyle and Aqua Texas, Inc. Reclaimed Water Authorization

No. R11041002

CN600334510, RN102182680

Hays County

Dear Mr. Earp:

The Texas Commission on Environmental Quality completed its review of the requested amendments to your reclaimed water authorization received on July 29, 2009. The authorization allows the use of Type II reclaimed water from the Kyle wastewater treatment facility by users authorized by the City and Aqua Texas, Inc.

The amendment included in this authorization adds irrigation of medians and other public areas.

Thank you for your cooperation during this review process. If you have any questions, please contact Sherry Smith of my staff at (512) 239-0571.

Sincerely

Chris Linendoll, Manager Wastewater Permitting Section

Water Quality Division

CL/SS/ms



Authorization No. R11041002 This authorization supersedes and replaces No. R11041002 approved April 20, 2007.

### AUTHORIZATION FOR RECLAIMED WATER

Producers:

City of Kyle and Aqua Texas, Inc.

P.O. Box 40

Kyle, Texas 78640

Providers:

City of Kyle and Aqua Texas, Inc.

P.O. Box 40

Kyle, Texas 78640

User:

Any user within the service area authorized by the Provider.

Location:

The wastewater treatment plant is located at approximately 2.7 miles northwest of the intersec-

tion of State Route 21 and Farm-to-Market Road 2720 Hays County, Texas.

Authorization: Type II reclaimed water from the Kyle Wastewater Treatment Facility (TPDES Permit No. WQ0011041002) to be used for golf course irrigation, irrigation of medians and other land-

scaped areas, dust suppression, and soil compaction for construction. The service area is shown

in Attachment A.

This authorization contains the conditions that apply for the uses of the reclaimed water. The approval of a reclaimed water use project under Chapter 210 does not affect any existing water rights. If applicable, a reclaimed water use authorization in no way affects the need of a producer, provider and/or user to obtain a separate water right authorization from the commission. This authorization does not allow irrigation of any area authorized for irrigation under a Texas Land Application Permit.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality.

Issued Date: November 13, 2009

City of Kyle and Aqua Texas, Inc. Reclaimed Water Authorization No. R11041002 Page 2

The authorization is subject to the following requirements:

### I. General Requirements

- (a) No producer or provider may begin transferring reclaimed water to a user without first notifying the commission.
- (b) Reuse of untreated wastewater is prohibited.
- (c) Food crops that may be consumed raw by humans must not be spray irrigated. Food crops including orchard crops that will be substantially processed prior to human consumption may be spray irrigated. Other types of irrigation that avoid contact of reclaimed water with edible portions of food crops are acceptable.
- (d) There must be no nuisance conditions resulting from the distribution, the use, and/or storage of reclaimed water.
- (e) Reclaimed water must not be used in a way that degrades groundwater quality to a degree adversely affecting its actual or potential uses.
- (f) Reclaimed water stored in ponds must be prevented from discharging into waters in the state, except for discharges directly resulting from rainfall events, in accordance with a permit issued by the commission, or as authorized under the City's wastewater treatment facility (TPDES No. WQ0011041002). All other discharges are unauthorized. If any unauthorized overflow of a holding pond occurs causing discharge into or adjacent to waters in the state, the user or provider, as appropriate, shall report any noncompliance. A written submission of such information must be provided to the TCEQ Region 11 office in Austin and to the TCEQ Enforcement Division (MC-149) in Austin, within five (5) working days after becoming aware of the overflow. The written submission must contain a description of the noncompliance and its cause; the potential danger to human health, safety, or the environment; the period of noncompliance, including exact dates and times; 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 recurrence of the noncompliance, and to mitigate its adverse effects.
- (g) Unless otherwise provided in this authorization, there must be no off-site discharge, either airborne or surface runoff, of reclaimed water from the user's property except to a wastewater treatment system or wastewater treatment collection system unless the reclaimed water user applies for and obtains a permit from the commission that authorizes discharge of the water.
- (h) All reclaimed water piping must be separated from potable water piping when trenched by a distance of at least nine feet. All buried pipe must be manufactured in purple, painted purple, taped with purple metallic tape or bagged in purple. All exposed piping, hose bibs and faucets must be painted purple, designed to prevent connection to a standard water hose, and stenciled with a warning reading "NON-POTABLE WATER."

- (i) The design of any new distribution system that will convey reclaimed water to a user must require the approval of the executive director. Materials must be submitted to the executive director in accordance with the Texas Engineering Practice Act (Article 3271a, Vernon's Annotated Texas Statutes). The plans and specifications for any new distribution system constructed pursuant to this authorization must be approved pursuant to state law, and failure to secure approval before commencing construction of such works or making a transfer of reclaimed water is a violation of this authorization. Each day of a transfer is an additional violation until approval has been secured.
- (j) Nothing in this authorization modifies any requirements of the found in 30 TAC Chapter 290, *Public Drinking Water*.
- (k) A major change from a prior notification for use of reclaimed water must be approved by the executive director before it can be implemented. A major change includes:
  - (1) a change in the boundary of the approved service area not including the conversion of individual lots within a subdivision to reclaimed water use;
  - (2) the addition of a new producer;
  - (3) a major change in the intended use, such as conversion from irrigation of a golf course to residential irrigation; or
  - (4) a change from either Type I or Type II use to the other.
- (l) The reclaimed water producer, provider, and user shall maintain a current operation and maintenance plan on the sites over which they have operational control. The operation and maintenance plan must contain the following, as a minimum:
  - (1) a copy of the signed contract between the user and provider and/or a copy of the signed contract between the provider and the producer;
  - a labeling and separation plan for the prevention of cross connections between reclaimed water distribution lines and potable water lines;
  - the measures that will be implemented to prevent unauthorized access to reclaimed water facilities (e.g., secured valves);
  - (4) procedures for monitoring reclaimed water;
  - a plan for how reclaimed water use will be scheduled to minimize the risk of inadvertent human exposure;
  - (6) schedules for routine maintenance;
  - (7) a plan for worker training and safety; and

- (8) contingency plan for system failure or upsets.
- (m) One of the following requirements must be met by the user or provider, for any area where reclaimed water is stored or where there are hose bibs or faucets:
  - (1) Signs having a minimum size of eight inches by eight inches must be posted at all storage areas and on all hose bibs and faucets reading, in both English and Spanish, "Reclaimed Water, Do Not Drink" or similar warning.
  - (2) The area must be secured to prevent access by the public.
- (n) Where a reclaimed water line parallels a sewer line, the reclaimed water line must be constructed in accordance with subsection (p) or (q) of this section. The horizontal separation distance must be three feet (outside to outside) with the reclaimed water line at the level of or above the sewer line. Reclaimed water lines that parallel sewer lines may be placed in the same benched trench. Where a reclaimed water line crosses a sewer line, the requirement of 30 TAC §290.44(e)(5)(B), Location of Water Lines, must be followed with the reclaimed water line substituted for the water line.
- (o) Reclaimed water lines that transport reclaimed water under pressure must be sized according to acceptable engineering practices for the needs of the reclaimed water users. The provider shall prevent high velocity scouring and maintain adequate fluid velocity to prevent the deposition of solids in the lines. Pipe specified for reclaimed water force mains must have an expected life of at least as long as that of the associated lift station and must be suitable for the reclaimed water being pumped and operating pressure to which it will be subjected. All pipe must be identified in the technical specifications with appropriate American Society for Testing and Materials, American National Standard Institute, or American Water Works Association standard numbers for both quality control (dimensions, tolerance, and installation such as bedding or backfill). All pipes and fittings must have a minimum working pressure rating of 150 pounds per square inch. Final plans and specifications must describe required pressure testing for all installed reclaimed water force mains. Minimum test pressure must be 1.5 times the maximum design pressure. Allowable leakage rates must be determined as described in 30 TAC §217.97, *Pressure Sewer Systems*.
- (p) Gravity flow reclaimed water lines must meet the requirements of 30 TAC Chapter 217, Subchapter C, *Conventional Collection Systems*. The provider shall prevent high velocity scouring and maintain adequate fluid velocity to prevent the deposition of solids in the lines.
- (q) All exposed piping and piping within a building must be either purple pipe or painted purple.
   All exposed piping should be stenciled in white with a warning reading "NON-POTABLE WATER." All exposed or buried reclaimed water piping constructed at a wastewater treatment facility is exempt from the color-coding requirement of this section.
- (r) When applicable, in accordance with 30 TAC Chapter 217, Design Criteria for Domestic Wastewater Systems, the design of the distribution systems that will convey reclaimed water to a user must be submitted to the executive director and must receive an approval before the distribution system may be constructed. The design of the distribution systems must meet the

criteria of 30 TAC Chapter 217, Design Criteria for Domestic Wastewater Systems. When a municipality is the plan review authority for certain sewer systems that transport primarily domestic waste, in lieu of the commission, design submittal will not be subject to submittal to the commission and instead must be approved by the municipality.

(s) All ground level and elevated storage tanks must be designed, installed, and constructed in accordance with current AWWA standards with reference to materials to be used and construction practices to be followed, except for health-based standards strictly related to potable water storage and contact practices, where appropriately less restrictive standards may be applied.

### II. Storage Requirements for Reclaimed Water

- (a) Storage facilities for retaining reclaimed water prior to use must not be located within a floodway and must be protected from a 100-year flood.
- (b) Outside the Edwards Aquifer Recharge Zone and the DRASTIC Zone
  - (1) Any holding pond designed to contain Type I or Type II effluent must have a lining with a permeability of no more than  $1 \times 10^{-4}$  cm/sc and conform to the following requirements:
    - (A) The ponds must be designed and constructed to prevent groundwater contamination;
    - (B) Soils used for pond lining must be free from foreign material such as paper, brush, trees, and large rocks; and
    - (C) All soil liners must be of compacted material, at least 24 inches thick, compacted in lifts no greater than 6 inches thick and compacted to 95% of Standard Proctor Density. In-situ clay soils meeting the soils liner requirements must be excavated and re-compacted a minimum of 6 inches below planned grade to assure a uniformly compacted finished surface.
    - (D) Soil liners must meet the following particle size gradation and Atterburg limits:
      - (i) 30% or more passing a number 200 mesh sieve; and
      - (ii) a liquid limit of 30% or greater; and a plasticity index of 15 or greater and have a permeability less than or equal to 1 X 10<sup>-4</sup> cm/sec;
    - (E) Synthetic membrane linings must have a minimum thickness of 40 mils with a leak detection system. In situ liners at least 24 inches thick meeting a permeability less than or equal to 1 X 10<sup>-4</sup> cm/sec are acceptable alternatives;

- (F) Certification by a Texas licensed professional engineer must be furnished that the pond lining meets the appropriate criteria prior to utilization of the facilities;
- (G) Soil embankment walls must have a top width of at least five feet. The interior and exterior slopes of soil embankment walls must be no steeper than one foot vertical to three feet horizontal unless alternate methods of slope stabilization are used. All soil embankment walls must be protected by a vegetative cover or other stabilizing material to prevent erosion. Erosion stops and water seals must be installed on all piping penetrating the embankments;
- (H) An alternative method of pond lining that provides equivalent or better water quality protection than provided under this section may be used with the prior approval of the executive director; and
- (2) Reclaimed water may be stored in leak-proof, fabricated tanks.
- (3) Subsequent holding ponds used for the receipt and storage of reclaimed water of a quality that could cause or causes a violation of a surface water quality standard or impairment of groundwater for its actual or intended use will be also subject to the storage requirements of this section.
- (b) Within the Edwards Aquifer Recharge Zone or the DRASTIC Zone
  - (1) Any holding pond designed to contain Type I or Type II effluent shall have a lining with a permeability of no more than  $1 \times 10^{-7}$  cm/sc and conform to the following requirements:
    - (A) The ponds shall be designed and constructed to prevent groundwater contamination;
    - (B) Soils used for pond lining shall be free from foreign material such as paper, brush, trees, and large rocks; and
    - (C) All soil liners must be of compacted material, at least 24 inches thick, compacted in lifts no greater than 6 inches thick and compacted to 95% of Standard Proctor Density. In-situ clay soils meeting the soils liner requirements shall be excavated and re-compacted a minimum of 6 inches below planned grade to assure a uniformly compacted finished surface.
    - (D) Soil liners must meet the following particle size gradation and Atterburg limits:
      - (i) 30% or more passing a number 200 mesh sieve; and

- (ii) a liquid limit of 30% or greater; and a plasticity index of 15 or greater and have a permeability less than or equal to 1 X 10<sup>-7</sup> cm/sec:
- (E) Synthetic membrane linings shall have a minimum thickness of 40 mils with a leak detection system. In situ liners at least 24 inches thick meeting a permeability less than or equal to 1 X 10<sup>-7</sup> cm/sec are acceptable alternatives;
- (F) Certification by a Texas License Professional Engineer shall be furnished that the pond lining meets the appropriate criteria prior to utilization of the facilities:
- (G) Soil embankment walls shall have a top width of at least five feet. The interior and exterior slopes of soil embankment walls shall be no steeper than one foot vertical to three feet horizontal unless alternate methods of slope stabilization are used. All soil embankment walls shall be protected by a vegetative cover or other stabilizing material to prevent erosion. Erosion stops and water seals shall be installed on all piping penetrating the embankments:
- (H) An alternative method of pond lining that provides equivalent or better water quality protection than provided under this section may be used with the prior approval of the executive director; and
- (2) Reclaimed water may be stored in leak-proof, fabricated tanks.
- (3) Subsequent holding ponds used for the receipt and storage of reclaimed water of a quality that could cause or causes a violation of a surface water quality standard or impairment of groundwater for its actual or intended use will be also subject to the storage requirements of this section.

### III. Specific Uses and Quality Standards for Reclaimed Water

- (a) Numerical parameter limits pertaining to specific reclaimed water use categories are contained in this section. These limits apply to reclaimed water before discharge to initial holding ponds or a reclaimed water distribution system.
- (b) The reclaimed water producer shall establish that the reclaimed water meets the quality limits at the sample point for the intended use in accordance with the monitoring requirements identified in Section IV, Sampling and Analysis.
- (c) Types and quality standards for reclaimed water.
  - (1) Type II Reclaimed Water Use. The type of use is that where the public would not come in contact with the reclaimed water. The uses allowed by this authorization are:

- o Irrigation of sod farms, silviculture, limited access highway rights of way, and other areas where human access is restricted or unlikely to occur. The restriction of access to areas under irrigation with reclaimed water could include the following:
  - The irrigation site is considered to be remote.
  - The irrigation site is bordered by walls or fences and access to the site is controlled by the owner/operator of the irrigation site.
  - The irrigation site is not used by the public during the times when irrigation operations are in progress. Such sites may include golf courses, cemeteries, and landscaped areas surrounding commercial or industrial complexes. The "syringing" or "wetting" of greens and tees on golf courses shall be allowable under Type II so long as the "syringing" is done with hand-held hoses as opposed to automatic irrigation equipment. The public need not be excluded from areas where irrigation is not taking place. For example, irrigation of golf course fairways at night would not prohibit the use of club house or other facilities located a sufficient distance from the irrigation.
  - The irrigation site is restricted from public access by local ordinance or law with specific standards to achieve such a purpose.
- O Soil compaction or dust control in construction areas where application procedures minimize aerosol drift to public areas.
- (2) The following conditions apply to Type II use of reclaimed water. At a minimum, the reclaimed water producer shall transfer only reclaimed water of the following quality as described for Type II reclaimed water use. Type II reclaimed water on a 30-day average must have a quality of no more than:

BOD<sub>5</sub>

20 mg/l

Fecal coliform or *E. coli*200 CFU/100 ml\*

Fecal coliform or *E. coli*800 CFU/100 ml\*\*

\* 30-day geometric mean

\*\* maximum single grab sample

#### (d) Test Procedures

- (1) Test procedures for the analysis of pollutants must comply with procedures specified in 30 TAC §§319.11 319.12. Measurements, tests, and calculations must accurately represent the reclaimed water.
- (2) All laboratory tests submitted to demonstrate compliance with this authorization must meet the requirements of 30 TAC Chapter 25, *Environmental Testing Laboratory*

### Accreditation and Certification.

### IV. Sampling and Analysis

- (a) The reclaimed water producer shall sample the reclaimed water prior to distribution to user to assure that the water quality is in accord with the intended contracted use.
- (b) Analytical methods must be in accord with those specified in 30 TAC Chapter 319, *Monitoring and Reporting*.
- (c) The minimum sampling and analysis frequency for Type II reclaimed water is once per week.
- (d) The monitoring must be done after the final treatment unit.
- (e) The records of the monitoring must be done on a monthly basis and be available at the facility site for inspection by representatives of the Commission for at least five years.

### V. Record Keeping and Reporting

- (a) The reclaimed water provider and user shall maintain records on site for a period of at least five years.
  - (1) Records to be maintained by the provider include:
    - (A) copies of notifications made to the commission concerning reclaimed water projects;
    - (B) as applicable, copies of contracts made with each reclaimed water user (this requirement does not include reclaimed water users at residences that have separate distribution lines for potable water);
    - (C) records of volume of water delivered to each reclaimed water user per delivery (this requirement does not apply to reclaimed water users at residences that have separate distribution lines for potable water); and
    - (D) reclaimed water quality analyses.
  - (2) The reclaimed water provider or producer shall report to the commission on a monthly basis the following information on forms furnished by the executive director. Such reports are due to the commission by the 20th day of the month following the reporting period.
    - (A) volume of reclaimed water delivered to provider; and

(B) quality of reclaimed water delivered to a user or provider reported as a monthly average for each quality criteria except those listed as "not to exceed" that must be reported as individual analyses.

### VI. Transfer of Reclaimed Water

- (a) Reclaimed water transferred from a provider to a user must be done on a demand only basis. A reclaimed water user may refuse delivery of such water at any time.
- (b) All reclaimed water transferred to a user must be of at least the treatment quality specified in Section IV, Sampling and Analysis.
- (c) Transfer must be accomplished via pipes or tank trucks.
- (d) The transfer of reclaimed water must be terminated immediately if a provider becomes aware of the misuse of the reclaimed water by the user, regardless of contract provisions.

#### VII. Restrictions

- (a) This authorization does not convey any property right and does not grant any exclusive privilege.
- (b) This authorization does not allow the use of reclaimed water on a land that is authorized as a disposal site under either a Texas Discharge Pollutant Elimination System (TPDES) permit or a Texas Land Application Permit (TLAP).

### VIII. Responsibilities and Contracts

- (a) The producer of reclaimed water will not be liable for misapplication of reclaimed water by users, except as provided in this section. Both the reclaimed water provider and user have, but are not limited to, the following responsibilities:
  - (1) The reclaimed water producer shall:
    - (A) transfer reclaimed water of at least the minimum quality required by this chapter at the point of delivery to the user for the specified use;
    - (B) sample and analyze the reclaimed water and report such analyses in accordance with Section IV, Sampling and Analysis, and Section V, Record keeping and Reporting; and
    - (C) notify the executive director in writing within five (5) days after obtaining knowledge of reclaimed water use not authorized by the executive director's reclaimed water use approval.

- (2) The reclaimed water provider shall:
  - (A) assure construction of reclaimed water distribution lines/systems in accordance with 30 TAC Chapter 217, *Design of Domestic Wastewater Systems*, and in accordance with approved plans and specifications;
  - (B) transfer reclaimed water of at least the minimum quality required by this chapter at the point of delivery to the user for the specified use;
  - (C) notify the executive director in writing within five (5) days after obtaining knowledge of reclaimed water use not authorized by the executive director's reclaimed water use approval; and
  - (D) not be found in violation of this chapter for the misuse of the reclaimed water by the user if transfer of such water is shut off promptly upon knowledge of misuse regardless of contract provisions.
- (3) The reclaimed water user shall:
  - (A) use the reclaimed water in accordance with this authorization; and
  - (B) maintain and provide records as required by Section III, Record Keeping and Reporting.

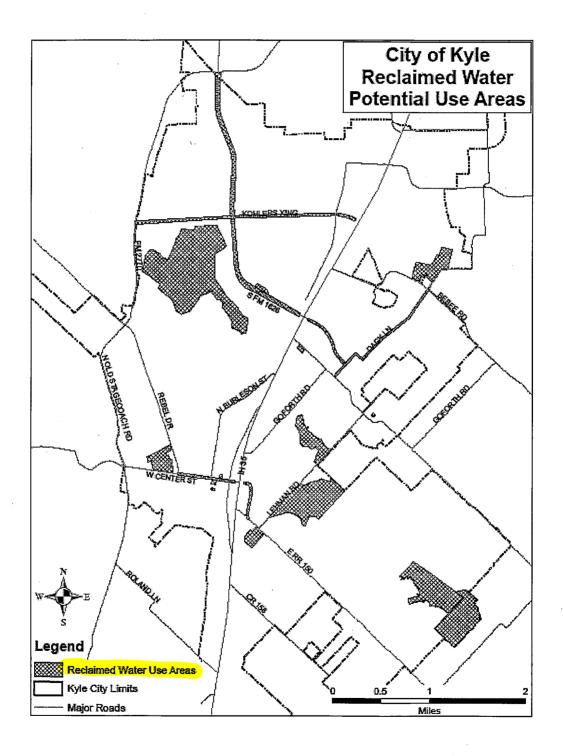
#### IX. Enforcement

If the producer, provider and/or user fail to comply with the terms of this authorization, the executive director may take enforcement action provided by the Texas Water Code §26.019 and §26.136.

### X. Standard Provisions

- (a) This authorization is granted in accordance with the rules and orders of the commission and the laws of the state of Texas.
- (b) Acceptance of this authorization constitutes an acknowledgment and agreement that the provider and user will comply with all the terms, provisions, conditions, limitations and restrictions embodied in this authorization and with the rules and other orders of the commission and the laws of the state of Texas. Agreement is a condition precedent to the granting of this authorization.

### Attachment A



Jon Niermann, *Chairman*Emily Lindley, *Commissioner*Bobby Janecka, *Commissioner*Toby Baker, *Executive Director* 



### TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

Ms. Yvonne Gil-Vallejo, Project Manager City of Kyle 100 West Center Street Kyle, Texas 78640

Re: City of Kyle - TPDES Permit No. WQ0011041002, EPA ID No. TX0119466 (CN600334510; RN102182680)

Dear Ms. Gil-Vallejo:

Enclosed for your review and comment is a copy of a draft permit, Fact Sheet and Executive Director's Preliminary Decision for the above-referenced operation. This draft permit is subject to further staff review and modification; however, we believe it generally includes the terms and conditions that are appropriate to your discharge. Please read the entire draft carefully as there may be changes from the existing permit and note the following:

- 1. The applicant has applied for a major amendment to TPDES No. WQ0011041002 to authorize an increase in the discharge of treated domestic wastewater from an annual average flow limit not to exceed 4.5 MGD to an annual average flow limit not to exceed 12.0 MGD and the addition of an Interim II phase at an annual average flow not to exceed 9.0 MGD.
- 2. The draft permit will be issued to expire **three years from the date of issuance**. Due to two chronic failures by each test species occurring during the term of the existing permit, the permit will be issued for a three-year term, based on recommendations from the WQ Standards Implementation Team.
- 3. The Standard Permit Conditions, Sludge Provisions, Other Requirements, and Biomonitoring sections of the draft permit have been updated.
- 4. For Publicly Owned Treatment Works (POTWs), effective December 21, 2025, the permittee must submit the written report for unauthorized discharges and unanticipated bypasses that exceed any effluent limit in the permit using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver.
- 5. Effective December 21, 2025, the permittee must submit the annual sludge report using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. The Reporting Requirements of the Sludge Provisions have also been updated.

Ms. Yvonne Gil-Vallejo, Project Manager Page 2

- 6. Certain accidental discharges or spills of treated or untreated wastewater from wastewater treatment facilities or collection systems owned or operated by a local government may be reported on a monthly basis in accordance with 30 TAC § 305.132.
- 7. Total Phosphorus limits of 0.5 mg/L have been placed in the permit in the Interim II and Final phases, based on recommendations by the WQ Standards Implementation Team.
- 8. The Interim I & II and Final phases have been placed in the permit to transition the annual average flow limits from 4.5 MGD to 12.0 MGD.
- 9. The draft permit includes all updates based on the 30 TAC § 312 rule change effective April 23, 2020.
- 10. If you do not have any comments on the draft permit, please inform me in writing and fax it to my attention at 512-239-4430 or e-mail Sonia.bhuiya@tceq.texas.gov indicating that you do not have any comments. If your response is received after the two-week official comment period deadline, the file will be forwarded to the Office of the Chief Clerk for processing.

Also enclosed for your review and comment is a copy of the draft second notice, the Notice of Application and Preliminary Decision (NAPD), that was prepared for your application. Please review this notice and provide comments if there are any inaccuracies or any information that is not consistent with your application. Please do not publish the notice at this time; after the draft permit is filed with the Office of the Chief Clerk, you will receive instructions for publishing this notice in a newspaper from the Office of the Chief Clerk. Please note that these instructions will not be mailed if the Office of the Chief Clerk has not received the requested proof that the first notice (Notice of Receipt and Intent to Obtain a Permit) has been published. This could cause delays in the processing of your application and the final issuance of the draft permit. When the NAPD notice is received, please publish promptly and submit proof of publication (affidavit and tearsheet) to the Office of the Chief Clerk. Failure to publish notice and submit proof of publication in a timely manner may result in returning of the application and loss of authorization to operate.

It is your responsibility to submit your comments on the draft permit prior to the deadline that is indicated in the email. Comments can be sent to Sonia.Bhuiya@tceq.texas.gov in place of or in addition to a hard copy.

Ms. Yvonne Gil-Vallejo, Project Manager Page 3

If you have any comments or questions, please contact me at (512) 239-1205, or if by correspondence, include MC 148 in the letterhead address following my name.

Sincerely,

### Sonia Bhuiya

Sonia Bhuiya, Permit Coordinator Municipal Permits Team Wastewater Permitting Section (MC 148) Water Quality Division Texas Commission on Environmental Quality

SB/SW

**Enclosures** 

## **Texas Commission on Environmental Quality**



### NOTICE OF APPLICATION AND PRELIMINARY DECISION FOR TPDES PERMIT FOR MUNICIPAL WASTEWATER MAJOR AMENDMENT

### **PERMIT NO. WQ0011041002**

**APPLICATION AND PRELIMINARY DECISION.** City of Kyle, 100 West Center Street, Kyle, Texas 78640, has applied to the Texas Commission on Environmental Quality (TCEQ) for a major amendment to Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0011041002 to authorize an increase in the discharge of treated domestic wastewater from an annual average flow limit not to exceed 4,500,000 gallons per day to an annual average flow limit not to exceed 12,000,000 gallons per day and the addition of an Interim II phase at an annual average flow not to exceed 9,000,000 gallons per day. TCEQ received this application on March 11, 2022.

The facility is located at 941 New Bridge Drive, in Hays County, Texas 78640. The treated effluent is discharged directly to Plum Creek in Segment No. 1810 of the Guadalupe River Basin. The designated uses for Segment No. 1810 are primary contact recreation, aquifer protection, and high aquatic life use. In accordance with 30 Texas Administrative Code § 307.5 and the TCEQ implementation procedures (June 2010) for the Texas Surface Water Quality Standards, an antidegradation review of the receiving waters was performed. A Tier 1 antidegradation review has preliminarily determined that existing water quality uses will not be impaired by this permit action. Numerical and narrative criteria to protect existing uses will be maintained. A Tier 2 review has preliminarily determined that no significant degradation of water quality is expected in Plum Creek, which has been identified as having high aquatic life use. Existing uses will be maintained and protected. The preliminary determination can be reexamined and may be modified if new information is received.

This link to an electronic map of the site or facility's general location is provided as a public courtesy and is not part of the application or notice. For the exact location, refer to the application.

https://tceq.maps.arcgis.com/apps/webappviewer/index.html?id=db5bac44afbc468bbddd360f8168250f&marker=-97.835277%2C29.967777&level=12

The TCEQ Executive Director has completed the technical review of the application and prepared a draft permit. The draft permit, if approved, would establish the conditions under which the facility must operate. The Executive Director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. The permit application, Executive Director's preliminary decision, and draft permit are available for viewing and copying at Kyle Public Library, 550 Scott Street, Kyle, Texas.

# DRAFT NOTICE, DO NOT PUBLISH UNTIL YOU RECEIVE THE OFFICIAL VERSION AND INSTRUCTIONS FROM TCEQ's OFFICE OF THE CHIEF CLERK.

**PUBLIC COMMENT / PUBLIC MEETING. You may submit public comments or request a public meeting about this application.** The purpose of a public meeting is to provide the opportunity to submit comments or to ask questions about the application. TCEQ holds a public meeting if the Executive Director determines that there is a significant degree of public interest in the application or if requested by a local legislator. A public meeting is not a contested case hearing.

OPPORTUNITY FOR A CONTESTED CASE HEARING. After the deadline for submitting public comments, the Executive Director will consider all timely comments and prepare a response to all relevant and material, or significant public comments. Unless the application is directly referred for a contested case hearing, the response to comments will be mailed to everyone who submitted public comments and to those persons who are on the mailing list for this application. If comments are received, the mailing will also provide instructions for requesting a contested case hearing or reconsideration of the Executive Director's decision. A contested case hearing is a legal proceeding similar to a civil trial in a state district court.

TO REQUEST A CONTESTED CASE HEARING, YOU MUST INCLUDE THE FOLLOWING ITEMS IN YOUR REQUEST: your name, address, phone number; applicant's name and proposed permit number; the location and distance of your property/activities relative to the proposed facility; a specific description of how you would be adversely affected by the facility in a way not common to the general public; a list of all disputed issues of fact that you submit during the comment period; and the statement "[I/we] request a contested case hearing." If the request for contested case hearing is filed on behalf of a group or association, the request must designate the group's representative for receiving future correspondence; identify by name and physical address an individual member of the group who would be adversely affected by the proposed facility or activity; provide the information discussed above regarding the affected member's location and distance from the facility or activity; explain how and why the member would be affected; and explain how the interests the group seeks to protect are relevant to the group's purpose.

Following the close of all applicable comment and request periods, the Executive Director will forward the application and any requests for reconsideration or for a contested case hearing to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

The Commission may only grant a request for a contested case hearing on issues the requestor submitted in their timely comments that were not subsequently withdrawn. If a hearing is granted, the subject of a hearing will be limited to disputed issues of fact or mixed questions of fact and law relating to relevant and material water quality concerns submitted during the comment period. TCEQ may act on an application to renew a permit for discharge of wastewater without providing an opportunity for a contested case hearing if certain criteria are met.

**EXECUTIVE DIRECTOR ACTION.** The Executive Director may issue final approval of the application unless a timely contested case hearing request or request for reconsideration is filed. If a timely hearing request or request for reconsideration is filed, the Executive Director will not issue final approval of the permit and will forward the application and request to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

# DRAFT NOTICE, DO NOT PUBLISH UNTIL YOU RECEIVE THE OFFICIAL VERSION AND INSTRUCTIONS FROM TCEQ'S OFFICE OF THE CHIEF CLERK.

**MAILING LIST.** If you submit public comments, a request for a contested case hearing or a reconsideration of the Executive Director's decision, you will be added to the mailing list for this specific application to receive future public notices mailed by the Office of the Chief Clerk. In addition, you may request to be placed on: (1) the permanent mailing list for a specific applicant name and permit number; and/or (2) the mailing list for a specific county. If you wish to be placed on the permanent and/or the county mailing list, clearly specify which list(s) and send your request to TCEQ Office of the Chief Clerk at the address below.

All written public comments and public meeting requests must be submitted to the Office of the Chief Clerk, MC 105, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, TX 78711-3087 or electronically at www.tceq.texas.gov/goto/comment within 30 days from the date of newspaper publication of this notice.

**INFORMATION AVAILABLE ONLINE.** For details about the status of the application, visit the Commissioners' Integrated Database at www.tceq.texas.gov/goto/cid. Search the database using the permit number for this application, which is provided at the top of this notice.

AGENCY CONTACTS AND INFORMATION. Public comments and requests must be submitted either electronically at www.tceq.texas.gov/goto/comment, or in writing to the Texas Commission on Environmental Quality, Office of the Chief Clerk, MC 105, P.O. Box 13087, Austin, Texas 78711-3087. Any personal information you submit to the TCEQ will become part of the agency's record; this includes email addresses. For more information about this permit application or the permitting process, please call the TCEQ Public Education Program, Toll Free, at 1-800-687-4040 or visit their website at www.tceq.texas.gov/goto/pep. Si desea información en Español, puede llamar al 1-800-687-4040.

Further information may also be obtained from City of Kyle at the address stated above or by calling Mr. Timothy Samford, Division Manager of Treatment Operations, at 512-262-3024.

Issuance Date	

### FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

For draft Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0011041002, EPA I.D. No. TX0119466, to discharge to water in the state.

Issuing Office: Texas Commission on Environmental Quality

P.O. Box 13087

Austin, Texas 78711-3087

Applicant: City of Kyle

100 West Center Street Kyle, Texas 78640

Prepared By: Sonia Bhuiya

**Municipal Permits Team** 

Wastewater Permitting Section (MC 148)

Water Quality Division

(512) 239-1205

Date: July 11, 2022

Permit Action: Major Amendment with Renewal

### 1. EXECUTIVE DIRECTOR RECOMMENDATION

The Executive Director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. The draft permit includes an expiration date of **five years from the date of issuance**.

### 2. APPLICANT ACTIVITY

The applicant has applied to the Texas Commission on Environmental Quality (TCEQ) for an amendment of the existing permit to authorize an increase in the discharge of treated domestic wastewater from an annual average flow limit not to exceed 4.5 million gallons per day (MGD) to an annual average flow limit not to exceed 12.0 MGD; The existing wastewater treatment facility serves and the addition of an Interim II phase at an annual average flow not to exceed 9.0 MGD.

### **Outfall Location:**

Outfall Number	Latitude	Longitude	
001	29.968166 N	97.833019 W	

The treated effluent is discharged directly to Plum Creek in Segment No. 1810 of the Guadalupe River Basin. O The designated uses for Segment No. 1810 are primary contact recreation, aquifer protection, and high aquatic life use.

### 4. TREATMENT PROCESS DESCRIPTION AND SEWAGE SLUDGE DISPOSAL

The City of Kyle Wastewater Treatment Facility is an activated sludge process plant operated in the complete mix mode with nitrification. Treatment units in the Interim I phase include two fine screens, four lift stations, four aeration basins, four final

clarifiers, two post aeration basins, four aerobic sludge digestions and two ultravioletlight disinfection system. Treatment units in the Interim II phase will include four fine screens, six lift station, ten aeration basins, nine final clarifiers, four post aeration basins, four aerobic sludge digestions and three ultra-violetlight disinfection system. Treatment units in the Final phase will include six fine screens, twelve aeration basins, six lift station, twelve final clarifiers, four tertiary flters, ten post aeration basins, six aerobic sludge digestions and four ultra-violetlight disinfection system. The facility is operating in the interim I phase.

The draft permit also authorizes the disposal of sludge at a TCEQ-authorized land application site, co-disposal landfill, wastewater treatment facility, or facility that further processes sludge.

### 5. INDUSTRIAL WASTE CONTRIBUTION

The draft permit includes pretreatment requirements that are appropriate for a facility of this size and complexity. The City of Kyle WWTP does appear to receive significant industrial wastewater contributions. The WWTP receives process wastewater from two significant industrial users (SIUs). The process wastewater flow from the SIU contributes less than 0.3% of the WWTP's current maximum hydraulic capacity. The POTW has not experienced any instances of pass through or interference, therefore, at this time, the TCEQ is not requiring the permittee to develop a pretreatment program.

### 6. SUMMARY OF SELF-REPORTED EFFLUENT ANALYSES

The following is a summary of the applicant's effluent monitoring data for the period March 2017 through April 2022. The average of Daily Average value is computed by the averaging of all 30-day average values for the reporting period for each parameter: flow, five-day carbonaceous biochemical oxygen demand (CBOD $_5$ ), total suspended solids (TSS), ammonia nitrogen (NH $_3$ -N). The average of Daily Average value for *Escherichia coli* (*E. coli*) in colony-forming units (CFU) or most probable number (MPN) per 100 ml is calculated via geometric mean.

<u>Parameter</u>	<u>Average of Daily Avg</u>
Flow, MGD	2.59
CBOD <sub>5</sub> , mg/l	3.8
TSS, mg/l	3.03
NH <sub>3</sub> -N, mg/l	3.3
E. coli, CFU or MPN per 100 ml	18

### 7. DRAFT PERMIT CONDITIONS AND MONITORING REQUIREMENTS

The effluent limitations and monitoring requirements for those parameters that are limited in the draft permit are as follows:

# A. INTERIM I PHASE EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The annual average flow of effluent shall not exceed 4.5 MGD, nor shall the average discharge during any two-hour period (2-hour peak) exceed 12,500 gallons per minute (gpm).

<u>Parameter</u>	<u> 30-Day Average</u>		<u>7-Day</u>	<u>Daily</u>
			<u>Average</u>	<u>Maximum</u>
	<u>mg/l</u>	<u>lbs/day</u>	<u>mg/l</u>	<u>mg/l</u>
$\mathrm{CBOD}_5$	10	375	15	25
TSS	15	563	25	40
$NH_3$ - $N$	2	75	5	10
DO (minimum)	5.0	N/A	N/A	N/A
E. coli, CFU or MPN	126	N/A	N/A	399
per 100 ml				

The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units and shall be monitored once per week by grab sample. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

The permittee shall utilize an Ultraviolet Light (UV) system for disinfection purposes. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.

$\begin{array}{ccc} Flow, MGD & Continuous \\ CBOD_5 & Two/week \\ TSS & Two/week \\ NH_3-N & Two/week \\ \end{array}$
TSS Two/week NH <sub>3</sub> -N Two/week
NH <sub>3</sub> -N Two/week
DO Two/week
E. coli Daily

# B. INTERIM II PHASE EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The annual average flow of effluent shall not exceed 9.0 MGD, nor shall the average discharge during any two-hour period (2-hour peak) exceed 25,000 gpm.

<u>Parameter</u>	<u>30-Day Average</u>		<u>7-Day</u>	<u>Daily</u>
			<u>Average</u>	<u>Maximum</u>
	<u>mg/l</u>	<u>lbs/day</u>	<u>mg/l</u>	<u>mg/l</u>
$CBOD_5$	7	525	12	22
TSS	15	1,126	15	40
$NH_3$ -N	2	150	5	10
Total Phosphorus	0.5	38	1	2
DO (minimum)	5.0	N/A	N/A	N/A
<i>E. coli</i> , CFU or	126	N/A	N/A	399
MPN/100 ml				

The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units and shall be monitored five times per week by grab sample. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

The permittee shall utilize an Ultraviolet Light (UV) system for disinfection purposes. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.

<u>Parameter</u>	Monitoring Requirement
Flow, MGD	Continuous
$CBOD_5$	Five/Week
TSS	Five/Week
$NH_3$ -N	Five/Week
Total P	Five/Week
DO	Five/Week
E. coli	Daily

# C. FINAL PHASE EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The annual average flow of effluent shall not exceed 12.0 MGD, nor shall the average discharge during any two-hour period (2-hour peak) exceed 39,344 gpm.

<u>Parameter</u>	30-Day Average		<u>7-Day</u>	<u>Daily</u>
			<u>Average</u>	<u>Maximum</u>
	<u>mg/l</u>	<u>lbs/day</u>	mg/l	<u>mg/l</u>
$CBOD_5$	5	500	10	20
TSS	15	1,053	15	40
$NH_3$ -N	2	200	5	10
Total Phosphorus	0.5	50	1	2
DO (minimum)	5.0	N/A	N/A	N/A
E. coli, CFU or	126	N/A	N/A	399
MPN/100 ml				

The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units and shall be monitored once per day by grab sample. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

The permittee shall utilize an Ultraviolet Light (UV) system for disinfection purposes. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.

<u>Parameter</u>	Monitoring Requirement
Flow, MGD	Continuous
$CBOD_5$	One/day
TSS	One/day
$NH_3$ - $N$	One/day
Total P	One/day
DO	One/day
E. coli	Daily

### C. SEWAGE SLUDGE REQUIREMENTS

The draft permit includes Sludge Provisions according to the requirements of 30 TAC Chapter 312, Sludge Use, Disposal, and Transportation. The draft permit also authorizes the disposal of sludge at a TCEQ-authorized land application site, co-disposal landfill, wastewater treatment facility, or facility that further processes sludge.

### D. PRETREATMENT REQUIREMENTS

Permit requirements for pretreatment are based on TPDES regulations contained in 30 TAC Chapter 315, which references 40 Code of Federal Regulations (CFR) Part 403, "General Pretreatment Regulations for Existing and New Sources of Pollution" [rev. Federal Register/Vol. 70/No. 198/Friday, October 14, 2005/Rules and Regulations, pages 60134-60798]. The permit includes specific requirements that establish responsibilities of local government, industry, and the public to implement the standards to control pollutants which pass through or interfere with treatment processes in publicly owned treatment works or which may contaminate the sewage sludge. This permit has appropriate pretreatment language for a facility of this size and complexity.

### E. WHOLE EFFLUENT TOXICITY (BIOMONITORING) REQUIREMENTS

- (1) The draft permit includes chronic freshwater biomonitoring requirements as follows. The permit requires five dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional effluent concentrations shall be 32%, 42%, 56%, 75%, and 100%. The low-flow effluent concentration (critical dilution) is defined as 100% effluent. The critical dilution is in accordance with the "Aquatic Life Criteria" section of the "Water Quality Based Effluent Limitations/Conditions" section.
  - (a) Chronic static renewal survival and reproduction test using the water flea (*Ceriodaphnia dubia*). The frequency of the testing is once per quarter for at least the first year of testing, after which the permittee may apply for a testing frequency reduction.
  - (b) Chronic static renewal 7-day larval survival and growth test using the fathead minnow (*Pimephales promelas*). The frequency of the testing is once per quarter for at least the first year of testing, after which the permittee may apply for a testing frequency reduction.
- (2) The draft permit includes the following minimum 24-hour acute freshwater biomonitoring requirements at a frequency of once per six months:
  - (a) Acute 24-hour static toxicity test using the water flea (*Daphnia pulex* or *Ceriodaphnia dubia*).
  - (b) Acute 24-hour static toxicity test using the fathead minnow (*Pimephales promelas*).

#### H. SUMMARY OF CHANGES FROM APPLICATION

None.

#### I. SUMMARY OF CHANGES FROM EXISTING PERMIT

The draft permit will be issued to expire **three years from the date of issuance**. Due to two chronic failures by each test species occurring during the term of the existing permit, the permit will be issued for a three-year term, based on recommendations from the WQ Standards Implementation Team.

The Standard Permit Conditions, Sludge Provisions, Other Requirements, and Biomonitoring sections of the draft permit have been updated.

For Publicly Owned Treatment Works (POTWs), effective December 21, 2025, the permittee must submit the written report for unauthorized discharges and unanticipated bypasses that exceed any effluent limit in the permit using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver.

Effective December 21, 2025, the permittee must submit the annual sludge report using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. The Reporting Requirements of the Sludge Provisions have also been updated.

Certain accidental discharges or spills of treated or untreated wastewater from wastewater treatment facilities or collection systems owned or operated by a local government may be reported on a monthly basis in accordance with 30 TAC § 305.132.

Total Phosphorus limits of 0.5 mg/L have been placed in the permit in the Interim II and Final phases, based on recommendations by the WQ Standards Implementation Team.

The Interim I & II and Final phases have been placed in the permit to transition the annual average flow limits from 4.5 MGD to 12.0 MGD.

The draft permit includes all updates based on the 30 TAC § 312 rule change effective April 23, 2020.

### 8. DRAFT PERMIT RATIONALE

### A. TECHNOLOGY-BASED EFFLUENT LIMITATIONS/CONDITIONS

Regulations promulgated in Title 40 of the CFR require that technology-based limitations be placed in wastewater discharge permits based on effluent limitations guidelines, where applicable, or on best professional judgment (BPJ) in the absence of guidelines.

Effluent limitations for maximum and minimum pH are in accordance with 40 CFR § 133.102(c) and 30 TAC § 309.1(b).

Texas Surface Water Quality Standards (TSWQS) at 30 TAC Chapter 307 allow for consideration of the mixing of effluent and receiving water when evaluating discharge compliance with water quality criteria for pH. The discharge authorized by this permit shall meet the TSWQS pH criterion for Segment No. 1810 of 6.5 to 9.0 standard units at the edge of the chronic mixing zone. See Attachment A of this Fact Sheet.

### B. WATER QUALITY SUMMARY AND COASTAL MANAGEMENT PLAN

### (1) WATER QUALITY SUMMARY

The treated effluent is discharged directly to Plum Creek in Segment No. 1810 of the Guadalupe River Basin. The designated uses for Segment No. 1810 are primary contact recreation, aquifer protection, and high aquatic life use. In accordance with 30 Texas Administrative Code §307.5 and the TCEQ implementation procedures (June 2010) for the Texas Surface Water Quality Standards, an antidegradation review of the receiving waters was performed. A Tier 1 antidegradation review has preliminarily determined that existing water quality uses will not be impaired by this permit action. Numerical and narrative criteria to protect existing uses will be maintained. A Tier 2 review has preliminarily determined that no significant degradation of water quality is expected in Plum Creek, which has been identified as having high aquatic life use. Existing uses will be maintained and protected. The preliminary determination can be reexamined and may be modified if new information is received.

The discharge from this permit action is not expected to have an effect on any federal endangered or threatened aquatic or aquatic-dependent species or proposed species or their critical habitat. This determination is based on the United States Fish and Wildlife Service's (USFWS's) biological opinion on the State of Texas authorization of the TPDES (September 14, 1998; October 21, 1998, update). To make this determination for TPDES permits, TCEQ and EPA only considered aquatic or aquatic-dependent species occurring in watersheds of critical concern or high priority as listed in Appendix A of the USFWS biological opinion. The determination is subject to reevaluation due to subsequent updates or amendments to the biological opinion. The permit does not require EPA review with respect to the presence of endangered or threatened species.

Segment No. 1810 is not currently listed on the state's inventory of impaired and threatened waters (the 2020 CWA § 303(d) list).

The pollutant analysis of treated effluent provided by the permittee in the application indicated 872 mg/l total dissolved solids (TDS), 104 mg/l sulfate, and 241 mg/l chloride present in the effluent. The segment criteria for Segment No. 1810 are 1,120 mg/l for TDS, 150 mg/l for sulfate, and 350mg/l for chlorides. Based on dissolved solids screening, no additional limits or monitoring requirements are needed for total dissolved solids, chloride, or sulfate. See Attachment B of this Fact Sheet.

The effluent limitations and conditions in the draft permit comply with EPA-approved portions of the 2018 Texas Surface Water Quality Standards (TSWQS), 30 TAC §§ 307.1 - 307.10, effective March 1, 2018; 2014 TSWQS, effective March 6, 2014; 2010 TSWQS, effective July 22, 2010; and 2000 TSWQS, effective July 26, 2000.

#### (2) CONVENTIONAL PARAMETERS

Effluent limitations for the conventional effluent parameters (i.e., Five-Day Biochemical Oxygen Demand or Five-Day Carbonaceous Biochemical Oxygen Demand, Ammonia Nitrogen, etc.) are based on stream standards and waste load allocations for water quality-limited streams as established in the TSWQS and the State of Texas Water Quality Management Plan (WQMP).

The effluent limitations in the draft permit have been reviewed for consistency with the WQMP. The proposed effluent limitations are not contained in the approved WQMP. However, these limits will be included in the next WQMP update.

The effluent limitations in the draft permit meet the requirements for secondary treatment and the requirements for disinfection according to 30 TAC Chapter 309, Subchapter A: Effluent Limitations.

#### (3) COASTAL MANAGEMENT PLAN

The facility is not located in the Coastal Management Program boundary.

#### C. WATER QUALITY-BASED EFFLUENT LIMITATIONS/CONDITIONS

#### (1) GENERAL COMMENTS

The Texas Surface Water Quality Standards (30 TAC Chapter 307) state that surface waters will not be toxic to man, or to terrestrial or aquatic life. The methodology outlined in the *Procedures to Implement the Texas Surface Water Quality Standards*, (IP) (June 2010) is designed to ensure compliance with 30 TAC Chapter 307. Specifically, the methodology is designed to ensure that no source will be allowed to discharge any wastewater that: (1) results in instream aquatic toxicity; (2) causes a violation of an applicable narrative or numerical state water quality standard; (3) results in the endangerment of a drinking water supply; or (4) results in aquatic bioaccumulation that threatens human health.

#### (2) AQUATIC LIFE CRITERIA

#### (a) SCREENING

Water quality-based effluent limitations are calculated from freshwater aquatic life criteria found in Table 1 of the Texas Surface Water Quality Standards (30 TAC Chapter 307).

Acute freshwater criteria are applied at the edge of the zone of initial dilution (ZID), and chronic freshwater criteria are applied at the edge of the aquatic life mixing zone. The ZID for this discharge is defined as 20 feet upstream and 60 feet downstream from the point where the discharge enters Plum Creek. The aquatic life mixing zone for this discharge is defined as 100 feet upstream and 300 feet downstream from the point where the discharge enters Plum Creek.

TCEQ uses the mass balance equation to estimate dilutions at the edges of the ZID and aquatic life mixing zone during critical conditions. The estimated dilution at the edge of the aquatic life mixing zone is calculated using the permitted flow of 12 MGD and the 7-day, 2-year (7Q2) flow of 0.1 cubic feet per second (cfs) for Plum Creek. The estimated dilution at the edge of the ZID is calculated using the permitted flow of 12.0 MGD and 25% of the 7Q2 flow. The following critical effluent percentages are being used:

Acute Effluent %: 99.46% Chronic Effluent %: 99.87%

Waste load allocations (WLAs) are calculated using the above estimated effluent percentages, criteria outlined in the Texas Surface Water Quality Standards, and partitioning coefficients for metals (when appropriate and designated in the implementation procedures). The WLA is the end-of-pipe effluent concentration that can be discharged when, after mixing in the receiving stream, instream numerical criteria will not be exceeded.

From the WLA, a long-term average (LTA) is calculated using a log normal probability distribution, a given coefficient of variation (0.6), and a 90<sup>th</sup> percentile confidence level. The LTA is the long-term average effluent concentration for which the WLA will never be exceeded using a selected percentile confidence level. The lower of the two LTAs (acute and chronic) is used to calculate a daily average and daily maximum effluent limitation for the protection of aquatic life using the same statistical considerations with the 99th percentile confidence level and a standard number of monthly effluent samples collected (12). Assumptions used in deriving the effluent limitations include segment values for hardness, chlorides, pH, and total suspended solids (TSS) according to the segmentspecific values contained in the TCEQ guidance document IP. The segment values are 215 mg/l for hardness (as calcium carbonate), 135 mg/l chlorides, 7.6 standard units for pH, and 12 mg/l for TSS. For additional details on the calculation of water quality-based effluent limitations, refer to the TCEQ guidance document.

TCEQ practice for determining significant potential is to compare the reported analytical data against percentages of the calculated daily average water quality-based effluent limitation. Permit limitations are required when analytical data reported in the application exceeds 85% of the calculated daily average water quality-based effluent limitation. Monitoring and reporting is required when analytical data reported in the application exceeds 70% of the calculated daily average water quality-based effluent limitation. See Attachment C of this Fact Sheet.

#### (b) PERMIT ACTION

Reported analytical data does not exceed 70% of the calculated daily average water quality-based effluent limitations for aquatic life protection.

#### (3) AQUATIC ORGANISM BIOACCUMULATION CRITERIA

#### (a) SCREENING

Water quality-based effluent limitations for the protection of human health are calculated using criteria for the consumption of freshwater fish tissue found in Table 2 of the Texas Surface Water Quality Standards (30 TAC Chapter 307). Freshwater fish tissue bioaccumulation criteria are applied at the edge of the human health mixing zone. The human health mixing zone for this discharge is identical to the aquatic life mixing zone. TCEQ uses the mass balance equation to estimate dilution at the edge of the human health mixing zone during average flow conditions. The estimated dilution at the edge of the human health mixing zone is calculated using the permitted flow of 12 MGD and the harmonic mean flow of 0.2 cfs for Plum Creek. The following critical effluent percentage is being used:

Human Health Effluent %: 98.93%

#### (b) PERMIT ACTION

Reported analytical data does not exceed 70% of the calculated daily average water quality-based effluent limitation for human health protection.

#### (4) DRINKING WATER SUPPLY PROTECTION

#### (a) SCREENING

Water Quality Segment No. 1810, which receives the discharge from this facility, is not designated as a public water supply. Screening reported analytical data of the effluent against water quality-based effluent limitations calculated for the protection of a drinking water supply is not applicable.

#### (b) PERMIT ACTION

None.

#### (5) WHOLE EFFLUENT TOXICITY (BIOMONITORING) CRITERIA

#### (a) SCREENING

TCEQ has determined that there may be pollutants present in the effluent that may have the potential to cause toxic conditions in the receiving

stream. Whole effluent biomonitoring is the most direct measure of potential toxicity that incorporates the effects of synergism of effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity.

The existing permit includes chronic freshwater biomonitoring requirements. A summary of the biomonitoring testing for the facility indicates that in the past three years, the permittee performed twenty-eight chronic tests, with four demonstrations of significant toxicity (i.e., four failures), two by each test species.

A reasonable potential (RP) determination was performed for the in accordance with 40 CFR § 122.44(d)(1)(ii) to determine whether the discharge will reasonably be expected to cause or contribute to an exceedance of a state water quality standard or criterion within that standard. The RP determination is based on representative data from the previous three years of chronic WET testing. This determination was performed in accordance with the methodology outlined in the TCEQ letter to the EPA dated December 28, 2015, and approved by the EPA in a letter dated December 28, 2015.

With two failures by each test species, a three-year permit will be issued in accordance with the methodology referenced above. Neither test species is eligible for the testing frequency reduction.

After permit issuance and upon another failure (i.e., another demonstration of significant toxicity), the testing frequency for that test species will increase to monthly until three consecutive tests pass (i.e., do not demonstrate significant toxicity), at which time the permittee may return to the quarterly testing frequency. If three or more failures are demonstrated during the three-year permit term for either test species, RP will have been demonstrated and a WET limit will be included in the subsequently reissued permit for that test species.

#### (b) PERMIT ACTION

The test species are appropriate to measure the toxicity of the effluent consistent with the requirements of the State water quality standards. The biomonitoring frequency has been established to reflect the likelihood of ambient toxicity and to provide data representative of the toxic potential of the facility's discharge. This permit may be reopened to require effluent limits, additional testing, and/or other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body.

#### (6) WHOLE EFFLUENT TOXICITY CRITERIA (24-HOUR ACUTE)

#### (a) SCREENING

The existing permit includes 24-hour acute freshwater biomonitoring language. A summary of the biomonitoring testing for the facility indicates that in the past three years, the permittee has performed ten 24-hour acute tests, with zero demonstrations of significant lethality (i.e., zero failures).

#### (b) PERMIT ACTION

The draft permit includes 24-hour 100% acute biomonitoring tests for the life of the permit.

#### 9. WATER QUALITY VARIANCE REQUESTS

No variance requests have been received.

#### 10. PROCEDURES FOR FINAL DECISION

When an application is declared administratively complete, the Chief Clerk sends a letter to the applicant advising the applicant to publish the Notice of Receipt of Application and Intent to Obtain Permit in the newspaper. In addition, the Chief Clerk instructs the applicant to place a copy of the application in a public place for review and copying in the county where the facility is or will be located. This application will be in a public place throughout the comment period. The Chief Clerk also mails this notice to any interested persons and, if required, to landowners identified in the permit application. This notice informs the public about the application and provides that an interested person may file comments on the application or request a contested case hearing or a public meeting.

Once a draft permit is completed, it is sent, along with the Executive Director's preliminary decision, as contained in the technical summary or fact sheet, to the Chief Clerk. At that time, the Notice of Application and Preliminary Decision will be mailed to the same people and published in the same newspaper as the prior notice. This notice sets a deadline for making public comments. The applicant must place a copy of the Executive Director's preliminary decision and draft permit in the public place with the application.

Any interested person may request a public meeting on the application until the deadline for filing public comments. A public meeting is intended for the taking of public comment and is not a contested case proceeding.

After the public comment deadline, the Executive Director prepares a response to all significant public comments on the application or the draft permit raised during the public comment period. The Chief Clerk then mails the Executive Director's response to comments and final decision to people who have filed comments, requested a contested case hearing, or requested to be on the mailing list. This notice provides that if a person is not satisfied with the Executive Director's response and decision, they can request a contested case hearing or file a request to reconsider the Executive Director's decision within 30 days after the notice is mailed.

The Executive Director will issue the permit unless a written hearing request or request for reconsideration is filed within 30 days after the Executive Director's response to comments and final decision is mailed. If a hearing request or request for

reconsideration is filed, the Executive Director will not issue the permit and will forward the application and request to the TCEQ Commissioners for their consideration at a scheduled Commission meeting. If a contested case hearing is held, it will be a legal proceeding similar to a civil trial in state district court.

If the Executive Director calls a public meeting or the Commission grants a contested case hearing as described above, the Commission will give notice of the date, time, and place of the meeting or hearing. If a hearing request or request for reconsideration is made, the Commission will consider all public comments in making its decision and shall either adopt the Executive Director's response to public comments or prepare its own response.

For additional information about this application, contact Sonia Bhuiya at (512) 239-1205.

#### 11. ADMINISTRATIVE RECORD

The following items were considered in developing the draft permit:

#### A. PERMIT(S)

TPDES Permit No. WQ0011041002 issued on October 6, 2020.

#### B. APPLICATION

Application received on March 11, 2022, and additional information received on April 11, 2022. Staff initiated minor amendment started on XXX date.

#### C. MEMORANDA

Interoffice Memoranda from the Water Quality Assessment Section of the TCEQ Water Quality Division. Interoffice Memorandum from the Pretreatment Team of the TCEQ Water Quality Division.

#### D. MISCELLANEOUS

Federal Clean Water Act § 402; Texas Water Code § 26.027; 30 TAC Chapters 30, 305, 309, 312, and 319; Commission policies; and U.S. Environmental Protection Agency guidelines.

Texas Surface Water Quality Standards, 30 TAC §§ 307.1 - 307.10.

Procedures to Implement the Texas Surface Water Quality Standards (IP), Texas Commission on Environmental Quality, June 2010, as approved by the U.S. Environmental Protection Agency, and the IP, January 2003, for portions of the 2010 IP not approved by the U.S. Environmental Protection Agency.

Texas 2020 Clean Water Act Section 303(d) List, Texas Commission on Environmental Quality, March 25, 2020; approved by the U.S. Environmental Protection Agency on May 12, 2020.

Texas Natural Resource Conservation Commission, Guidance Document for Establishing Monitoring Frequencies for Domestic and Industrial Wastewater Discharge Permits, Document No. 98-001.000-OWR-WQ, May 1998.

## **Attachment A: pH Screening**

Calculation of pH of a mixture of two flows. Based on the procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington D.C.)

City of Kyle (WWTP)

pH Screening - 11041-002

INPUT			
	Lower pH limit	Higher pH limit	Data source and notes Reciprocal of the effluent fraction.
1. DILUTION FACTOR AT MIXING ZONE BOUNDARY	1.005	1.005	Calculated from values in critical conditions memo dated 3/2022
RECEIVING WATER CHARACTERISTICS			
2. Temperature (deg C):	20.00	20.00	Range of temperatures tested (5 to 35 degrees C)
3. pH:	7.6	7.6	Ambient pH for Segment 1810 from 2010 IPs. Hardness for
4. Alkalinity (mg CaCO3/L):	215.00	215.00	Segment 1810 from IPs.
EFFLUENT CHARACTERISTICS			
5. Temperature (deg C):	20.00	20.00	Range of temperatures tested (5 to 35 degrees C)
6. pH:	6.00	9.00	Proposed permit limit.
7. Alkalinity (mg CaCO3/L):*	20.00	200.00	Range of values tested (50 - 500 mg/L CaCO3). Note that default of 20 is used for low pH situations.

#### **OUTPUT**

1.	IONIZATION CONSTANTS		
	Upstream/Background pKa:	6.3 8	6.3 8
		6.3	6.3
	Effluent pKa:	8	8
2.	IONIZATION FRACTIONS	0.0	0.0
	Upstream/Background Ionization Fraction:	0.9 4 0.2	0.9 4 1.0
	Effluent Ionization Fraction:	9	0
3.	TOTAL INORGANIC CARBON	220	220
	Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	.01	.01
	Effluent Total Inorganic Carbon (mg CaCO3/L):	68. 20	200 .48
4.	CONDITIONS AT MIXING ZONE BOUNDARY		
	Temperature (deg C):	20. 00	20. 00
	remperature (deg e).	21.	200
	Alkalinity (mg CaCO3/L):	04 69.	.08 200
	Total Inorganic Carbon (mg CaCO3/L):	09. 05	.63
		6.3	6.3
	pKa:	8	8
		6.0	8.9
	pH at Mixing Zone Boundary:	2	4

<sup>\*</sup> Assume minimal total alkalinity at low effluent pH based on carbonate equilibrium chemistry of natural and treated waters

## Attachment B: Screening Calculations for Total Dissolved Solids, Chloride, and Sulfate

## Screening Calculations for Total Dissolved Solids, Chloride, and Sulfate Menu 3 - Discharge to a Perennial Stream or River

Applicant Name:

City of Kyle (WWTP)

Permit Number, Outfall:

11041-002

Segment Number:

1810

Enter values needed for screening:			Data Source (edit if different)
QE - Average effluent flow	4.5	MGD	
QS - Perennial stream harmonic mean flow	0.20	cfs	2019 Critical conditions memo
QE - Average effluent flow	6.9625	cfs	Calculated
CA - TDS - ambient segment concentration	673	mg/L	2010 IP, Appendix D
CA - chloride - ambient segment concentration	135	mg/L	2010 IP, Appendix D
CA - sulfate - ambient segment concentration	85	mg/L	2010 IP, Appendix D
CC - TDS - segment criterion	1120	mg/L	2014 TSWQS, Appendix A
CC - chloride - segment criterion	350	mg/L	2014 TSWQS, Appendix A
CC - sulfate - segment criterion	150	mg/L	2014 TSWQS, Appendix A
		-	
CE - TDS - average effluent concentration	872	mg/L	Permit application
CE - chloride - average effluent concentration	241	mg/L	Permit application
CE - sulfate - average effluent concentration	104	mg/L	Permit application

#### **Screening Equation**

 $CC \ge [(QS)(CA) + (QE)(CE)]/[QE + QS]$ 

#### **Permit Limit Calculations**

#### **TDS**

	WLA= [CC(QE+QS) -	
Calculate the WLA	(QS)(CA)]/QE	1132.84
Calculate the LTA	LTA = WLA * 0.93	1053.54
Calculate the daily average	Daily Avg. = LTA * 1.47	1548.71
Calculate the daily maximum	Daily Max. = LTA * 3.11	3276.51
	70% of Daily Avg.	
Calculate 70% of the daily average	=	1084.09
	85% of Daily Avg.	
Calculate 85% of the daily average	=	1316.40

No permit limitations needed if:	872	≤	1084.09		
Reporting needed if:	872	>	1084.09	but ≤	1316.40
Permit limits may be needed if:	872	>	1316.40		

## No permit limitations needed for TDS

#### Chloride

emoriae					
	WLA= [CC(				
Calculate the WLA	(QS)(CA)]/		356.18		
Calculate the LTA	LTA = WLA	* 0.93		331.24	
Calculate the daily average	Daily Avg.	= LTA * 1	L.47	486.93	
Calculate the daily maximum	Daily Max.	= LTA *	3.11	1030.17	
	70% of Daily Avg.				
Calculate 70% of the daily average	=				
	85% of Dai	ly Avg.			
Calculate 85% of the daily average	=			413.89	
No permit limitations needed if:	241	≤	340.85		
Reporting needed if:	241	>	340.85	but ≤	413.89
Permit limits may be needed if:	241	>	413.89		

## No permit limitations needed for chloride

## Sulfate

	WLA= [CC(QE+QS) -
Calculate the WLA	(QS)(CA)]/QE 151.87
Calculate the LTA	LTA = WLA * 0.93 141.24
Calculate the daily average	Daily Avg. = LTA * 1.47 <b>207.62</b>
Calculate the daily maximum	Daily Max. = LTA * 3.11 <b>439.25</b> 70% of Daily Avg.
Calculate 70% of the daily average	= 145.33 85% of Daily Avg.
Calculate 85% of the daily average	176.47
No permit limitations needed if:	104 ≤ 145.33
Reporting needed if:	104 > 145.33 but ≤ 176.47
Permit limits may be needed if:	104 > 176.47

## No permit limitations needed for sulfate

## **Attachment C: Calculated Water Quality Based Effluent Limitations**

#### **TEXTOX MENU #3 - PERENNIAL STREAM OR RIVER**

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Freshwater Aquatic Life

Table 2, 2018 Texas Surface Water Quality Standards for Human Health

"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

#### PERMIT INFORMATION

Permittee Name:	City of Kyle
TPDES Permit No.:	WQ0011041002
Outfall No.:	001
Prepared by:	Sonia Bhuiya
Date:	July 11, 2022

#### DISCHARGE INFORMATION

Receiving Waterbody:	Plum Creek	
Segment No.:	1810	
TSS (mg/L):	12	
pH (Standard Units):	7.6	
Hardness (mg/L as CaCO <sub>3</sub> ):	215	
Chloride (mg/L):	135	
Effluent Flow for Aquatic Life (MGD):	12	
Critical Low Flow [7Q2] (cfs):  % Effluent for Chronic Aquatic Life (Mixing	0.1	
Zone):	99.46	
% Effluent for Acute Aquatic Life (ZID):	99.87	
Effluent Flow for Human Health (MGD):	12	
Harmonic Mean Flow (cfs):	0.2	
% Effluent for Human Health:	98.93	
Human Health Criterion (select: PWS, FISH, or INC)	FISH	

#### CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Stream/River Metal	Intercept (b)	Slope (m)	Partition Coefficient (Kp)	Dissolved Fraction (Cd/Ct)	Source	Water Effect Ratio (WER)	Source
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	5.68	-0.73	78018.52	0.516		1.00	Assumed
Cadmium	6.60	-1.13	240173.56	0.258		1.00	Assumed
Chromium (total)	6.52	-0.93	328368.46	0.202		1.00	Assumed
Chromium (trivalent)	6.52	-0.93	328368.46	0.202		1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	6.02	-0.74	166496.80	0.334		1.00	Assumed
Lead	6.45	-0.80	386060.17	0.178		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	5.69	-0.57	118813.75	0.412		1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	6.38	-1.03	185542.46	0.310		1.00	Assumed
Zinc	6.10	-0.70	221092.05	0.274		1.00	Assumed

#### AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	FW Acute Criterion (μg/L)	FW Chronic Criterion (μg/L)	WLAα (μg/L)	WLAc (μg/L)	LTAα (μg/L)	LTAc (μg/L)	Daily Avg. (μg/L)	Daily Max. (μg/L)
Aldrin	3.0	N/A	3.00	N/A	1.72	N/A	2.53	5.35
Aluminum	991	N/A	992	N/A	569	N/A	835	1768
Arsenic	340	150	659	292	378	225	330	699
Cadmium	18.1	0.418	70.2	1.63	40.2	1.26	1.84	3.91
Carbaryl	2.0	N/A	2.00	N/A	1.15	N/A	1.68	3.56
Chlordane	2.4	0.004	2.40	0.00402	1.38	0.00310	0.00455	0.00963
Chlorpyrifos	0.083	0.041	0.0831	0.0412	0.0476	0.0317	0.0466	0.0987
Chromium (trivalent)	1067	139	5276	689	3023	531	779	1650
Chromium (hexavalent)	15.7	10.6	15.7	10.7	9.01	8.21	12.0	25.5
Copper	29.2	18.2	87.7	54.9	50.2	42.3	62.1	131
Cyanide (free)	45.8	10.7	45.9	10.8	26.3	8.28	12.1	25.7
4,4'-DDT	1.1	0.001	1.10	0.00101	0.631	0.000774	0.00113	0.00240
Demeton	N/A	0.1	N/A	0.101	N/A	0.0774	0.113	0.240
Diazinon	0.17	0.17	0.170	0.171	0.0975	0.132	0.143	0.303
Dicofol [Kelthane]	59.3	19.8	59.4	19.9	34.0	15.3	22.5	47.6
Dieldrin	0.24	0.002	0.240	0.00201	0.138	0.00155	0.00227	0.00481
Diuron	210	70	210	70.4	120	54.2	79.6	168
Endosulfan I (alpha)	0.22	0.056	0.220	0.0563	0.126	0.0434	0.0637	0.134
Endosulfan II (beta)	0.22	0.056	0.220	0.0563	0.126	0.0434	0.0637	0.134
Endosulfan sulfate	0.22	0.056	0.220	0.0563	0.126	0.0434	0.0637	0.134
Endrin	0.086	0.002	0.0861	0.00201	0.0493	0.00155	0.00227	0.00481
Guthion [Azinphos Methyl]	N/A	0.01	N/A	0.0101	N/A	0.00774	0.0113	0.0240
Heptachlor	0.52	0.004	0.521	0.00402	0.298	0.00310	0.00455	0.00963
Hexachlorocyclohexane (gamma) [Lindane]	1.126	0.08	1.13	0.0804	0.646	0.0619	0.0910	0.192
Lead	147	5.73	829	32.4	475	25.0	36.7	77.6
Malathion	N/A	0.01	N/A	0.0101	N/A	0.00774	0.0113	0.0240
Mercury	2.4	1.3	2.40	1.31	1.38	1.01	1.47	3.12
Methoxychlor	N/A	0.03	N/A	0.0302	N/A	0.0232	0.0341	0.0722
Mirex	N/A	0.001	N/A	0.00101	N/A	0.000774	0.00113	0.00240
Nickel	895	99.4	2173	242	1245	187	274	580
Nonylphenol	28	6.6	28.0	6.64	16.1	5.11	7.51	15.8
Parathion (ethyl)	0.065	0.013	0.0651	0.0131	0.0373	0.0101	0.0147	0.0312
Pentachlorophenol	15.9	12.2	16.0	12.3	9.15	9.47	13.4	28.4
Phenanthrene	30	30	30.0	30.2	17.2	23.2	25.3	53.5
Polychlorinated Biphenyls [PCBs]	2.0	0.014	2.00	0.0141	1.15	0.0108	0.0159	0.0337
Selenium	20	5	20.0	5.03	11.5	3.87	5.68	12.0
Silver	0.8	N/A	27.9	N/A	16.0	N/A	23.5	49.7
Toxaphene	0.78	0.0002	0.781	0.000201	0.448	0.000155	0.000227	0.000481
Tributyltin [TBT]	0.13	0.024	0.130	0.0241	0.0746	0.0186	0.0273	0.0577
2,4,5 Trichlorophenol	136	64	136	64.3	78.0	49.5	72.8	154
Zinc	224	226	820	830	470	639	690	1461

#### **HUMAN HEALTH**

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	Water and Fish Criterion (µg/L)	Fish Only Criterion (μg/L)	Incidental Fish Criterion (μg/L)	WLAh (μg/L)	LTAh (μg/L)	Daily Avg. (μg/L)	Daily Max. (μg/L)
Acrylonitrile	1.0	115	1150	116	108	158	336
Aldrin	1.146E-05	1.147E-05	1.147E-04	0.0000116	0.0000108	0.0000158	0.0000335
Anthracene	1109	1317	13170	1331	1238	1819	3850
Antimony	6	1071	10710	1083	1007	1479	3131
Arsenic	10	N/A	N/A	N/A	N/A	N/A	N/A

Barium	2000	N/A	N/A	N/A	N/A	N/A	N/A
Benzene	5	581	5810	587	546	802	1698
Benzidine	0.0015	0.107	1.07	0.108	0.101	0.147	0.312
Benzo(a)anthracene	0.024	0.025	0.25	0.0253	0.0235	0.0345	0.0730
Benzo(a)pyrene	0.0025	0.0025	0.025	0.00253	0.00235	0.00345	0.00730
Bis(chloromethyl)ether	0.0024	0.2745	2.745	0.277	0.258	0.379	0.802
Bis(2-chloroethyl)ether	0.60	42.83	428.3	43.3	40.3	59.1	125
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl)							
phthalate] Bromodichloromethane	6	7.55	75.5	7.63	7.10	10.4	22.0
[Dichlorobromomethane]	10.2	275	2750	278	259	380	803
Bromoform [Tribromomethane]	66.9	1060	10600	1071	996	1464	3098
Cadmium	5	N/A	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	4.5	46	460	46.5	43.2	63.5	134
Chlordane	0.0025	0.0025	0.025	0.00253	0.00235	0.00345	0.00730
Chlorobenzene	100	2737	27370	2766	2573	3782	8001
Chlorodibromomethane	7.5	400	1020	405	470	252	F2.4
[Dibromochloromethane]	7.5	183	1830	185	172	252	534
Chloroform [Trichloromethane]	70	7697	76970	7780	7235	10635	22501
Chromium (hexavalent)	62	502	5020	507	472	693	1467
Chrysene	2.45	2.52	25.2	2.55	2.37	3.48	7.36
Cresols [Methylphenols]	1041	9301	93010	9401	8743	12852	27191
Cyanide (free)	200	N/A	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.002	0.002	0.02	0.00202	0.00188	0.00276	0.00584
4,4'-DDE	0.00013	0.00013	0.0013	0.000131	0.000122	0.000179	0.000380
4,4'-DDT	0.0004	0.0004	0.004	0.000404	0.000376	0.000552	0.00116
2,4'-D	70	N/A	N/A	N/A	N/A	N/A	N/A
Danitol [Fenpropathrin]	262	473	4730	478	445	653	1382
1,2-Dibromoethane [Ethylene Dibromide]	0.17 322	4.24 595	42.4 5950	4.29 601	3.99 559	5.85 822	12.3 1739
<i>m</i> -Dichlorobenzene [1,3-Dichlorobenzene] <i>o</i> -Dichlorobenzene [1,2-Dichlorobenzene]	600	3299	32990	3335	3101	4558	9644
	75	N/A	32990 N/A	N/A	N/A	N/A	
p-Dichlorobenzene [1,4-Dichlorobenzene] 3,3'-Dichlorobenzidine	0.79	2.24	22.4	2.26	2.11	3.09	N/A 6.54
1,2-Dichloroethane	5	364	3640	368	342	502	1064
1,1-Dichloroethylene [1,1-Dichloroethene]	7	55114	551140	55708	51808	76157	161123
Dichloromethane [Methylene Chloride]	5	13333	133330	13477	12533	18423	38978
1,2-Dichloropropane	5	259	2590	262	243	357	757
1,3-Dichloropropene [1,3-Dichloropropylene]	2.8	119	1190	120	112	164	347
Dicofol [Kelthane]	0.30	0.30	3	0.303	0.282	0.414	0.877
Dieldrin	2.0E-05	2.0E-05	2.0E-04	0.0000202	0.0000188	0.0000276	0.0000584
2,4-Dimethylphenol	444	8436	84360	8527	7930	11657	24662
Di-n-Butyl Phthalate	88.9	92.4	924	93.4	86.9	127	270
Dioxins/Furans [TCDD Equivalents]	7.80E-08	7.97E-08	7.97E-07	8.06E-08	7.49E-08	1.10E-07	2.32E-07
Endrin	0.02	0.02	0.2	0.0202	0.0188	0.0276	0.0584
Epichlorohydrin	53.5	2013	20130	2035	1892	2781	5884
Ethylbenzene	700	1867	18670	1887	1755	2579	5458
Ethylene Glycol	46744	1.68E+07	1.68E+08	16980970	15792302	23214683	49114058
Fluoride	4000	N/A	N/A	N/A	N/A	N/A	N/A
Heptachlor	8.0E-05	0.0001	0.001	0.000101	0.0000940	0.000138	0.000292
Heptachlor Epoxide	0.00029	0.00029	0.0029	0.000293	0.000273	0.000400	0.000847
Hexachlorobenzene	0.00068	0.00068	0.0068	0.000687	0.000639	0.000939	0.00198
Hexachlorobutadiene	0.21	0.22	2.2	0.222	0.207	0.304	0.643
Hexachlorocyclohexane (alpha)	0.0078	0.0084	0.084	0.00849	0.00790	0.0116	0.0245
Hexachlorocyclohexane (beta)	0.15	0.26	2.6	0.263	0.244	0.359	0.760
Hexachlorocyclohexane (gamma) [Lindane]	0.2	0.341	3.41	0.345	0.321	0.471	0.996
Hexachlorocyclopentadiene	10.7	11.6	116	11.7	10.9	16.0	33.9

Hexachloroethane	1.84	2.33	23.3	2.36	2.19	3.21	6.81
Hexachlorophene	2.05	2.90	29	2.93	2.73	4.00	8.47
4,4'-lsopropylidenediphenol	1092	15982	159820	16154	15023	22084	46722
Lead	1.15	3.83	38.3	21.8	20.3	29.8	63.0
Mercury	0.0122	0.0122	0.122	0.0123	0.0115	0.0168	0.0356
Methoxychlor	2.92	3.0	30	3.03	2.82	4.14	8.77
Methyl Ethyl Ketone	13865	9.92E+05	9.92E+06	1002686	932498	1370771	2900068
Methyl tert-butyl ether [MTBE]	15	10482	104820	10595	9853	14484	30643
Nickel	332	1140	11400	2795	2599	3821	8084
Nitrate-Nitrogen (as Total Nitrogen)	10000	N/A	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	45.7	1873	18730	1893	1761	2588	5475
N-Nitrosodiethylamine	0.0037	2.1	21	2.12	1.97	2.90	6.13
N-Nitroso-di- <i>n</i> -Butylamine	0.119	4.2	42	4.25	3.95	5.80	12.2
Pentachlorobenzene	0.348	0.355	3.55	0.359	0.334	0.490	1.03
Pentachlorophenol	0.22	0.29	2.9	0.293	0.273	0.400	0.847
Polychlorinated Biphenyls [PCBs]	6.4E-04	6.4E-04	6.40E-03	0.000647	0.000602	0.000884	0.00187
Pyridine	23	947	9470	957	890	1308	2768
Selenium	50	N/A	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.23	0.24	2.4	0.243	0.226	0.331	0.701
1,1,2,2-Tetrachloroethane	1.64	26.35	263.5	26.6	24.8	36.4	77.0
Tetrachloroethylene [Tetrachloroethylene]	5	280	2800	283	263	386	818
Thallium	0.12	0.23	2.3	0.232	0.216	0.317	0.672
Toluene	1000	N/A	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.011	0.011	0.11	0.0111	0.0103	0.0152	0.0321
2,4,5-TP [Silvex]	50	369	3690	373	347	509	1078
1,1,1-Trichloroethane	200	784354	7843540	792803	737307	1083841	2293024
1,1,2-Trichloroethane	5	166	1660	168	156	229	485
Trichloroethylene [Trichloroethene]	5	71.9	719	72.7	67.6	99.3	210
2,4,5-Trichlorophenol	1039	1867	18670	1887	1755	2579	5458
TTHM [Sum of Total Trihalomethanes]	80	N/A	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	0.23	16.5	165	16.7	15.5	22.8	48.2

#### CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life	70% of Daily Avg.	85% of Daily Avg.
Parameter	(μg/L)	(μg/L)
Aldrin	1.77	2.15
Aluminum	585	710
Arsenic	231	280
Cadmium	1.29	1.57
Carbaryl	1.18	1.43
Chlordane	0.00318	0.00386
Chlorpyrifos	0.0326	0.0396
Chromium (trivalent)	545	662
Chromium (hexavalent)	8.44	10.2
Copper	43.4	52.8
Cyanide (free)	8.52	10.3
4,4'-DDT	0.000796	0.000967
Demeton	0.0796	0.0967
Diazinon	0.100	0.121
Dicofol [Kelthane]	15.7	19.1
Dieldrin	0.00159	0.00193
Diuron	55.7	67.7

Endosulfan I (alpha)	0.0446	0.0541
Endosulfan II (beta)	0.0446	0.0541
Endosulfan sulfate	0.0446	0.0541
Endrin	0.00159	0.00193
Guthion [Azinphos Methyl]	0.00796	0.00967
Heptachlor	0.00318	0.00386
Hexachlorocyclohexane (gamma) [Lindane]	0.0637	0.0773
Lead	25.7	31.2
Malathion	0.00796	0.00967
Mercury	1.03	1.25
Methoxychlor	0.0238	0.0290
Mirex	0.000796	0.000967
Nickel	192	233
Nonylphenol	5.25	6.38
Parathion (ethyl)	0.0103	0.0125
Pentachlorophenol	9.41	11.4
Phenanthrene	17.7	21.5
Polychlorinated Biphenyls [PCBs]	0.0111	0.0135
Selenium	3.98	4.83
Silver	16.4	19.9
Toxaphene	0.000159	0.000193
Tributyltin [TBT]	0.0191	0.0232
2,4,5 Trichlorophenol	50.9	61.9
Zinc	483	587

Human Health	70% of Daily Avg.	85% of Daily Avg.
Parameter	(μg/L)	(μg/L)
Acrylonitrile	111	135
Aldrin	0.0000110	0.0000134
Anthracene	1273	1546
Antimony	1035	1257
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	561	682
Benzidine	0.103	0.125
Benzo(a)anthracene	0.0241	0.0293
Benzo(a)pyrene	0.00241	0.00293
Bis(chloromethyl)ether	0.265	0.322
Bis(2-chloroethyl)ether	41.4	50.3
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	7.30	8.86
Bromodichloromethane [Dichlorobromomethane]	266	323
Bromoform [Tribromomethane]	1025	1245
Cadmium	N/A	N/A
Carbon Tetrachloride	44.4	54.0
Chlordane	0.00241	0.00293
Chlorobenzene	2647	3214
Chlorodibromomethane [Dibromochloromethane]	177	214
Chloroform [Trichloromethane]	7445	9040
Chromium (hexavalent)	485	589
Chrysene	2.43	2.95
Cresols [Methylphenols]	8996	10924
Cyanide (free)	N/A	N/A

4,4'-DDD	0.00193	0.00234
4,4'-DDE	0.00193	0.00234
4,4'-DDT	0.000123	0.000132
2,4'-D	0.000380 N/A	0.000403 N/A
Danitol [Fenpropathrin]	457	555
1,2-Dibromoethane [Ethylene Dibromide]	4.10	4.98
m-Dichlorobenzene [1,3-Dichlorobenzene]	575	698
	3191	3874
o-Dichlorobenzene [1,2-Dichlorobenzene]  p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A
3,3'-Dichlorobenzidine	2.16	2.63
1,2-Dichloroethane	352	427
	53310	64734
1,1-Dichloroethylene [1,1-Dichloroethene]		
Dichloromethane [Methylene Chloride]	12896	15660
1,2-Dichloropropane	250	304
1,3-Dichloropropene [1,3-Dichloropropylene]	115	139
Dicofol [Kelthane]	0.290	0.352
Dieldrin	0.0000193	0.0000234
2,4-Dimethylphenol	8159	9908
Di-n-Butyl Phthalate	89.3	108
Dioxins/Furans [TCDD Equivalents]	7.70E-08	9.36E-08
Endrin	0.0193	0.0234
Epichlorohydrin	1947	2364
Ethylbenzene	1805	2192
Ethylene Glycol	16250278	19732481
Fluoride	N/A	N/A
Heptachlor	0.0000967	0.000117
Heptachlor Epoxide	0.000280	0.000340
Hexachlorobenzene	0.000657	0.000798
Hexachlorobutadiene	0.212	0.258
Hexachlorocyclohexane (alpha)	0.00812	0.00986
Hexachlorocyclohexane (beta)	0.251	0.305
Hexachlorocyclohexane (gamma) [Lindane]	0.329	0.400
Hexachlorocyclopentadiene	11.2	13.6
Hexachloroethane	2.25	2.73
Hexachlorophene	2.80	3.40
4,4'-Isopropylidenediphenol	15459	18771
Lead	20.8	25.3
Mercury	0.0118	0.0143
Methoxychlor	2.90	3.52
Methyl Ethyl Ketone	959540	1165156
Methyl tert-butyl ether [MTBE]	10139	12311
Nickel	2674	3248
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene		
THE ODE IZE ITE	1811	2199
N-Nitrosodiethylamine	2.03	2199 2.46
N-Nitrosodiethylamine	2.03	2.46
N-Nitrosodiethylamine N-Nitroso-di- <i>n</i> -Butylamine	2.03 4.06	2.46 4.93
N-Nitrosodiethylamine N-Nitroso-di- <i>n</i> -Butylamine Pentachlorobenzene	2.03 4.06 0.343	2.46 4.93 0.416
N-Nitrosodiethylamine N-Nitroso-di- <i>n</i> -Butylamine Pentachlorobenzene Pentachlorophenol	2.03 4.06 0.343 0.280	2.46 4.93 0.416 0.340
N-Nitrosodiethylamine N-Nitroso-di- <i>n</i> -Butylamine Pentachlorobenzene Pentachlorophenol Polychlorinated Biphenyls [PCBs]	2.03 4.06 0.343 0.280 0.000619	2.46 4.93 0.416 0.340 0.000751
N-Nitrosodiethylamine N-Nitroso-di- <i>n</i> -Butylamine Pentachlorobenzene Pentachlorophenol Polychlorinated Biphenyls [PCBs] Pyridine	2.03 4.06 0.343 0.280 0.000619 916	2.46 4.93 0.416 0.340 0.000751 1112
N-Nitrosodiethylamine N-Nitroso-di- <i>n</i> -Butylamine Pentachlorobenzene Pentachlorophenol Polychlorinated Biphenyls [PCBs] Pyridine Selenium	2.03 4.06 0.343 0.280 0.000619 916 N/A	2.46 4.93 0.416 0.340 0.000751 1112 N/A
N-Nitrosodiethylamine N-Nitroso-di- <i>n</i> -Butylamine Pentachlorobenzene Pentachlorophenol Polychlorinated Biphenyls [PCBs] Pyridine Selenium 1,2,4,5-Tetrachlorobenzene	2.03 4.06 0.343 0.280 0.000619 916 N/A 0.232	2.46 4.93 0.416 0.340 0.000751 1112 N/A 0.281

Toluene	N/A	N/A
Toxaphene	0.0106	0.0129
2,4,5-TP [Silvex]	356	433
1,1,1-Trichloroethane	758688	921264
1,1,2-Trichloroethane	160	194
Trichloroethylene [Trichloroethene]	69.5	84.4
2,4,5-Trichlorophenol	1805	2192
TTHM [Sum of Total Trihalomethanes]	N/A	N/A
Vinyl Chloride	15.9	19.3



TPDES PERMIT NO. WQ0011041002 [For TCEQ office use only - EPA I.D. No. TX0119466]

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY P.O. Box 13087 Austin, Texas 78711-3087

This is a renewal that replaces TPDES Permit No. WQ0011041002 issued on October 6, 2020.

#### PERMIT TO DISCHARGE WASTES

under provisions of Section 402 of the Clean Water Act and Chapter 26 of the Texas Water Code

City of Kyle

whose mailing address is

100 West Center Street Kyle, Texas 78640

is authorized to treat and discharge wastes from the City of Kyle Wastewater Treatment Facility, SIC Code 4952

located at 941 New Bridge Drive in Hays County, Texas 78640

directly to Plum Creek in Segment No. 1810 of the Guadalupe River Basin

only according to effluent limitations, monitoring requirements, and other conditions set forth in this permit, as well as the rules of the Texas Commission on Environmental Quality (TCEQ), the laws of the State of Texas, and other orders of the TCEQ. The issuance of this permit does not grant to the permittee the right to use private or public property for conveyance of wastewater along the discharge route described in this permit. This includes, but is not limited to, property belonging to any individual, partnership, corporation, or other entity. Neither does this permit authorize any invasion of personal rights nor any violation of federal, state, or local laws or regulations. It is the responsibility of the permittee to acquire property rights as may be necessary to use the discharge route.

This permit shall expire at midnight, three years fro	m the date of issuance.
ISSUED DATE:	
•	For the Commission

#### INTERIM I EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Outfall Number 001

1. During the period beginning upon the date of issuance and lasting through the completion of expansion to the 9.0 million gallons per day (MGD) facility, the permittee is authorized to discharge subject to the following effluent limitations:

The annual average flow of effluent shall not exceed 4.5 MGD, nor shall the average discharge during any two-hour period (2-hour peak) exceed 12,500 gallons per minute (gpm).

Effluent Characteristic		Discharge Limitations				itoring Requirements
	Daily Avg	7-day Avg	Daily Max	Single Grab	Report Daily	Avg. & Daily Max.
	mg/l (lbs/day)	mg/l	mg/l	mg/l	Measurement Frequency	Sample Type
Flow, MGD	Report	N/A	Report	N/A	Continuous	<b>Totalizing Meter</b>
Carbonaceous Biochemical Oxygen Demand (5-day)	10 (375)	15	25	35	Two/week	Composite
Total Suspended Solids	15 (563)	25	40	60	Two/week	Composite
Ammonia Nitrogen	2 (75)	5	10	15	Two/week	Composite
E. coli, colony-forming units or most probable number per	126	N/A	399	N/A	Daily	Grab

- 2. The permittee shall utilize an Ultraviolet Light (UV) system for disinfection purposes. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.
- 3. The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units and shall be monitored once per week by grab sample.
- 4. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
- 5. Effluent monitoring samples shall be taken at the following location(s): Following the final treatment unit.
- 6. The effluent shall contain a minimum dissolved oxygen of 5.0 mg/l and shall be monitored twice per week by grab sample.
- 7. The annual average flow and maximum 2-hour peak flow shall be reported monthly.

#### INTERIM II EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Outfall Number 001

1. During the period beginning upon the date of completion of expansion to the 9.0 million gallons per day (MGD) facility and lasting through the date of completion of expansion to the 12.0 MGD facility, the permittee is authorized to discharge subject to the following effluent limitations:

The annual average flow of effluent shall not exceed 9.0 MGD, nor shall the average discharge during any two-hour period (2-hour peak) exceed 25,000 gallons per minute (gpm).

Effluent Characteristic	Discharge Limitations			Min. Self-Mor	nitoring Requirements	
	Daily Avg mg/l (lbs/day)	7-day Avg mg/l	Daily Max mg/l	Single Grab mg/l	Report Daily Measurement Frequency	Avg. & Daily Max. Sample Type
Flow, MGD	Report	N/A	Report	N/A	Continuous	<b>Totalizing Meter</b>
Carbonaceous Biochemical Oxygen Demand (5-day)	7 (525)	12	22	32	Five/Week	Composite
Total Suspended Solids	15 (1,126)	25	40	60	Five/Week	Composite
Ammonia Nitrogen	2 (150)	5	10	15	Five/Week	Composite
Total Phosphorus	0.5 (38)	1	2	3	Five/Week	Composite
<i>E. coli</i> , colony-forming units or most probable number per 100 ml	126	N/A	399	N/A	Daily	Grab

- 2. The permittee shall utilize an Ultraviolet Light (UV) system for disinfection purposes. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.
- 3. The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units and shall be monitored five times per week by grab sample.
- 4. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
- 5. Effluent monitoring samples shall be taken at the following location(s): Following the final treatment unit.
- 6. The effluent shall contain a minimum dissolved oxygen of 5.0 mg/l and shall be monitored once per day by grab sample.
- 7. The annual average flow and maximum 2-hour peak flow shall be reported monthly.

#### FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Outfall Number 001

1. During the period beginning upon the completion of expansion to the 12.0 million gallons per day (MGD) facility and lasting through the date of expiration, the permittee is authorized to discharge subject to the following effluent limitations:

The annual average flow of effluent shall not exceed 12.0 MGD, nor shall the average discharge during any two-hour period (2-hour peak) exceed 39,344 gallons per minute (gpm).

Effluent Characteristic		Discharge Limitations			Min. Self-Monitoring Requirements  Report Daily Avg. & Daily Max.  Measurement Sample Type  Frequency		
	Daily Avg mg/l (lbs/day)		7-day Avg Daily Max mg/l mg/l				
Flow, MGD	Report	N/A	Report	N/A	Continuous	Totalizing Meter	
Carbonaceous Biochemical Oxygen Demand (5-day)	5 (500)	10	20	30	One/day	Composite	
<b>Total Suspended Solids</b>	15 (1,501)	25	40	60	One/day	Composite	
Ammonia Nitrogen	2 (200)	5	10	15	One/day	Composite	
Total Phosphorus	0.5 (50)	1	2	3	One/day	Composite	
<i>E. coli</i> , colony-forming units or most probable number per 100 ml	126	N/A	399	N/A	Daily	Grab	

- 2. The permittee shall utilize an Ultraviolet Light (UV) system for disinfection purposes. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.
- 3. The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units and shall be monitored once per day by grab sample.
- 4. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
- 5. Effluent monitoring samples shall be taken at the following location(s): Following the final treatment unit.
- 6. The effluent shall contain a minimum dissolved oxygen of 5.0 mg/l and shall be monitored once per day by grab sample.
- 7. The annual average flow and maximum 2-hour peak flow shall be reported monthly.

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#### **DEFINITIONS AND STANDARD PERMIT CONDITIONS**

As required by Title 30 Texas Administrative Code (TAC) Chapter 305, certain regulations appear as standard conditions in waste discharge permits. 30 TAC § 305.121 - 305.129 (relating to Permit Characteristics and Conditions) as promulgated under the Texas Water Code (TWC) §§ 5.103 and 5.105, and the Texas Health and Safety Code (THSC) §§ 361.017 and 361.024(a), establish the characteristics and standards for waste discharge permits, including sewage sludge, and those sections of 40 Code of Federal Regulations (CFR) Part 122 adopted by reference by the Commission. The following text includes these conditions and incorporates them into this permit. All definitions in TWC § 26.001 and 30 TAC Chapter 305 shall apply to this permit and are incorporated by reference. Some specific definitions of words or phrases used in this permit are as follows:

#### 1. Flow Measurements

- a. Annual average flow the arithmetic average of all daily flow determinations taken within the preceding 12 consecutive calendar months. The annual average flow determination shall consist of daily flow volume determinations made by a totalizing meter, charted on a chart recorder and limited to major domestic wastewater discharge facilities with one million gallons per day or greater permitted flow.
- b. Daily average flow the arithmetic average of all determinations of the daily flow within a period of one calendar month. The daily average flow determination shall consist of determinations made on at least four separate days. If instantaneous measurements are used to determine the daily flow, the determination shall be the arithmetic average of all instantaneous measurements taken during that month. Daily average flow determination for intermittent discharges shall consist of a minimum of three flow determinations on days of discharge.
- c. Daily maximum flow the highest total flow for any 24-hour period in a calendar month.
- d. Instantaneous flow the measured flow during the minimum time required to interpret the flow measuring device.
- e. 2-hour peak flow (domestic wastewater treatment plants) the maximum flow sustained for a two-hour period during the period of daily discharge. The average of multiple measurements of instantaneous maximum flow within a two-hour period may be used to calculate the 2-hour peak flow.
- f. Maximum 2-hour peak flow (domestic wastewater treatment plants) the highest 2-hour peak flow for any 24-hour period in a calendar month.

#### 2. Concentration Measurements

- a. Daily average concentration the arithmetic average of all effluent samples, composite or grab as required by this permit, within a period of one calendar month, consisting of at least four separate representative measurements.
  - i. For domestic wastewater treatment plants When four samples are not available in a calendar month, the arithmetic average (weighted by flow) of all values in the previous four consecutive month period consisting of at least four measurements shall be utilized as the daily average concentration.

- ii. For all other wastewater treatment plants When four samples are not available in a calendar month, the arithmetic average (weighted by flow) of all values taken during the month shall be utilized as the daily average concentration.
- b. 7-day average concentration the arithmetic average of all effluent samples, composite or grab as required by this permit, within a period of one calendar week, Sunday through Saturday.
- c. Daily maximum concentration the maximum concentration measured on a single day, by the sample type specified in the permit, within a period of one calendar month.
- d. Daily discharge the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the sampling day.

The daily discharge determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the daily discharge determination of concentration shall be the arithmetic average (weighted by flow value) of all samples collected during that day.

- e. Bacteria concentration (*E. coli* or Enterococci) Colony Forming Units (CFU) or Most Probable Number (MPN) of bacteria per 100 milliliters effluent. The daily average bacteria concentration is a geometric mean of the values for the effluent samples collected in a calendar month. The geometric mean shall be determined by calculating the nth root of the product of all measurements made in a calendar month, where n equals the number of measurements made; or, computed as the antilogarithm of the arithmetic mean of the logarithms of all measurements made in a calendar month. For any measurement of bacteria equaling zero, a substituted value of one shall be made for input into either computation method. If specified, the 7-day average for bacteria is the geometric mean of the values for all effluent samples collected during a calendar week.
- f. Daily average loading (lbs/day) the arithmetic average of all daily discharge loading calculations during a period of one calendar month. These calculations must be made for each day of the month that a parameter is analyzed. The daily discharge, in terms of mass (lbs/day), is calculated as (Flow, MGD x Concentration, mg/l x 8.34).
- g. Daily maximum loading (lbs/day) the highest daily discharge, in terms of mass (lbs/day), within a period of one calendar month.

### 3. Sample Type

a. Composite sample - For domestic wastewater, a composite sample is a sample made up of a minimum of three effluent portions collected in a continuous 24-hour period or during the period of daily discharge if less than 24 hours, and combined in volumes proportional to flow, and collected at the intervals required by 30 TAC § 319.9 (a). For industrial wastewater, a composite sample is a sample made up of a minimum of three effluent portions collected in a continuous 24-hour period or during the period of daily discharge if less than 24 hours, and combined in volumes proportional to flow, and collected at the intervals required by 30 TAC § 319.9 (b).

- b. Grab sample an individual sample collected in less than 15 minutes.
- 4. Treatment Facility (facility) wastewater facilities used in the conveyance, storage, treatment, recycling, reclamation and/or disposal of domestic sewage, industrial wastes, agricultural wastes, recreational wastes, or other wastes including sludge handling or disposal facilities under the jurisdiction of the Commission.
- 5. The term "sewage sludge" is defined as solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in 30 TAC Chapter 312. This includes the solids that have not been classified as hazardous waste separated from wastewater by unit processes.
- 6. The term "biosolids" is defined as sewage sludge that has been tested or processed to meet Class A, Class AB, or Class B pathogen standards in 30 TAC Chapter 312 for beneficial use.
- 7. Bypass the intentional diversion of a waste stream from any portion of a treatment facility.

#### MONITORING AND REPORTING REQUIREMENTS

#### 1. Self-Reporting

Monitoring results shall be provided at the intervals specified in the permit. Unless otherwise specified in this permit or otherwise ordered by the Commission, the permittee shall conduct effluent sampling and reporting in accordance with 30 TAC §§ 319.4 - 319.12. Unless otherwise specified, effluent monitoring data shall be submitted each month, to the Compliance Monitoring Team of the Enforcement Division (MC 224), by the 20th day of the following month for each discharge which is described by this permit whether or not a discharge is made for that month. Monitoring results must be submitted online using the NetDMR reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. Monitoring results must be signed and certified as required by Monitoring and Reporting Requirements No. 10.

As provided by state law, the permittee is subject to administrative, civil and criminal penalties, as applicable, for negligently or knowingly violating the Clean Water Act (CWA); TWC §§ 26, 27, and 28; and THSC § 361, including but not limited to knowingly making any false statement, representation, or certification on any report, record, or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, or falsifying, tampering with or knowingly rendering inaccurate any monitoring device or method required by this permit or violating any other requirement imposed by state or federal regulations.

#### 2. Test Procedures

- a. Unless otherwise specified in this permit, test procedures for the analysis of pollutants shall comply with procedures specified in 30 TAC §§ 319.11 319.12. Measurements, tests, and calculations shall be accurately accomplished in a representative manner.
- b. All laboratory tests submitted to demonstrate compliance with this permit must meet the requirements of 30 TAC § 25, Environmental Testing Laboratory Accreditation and Certification.

#### 3. Records of Results

a. Monitoring samples and measurements shall be taken at times and in a manner so as to be representative of the monitored activity.

- b. Except for records of monitoring information required by this permit related to the permittee's sewage sludge or biosolids 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), monitoring and reporting records, including strip charts and records of calibration and maintenance, copies of all records required by this permit, records of all data used to complete the application for this permit, and the certification required by 40 CFR § 264.73(b)(9) shall be retained at the facility site, or shall be readily available for review by a TCEQ representative for a period of three years from the date of the record or sample, measurement, report, application or certification. This period shall be extended at the request of the Executive Director.
- c. Records of monitoring activities shall include the following:
  - i. date, time and place of sample or measurement;
  - ii. identity of individual who collected the sample or made the measurement.
  - iii. date and time of analysis;
  - iv. identity of the individual and laboratory who performed the analysis;
  - v. the technique or method of analysis; and
  - vi. the results of the analysis or measurement and quality assurance/quality control records.

The period during which records are required to be kept shall be automatically extended to the date of the final disposition of any administrative or judicial enforcement action that may be instituted against the permittee.

#### 4. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit using approved analytical methods as specified above, all results of such monitoring shall be included in the calculation and reporting of the values submitted on the approved self-report form. Increased frequency of sampling shall be indicated on the self-report form.

#### 5. Calibration of Instruments

All automatic flow measuring or recording devices and all totalizing meters for measuring flows shall be accurately calibrated by a trained person at plant start-up and as often thereafter as necessary to ensure accuracy, but not less often than annually unless authorized by the Executive Director for a longer period. Such person shall verify in writing that the device is operating properly and giving accurate results. Copies of the verification shall be retained at the facility site and/or shall be readily available for review by a TCEQ representative for a period of three years.

#### 6. Compliance Schedule Reports

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date to the Regional Office and the Compliance Monitoring Team of the Enforcement Division (MC 224).

#### 7. Noncompliance Notification

- a. In accordance with 30 TAC § 305.125(9) any noncompliance which may endanger human health or safety, or the environment shall be reported by the permittee to the TCEQ. Except as allowed by 30 TAC § 305.132, report of such information shall be provided orally or by facsimile transmission (FAX) to the Regional Office within 24 hours of becoming aware of the noncompliance. A written submission of such information shall also be provided by the permittee to the Regional Office and the Compliance Monitoring Team of the Enforcement Division (MC 224) within five working days of becoming aware of the noncompliance. For Publicly Owned Treatment Works (POTWs), effective December 21, 2025, the permittee must submit the written report for unauthorized discharges and unanticipated bypasses that exceed any effluent limit in the permit using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. The written submission shall contain a description of the noncompliance and its cause; the potential danger to human health or safety, or the environment; the period of noncompliance, including exact dates and times; if the noncompliance has not been corrected, the time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance, and to mitigate its adverse effects.
- b. The following violations shall be reported under Monitoring and Reporting Requirement 7.a.:
  - i. Unauthorized discharges as defined in Permit Condition 2(g).
  - ii. Any unanticipated bypass that exceeds any effluent limitation in the permit.
  - iii. Violation of a permitted maximum daily discharge limitation for pollutants listed specifically in the Other Requirements section of an Industrial TPDES permit.
- c. In addition to the above, any effluent violation which deviates from the permitted effluent limitation by more than 40% shall be reported by the permittee in writing to the Regional Office and the Compliance Monitoring Team of the Enforcement Division (MC 224) within 5 working days of becoming aware of the noncompliance.
- d. Any noncompliance other than that specified in this section, or any required information not submitted or submitted incorrectly, shall be reported to the Compliance Monitoring Team of the Enforcement Division (MC 224) as promptly as possible. For effluent limitation violations, noncompliances shall be reported on the approved self-report form.
- 8. In accordance with the procedures described in 30 TAC §§ 35.301 35.303 (relating to Water Quality Emergency and Temporary Orders) if the permittee knows in advance of the need for a bypass, it shall submit prior notice by applying for such authorization.
- 9. Changes in Discharges of Toxic Substances

All existing manufacturing, commercial, mining, and silvicultural permittees shall notify the Regional Office, orally or by facsimile transmission within 24 hours, and both the Regional Office and the Compliance Monitoring Team of the Enforcement Division (MC 224) in writing within five (5) working days, after becoming aware of or having reason to believe:

- a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant listed at 40 CFR Part 122, Appendix D, Tables II and III (excluding Total Phenols) which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
  - i. One hundred micrograms per liter (100  $\mu$ g/L);
  - ii. Two hundred micrograms per liter (200  $\mu$ g/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500  $\mu$ g/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
  - iii. Five (5) times the maximum concentration value reported for that pollutant in the permit application; or
  - iv. The level established by the TCEQ.
- b. That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
  - i. Five hundred micrograms per liter (500  $\mu$ g/L);
  - ii. One milligram per liter (1 mg/L) for antimony;
  - iii. Ten (10) times the maximum concentration value reported for that pollutant in the permit application; or
  - iv. The level established by the TCEQ.

#### 10. Signatories to Reports

All reports and other information requested by the Executive Director shall be signed by the person and in the manner required by 30 TAC § 305.128 (relating to Signatories to Reports).

- 11. All POTWs must provide adequate notice to the Executive Director of the following:
  - a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to CWA § 301 or § 306 if it were directly discharging those pollutants;
  - b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit; and
  - c. For the purpose of this paragraph, adequate notice shall include information on:
    - i. The quality and quantity of effluent introduced into the POTW; and
    - ii. Any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

#### PERMIT CONDITIONS

#### 1. General

- a. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in an application or in any report to the Executive Director, it shall promptly submit such facts or information.
- b. This permit is granted on the basis of the information supplied and representations made by the permittee during action on an application, and relying upon the accuracy and completeness of that information and those representations. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked, in whole or in part, in accordance with 30 TAC Chapter 305, Subchapter D, during its term for good cause including, but not limited to, the following:
  - i. Violation of any terms or conditions of this permit;
  - ii. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
  - iii. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
- c. The permittee shall furnish to the Executive Director, upon request and within a reasonable time, any information to determine whether cause exists for amending, revoking, suspending or terminating the permit. The permittee shall also furnish to the Executive Director, upon request, copies of records required to be kept by the permit.

#### 2. Compliance

- a. Acceptance of the permit by the person to whom it is issued constitutes acknowledgment and agreement that such person will comply with all the terms and conditions embodied in the permit, and the rules and other orders of the Commission.
- b. The permittee has a duty to comply with all conditions of the permit. Failure to comply with any permit condition constitutes a violation of the permit and the Texas Water Code or the Texas Health and Safety Code, and is grounds for enforcement action, for permit amendment, revocation, or suspension, or for denial of a permit renewal application or an application for a permit for another facility.
- c. 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 the permit.
- d. The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal or other permit violation that has a reasonable likelihood of adversely affecting human health or the environment.
- e. Authorization from the Commission is required before beginning any change in the permitted facility or activity that may result in noncompliance with any permit requirements.

- f. A permit may be amended, suspended and reissued, or revoked for cause in accordance with 30 TAC §§ 305.62 and 305.66 and TWC§ 7.302. The filing of a request by the permittee for a permit amendment, suspension and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
- g. There shall be no unauthorized discharge of wastewater or any other waste. For the purpose of this permit, an unauthorized discharge is considered to be any discharge of wastewater into or adjacent to water in the state at any location not permitted as an outfall or otherwise defined in the Other Requirements section of this permit.
- h. In accordance with 30 TAC § 305.535(a), the permittee may allow any bypass to occur from a TPDES permitted facility which does not cause permitted effluent limitations to be exceeded or an unauthorized discharge to occur, but only if the bypass is also for essential maintenance to assure efficient operation.
- i. The permittee is subject to administrative, civil, and criminal penalties, as applicable, under TWC §§ 7.051 7.075 (relating to Administrative Penalties), 7.101 7.111 (relating to Civil Penalties), and 7.141 7.202 (relating to Criminal Offenses and Penalties) for violations including, but not limited to, negligently or knowingly violating the federal CWA §§ 301, 302, 306, 307, 308, 318, or 405, or any condition or limitation implementing any sections in a permit issued under the CWA § 402, or any requirement imposed in a pretreatment program approved under the CWA §§ 402 (a)(3) or 402 (b)(8).

#### 3. Inspections and Entry

- a. Inspection and entry shall be allowed as prescribed in the TWC Chapters 26, 27, and 28, and THSC § 361.
- b. The members of the Commission and employees and agents of the Commission are entitled to enter any public or private property at any reasonable time for the purpose of inspecting and investigating conditions relating to the quality of water in the state or the compliance with any rule, regulation, permit or other order of the Commission. Members, employees, or agents of the Commission and Commission contractors are entitled to enter public or private property at any reasonable time to investigate or monitor or, if the responsible party is not responsive or there is an immediate danger to public health or the environment, to remove or remediate a condition related to the quality of water in the state. Members, employees, Commission contractors, or agents acting under this authority who enter private property shall observe the establishment's rules and regulations concerning safety, internal security, and fire protection, and if the property has management in residence, shall notify management or the person then in charge of his presence and shall exhibit proper credentials. If any member, employee, Commission contractor, or agent is refused the right to enter in or on public or private property under this authority, the Executive Director may invoke the remedies authorized in TWC § 7.002. The statement above, that Commission entry shall occur in accordance with an establishment's rules and regulations concerning safety, internal security, and fire protection, is not grounds for denial or restriction of entry to any part of the facility, but merely describes the Commission's duty to observe appropriate rules and regulations during an inspection.

- 4. Permit Amendment and/or Renewal
  - a. The permittee shall give notice to the Executive Director as soon as possible of any planned physical alterations or additions to the permitted facility if such alterations or additions would require a permit amendment or result in a violation of permit requirements. Notice shall also be required under this paragraph when:
    - i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in accordance with 30 TAC § 305.534 (relating to New Sources and New Dischargers); or
    - ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in the permit, nor to notification requirements in Monitoring and Reporting Requirements No. 9; or
    - iii. 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 that are 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. Prior to any facility modifications, additions, or expansions that will increase the plant capacity beyond the permitted flow, the permittee must apply for and obtain proper authorization from the Commission before commencing construction.
  - c. The permittee must apply for an amendment or renewal at least 180 days prior to expiration of the existing permit in order to continue a permitted activity after the expiration date of the permit. If an application is submitted prior to the expiration date of the permit, the existing permit shall remain in effect until the application is approved, denied, or returned. If the application is returned or denied, authorization to continue such activity shall terminate upon the effective date of the action. If an application is not submitted prior to the expiration date of the permit, the permit shall expire and authorization to continue such activity shall terminate.
  - d. Prior to accepting or generating wastes which are not described in the permit application or which would result in a significant change in the quantity or quality of the existing discharge, the permittee must report the proposed changes to the Commission. The permittee must apply for a permit amendment reflecting any necessary changes in permit conditions, including effluent limitations for pollutants not identified and limited by this permit.
  - e. In accordance with the TWC § 26.029(b), after a public hearing, notice of which shall be given to the permittee, the Commission may require the permittee, from time to time, for good cause, in accordance with applicable laws, to conform to new or additional conditions.
  - f. If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under CWA § 307(a) for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or

prohibition. The permittee shall comply with effluent standards or prohibitions established under CWA § 307(a) for toxic pollutants within the time provided in the regulations that established those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

#### 5. Permit Transfer

- a. Prior to any transfer of this permit, Commission approval must be obtained. The Commission shall be notified in writing of any change in control or ownership of facilities authorized by this permit. Such notification should be sent to the Applications Review and Processing Team (MC 148) of the Water Quality Division.
- b. A permit may be transferred only according to the provisions of 30 TAC § 305.64 (relating to Transfer of Permits) and 30 TAC § 50.133 (relating to Executive Director Action on Application or WQMP update).

#### 6. Relationship to Hazardous Waste Activities

This permit does not authorize any activity of hazardous waste storage, processing, or disposal that requires a permit or other authorization pursuant to the Texas Health and Safety Code.

#### 7. Relationship to Water Rights

Disposal of treated effluent by any means other than discharge directly to water in the state must be specifically authorized in this permit and may require a permit pursuant to TWC Chapter 11.

### 8. Property Rights

A permit does not convey any property rights of any sort, or any exclusive privilege.

#### 9. Permit Enforceability

The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

#### 10. Relationship to Permit Application

The application pursuant to which the permit has been issued is incorporated herein; provided, however, that in the event of a conflict between the provisions of this permit and the application, the provisions of the permit shall control.

#### 11. Notice of Bankruptcy

- a. Each permittee shall notify the Executive Director, in writing, immediately following the filing of a voluntary or involuntary petition for bankruptcy under any chapter of Title 11 (Bankruptcy) of the United States Code (11 USC) by or against:
  - i. the permittee;
  - ii. an entity (as that term is defined in 11 USC, § 101(14)) controlling the permittee or listing the permit or permittee as property of the estate; or

- iii. an affiliate (as that term is defined in 11 USC, § 101(2)) of the permittee.
- b. This notification must indicate:
  - i. the name of the permittee;
  - ii. the permit number(s);
  - iii. the bankruptcy court in which the petition for bankruptcy was filed; and
  - iv. the date of filing of the petition.

#### **OPERATIONAL REQUIREMENTS**

- 1. The permittee shall at all times ensure that the facility and all of its systems of collection, treatment, and disposal are properly operated and maintained. This includes, but is not limited to, the regular, periodic examination of wastewater solids within the treatment plant by the operator in order to maintain an appropriate quantity and quality of solids inventory as described in the various operator training manuals and according to accepted industry standards for process control. Process control, maintenance, and operations records shall be retained at the facility site, or shall be readily available for review by a TCEQ representative, for a period of three years.
- 2. Upon request by the Executive Director, the permittee shall take appropriate samples and provide proper analysis in order to demonstrate compliance with Commission rules. Unless otherwise specified in this permit or otherwise ordered by the Commission, the permittee shall comply with all applicable provisions of 30 TAC Chapter 312 concerning sewage sludge or biosolids use and disposal and 30 TAC §§ 319.21 319.29 concerning the discharge of certain hazardous metals.
- 3. Domestic wastewater treatment facilities shall comply with the following provisions:
  - a. The permittee shall notify the Municipal Permits Team, Wastewater Permitting Section (MC 148) of the Water Quality Division, in writing, of any facility expansion at least 90 days prior to conducting such activity.
  - b. The permittee shall submit a closure plan for review and approval to the Municipal Permits Team, Wastewater Permitting Section (MC 148) of the Water Quality Division, for any closure activity at least 90 days prior to conducting such activity. Closure is the act of permanently taking a waste management unit or treatment facility out of service and includes the permanent removal from service of any pit, tank, pond, lagoon, surface impoundment and/or other treatment unit regulated by this permit.
- 4. The permittee is responsible for installing prior to plant start-up, and subsequently maintaining, adequate safeguards to prevent the discharge of untreated or inadequately treated wastes during electrical power failures by means of alternate power sources, standby generators, and/or retention of inadequately treated wastewater.
- 5. Unless otherwise specified, the permittee shall provide a readily accessible sampling point and, where applicable, an effluent flow measuring device or other acceptable means by which effluent flow may be determined.

6. The permittee shall remit an annual water quality fee to the Commission as required by 30 TAC Chapter 21. Failure to pay the fee may result in revocation of this permit under TWC § 7.302(b)(6).

#### 7. Documentation

For all written notifications to the Commission required of the permittee by this permit, the permittee shall keep and make available a copy of each such notification under the same conditions as self-monitoring data are required to be kept and made available. Except for information required for TPDES permit applications, effluent data, including effluent data in permits, draft permits and permit applications, and other information specified as not confidential in 30 TAC §§ 1.5(d), any information submitted pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted in the manner prescribed in the application form or by stamping the words confidential business information on each page containing such information. If no claim is made at the time of submission, information may be made available to the public without further notice. If the Commission or Executive Director agrees with the designation of confidentiality, the TCEQ will not provide the information for public inspection unless required by the Texas Attorney General or a court pursuant to an open records request. If the Executive Director does not agree with the designation of confidentiality, the person submitting the information will be notified.

- 8. Facilities that generate domestic wastewater shall comply with the following provisions; domestic wastewater treatment facilities at permitted industrial sites are excluded.
  - a. Whenever flow measurements for any domestic sewage treatment facility reach 75% of the permitted daily average or annual average flow for three consecutive months, the permittee must initiate engineering and financial planning for expansion and/or upgrading of the domestic wastewater treatment and/or collection facilities. Whenever the flow reaches 90% of the permitted daily average or annual average flow for three consecutive months, the permittee shall obtain necessary authorization from the Commission to commence construction of the necessary additional treatment and/or collection facilities. In the case of a domestic wastewater treatment facility which reaches 75% of the permitted daily average or annual average flow for three consecutive months, and the planned population to be served or the quantity of waste produced is not expected to exceed the design limitations of the treatment facility, the permittee shall submit an engineering report supporting this claim to the Executive Director of the Commission.

If in the judgment of the Executive Director the population to be served will not cause permit noncompliance, then the requirement of this section may be waived. To be effective, any waiver must be in writing and signed by the Director of the Enforcement Division (MC 219) of the Commission, and such waiver of these requirements will be reviewed upon expiration of the existing permit; however, any such waiver shall not be interpreted as condoning or excusing any violation of any permit parameter.

b. The plans and specifications for domestic sewage collection and treatment works associated with any domestic permit must be approved by the Commission and failure to secure approval before commencing construction of such works or making a discharge is a violation of this permit and each day is an additional violation until approval has been secured.

- c. Permits for domestic wastewater treatment plants are granted subject to the policy of the Commission to encourage the development of area-wide waste collection, treatment, and disposal systems. The Commission reserves the right to amend any domestic wastewater permit in accordance with applicable procedural requirements to require the system covered by this permit to be integrated into an area-wide system, should such be developed; to require the delivery of the wastes authorized to be collected in, treated by or discharged from said system, to such area-wide system; or to amend this permit in any other particular to effectuate the Commission's policy. Such amendments may be made when the changes required are advisable for water quality control purposes and are feasible on the basis of waste treatment technology, engineering, financial, and related considerations existing at the time the changes are required, exclusive of the loss of investment in or revenues from any then existing or proposed waste collection, treatment or disposal system.
- 9. Domestic wastewater treatment plants shall be operated and maintained by sewage plant operators holding a valid certificate of competency at the required level as defined in 30 TAC Chapter 30.
- 10. For Publicly Owned Treatment Works (POTWs), the 30-day average (or monthly average) percent removal for BOD and TSS shall not be less than 85%, unless otherwise authorized by this permit.
- 11. Facilities that generate industrial solid waste as defined in 30 TAC § 335.1 shall comply with these provisions:
  - a. Any solid waste, as defined in 30 TAC § 335.1 (including but not limited to such wastes as garbage, refuse, sludge from a waste treatment, water supply treatment plant or air pollution control facility, discarded materials, discarded materials to be recycled, whether the waste is solid, liquid, or semisolid), generated by the permittee during the management and treatment of wastewater, must be managed in accordance with all applicable provisions of 30 TAC Chapter 335, relating to Industrial Solid Waste Management.
  - b. Industrial wastewater that is being collected, accumulated, stored, or processed before discharge through any final discharge outfall, specified by this permit, is considered to be industrial solid waste until the wastewater passes through the actual point source discharge and must be managed in accordance with all applicable provisions of 30 TAC Chapter 335.
  - c. The permittee shall provide written notification, pursuant to the requirements of 30 TAC § 335.8(b)(1), to the Corrective Action Section (MC 127) of the Remediation Division informing the Commission of any closure activity involving an Industrial Solid Waste Management Unit, at least 90 days prior to conducting such an activity.
  - d. Construction of any industrial solid waste management unit requires the prior written notification of the proposed activity to the Registration and Reporting Section (MC 129) of the Permitting and Registration Support Division. No person shall dispose of industrial solid waste, including sludge or other solids from wastewater treatment processes, prior to fulfilling the deed recordation requirements of 30 TAC § 335.5.
  - e. The term "industrial solid waste management unit" means a landfill, surface impoundment, waste-pile, industrial furnace, incinerator, cement kiln, injection well,

container, drum, salt dome waste containment cavern, or any other structure vessel, appurtenance, or other improvement on land used to manage industrial solid waste.

- f. The permittee shall keep management records for all sludge (or other waste) removed from any wastewater treatment process. These records shall fulfill all applicable requirements of 30 TAC § 335 and must include the following, as it pertains to wastewater treatment and discharge:
  - i. Volume of waste and date(s) generated from treatment process;
  - ii. Volume of waste disposed of on-site or shipped off-site;
  - iii. Date(s) of disposal;
  - iv. Identity of hauler or transporter;
  - v. Location of disposal site; and
  - vi. Method of final disposal.

The above records shall be maintained on a monthly basis. The records shall be retained at the facility site, or shall be readily available for review by authorized representatives of the TCEQ for at least five years.

12. For industrial facilities to which the requirements of 30 TAC § 335 do not apply, sludge and solid wastes, including tank cleaning and contaminated solids for disposal, shall be disposed of in accordance with THSC § 361.

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#### **SLUDGE PROVISIONS**

The permittee is authorized to dispose of sludge only at a Texas Commission on Environmental Quality (TCEQ) authorized land application site, co-disposal landfill, wastewater treatment facility, or facility that further processes sludge. The disposal of sludge or biosolids by land application on property owned, leased or under the direct control of the permittee is a violation of the permit unless the site is authorized with the TCEQ. This provision does not authorize Distribution and Marketing of Class A or Class AB Biosolids. This provision does not authorize the permittee to land apply biosolids on property owned, leased or under the direct control of the permittee.

### SECTION I. REQUIREMENTS APPLYING TO ALL SEWAGE SLUDGE OR BIOSOLIDS LAND APPLICATION

#### A. General Requirements

- 1. The permittee shall handle and dispose of sewage sludge or biosolids in accordance with 30 TAC § 312 and all other applicable state and federal regulations in a manner that protects public health and the environment from any reasonably anticipated adverse effects due to any toxic pollutants that may be present in the sludge or biosolids.
- 2. In all cases, if the person (permit holder) who prepares the sewage sludge supplies the sewage sludge to another person for land application use or to the owner or lease holder of the land, the permit holder shall provide necessary information to the parties who receive the sludge to assure compliance with these regulations.
- 3. The land application of processed or unprocessed chemical toilet waste, grease trap waste, grit trap waste, milk solids, or similar non-hazardous municipal or industrial solid wastes, or any of the wastes listed in this provision combined with biosolids, WTP residuals or domestic septage is prohibited unless the grease trap waste is added at a fats, oil and grease (FOG) receiving facility as part of an anaerobic digestion process.

#### **B.** Testing Requirements

1. Sewage sludge or biosolids shall be tested annually in accordance with the method specified in both 40 CFR Part 261, Appendix II and 40 CFR Part 268, Appendix I [Toxicity Characteristic Leaching Procedure (TCLP)] or other method that receives the prior approval of the TCEQ for the contaminants listed in 40 CFR Part 261.24, Table 1. Sewage sludge or biosolids failing this test shall be managed according to RCRA standards for generators of hazardous waste, and the waste's disposition must be in accordance with all applicable requirements for hazardous waste processing, storage, or disposal. Following failure of any TCLP test, the management or disposal of sewage sludge or biosolids at a facility other than an authorized hazardous waste processing, storage, or disposal facility shall be prohibited until such time as the permittee can demonstrate the sewage sludge or biosolids no longer exhibits the hazardous waste toxicity characteristics (as demonstrated by the results of the TCLP tests). A written report shall be provided to both the TCEQ Registration and Reporting Section (MC 129) of the Permitting and Registration Support Division and the Regional Director (MC Region 11) within seven (7) days after failing the TCLP Test.

The report shall contain test results, certification that unauthorized waste management has stopped and a summary of alternative disposal plans that comply with RCRA standards for the management of hazardous waste. The report shall be addressed to: Director, Permitting and Registration Support Division (MC 129), Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087. In addition, the permittee shall prepare an annual report on the results of all sludge toxicity testing. This annual report shall be submitted to the TCEQ Regional Office (MC Region 11) and the Compliance Monitoring Team (MC 224) of the Enforcement Division by September 30<sup>th</sup> of each year. Effective December 21, 2025, the permittee must submit this annual report using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver.

2. Biosolids shall not be applied to the land if the concentration of the pollutants exceeds the pollutant concentration criteria in Table 1. The frequency of testing for pollutants in Table 1 is found in Section I.C. of this permit.

TABLE 1

<u>Pollutant</u>	<b>Ceiling Concentration</b>
	(Milligrams per kilogram)*
Arsenic	75
Cadmium	85
Chromium	3000
Copper	4300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
PCBs	49
Selenium	100
Zinc	7500

<sup>\*</sup> Dry weight basis

#### 3. Pathogen Control

All sewage sludge that is applied to agricultural land, forest, a public contact site, or a reclamation site must be treated by one of the following methods to ensure that the sludge meets either the Class A, Class AB or Class B biosolids pathogen requirements.

a. For sewage sludge to be classified as Class A biosolids with respect to pathogens, the density of fecal coliform in the sewage sludge must be less than 1,000 most probable number (MPN) per gram of total solids (dry weight basis), or the density of Salmonella sp. bacteria in the sewage sludge must be less than three MPN per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed. In addition, one of the alternatives listed below must be met:

<u>Alternative 1</u> - The temperature of the sewage sludge that is used or disposed shall be maintained at or above a specific value for a period of time. See 30 TAC § 312.82(a)(2)(A) for specific information;

Alternative 5 (PFRP) - Sewage sludge that is used or disposed of must be treated in one of the Processes to Further Reduce Pathogens (PFRP) described in 40 CFR Part 503, Appendix B. PFRP include composting, heat drying, heat treatment, and thermophilic aerobic digestion; or

Alternative 6 (PFRP Equivalent) - Sewage sludge that is used or disposed of must be treated in a process that has been approved by the U. S. Environmental Protection Agency as being equivalent to those in Alternative 5.

b. For sewage sludge to be classified as Class AB biosolids with respect to pathogens, the density of fecal coliform in the sewage sludge must be less than 1,000 MPN per gram of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge be less than three MPN per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed. In addition, one of the alternatives listed below must be met:

<u>Alternative 2</u> - The pH of the sewage sludge that is used or disposed shall be raised to above 12 std. units and shall remain above 12 std. units for 72 hours.

The temperature of the sewage sludge shall be above 52° Celsius for 12 hours or longer during the period that the pH of the sewage sludge is above 12 std. units.

At the end of the 72-hour period during which the pH of the sewage sludge is above 12 std. units, the sewage sludge shall be air dried to achieve a percent solids in the sewage sludge greater than 50%; or

Alternative 3 - The sewage sludge shall be analyzed for enteric viruses prior to pathogen treatment. The limit for enteric viruses is less than one Plaque-forming Unit per four grams of total solids (dry weight basis) either before or following pathogen treatment. See 30 TAC § 312.82(a)(2)(C)(i-iii) for specific information. The sewage sludge shall be analyzed for viable helminth ova prior to pathogen treatment. The limit for viable helminth ova is less than one per four grams of total solids (dry weight basis) either before or following pathogen treatment. See 30 TAC § 312.82(a)(2)(C)(iv-vi) for specific information; or

<u>Alternative 4</u> - The density of enteric viruses in the sewage sludge shall be less than one Plaque-forming Unit per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed. The density of viable helminth ova in the sewage sludge shall be less than one per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed.

- c. Sewage sludge that meets the requirements of Class AB biosolids may be classified a Class A biosolids if a variance request is submitted in writing that is supported by substantial documentation demonstrating equivalent methods for reducing odors and written approval is granted by the executive director. The executive director may deny the variance request or revoke that approved variance if it is determined that the variance may potentially endanger human health or the environment, or create nuisance odor conditions.
- d. Three alternatives are available to demonstrate compliance with Class B biosolids criteria.

#### Alternative 1

- i. A minimum of seven random samples of the sewage sludge shall be collected within 48 hours of the time the sewage sludge is used or disposed of during each monitoring episode for the sewage sludge.
- ii. The geometric mean of the density of fecal coliform in the samples collected shall be less than either 2,000,000 MPN per gram of total solids (dry weight basis) or 2,000,000 Colony Forming Units per gram of total solids (dry weight basis).

<u>Alternative 2</u> - Sewage sludge that is used or disposed of shall be treated in one of the Processes to Significantly Reduce Pathogens (PSRP) described in 40 CFR Part 503, Appendix B, so long as all of the following requirements are met by the generator of the sewage sludge.

- i. Prior to use or disposal, all the sewage sludge must have been generated from a single location, except as provided in paragraph v. below;
- ii. An independent Texas Licensed Professional Engineer must make a certification to the generator of a sewage sludge that the wastewater treatment facility generating the sewage sludge is designed to achieve one of the PSRP at the permitted design loading of the facility. The certification need only be repeated if the design loading of the facility is increased. The certification shall include a statement indicating the design meets all the applicable standards specified in Appendix B of 40 CFR Part 503;
- iii. Prior to any off-site transportation or on-site use or disposal of any sewage sludge generated at a wastewater treatment facility, the chief certified operator of the wastewater treatment facility or other responsible official who manages the processes to significantly reduce pathogens at the wastewater treatment facility for the permittee, shall certify that the sewage sludge underwent at least the minimum operational requirements necessary in order to meet one of the PSRP. The acceptable processes and the minimum operational and record keeping requirements shall be in accordance with established U.S. Environmental Protection Agency final guidance;
- iv. All certification records and operational records describing how the requirements of this paragraph were met shall be kept by the generator for a minimum of three years and be available for inspection by commission staff for review; and
- v. If the sewage sludge is generated from a mixture of sources, resulting from a person who prepares sewage sludge from more than one wastewater treatment facility, the resulting derived product shall meet one of the PSRP, and shall meet the certification, operation, and record keeping requirements of this paragraph.

<u>Alternative 3</u> - Sewage sludge shall be treated in an equivalent process that has been approved by the U.S. Environmental Protection Agency, so long as all of the following requirements are met by the generator of the sewage sludge.

i. Prior to use or disposal, all the sewage sludge must have been generated from a single location, except as provided in paragraph v. below;

- ii. Prior to any off-site transportation or on-site use or disposal of any sewage sludge generated at a wastewater treatment facility, the chief certified operator of the wastewater treatment facility or other responsible official who manages the processes to significantly reduce pathogens at the wastewater treatment facility for the permittee, shall certify that the sewage sludge underwent at least the minimum operational requirements necessary in order to meet one of the PSRP. The acceptable processes and the minimum operational and record keeping requirements shall be in accordance with established U.S. Environmental Protection Agency final guidance;
- iii. All certification records and operational records describing how the requirements of this paragraph were met shall be kept by the generator for a minimum of three years and be available for inspection by commission staff for review;
- iv. The Executive Director will accept from the U.S. Environmental Protection Agency a finding of equivalency to the defined PSRP; and
- v. If the sewage sludge is generated from a mixture of sources resulting from a person who prepares sewage sludge from more than one wastewater treatment facility, the resulting derived product shall meet one of the Processes to Significantly Reduce Pathogens, and shall meet the certification, operation, and record keeping requirements of this paragraph.

In addition to the Alternatives 1 - 3, the following site restrictions must be met if Class B biosolids are land applied:

- i. Food crops with harvested parts that touch the biosolids/soil mixture and are totally above the land surface shall not be harvested for 14 months after application of biosolids.
- ii. Food crops with harvested parts below the surface of the land shall not be harvested for 20 months after application of biosolids when the biosolids remain on the land surface for 4 months or longer prior to incorporation into the soil.
- iii. Food crops with harvested parts below the surface of the land shall not be harvested for 38 months after application of biosolids when the biosolids remain on the land surface for less than 4 months prior to incorporation into the soil.
- iv. Food crops, feed crops, and fiber crops shall not be harvested for 30 days after application of biosolids.
- v. Domestic livestock shall not be allowed to graze on the land for 30 days after application of biosolids.
- vi. Turf grown on land where biosolids are applied shall not be harvested for 1 year after application of the biosolids when the harvested turf is placed on either land with a high potential for public exposure or a lawn.
- vii. Public access to land with a high potential for public exposure shall be restricted for 1 year after application of biosolids.

- viii. Public access to land with a low potential for public exposure shall be restricted for 30 days after application of biosolids.
- ix. Land application of biosolids shall be in accordance with the buffer zone requirements found in 30 TAC § 312.44.

#### 4. Vector Attraction Reduction Requirements

All bulk sewage sludge that is applied to agricultural land, forest, a public contact site, or a reclamation site shall be treated by one of the following Alternatives 1 through 10 for vector attraction reduction.

- Alternative 1 The mass of volatile solids in the sewage sludge shall be reduced by a minimum of 38%.
- Alternative 2 If Alternative 1 cannot be met for an anaerobically digested sludge, demonstration can be made by digesting a portion of the previously digested sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30° and 37° Celsius. Volatile solids must be reduced by less than 17% to demonstrate compliance.
- Alternative 3 If Alternative 1 cannot be met for an aerobically digested sludge, demonstration can be made by digesting a portion of the previously digested sludge with percent solids of two percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20° Celsius. Volatile solids must be reduced by less than 15% to demonstrate compliance.
- Alternative 4 The specific oxygen uptake rate (SOUR) for sewage sludge treated in an aerobic process shall be equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry weight basis) at a temperature of 20° Celsius.
- Alternative 5 Sewage sludge shall be treated in an aerobic process for 14 days or longer. During that time, the temperature of the sewage sludge shall be higher than 40° Celsius and the average temperature of the sewage sludge shall be higher than 45° Celsius.
- Alternative 6 The pH of sewage sludge shall be raised to 12 or higher by alkali addition and, without the addition of more alkali shall remain at 12 or higher for two hours and then remain at a pH of 11.5 or higher for an additional 22 hours at the time the sewage sludge is prepared for sale or given away in a bag or other container.
- Alternative 7 The percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 75% based on the moisture content and total solids prior to mixing with other materials. Unstabilized solids are defined as organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

#### Alternative 8 -

The percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90% based on the moisture content and total solids prior to mixing with other materials at the time the sludge is used. Unstabilized solids are defined as organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

#### Alternative 9 -

- i. Biosolids shall be injected below the surface of the land.
- ii. No significant amount of the biosolids shall be present on the land surface within one hour after the biosolids are injected.
- iii. When sewage sludge that is injected below the surface of the land is Class A or Class AB with respect to pathogens, the biosolids shall be injected below the land surface within eight hours after being discharged from the pathogen treatment process.

#### Alternative 10-

- i. Biosolids applied to the land surface or placed on a surface disposal site shall be incorporated into the soil within six hours after application to or placement on the land.
- ii. When biosolids that are incorporated into the soil is Class A or Class AB with respect to pathogens, the biosolids shall be applied to or placed on the land within eight hours after being discharged from the pathogen treatment process.

#### C. Monitoring Requirements

Toxicity Characteristic Leaching Procedure - annually (TCLP) Test
PCBs - annually

All metal constituents and fecal coliform or *Salmonella* sp. bacteria shall be monitored at the appropriate frequency shown below, pursuant to 30 TAC § 312.46(a)(1):

Amount of biosolids (*) metric tons per 365-day period	Monitoring Frequency
o to less than 290	Once/Year
290 to less than 1,500	Once/Quarter
1,500 to less than 15,000	Once/Two Months
15,000 or greater	Once/Month

(\*) The amount of bulk biosolids applied to the land (dry wt. basis).

Representative samples of sewage sludge shall be collected and analyzed in accordance with the methods referenced in 30 TAC § 312.7

Identify each of the analytic methods used by the facility to analyze enteric viruses, fecal coliforms, helminth ova, *Salmonella* sp., and other regulated parameters.

Identify in the following categories (as applicable) the sewage sludge or biosolids treatment process or processes at the facility: preliminary operations (e.g., sludge or biosolids grinding and degritting), thickening (concentration), stabilization, anaerobic digestion, aerobic digestion, composting, conditioning, disinfection (e.g., beta ray irradiation, gamma ray irradiation, pasteurization), dewatering (e.g., centrifugation, sludge drying beds, sludge lagoons), heat drying, thermal reduction, and methane or biogas capture and recovery.

Identify the nature of material generated by the facility (such as a biosolid for beneficial use or land-farming, or sewage sludge or biosolids for disposal at a monofill) and whether the material is ultimately conveyed off-site in bulk or in bags.

# SECTION II. REQUIREMENTS SPECIFIC TO BULK SEWAGE SLUDGE OR BIOSOLIDS FOR APPLICATION TO THE LAND MEETING CLASS A, CLASS AB or B PATHOGEN REDUCTION AND THE CUMULATIVE LOADING RATES IN TABLE 2, OR CLASS B PATHOGEN REDUCTION AND THE POLLUTANT CONCENTRATIONS IN TABLE 3

For those permittees meeting Class A, Class AB or B pathogen reduction requirements and that meet the cumulative loading rates in Table 2 below, or the Class B pathogen reduction requirements and contain concentrations of pollutants below listed in Table 3, the following conditions apply:

#### A. Pollutant Limits

#### Table 2

	Cumulative Pollutant Loading Rate
<u>Pollutant</u>	(pounds per acre)*
Arsenic	36
Cadmium	35
Chromium	2677
Copper	1339
Lead	268
Mercury	15
Molybdenum	Report Only
Nickel	375
Selenium	89
Zinc	2500

#### Table 3

	Monthly Average
	Concentration
<u>Pollutant</u>	(milligrams per kilogram)*
Arsenic	41
Cadmium	39
Chromium	1200
Copper	1500
Lead	300
Mercury	17
Molybdenum	Report Only
Nickel	420
Selenium	36
Zinc	2800

<sup>\*</sup>Dry weight basis

#### **B.** Pathogen Control

All bulk sewage sludge that is applied to agricultural land, forest, a public contact site, a reclamation site, shall be treated by either Class A, Class AB or Class B biosolids pathogen reduction requirements as defined above in Section I.B.3.

#### C. Management Practices

- 1. Bulk biosolids shall not be applied to agricultural land, forest, a public contact site, or a reclamation site that is flooded, frozen, or snow-covered so that the bulk sewage sludge enters a wetland or other waters in the State.
- 2. Bulk biosolids not meeting Class A requirements shall be land applied in a manner which complies with Applicability in accordance with 30 TAC §312.41 and the Management Requirements in accordance with 30 TAC § 312.44.
- 3. Bulk biosolids shall be applied at or below the agronomic rate of the cover crop.
- 4. An information sheet shall be provided to the person who receives bulk Class A or AB biosolids sold or given away. The information sheet shall contain the following information:
  - a. The name and address of the person who prepared the Class A or AB biosolids that are sold or given away in a bag or other container for application to the land.
  - b. A statement that application of the biosolids to the land is prohibited except in accordance with the instruction on the label or information sheet.
  - c. The annual whole sludge application rate for the biosolids application rate for the biosolids that does not cause any of the cumulative pollutant loading rates in Table 2 above to be exceeded, unless the pollutant concentrations in Table 3 found in Section II above are met.

#### **D. Notification Requirements**

- 1. If bulk is applied to land in a State other than Texas, written notice shall be provided prior to the initial land application to the permitting authority for the State in which the bulk biosolids are proposed to be applied. The notice shall include:
  - a. The location, by street address, and specific latitude and longitude, of each land application site.
  - b. The approximate time period bulk biosolids will be applied to the site.
  - c. The name, address, telephone number, and National Pollutant Discharge Elimination System permit number (if appropriate) for the person who will apply the bulk biosolids.
- 2. The permittee shall give 180 days prior notice to the Executive Director in care of the Wastewater Permitting Section (MC 148) of the Water Quality Division of any change planned in the biosolids disposal practice.

#### E. Record Keeping Requirements

The documents will be retained at the facility site and/or shall be readily available for review by a TCEQ representative. The person who prepares bulk sewage sludge or a biosolids material shall develop the following information and shall retain the information at the facility site and/or shall be readily available for review by a TCEQ representative for a

period of <u>five years</u>. If the permittee supplies the sludge to another person who land applies the sludge, the permittee shall notify the land applier of the requirements for record keeping found in 30 TAC § 312.47 for persons who land apply.

- 1. The concentration (mg/kg) in the sludge of each pollutant listed in Table 3 above and the applicable pollutant concentration criteria (mg/kg), or the applicable cumulative pollutant loading rate and the applicable cumulative pollutant loading rate limit (lbs/ac) listed in Table 2 above.
- 2. A description of how the pathogen reduction requirements are met (including site restrictions for Class AB and Class B biosolids, if applicable).
- 3. A description of how the vector attraction reduction requirements are met.
- 4. A description of how the management practices listed above in Section II.C are being met
- 5. The following certification statement:

"I certify, under penalty of law, that the applicable pathogen requirements in 30 TAC § 312.82(a) or (b) and the vector attraction reduction requirements in 30 TAC § 312.83(b) have been met for each site on which bulk biosolids are applied. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the management practices have been met. I am aware that there are significant penalties for false certification including fine and imprisonment."

- 6. The recommended agronomic loading rate from the references listed in Section II.C.3. above, as well as the actual agronomic loading rate shall be retained. The person who applies bulk biosolids shall develop the following information and shall retain the information at the facility site and/or shall be readily available for review by a TCEQ representative <u>indefinitely</u>. If the permittee supplies the sludge to another person who land applies the sludge, the permittee shall notify the land applier of the requirements for record keeping found in 30 TAC § 312.47 for persons who land apply:
  - a. A certification statement that all applicable requirements (specifically listed) have been met, and that the permittee understands that there are significant penalties for false certification including fine and imprisonment. See 30 TAC § 312.47(a)(4)(A)(ii) or 30 TAC § 312.47(a)(5)(A)(ii), as applicable, and to the permittee's specific sludge treatment activities.
  - b. The location, by street address, and specific latitude and longitude, of each site on which biosolids are applied.
  - c. The number of acres in each site on which bulk biosolids are applied.
  - d. The date and time biosolids are applied to each site.
  - e. The cumulative amount of each pollutant in pounds/acre listed in Table 2 applied to each site.
  - f. The total amount of biosolids applied to each site in dry tons.

The above records shall be maintained on-site on a monthly basis and shall be made available to the Texas Commission on Environmental Quality upon request.

#### F. Reporting Requirements

The permittee shall report annually to the TCEQ Regional Office (MC Region 11) and Compliance Monitoring Team (MC 224) of the Enforcement Division, by September 30<sup>th</sup> of each year the following information. Effective December 21, 2025, the permittee must submit this annual report using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver.

- Identify in the following categories (as applicable) the sewage sludge or biosolids treatment process or processes at the facility: preliminary operations (e.g., sludge or biosolids grinding and degritting), thickening (concentration), stabilization, anaerobic digestion, aerobic digestion, composting, conditioning, disinfection (e.g., beta ray irradiation, gamma ray irradiation, pasteurization), dewatering (e.g., centrifugation, sludge drying beds, sludge lagoons), heat drying, thermal reduction, and methane or biogas capture and recovery.
- 2. Identify the nature of material generated by the facility (such as a biosolid for beneficial use or land-farming, or sewage sludge for disposal at a monofill) and whether the material is ultimately conveyed off-site in bulk or in bags.
- 3. Results of tests performed for pollutants found in either Table 2 or 3 as appropriate for the permittee's land application practices.
- 4. The frequency of monitoring listed in Section I.C. that applies to the permittee.
- 5. Toxicity Characteristic Leaching Procedure (TCLP) results.
- 6. PCB concentration in sludge or biosolids in mg/kg.
- 7. Identity of hauler(s) and TCEQ transporter number.
- 8. Date(s) of transport.
- 9. Texas Commission on Environmental Quality registration number, if applicable.
- 10. Amount of sludge or biosolids disposal dry weight (lbs/acre) at each disposal site.
- 11. The concentration (mg/kg) in the sludge of each pollutant listed in Table 1 (defined as a monthly average) as well as the applicable pollutant concentration criteria (mg/kg) listed in Table 3 above, or the applicable pollutant loading rate limit (lbs/acre) listed in Table 2 above if it exceeds 90% of the limit.
- 12. Level of pathogen reduction achieved (Class A, Class AB or Class B).
- 13. Alternative used as listed in Section I.B.3.(a. or b.). Alternatives describe how the pathogen reduction requirements are met. If Class B biosolids, include information on how site restrictions were met.
- 14. Identify each of the analytic methods used by the facility to analyze enteric viruses, fecal coliforms, helminth ova, *Salmonella* sp., and other regulated parameters.
- 15. Vector attraction reduction alternative used as listed in Section I.B.4.

- 16. Amount of sludge or biosolids transported in dry tons/year.
- 17. The certification statement listed in either 30 TAC § 312.47(a)(4)(A)(ii) or 30 TAC § 312.47(a)(5)(A)(ii) as applicable to the permittee's sludge or biosolids treatment activities, shall be attached to the annual reporting form.
- 18. When the amount of any pollutant applied to the land exceeds 90% of the cumulative pollutant loading rate for that pollutant, as described in Table 2, the permittee shall report the following information as an attachment to the annual reporting form.
  - a. The location, by street address, and specific latitude and longitude.
  - b. The number of acres in each site on which bulk biosolids are applied.
  - c. The date and time bulk biosolids are applied to each site.
  - d. The cumulative amount of each pollutant (i.e., pounds/acre) listed in Table 2 in the bulk biosolids applied to each site.
  - e. The amount of biosolids (i.e., dry tons) applied to each site.

The above records shall be maintained on a monthly basis and shall be made available to the Texas Commission on Environmental Quality upon request.

## SECTION III. REQUIREMENTS APPLYING TO ALL SEWAGE SLUDGE OR BIOSOLIDS DISPOSED IN A MUNICIPAL SOLID WASTE LANDFILL

- A. The permittee shall handle and dispose of sewage sludge or biosolids in accordance with 30 TAC § 330 and all other applicable state and federal regulations to protect public health and the environment from any reasonably anticipated adverse effects due to any toxic pollutants that may be present. The permittee shall ensure that the sewage sludge meets the requirements in 30 TAC § 330 concerning the quality of the sludge or biosolids disposed in a municipal solid waste landfill.
- B. If the permittee generates sewage sludge and supplies that sewage sludge or biosolids to the owner or operator of a municipal solid waste landfill (MSWLF) for disposal, the permittee shall provide to the owner or operator of the MSWLF appropriate information needed to be in compliance with the provisions of this permit.
- C. The permittee shall give 180 days prior notice to the Executive Director in care of the Wastewater Permitting Section (MC 148) of the Water Quality Division of any change planned in the sewage sludge or biosolids disposal practice.
- D. Sewage sludge or biosolids shall be tested annually in accordance with the method specified in both 40 CFR Part 261, Appendix II and 40 CFR Part 268, Appendix I (Toxicity Characteristic Leaching Procedure) or other method, which receives the prior approval of the TCEQ for contaminants listed in Table 1 of 40 CFR § 261.24. Sewage sludge or biosolids failing this test shall be managed according to RCRA standards for generators of hazardous waste, and the waste's disposition must be in accordance with all applicable requirements for hazardous waste processing, storage, or disposal.

Following failure of any TCLP test, the management or disposal of sewage sludge or biosolids at a facility other than an authorized hazardous waste processing, storage, or disposal facility shall be prohibited until such time as the permittee can demonstrate the sewage sludge or biosolids no longer exhibits the hazardous waste toxicity characteristics (as demonstrated by the results of the TCLP tests). A written report shall be provided to both the TCEQ Registration and Reporting Section (MC 129) of the Permitting and Registration Support Division and the Regional Director (MC Region 11) of the appropriate TCEQ field office within 7 days after failing the TCLP Test.

The report shall contain test results, certification that unauthorized waste management has stopped and a summary of alternative disposal plans that comply with RCRA standards for the management of hazardous waste. The report shall be addressed to: Director, Permitting and Registration Support Division (MC 129), Texas Commission on Environmental Quality, P. O. Box 13087, Austin, Texas 78711-3087. In addition, the permittee shall prepare an annual report on the results of all sludge toxicity testing. This annual report shall be submitted to the TCEQ Regional Office (MC Region 11) and the Compliance Monitoring Team (MC 224) of the Enforcement Division by September 30 of each year.

- E. Sewage sludge or biosolids shall be tested as needed, in accordance with the requirements of 30 TAC Chapter 330.
- F. Record Keeping Requirements

The permittee shall develop the following information and shall retain the information for five years.

- 1. The description (including procedures followed and the results) of all liquid Paint Filter Tests performed.
- 2. The description (including procedures followed and results) of all TCLP tests performed.

The above records shall be maintained on-site on a monthly basis and shall be made available to the Texas Commission on Environmental Quality upon request.

#### G. Reporting Requirements

The permittee shall report annually to the TCEQ Regional Office (MC Region 11) and Compliance Monitoring Team (MC 224) of the Enforcement Division by September 30<sup>th</sup> of each year the following information. Effective December 21, 2025, the permittee must submit this annual report using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver.

- 1. Identify in the following categories (as applicable) the sewage sludge or biosolids treatment process or processes at the facility: preliminary operations (e.g., sludge or biosolids grinding and degritting), thickening (concentration), stabilization, anaerobic digestion, aerobic digestion, composting, conditioning, disinfection (e.g., beta ray irradiation, gamma ray irradiation, pasteurization), dewatering (e.g., centrifugation, sludge drying beds, sludge lagoons), heat drying, thermal reduction, and methane or biogas capture and recovery.
- 2. Toxicity Characteristic Leaching Procedure (TCLP) results.
- 3. Annual sludge or biosolids production in dry tons/year.
- 4. Amount of sludge or biosolids disposed in a municipal solid waste landfill in dry tons/year.
- 5. Amount of sludge or biosolids transported interstate in dry tons/year.
- 6. A certification that the sewage sludge or biosolids meets the requirements of 30 TAC § 330 concerning the quality of the sludge disposed in a municipal solid waste landfill.
- 7. Identity of hauler(s) and transporter registration number.
- 8. Owner of disposal site(s).
- 9. Location of disposal site(s).
- 10. Date(s) of disposal.

The above records shall be maintained on-site on a monthly basis and shall be made available to the Texas Commission on Environmental Quality upon request.

## SECTION IV. REQUIREMENTS APPLYING TO SLUDGE OR BIOSOLIDS TRANSPORTED TO ANOTHER FACILITY FOR FURTHER PROCESSING

These provisions apply to sludge or biosolids that is transported to another wastewater treatment facility or facility that further processes sludge or biosolids. These provisions are intended to allow transport of sludge or biosolids to facilities that have been authorized to accept sludge or biosolids. These provisions do not limit the ability of the receiving facility to determine whether to accept the sludge or biosolids, nor do they limit the ability of the receiving facility to request additional testing or documentation.

#### A. General Requirements

- 1. The permittee shall handle and dispose of sewage sludge or biosolids in accordance with 30 TAC Chapter 312 and all other applicable state and federal regulations in a manner that protects public health and the environment from any reasonably anticipated adverse effects due to any toxic pollutants that may be present in the sludge.
- 2. Sludge or biosolids may only be transported using a registered transporter or using an approved pipeline.

#### **B.** Record Keeping Requirements

- 1. For sludge transported by an approved pipeline, the permittee must maintain records of the following:
  - a. the amount of sludge or biosolids transported;
  - b. the date of transport;
  - c. the name and TCEO permit number of the receiving facility or facilities;
  - d. the location of the receiving facility or facilities;
  - e. the name and TCEQ permit number of the facility that generated the waste; and
  - f. copy of the written agreement between the permittee and the receiving facility to accept sludge or biosolids.
- 2. For sludge or biosolids transported by a registered transporter, the permittee must maintain records of the completed trip tickets in accordance with 30 TAC § 312.145(a)(1)-(7) and amount of sludge or biosolids transported.
- The above records shall be maintained on-site on a monthly basis and shall be made available to the TCEQ upon request. These records shall be retained for at least five years.

#### C. Reporting Requirements

The permittee shall report the following information annually to the TCEQ Regional Office (MC Region 11) and Compliance Monitoring Team (MC 224) of the Enforcement Division, by September 30<sup>th</sup> of each year. Effective December 21, 2025, the permittee must submit this annual report using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver.

- 1. Identify in the following categories (as applicable) the sewage sludge or biosolids treatment process or processes at the facility: preliminary operations (e.g., sludge or biosolids grinding and degritting), thickening (concentration), stabilization, anaerobic digestion, aerobic digestion, composting, conditioning, disinfection (e.g., beta ray irradiation, gamma ray irradiation, pasteurization), dewatering (e.g., centrifugation, sludge drying beds, sludge lagoons), heat drying, thermal reduction, and methane or biogas capture and recovery.
- 2. the annual sludge or biosolids production;
- 3. the amount of sludge or biosolids transported;
- 4. the owner of each receiving facility;
- 5. the location of each receiving facility; and
- 6. the date(s) of disposal at each receiving facility.

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#### OTHER REQUIREMENTS

- 1. The permittee shall employ or contract with one or more licensed wastewater treatment facility operators or wastewater system operations companies holding a valid license or registration according to the requirements of 30 TAC Chapter 30, Occupational Licenses and Registrations, and in particular 30 TAC Chapter 30, Subchapter J, Wastewater Operators and Operations Companies.
  - This Category B facility in the Interim I phase and Category A facility in the Interim II and Final phases must be operated by a chief operator or an operator holding a Class B license or higher in the Interim I phase and Class A license or higher in the Interim II and Final phases. The facility must be operated a minimum of five days per week by the licensed chief operator or an operator holding the required level of license or higher. The licensed chief operator or operator holding the required level of license or higher must be available by telephone or pager seven days per week. Where shift operation of the wastewater treatment facility is necessary, each shift that does not have the on-site supervision of the licensed chief operator must be supervised by an operator in charge who is licensed not less than one level below the category for the facility.
- 2. The facility is not located in the Coastal Management Program boundary.
- 3. Chronic toxic criteria apply at the edge of the mixing zone. The mixing zone is defined as 300 feet downstream and 100 feet upstream from the point of discharge.
- 4. The permittee shall comply with the requirements of 30 TAC § 309.13(a) through (d). In addition, by ownership of the required buffer zone area, the permittee shall comply with the requirements of 30 TAC § 309.13(e).
- 5. The permittee shall provide facilities for the protection of its wastewater treatment facility from a 100-year flood.
- 6. In accordance with 30 TAC § 319.9, a permittee that has at least twelve months of uninterrupted compliance with its bacteria limit may notify the commission in writing of its compliance and request a less frequent measurement schedule. To request a less frequent schedule, the permittee shall submit a written request to the TCEQ Wastewater Permitting Section (MC 148) for each phase that includes a different monitoring frequency. The request must contain all of the reported bacteria values (Daily Avg. and Daily Max/Single Grab) for the twelve consecutive months immediately prior to the request. If the Executive Director finds that a less frequent measurement schedule is protective of human health and the environment, the permittee may be given a less frequent measurement schedule. For this permit, daily may be reduced to 5/week in the Interim I, Interim II, and Final phases. A violation of any bacteria limit by a facility that has been granted a less frequent measurement schedule will require the permittee to return to the standard frequency schedule and submit written notice to the TCEQ Wastewater **Permitting Section (MC 148).** The permittee may not apply for another reduction in measurement frequency for at least 24 months from the date of the last violation. The Executive Director may establish a more frequent measurement schedule if necessary to protect human health or the environment.
- 7. Prior to construction of the Interim II and Final phases treatment facilities, the permittee shall submit to the TCEQ Wastewater Permitting Section (MC 148) a summary transmittal

letter in accordance with the requirements in 30 TAC § 217.6(d). If requested by the Wastewater Permitting Section, the permittee shall submit plans, specifications, and a final engineering design report which comply with 30 TAC Chapter 217, Design Criteria for Domestic Wastewater Systems. The permittee shall clearly show how the treatment system will meet the effluent limitations required on Pages 2a and 2b of this permit. A copy of the summary transmittal letter shall be available at the plant site for inspection by authorized representatives of the TCEQ.

Plans and specifications have been approved for the 4.5 MGD (Interim I phase) wastewater treatment facility, in accordance with 30 TAC § 217, Design Criteria for Domestic Wastewater Systems. A summary transmittal approval letter was issued *(January 30, 2022)* (Log No. 0118/032 an 0619/016). A copy of the summary transmittal letter shall be available at the plant site for inspection by authorized representatives of the TCEQ.

8. The permittee shall notify the TCEQ Regional Office (MC Region 11) and the Applications Review and Processing Team (MC 148) of the Water Quality Division, in writing at least forty-five days prior to the completion of the Interim II and Final phases treatment facilities on Notification of Completion Form 20007.

#### CONTRIBUTING INDUSTRIES AND PRETREATMENT REQUIREMENTS

- 1. The following pollutants may not be introduced into the treatment facility:
  - a. Pollutants which create a fire or explosion hazard in the publicly owned treatment works (POTW), including, but not limited to, waste streams with a closed-cup flash point of less than 140° Fahrenheit (60° Celsius) using the test methods specified in 40 CFR § 261.21;
  - b. Pollutants which will cause corrosive structural damage to the POTW, but in no case shall there be discharges with a pH lower than 5.0 standard units, unless the works are specifically designed to accommodate such discharges;
  - c. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW, resulting in Interference;
  - d. Any pollutant, including oxygen-demanding pollutants (e.g., biochemical oxygen demand), released in a discharge at a flow rate and/or pollutant concentration which will cause Interference with the POTW;
  - e. Heat in amounts which will inhibit biological activity in the POTW, resulting in Interference, but in no case shall there be heat in such quantities that the temperature at the POTW treatment plant exceeds 104° Fahrenheit (40° Celsius) unless the Executive Director, upon request of the POTW, approves alternate temperature limits;
  - f. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause Interference or Pass Through;
  - g. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems; and
  - h. Any trucked or hauled pollutants except at discharge points designated by the POTW.
- 2. The permittee shall require any indirect discharger to the treatment works to comply with the reporting requirements of Sections 204(b), 307, and 308 of the Clean Water Act, including any requirements established under 40 CFR Part 403 [rev. Federal Register/Vol. 70/No. 198/Friday, October 14, 2005/Rules and Regulations, pages 60134-60798].
- 3. The permittee shall provide adequate notification to the Executive Director, care of the Wastewater Permitting Section (MC 148) of the Water Quality Division, within 30 days subsequent to the permittee's knowledge of either of the following:
  - a. Any new introduction of pollutants into the treatment works from an indirect discharger which would be subject to Sections 301 and 306 of the Clean Water Act if it were directly discharging those pollutants; and
  - b. Any substantial change in the volume or character of pollutants being introduced into the treatment works by a source introducing pollutants into the treatment works at the time of issuance of the permit.

Any notice shall include information on the quality and quantity of effluent to be introduced into the treatment works and any anticipated impact of the change on the quality or quantity of effluent to be discharged from the POTW.

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#### BIOMONITORING REQUIREMENTS

#### CHRONIC BIOMONITORING REQUIREMENTS: FRESHWATER

The provisions of this section apply to Outfall 001 for whole effluent toxicity (WET) testing.

- 1. Scope, Frequency, and Methodology
  - a. The permittee shall test the effluent for toxicity in accordance with the provisions below. Such testing will determine if an appropriately dilute effluent sample adversely affects the survival, reproduction, or growth of the test organisms.
  - b. The permittee shall conduct the following toxicity tests using the test organisms, procedures, and quality assurance requirements specified in this part of this permit and in accordance with "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms," fourth edition (EPA-821-R-02-013) or its most recent update:
    - 1) Chronic static renewal survival and reproduction test using the water flea (*Ceriodaphnia dubia*) (Method 1002.0). This test should be terminated when 60% of the surviving adults in the control produce three broods or at the end of eight days, whichever occurs first. This test shall be conducted once per quarter.
    - 2) Chronic static renewal 7-day larval survival and growth test using the fathead minnow (*Pimephales promelas*) (Method 1000.0). A minimum of five replicates with eight organisms per replicate shall be used in the control and in each dilution. This test shall be conducted once per quarter.

The permittee must perform and report a valid test for each test species during the prescribed reporting period. An invalid test must be repeated during the same reporting period. An invalid test is defined as any test failing to satisfy the test acceptability criteria, procedures, and quality assurance requirements specified in the test methods and permit.

- c. The permittee shall use five effluent dilution concentrations and a control in each toxicity test. These effluent dilution concentrations are 32%, 42%, 56%, 75%, and 100% effluent. The critical dilution, defined as 100% effluent, is the effluent concentration representative of the proportion of effluent in the receiving water during critical low flow or critical mixing conditions.
- d. This permit may be amended to require a WET limit, a chemical-specific effluent limit, a best management practice, or other appropriate actions to address toxicity. The permittee may be required to conduct a toxicity reduction evaluation (TRE) after multiple toxic events.
- e. Should a test fail (i.e., demonstrate significant toxicity), the testing frequency for that test species increases to monthly until three consecutive tests pass (i.e., do not demonstrate significant toxicity), at which time the testing frequency of once per quarter resumes. If three or more failures are demonstrated during the

permit term for one or both test species, a WET limit will be included for that species in the subsequently reissued permit. Any two lethal failures in a three month period will require the permittee to initiate a TRE (see Part 4. Toxicity Reduction Evaluation).

#### 2. <u>Required Toxicity Testing Conditions</u>

- a. Test Acceptance The permittee shall repeat any toxicity test, including the control and all effluent dilutions, which fail to meet the following criteria:
  - 1) a control mean survival of 80% or greater;
  - 2) a control mean number of water flea neonates per surviving adult of 15 or greater;
  - 3) a control mean dry weight of surviving fathead minnow larvae of 0.25 mg or greater;
  - a control coefficient of variation percent (CV%) of 40 or less in between replicates for the young of surviving females in the water flea test; and the growth and survival endpoints in the fathead minnow test;
  - 5) a critical dilution CV% of 40 or less for the young of surviving females in the water flea test; and the growth and survival endpoints for the fathead minnow test. However, if statistically significant lethal or nonlethal effects are exhibited at the critical dilution, a CV% greater than 40 shall not invalidate the test:
  - 6) a percent minimum significant difference of 47 or less for water flea reproduction; and
  - 7) a percent minimum significant difference of 30 or less for fathead minnow growth.

#### b. Statistical Interpretation

- 1) For the water flea survival test, the statistical analyses used to determine if there is a significant difference between the control and an effluent dilution shall be the Fisher's exact test as described in the manual referenced in Part 1.b.
- 2) For the water flea reproduction test and the fathead minnow larval survival and growth tests, the statistical analyses used to determine if there is a significant difference between the control and an effluent dilution shall be in accordance with the manual referenced in Part 1.b.
- 3) The permittee is responsible for reviewing test concentration-response relationships to ensure that calculated test-results are interpreted and reported correctly. The document entitled "Method Guidance and Recommendation for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)" (EPA 821-B-00-004) provides guidance on determining the validity of test results.

- 4) If significant lethality is demonstrated (that is, there is a statistically significant difference in survival at the critical dilution when compared to the survival in the control), the conditions of test acceptability are met, and the survival of the test organisms are equal to or greater than 80% in the critical dilution and all dilutions below that, then the permittee shall report a survival No Observed Effect Concentration (NOEC) of not less than the critical dilution for the reporting requirements.
- 5) The NOEC is defined as the greatest effluent dilution at which no significant effect is demonstrated. The Lowest Observed Effect Concentration (LOEC) is defined as the lowest effluent dilution at which a significant effect is demonstrated. A significant effect is defined as a statistically significant difference between the survival, reproduction, or growth of the test organism in a specified effluent dilution when compared to the survival, reproduction, or growth of the test organism in the control.
- 6) The use of NOECs and LOECs assumes either a monotonic (continuous) concentration-response relationship or a threshold model of the concentration-response relationship. For any test result that demonstrates a non-monotonic (non-continuous) response, the NOEC should be determined based on the guidance manual referenced in Item 3.
- 7) Pursuant to the responsibility assigned to the permittee in Part 2.b.3), test results that demonstrate a non-monotonic (non-continuous) concentration-response relationship may be submitted, prior to the due date, for technical review. The guidance manual referenced in Item 3 will be used when making a determination of test acceptability.
- 8) TCEQ staff will review test results for consistency with rules, procedures, and permit requirements.

#### c. Dilution Water

- 1) Dilution water used in the toxicity tests must be the receiving water collected at a point upstream of the discharge point as close as possible to the discharge point but unaffected by the discharge. Where the toxicity tests are conducted on effluent discharges to receiving waters that are classified as intermittent streams, or where the toxicity tests are conducted on effluent discharges where no receiving water is available due to zero flow conditions, the permittee shall:
  - a) substitute a synthetic dilution water that has a pH, hardness, and alkalinity similar to that of the closest downstream perennial water unaffected by the discharge; or
  - b) use the closest downstream perennial water unaffected by the discharge.
- 2) Where the receiving water proves unsatisfactory as a result of pre-existing instream toxicity (i.e. fails to fulfill the test acceptance criteria of Part

- 2.a.), the permittee may substitute synthetic dilution water for the receiving water in all subsequent tests provided the unacceptable receiving water test met the following stipulations:
- a) a synthetic lab water control was performed (in addition to the receiving water control) which fulfilled the test acceptance requirements of Part 2.a;
- b) the test indicating receiving water toxicity was carried out to completion (i.e., 7 days); and
- c) the permittee submitted all test results indicating receiving water toxicity with the reports and information required in Part 3.
- 3) The synthetic dilution water shall consist of standard, moderately hard, reconstituted water. Upon approval, the permittee may substitute other appropriate dilution water with chemical and physical characteristics similar to that of the receiving water.

#### d. Samples and Composites

- 1) The permittee shall collect a minimum of three composite samples from Outfall 001. The second and third composite samples will be used for the renewal of the dilution concentrations for each toxicity test.
- 2) The permittee shall collect the composite samples such that the samples are representative of any periodic episode of chlorination, biocide usage, or other potentially toxic substance being discharged on an intermittent basis.
- 3) The permittee shall initiate the toxicity tests within 36 hours after collection of the last portion of the first composite sample. The holding time for any subsequent composite sample shall not exceed 72 hours. Samples shall be maintained at a temperature of 0-6 degrees Centigrade during collection, shipping, and storage.
- 4) If Outfall 001 ceases discharging during the collection of effluent samples, the requirements for the minimum number of effluent samples, the minimum number of effluent portions, and the sample holding time are waived during that sampling period. However, the permittee must have collected an effluent composite sample volume sufficient to complete the required toxicity tests with renewal of the effluent. When possible, the effluent samples used for the toxicity tests shall be collected on separate days if the discharge occurs over multiple days. The sample collection duration and the static renewal protocol associated with the abbreviated sample collection must be documented in the full report.
- 5) The effluent samples shall not be dechlorinated after sample collection.

#### 3. Reporting

All reports, tables, plans, summaries, and related correspondence required in this section shall be submitted to the attention of the Standards Implementation Team (MC 150) of the Water Quality Division.

- a. The permittee shall prepare a full report of the results of all tests conducted in accordance with the manual referenced in Part 1.b. for every valid and invalid toxicity test initiated whether carried to completion or not.
- b. The permittee shall routinely report the results of each biomonitoring test on the Table 1 forms provided with this permit.
  - 1) Annual biomonitoring test results are due on or before January 20th for biomonitoring conducted during the previous 12-month period.
  - Semiannual biomonitoring test results are due on or before July 20th and January 20th for biomonitoring conducted during the previous 6-month period.
  - 3) Quarterly biomonitoring test results are due on or before April 20th, July 20th, October 20th, and January 20th for biomonitoring conducted during the previous calendar quarter.
  - 4) Monthly biomonitoring test results are due on or before the 20th day of the month following sampling.
- c. Enter the following codes for the appropriate parameters for valid tests only:
  - 1) For the water flea, Parameter TLP3B, enter a "1" if the NOEC for survival is less than the critical dilution; otherwise, enter a "0."
  - 2) For the water flea, Parameter TOP3B, report the NOEC for survival.
  - 3) For the water flea, Parameter TXP3B, report the LOEC for survival.
  - 4) For the water flea, Parameter TWP3B, enter a "1" if the NOEC for reproduction is less than the critical dilution; otherwise, enter a "o."
  - 5) For the water flea, Parameter TPP3B, report the NOEC for reproduction.
  - 6) For the water flea, Parameter TYP3B, report the LOEC for reproduction.
  - 7) For the fathead minnow, Parameter TLP6C, enter a "1" if the NOEC for survival is less than the critical dilution; otherwise, enter a "0."
  - 8) For the fathead minnow, Parameter TOP6C, report the NOEC for survival.
  - 9) For the fathead minnow, Parameter TXP6C, report the LOEC for survival.

- For the fathead minnow, Parameter TWP6C, enter a "1" if the NOEC for growth is less than the critical dilution; otherwise, enter a "0."
- 11) For the fathead minnow, Parameter TPP6C, report the NOEC for growth.
- 12) For the fathead minnow, Parameter TYP6C, report the LOEC for growth.

#### 4. <u>Toxicity Reduction Evaluation</u>

- a. Within 45 days of the retest that demonstrates significant lethality, or within 45 days of being so instructed due to multiple toxic events, the permittee shall submit a general outline for initiating a TRE. The outline shall include, but not be limited to, a description of project personnel, a schedule for obtaining consultants (if needed), a discussion of influent and effluent data available for review, a sampling and analytical schedule, and a proposed TRE initiation date.
- b. Within 90 days of the retest that demonstrates significant lethality, or within 90 days of being so instructed due to multiple toxic events, the permittee shall submit a TRE action plan and schedule for conducting a TRE. The plan shall specify the approach and methodology to be used in performing the TRE. A TRE is a step-wise investigation combining toxicity testing with physical and chemical analyses to determine actions necessary to eliminate or reduce effluent toxicity to a level not effecting significant lethality at the critical dilution. The TRE action plan shall describe an approach for the reduction or elimination of lethality for both test species defined in Part 1.b. At a minimum, the TRE action plan shall include the following:
  - Specific Activities The TRE action plan shall specify the approach the 1) permittee intends to utilize in conducting the TRE, including toxicity characterizations, identifications, confirmations, source evaluations, treatability studies, and alternative approaches. When conducting characterization analyses, the permittee shall perform multiple characterizations and follow the procedures specified in the document entitled "Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I" (EPA/600/6-91/005F) or alternate procedures. The permittee shall perform multiple identifications and follow the methods specified in the documents entitled "Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/080) and "Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/081). All characterization, identification, and confirmation tests shall be conducted in an orderly and logical progression;
  - 2) Sampling Plan The TRE action plan should describe sampling locations, methods, holding times, chain of custody, and preservation techniques. The effluent sample volume collected for all tests shall be adequate to perform the toxicity characterization/identification/confirmation procedures and chemical-specific analyses when the toxicity tests show significant lethality. Where the permittee has identified or suspects a

- specific pollutant and source of effluent toxicity, the permittee shall conduct, concurrent with toxicity testing, chemical-specific analyses for the identified and suspected pollutant and source of effluent toxicity;
- 3) Quality Assurance Plan The TRE action plan should address record keeping and data evaluation, calibration and standardization, baseline tests, system blanks, controls, duplicates, spikes, toxicity persistence in the samples, randomization, reference toxicant control charts, and mechanisms to detect artifactual toxicity; and
- 4) Project Organization The TRE action plan should describe the project staff, project manager, consulting engineering services (where applicable), consulting analytical and toxicological services, etc.
- c. Within 30 days of submittal of the TRE action plan and schedule, the permittee shall implement the TRE.
- d. The permittee shall submit quarterly TRE activities reports concerning the progress of the TRE. The quarterly reports are due on or before April 20th, July 20th, October 20th, and January 20th. The report shall detail information regarding the TRE activities including:
  - 1) results and interpretation of any chemical-specific analyses for the identified and suspected pollutant performed during the quarter;
  - 2) results and interpretation of any characterization, identification, and confirmation tests performed during the quarter;
  - any data and substantiating documentation which identifies the pollutant(s) and source of effluent toxicity;
  - 4) results of any studies/evaluations concerning the treatability of the facility's effluent toxicity;
  - 5) any data that identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to meet no significant lethality at the critical dilution; and
  - 6) any changes to the initial TRE plan and schedule that are believed necessary as a result of the TRE findings.
- e. During the TRE, the permittee shall perform, at a minimum, quarterly testing using the more sensitive species. Testing for the less sensitive species shall continue at the frequency specified in Part 1.b.
- f. If the effluent ceases to effect significant lethality, i.e., there is a cessation of lethality, the permittee may end the TRE. A cessation of lethality is defined as no significant lethality for a period of 12 consecutive months with at least monthly testing. At the end of the 12 months, the permittee shall submit a statement of intent to cease the TRE and may then resume the testing frequency specified in Part 1.b.

This provision accommodates situations where operational errors and upsets, spills, or sampling errors triggered the TRE, in contrast to a situation where a single toxicant or group of toxicants cause lethality. This provision does not apply as a result of corrective actions taken by the permittee. Corrective actions are defined as proactive efforts that eliminate or reduce effluent toxicity. These include, but are not limited to, source reduction or elimination, improved housekeeping, changes in chemical usage, and modifications of influent streams and effluent treatment.

The permittee may only apply this cessation of lethality provision once. If the effluent again demonstrates significant lethality to the same species, the permit will be amended to add a WET limit with a compliance period, if appropriate. However, prior to the effective date of the WET limit, the permittee may apply for a permit amendment removing and replacing the WET limit with an alternate toxicity control measure by identifying and confirming the toxicant and an appropriate control measure.

- g. The permittee shall complete the TRE and submit a final report on the TRE activities no later than 28 months from the last test day of the retest that confirmed significant lethal effects at the critical dilution. The permittee may petition the Executive Director (in writing) for an extension of the 28-month limit. However, to warrant an extension the permittee must have demonstrated due diligence in its pursuit of the toxicity identification evaluation/TRE and must prove that circumstances beyond its control stalled the toxicity identification evaluation/TRE. The report shall provide information pertaining to the specific control mechanism selected that will, when implemented, result in the reduction of effluent toxicity to no significant lethality at the critical dilution. The report shall also provide a specific corrective action schedule for implementing the selected control mechanism.
- h. Based on the results of the TRE and proposed corrective actions, this permit may be amended to modify the biomonitoring requirements, where necessary, require a compliance schedule for implementation of corrective actions, specify a WET limit, specify a best management practice, and specify a chemical-specific limit.
- i. Copies of any and all required TRE plans and reports shall also be submitted to the U.S. EPA Region 6 office, 6WQ-PO.

#### TABLE 1 (SHEET 1 OF 4)

#### BIOMONITORING REPORTING

#### CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION

Dates and Tim	nes No. 1		Date 11	me TO:	Date 11me	
Composites Collected	No. 2	FROM: _		TO:		
	No. 3	FROM:_		TO:		
Test initiated				_am/pm		
Diluti	on water used	l:	Receivin	g water	Synthetic D	ilution water
				CED PER ADULT		
			Pe	rcent effluent		
REP	0%	32%	429	6 56%	75%	100%
A						
В						
С						
D						
Е						
F						
G						
Н						
I						
J						
Survival Mean						
Total Mean						
CV%*						
PMSD						

Designate males (M), and dead females (D), along with number of neonates (x) released prior to death.

<sup>\*</sup>Coefficient of Variation = standard deviation x 100/mean (calculation based on young of the surviving adults)

#### TABLE 1 (SHEET 2 OF 4)

#### CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

1. Dunnett's Procedure or Steel's Many-One Rank Test or Wilcoxon Rank Sum Test (with Bonferroni adjustment) or t-test (with Bonferroni adjustment) as appropriate:

Is the mean number of young produced per adult significantly less than the number of young per adult in the control for the % effluent corresponding to significant nonlethal effects?

CRITICAL DILUTION	(100%)	YES	NO
CIVITICAL DILUTION	(100/0).	1170	NO

#### PERCENT SURVIVAL

	Percent effluent					
Time of Reading	0%	32%	42%	56%	75%	100%
24h						
48h						
End of Test						

2. Fisher's Exact Test:

Is the mean survival at test end significantly less than the control survival for the % effluent corresponding to lethality?

CRITICAL DILUTION (	100%):	YES	NO

- 3. Enter percent effluent corresponding to each NOEC\LOEC below:
  - a.) NOEC survival = \_\_\_\_\_\_% effluent
  - b.) LOEC survival = \_\_\_\_\_% effluent
  - c.) NOEC reproduction = \_\_\_\_\_\_% effluent
  - d.) LOEC reproduction = \_\_\_\_\_ % effluent

Time

Date

#### TABLE 1 (SHEET 3 OF 4)

#### BIOMONITORING REPORTING

#### FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL

Date Time

Dates and Times Composites	No. 1 FR	OM:		To	O:		
Collected	No. 2 FROM: TO:						
	No. 3 FR	No. 3 FROM: TO:					
Test initiated:				am/pm			date
Dilution water	er used:	F	Receiving v	water		_Synthetic d	ilution water
		FATHEAI	OMINNO	W GROW	ΓH DATA	Δ	
Effluent	Avera	ige Dry We	eight in rep	olicate cha	mbers	Mean Dry	CV%*
Concentration	A	В	С	D	Е	Weight	
0%							
32%							
42%							
56%							
75%							
100%							
PMSD							
* Coefficient of Varia  1. Dunnett's Pro Bonferroni ac  Is the mean of (growth) for	ocedure or S djustment) o dry weight (g the % efflue	Steel's Mar or t-test (w growth) at nt correspo	ny-One Ra vith Bonfer 7 days sig onding to	nk Test or rroni adjust nificantly significant	stment) a less than t nonleth	as appropriat the control's	e:
	CIGITICAL		/14 (100/	·/·	110_	110	

#### TABLE 1 (SHEET 4 OF 4)

#### BIOMONITORING REPORTING

#### FATHEAD MINNOW GROWTH AND SURVIVAL TEST

#### FATHEAD MINNOW SURVIVAL DATA

Effluent	Percei	Percent Survival in replicate chambers					percent s	CV%*	
Concentration	A	В	С	D	E	24h	48h	7 day	
0%									
32%									
42%									
56%									
75%									
100%	-		_	-	_	_	_		

<sup>\*</sup> Coefficient of Variation = standard deviation x 100/mean

2.	Dunnett's Procedure or Steel's Many-One Rank Test or Wilcoxon Rank Sum Test (with Bonferroni adjustment) or t-test (with Bonferroni adjustment) as appropriate:						
	Is the mean survival at 7 days significantly less than the control survival for the % effluent corresponding to lethality?						
	CRITICAL DILUTION (100%):YESNO						
3.	Enter percent effluent corresponding to each NOEC\LOEC below:						
	a.) NOEC survival =% effluent						
	b.) LOEC survival =% effluent						
	c.) NOEC growth =% effluent						
	d)LOEC growth = % effluent						

#### 24-HOUR ACUTE BIOMONITORING REQUIREMENTS: FRESHWATER

The provisions of this section apply to Outfall 001 for whole effluent toxicity (WET) testing.

#### 1. Scope, Frequency, and Methodology

- a. The permittee shall test the effluent for lethality in accordance with the provisions in this section. Such testing will determine compliance with Texas Surface Water Quality Standard 30 TAC § 307.6(e)(2)(B), which requires greater than 50% survival of the appropriate test organisms in 100% effluent for a 24-hour period.
- b. The toxicity tests specified shall be conducted once per six months. The permittee shall conduct the following toxicity tests using the test organisms, procedures, and quality assurance requirements specified in this section of the permit and in accordance with "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms," fifth edition (EPA-821-R-02-012) or its most recent update:
  - 1) Acute 24-hour static toxicity test using the water flea (*Daphnia pulex* or *Ceriodaphnia dubia*). A minimum of five replicates with eight organisms per replicate shall be used in the control and each dilution.
  - 2) Acute 24-hour static toxicity test using the fathead minnow (*Pimephales promelas*). A minimum of five replicates with eight organisms per replicate shall be used in the control and each dilution.

A valid test result must be submitted for each reporting period. The permittee must report, and then repeat, an invalid test during the same reporting period. The repeat test shall include the control and the 100% effluent dilution and use the appropriate number of organisms and replicates, as specified above. An invalid test is defined as any test failing to satisfy the test acceptability criteria, procedures, and quality assurance requirements specified in the test methods and permit.

- c. In addition to an appropriate control, a 100% effluent concentration shall be used in the toxicity tests. Except as discussed in item 2.b., the control and dilution water shall consist of standard, synthetic, moderately hard, reconstituted water.
- d. This permit may be amended to require a WET limit, a Best Management Practice (BMP), Chemical-Specific (CS) limits, or other appropriate actions to address toxicity. The permittee may be required to conduct a Toxicity Reduction Evaluation after multiple toxic events.
- e. As the dilution series specified in the Chronic Biomonitoring Requirements includes a 100% effluent concentration, the results from those tests may fulfill the requirements of this Section; any tests performed in the proper time interval may be substituted. Compliance will be evaluated as specified in item a. The 50% survival in 100% effluent for a 24-hour period standard applies to all tests utilizing a 100% effluent dilution, regardless of whether the results are submitted to comply with the minimum testing frequency defined in item b.

#### 2. Required Toxicity Testing Conditions

- a. Test Acceptance The permittee shall repeat any toxicity test, including the control, if the control fails to meet a mean survival equal to or greater than 90%.
- b. Dilution Water In accordance with item 1.c., the control and dilution water shall normally consist of standard, synthetic, moderately hard, reconstituted water. If the permittee utilizes the results of a chronic test to satisfy the requirements in item 1.e., the permittee may use the receiving water or dilution water that meets the requirements of item 2.a as the control and dilution water.

#### c. Samples and Composites

- 1) The permittee shall collect one composite sample from Outfall 001.
- 2) The permittee shall collect the composite sample such that the sample is representative of any periodic episode of chlorination, biocide usage, or other potentially toxic substance being discharged.
- 3) The permittee shall initiate the toxicity tests within 36 hours after collection of the last portion of the composite sample. The sample shall be maintained at a temperature of o-6 degrees Centigrade during collection, shipping, and storage.
- 4) If Outfall 001 ceases discharging during the collection of the effluent composite sample, the requirements for the minimum number of effluent portions are waived. However, the permittee must have collected a composite sample volume sufficient for completion of the required test. The abbreviated sample collection, duration, and methodology must be documented in the full report.
- 5) The effluent sample shall not be dechlorinated after sample collection.

#### 3. Reporting

All reports, tables, plans, summaries, and related correspondence required in this section shall be submitted to the attention of the Standards Implementation Team (MC 150) of the Water Quality Division.

- a. The permittee shall prepare a full report of the results of all tests conducted in accordance with the manual referenced in Part 1.b. for every valid and invalid toxicity test initiated.
- b. The permittee shall routinely report the results of each biomonitoring test on the Table 2 forms provided with this permit.
  - 1) Semiannual biomonitoring test results are due on or before July 20th and January 20th for biomonitoring conducted during the previous 6-month period.

- 2) Quarterly biomonitoring test results are due on or before April 20th, July 20th, and October 20th, and January 20th for biomonitoring conducted during the previous calendar quarter.
- c. Enter the following codes for the appropriate parameters for valid tests only:
  - 1) For the water flea, Parameter TIE3D, enter a "0" if the mean survival at 24 hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter a "1."
  - 2) For the fathead minnow, Parameter TIE6C, enter a "0" if the mean survival at 24 hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter a "1."
- d. Enter the following codes for retests only:
  - 1) For retest number 1, Parameter 22415, enter a "0" if the mean survival at 24 hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter a "1."
  - 2) For retest number 2, Parameter 22416, enter a "0" if the mean survival at 24 hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter a "1."

#### 4. <u>Persistent Mortality</u>

The requirements of this part apply when a toxicity test demonstrates significant lethality, which is defined as a mean mortality of 50% or greater of organisms exposed to the 100% effluent concentration for 24 hours.

- a. The permittee shall conduct 2 additional tests (retests) for each species that demonstrates significant lethality. The two retests shall be conducted once per week for 2 weeks. Five effluent dilution concentrations in addition to an appropriate control shall be used in the retests. These effluent concentrations are 6%, 13%, 25%, 50% and 100% effluent. The first retest shall be conducted within 15 days of the laboratory determination of significant lethality. All test results shall be submitted within 20 days of test completion of the second retest. Test completion is defined as the 24th hour.
- b. If one or both of the two retests specified in Part 4.a. demonstrates significant lethality, the permittee shall initiate the TRE requirements as specified in Part 5.

#### 5. <u>Toxicity Reduction Evaluation</u>

a. Within 45 days of the retest that demonstrates significant lethality, the permittee shall submit a general outline for initiating a TRE. The outline shall include, but not be limited to, a description of project personnel, a schedule for obtaining consultants (if needed), a discussion of influent and effluent data available for review, a sampling and analytical schedule, and a proposed TRE initiation date.

- b. Within 90 days of the retest that demonstrates significant lethality, the permittee shall submit a TRE action plan and schedule for conducting a TRE. The plan shall specify the approach and methodology to be used in performing the TRE. A TRE is a step-wise investigation combining toxicity testing with physical and chemical analyses to determine actions necessary to eliminate or reduce effluent toxicity to a level not effecting significant lethality at the critical dilution. The TRE action plan shall lead to the successful elimination of significant lethality for both test species defined in Part 1.b. At a minimum, the TRE action plan shall include the following:
  - 1) Specific Activities - The TRE action plan shall specify the approach the permittee intends to utilize in conducting the TRE, including toxicity characterizations, identifications, confirmations, source evaluations, treatability studies, and alternative approaches. When conducting characterization analyses, the permittee shall perform multiple characterizations and follow the procedures specified in the document entitled "Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures" (EPA/600/6-91/003) or alternate procedures. The permittee shall perform multiple identifications and follow the methods specified in the documents entitled "Methods for Aguatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/080) and "Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/081). All characterization, identification, and confirmation tests shall be conducted in an orderly and logical progression:
  - 2) Sampling Plan The TRE action plan should describe sampling locations, methods, holding times, chain of custody, and preservation techniques. The effluent sample volume collected for all tests shall be adequate to perform the toxicity characterization/identification/confirmation procedures and chemical-specific analyses when the toxicity tests show significant lethality. Where the permittee has identified or suspects specific pollutant and source of effluent toxicity, the permittee shall conduct, concurrent with toxicity testing, chemical-specific analyses for the identified and suspected pollutant and source of effluent toxicity;
  - 3) Quality Assurance Plan The TRE action plan should address record keeping and data evaluation, calibration and standardization, baseline tests, system blanks, controls, duplicates, spikes, toxicity persistence in the samples, randomization, reference toxicant control charts, and mechanisms to detect artifactual toxicity; and
  - 4) Project Organization The TRE Action Plan should describe the project staff, project manager, consulting engineering services (where applicable), consulting analytical and toxicological services, etc.
- c. Within 30 days of submittal of the TRE action plan and schedule, the permittee shall implement the TRE.

- d. The permittee shall submit quarterly TRE activities reports concerning the progress of the TRE. The quarterly TRE activities reports are due on or before April 20th, July 20th, October 20th, and January 20th. The report shall detail information regarding the TRE activities including:
  - 1) results and interpretation of any chemical-specific analyses for the identified and suspected pollutant performed during the quarter;
  - 2) results and interpretation of any characterization, identification, and confirmation tests performed during the quarter;
  - any data and substantiating documentation that identifies the pollutant and source of effluent toxicity;
  - 4) results of any studies/evaluations concerning the treatability of the facility's effluent toxicity;
  - 5) any data that identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to eliminate significant lethality; and
  - 6) any changes to the initial TRE plan and schedule that are believed necessary as a result of the TRE findings.
- e. During the TRE, the permittee shall perform, at a minimum, quarterly testing using the more sensitive species. Testing for the less sensitive species shall continue at the frequency specified in Part 1.b.
- f. If the effluent ceases to effect significant lethality, i.e., there is a cessation of lethality, the permittee may end the TRE. A cessation of lethality is defined as no significant lethality for a period of 12 consecutive weeks with at least weekly testing. At the end of the 12 weeks, the permittee shall submit a statement of intent to cease the TRE and may then resume the testing frequency specified in Part 1.b.

This provision accommodates situations where operational errors and upsets, spills, or sampling errors triggered the TRE, in contrast to a situation where a single toxicant or group of toxicants cause lethality. This provision does not apply as a result of corrective actions taken by the permittee. Corrective actions are defined as proactive efforts that eliminate or reduce effluent toxicity. These include, but are not limited to, source reduction or elimination, improved housekeeping, changes in chemical usage, and modifications of influent streams and effluent treatment.

The permittee may only apply this cessation of lethality provision once. If the effluent again demonstrates significant lethality to the same species, the permit will be amended to add a WET limit with a compliance period, if appropriate. However, prior to the effective date of the WET limit, the permittee may apply for a permit amendment removing and replacing the WET limit with an alternate toxicity control measure by identifying and confirming the toxicant and an appropriate control measure.

- g. The permittee shall complete the TRE and submit a final report on the TRE activities no later than 18 months from the last test day of the retest that demonstrates significant lethality. The permittee may petition the Executive Director (in writing) for an extension of the 18-month limit. However, to warrant an extension the permittee must have demonstrated due diligence in its pursuit of the toxicity identification evaluation/TRE and must prove that circumstances beyond its control stalled the toxicity identification evaluation/TRE. The report shall specify the control mechanism that will, when implemented, reduce effluent toxicity as specified in Part 5.h. The report shall also specify a corrective action schedule for implementing the selected control mechanism.
- h. Within 3 years of the last day of the test confirming toxicity, the permittee shall comply with 30 TAC § 307.6(e)(2)(B), which requires greater than 50% survival of the test organism in 100% effluent at the end of 24-hours. The permittee may petition the Executive Director (in writing) for an extension of the 3-year limit. However, to warrant an extension the permittee must have demonstrated due diligence in its pursuit of the toxicity identification evaluation/TRE and must prove that circumstances beyond its control stalled the toxicity identification evaluation/TRE.

The permittee may be exempted from complying with 30 TAC § 307.6(e)(2)(B) upon proving that toxicity is caused by an excess, imbalance, or deficiency of dissolved salts. This exemption excludes instances where individually toxic components (e.g., metals) form a salt compound. Following the exemption, this permit may be amended to include an ion-adjustment protocol, alternate species testing, or single species testing.

- i. Based upon the results of the TRE and proposed corrective actions, this permit may be amended to modify the biomonitoring requirements where necessary, require a compliance schedule for implementation of corrective actions, specify a WET limit, specify a best management practice, and specify a chemical-specific limit.
- j. Copies of any and all required TRE plans and reports shall also be submitted to the U.S. EPA Region 6 office, 6WQ-PO.

# TABLE 2 (SHEET 1 OF 2)

## WATER FLEA SURVIVAL

## GENERAL INFORMATION

	Time	Date
Composite Sample Collected		
Test Initiated		

## PERCENT SURVIVAL

Time	Rep	Percent effluent					
		0%	6%	13%	25%	50%	100%
24h	A						
	В						
	C						
	D						
	Е						
	MEAN						_

Enter	percent	effluent	corres	ponding	to th	e LC	o be	low:

24-hour LC50 = \_\_\_\_\_% effluent

# TABLE 2 (SHEET 2 OF 2)

## FATHEAD MINNOW SURVIVAL

## GENERAL INFORMATION

	Time	Date
Composite Sample Collected		
Test Initiated		

## PERCENT SURVIVAL

Time	Rep	Percent effluent						
		0%	6%	13%	25%	50%	100%	
24h	A							
	В							
	С							
	D							
	E							
	MEAN					_		

T		- CCI			T () = 0	11
Enter t	percent	emuent	corresponding	to the	LC50	perow:

24-hour LC50 = \_\_\_\_\_% effluent

