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RECLAIMED WATER MASTER PLAN UPDATE

CITY OF PFLUGERVILLE

JULY 2023

QUIDDITY

Reclaimed Water Master Plan Update

City of Pflugerville

INTERIM REVIEW
Not intended for construction, bidding, or permit purposes.
Under the Authority of:
Engineer: Kyle H. Kaspar, P.E.
License No.: 114352

INTERIM REVIEW
Not intended for construction, bidding, or permit purposes.
Under the Authority of:
Engineer: Alan M. Moon, P.E.
License No.: 123364

JULY 2023
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Texas Board of Professional Engineers Registration No. F-23290 | Texas Board of Professional Land Surveying Registration No. 10046100

RECLAIMED WATER MASTER PLAN
CITY OF PFLUGERVILLE

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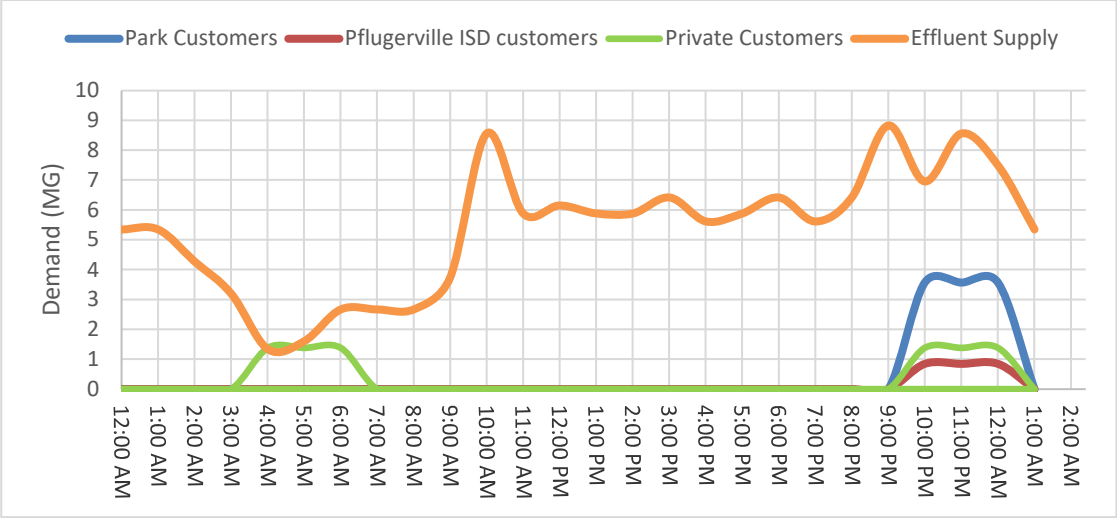
EXECUTIVE SUMMARY

The City of Pflugerville (the City) is looking to prepare for growth and ensure infrastructure resiliency in accordance with their Strategic Plan by expanding their reclaimed water system and mitigate continuing potable water demand strains. The City of Pflugerville engaged Quiddity Engineering (Quiddity) to develop a Reclaimed Water Master Plan Update report, an update to the previous 2015 Reclaimed Water Master Plan. The purpose of this report is to determine customer profiles, coordinate with the ongoing City Capital Improvements Plan (CIP) projects, define the customer profiles that maximize reclaimed water use, identifying growth planning models and incentive structures, and ultimately develop a CIP to distribute non-potable, Type I reclaimed water from the City's Central Wastewater Treatment Plant (WWTP). The City currently has 3-200 gallon per minute (gpm) pumps at the Central WWTP that serve the Northeast Metropolitan Park Type 1 reclaimed water used to irrigate the athletic fields. Potential reclaimed water users were identified by analyzing the City's potable water billing history to determine the top 200 Large Volume Users (LVUs), and by utilizing the City's development activity map to determine potential future LVUs. A questionnaire was developed and sent out to the existing and future LVUs to better understand how they currently or plan to use potable water.

A water model was built of the City's existing and future reclaimed water system using InfoWater Pro from Innovyze. Billing history from October 2021 – September 2022 was used to determine the demand for existing customers. Demands for future customers were estimated using available data such as the type of development, acreage and proposed amenities included. The City was divided into three different pressure zones determined by elevations to achieve a static pressure between 50 psi – 90 psi. The system was assumed to operate have different types of users are irrigating on separate days, similar to the current irrigation schedule and patterns. Under these assumptions, the total day demand, instantaneous demands, and facility sizes can be reduced. The customers were placed into three different categories: City Parks, Pflugerville ISD facilities, and private customers. The available effluent supply from the Central WWTP and reclaimed water demands are presented in Figure ES-1.

Figure ES-1: Demands vs. Effluent Supply



Improvements were identified to deliver reclaimed water to all three (3) pressure zones at a minimum of 40 psi including reclaimed waterlines, pump stations, ground storage tanks, elevated storage tanks, and rehabilitation and conversion of the City's existing South Standpipe. The projects can be divided into four phases based on the timing of the improvements. Table ES-1 presents the proposed improvements and recommended timing. The projects from FY25 – FY42 totals approximately $144.9M.

Table ES-1: Reclaimed Water System Capital Improvements Plan

	Phase 1[(1)] (FY25-27)	Phase 2 [(1)] (FY28-32)	Phase 3 [(2)] (FY33-36)	Phase 4 [(2)(3)] (FY37-42)
6-10" Waterline	21,000 LF	15,000 LF	4,900 LF	43,100 LF
12-16" Waterline	12,200 LF	2,500 LF		37,500 LF
20-24" Waterline			40,500 LF	
Pumping		1 – 300 gpm pump 5- 1,100 gpm pumps	3 – 1,500 gpm pumps	3 – 1,500 gpm pumps
Ground Storage Tank		750,000 gal GST	750,000 gal GST	
Elevated Storage Tank		1.5 MG gal EST	1.5 MG Standpipe Conversion	1.0 MG EST
Other	Rate Study & Ordinance	Master Plan Update	Master Plan Update	Master Plan Update, Pressure Reducing Valve Station
COSTS	**$9,020,000**	**$28,159,000**	**$56,372,000**	**$51,371,000**

(1) Improvements are located in Pressure Zone 1.
(2) Improvements are located in Pressure Zone 3 and setup for future service in Pressures Zones 2 & 3.
(3) Improvements are located in Pressure Zones 2 and 3.

One of the goals of the master plan is to maximize the reclaimed water conversion to the new infrastructure needed. Once all improvements are completed, approximately 5.2 MG of potable water demand across the different user types can be converted to reclaimed water. The primary use of the reclaimed water will be irrigation of practice fields, parks, and filling of irrigation and amenity ponds.

RECOMMENDATIONS

- The City should consider looking into funding options such as the Bureau of Reclamation Title XVI and the Texas Water Development Board (TWDB) Clean Water State Revolving Fund (CWSRF), as well as low interest loans from the EPA Water Infrastructure Finance and Innovation Act (WIFIA) and the CWSRF.
- The City should consider conducting a rate analysis and creating a reclaimed water rate that incentivizes potential users to use reclaimed water instead of potable water, i.e. $1.50 - $2.50 per 1,000 gallons which would be significantly lower than the City's existing rate of $5.20 per 1,000 gallons.
- The City should consider creating an ordinance for reclaimed water dictating certain days for irrigation for the different types of customers, and for future LVUs to connect to the reclaimed water system if a nearby reclaimed waterline is available to connect to.
- The City should update the master plan every five (5) years or prior to each phase of projects to better determine potential customer interest and estimated demands.

1.0 INTRODUCTION

The City of Pflugerville is looking to prepare for growth and ensure infrastructure resiliency in accordance with their Strategic Plan by expanding their reclaimed water system and mitigate continuing potable water demand strains. In September 2022, the City of Pflugerville (the "City") authorized Quiddity to develop a Reclaimed Water Master Plan Update to the City's previous 2015 Reclaimed Water Master Plan. The purpose of this report is to determine customer profiles, coordinate with the ongoing City Capital Improvements Plan (CIP) projects, define customer profiles that maximize reclaimed water use, identifying growth planning models and incentive structures, and ultimately develop a CIP to distribute direct non-potable, Type I reclaimed water from the City's Central Wastewater Treatment Plant (WWTP).

The City has undertaken previous endeavors to identify potential reclaimed water users and a distribution system including a 2015 Reclaimed Water Master Plan by DCE Engineering, LLC and the 2022 Reclaimed Water Feasibility Study by CP&Y, Inc. This study analyzes the City's historical water usage and identifies the top 200 Large Volume Users (LVUs) to assess potential reclaimed water users and establish a reclaimed water distribution system to assist with potable water conservation efforts.

2.0 EXISTING AND FUTURE CUSTOMERS AND DEMANDS

2.1 POTENTIAL USES OF TYPE I RECLAIMED WATER

The City currently produces Type I reclaimed water at the Central WWTP. Type I Reclaimed Water has more stringent treatment restrictions when compared to Type II Reclaimed Water, requiring additional filtration to limit total suspended solids (TSS) and bacterial limits. Type I reclaimed water can be used where public contact is possible, even likely, including: irrigation of athletic fields, direct contact crop irrigation, residential landscape irrigation, amenity ponds, fire protection systems, light industrial use, construction uses, and cooling towers. Per TAC Chapter 210 and 217, all reclaimed water pipes, hose bibs, and faucets should be painted purple and signs stating "Do Not Drink" are required at all faucets and signs stating "Do Not Swim" are required at pond areas. The City's current permit allows the City to use Type I and Type II reclaimed water for irrigation of athletic fields, green spaces, and a community garden.

Entities throughout Texas continue to develop examples of recent non-traditional uses of reclaimed water. The City of Austin and City of Round Rock have implemented reclaimed water filling stations where customers can fill up their water tanks or trailers and use for tree irrigation, dust control and construction

uses. These water stations allow for easy access to reclaimed water and can be placed near Wastewater Treatment Plants or in close proximity to an existing reclaimed water main.

2.2 RECLAIMED WATER SUPPLY

The City currently produces Type 1 reclaimed water at the Central Wastewater Treatment Plant (Central WWTP). At the time of the report, the City was not aware of any contractual requirements for amount of discharge into the Gilleland Creek tributary.

Quiddity collected and analyzed daily WWTP flows from August 2021 – August 2022 to establish the existing amount of reclaimed water available. Figure 2-1 presents the daily effluent produced from August 2021 – August 2022. The daily average effluent produced was approximately 5.35 million gallons (MG) per day. There was an error with meter readings from December 7, 2021 to December 31, 2021 therefore this data is not shown in the figure. Additionally, the spike in February 2022 of 11.7 MGD corresponds to a winter storm that occurred on February 3, 2022. The wastewater data used was also during an exceptionally dry year and includes minimal inflow and infiltration. While the collected data determined the existing amount of reclaimed water available, the City is currently in design of the Phase II expansion that will increase the plant capacity and available reclaimed water up to 8.5 MG per day.

Figure 2-1: Effluent Data from August 2021 – August 2022

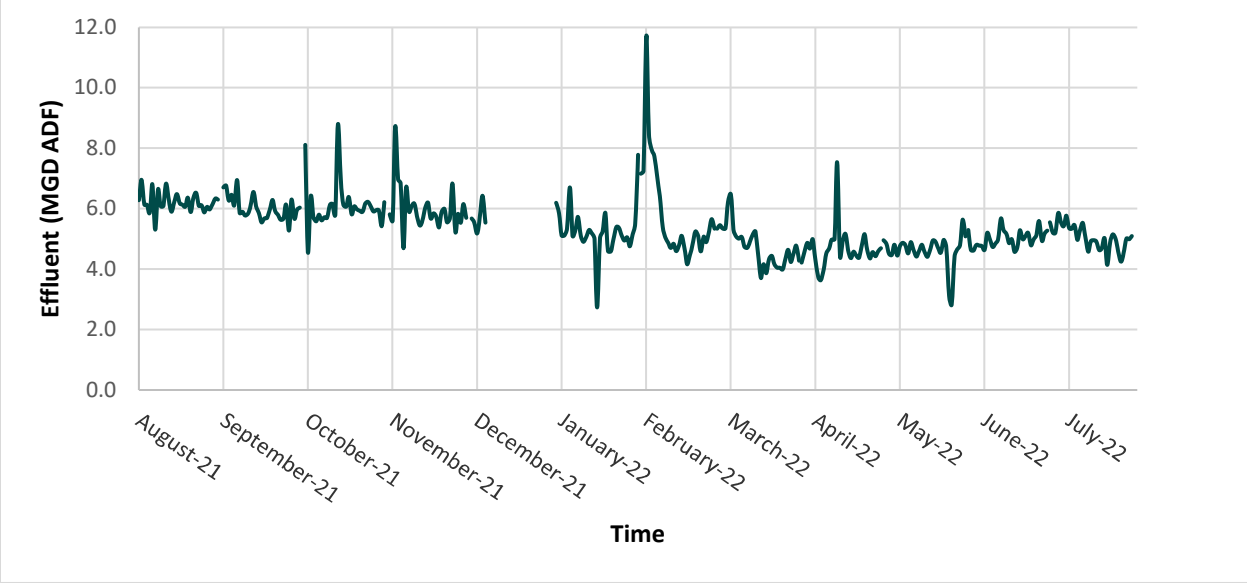
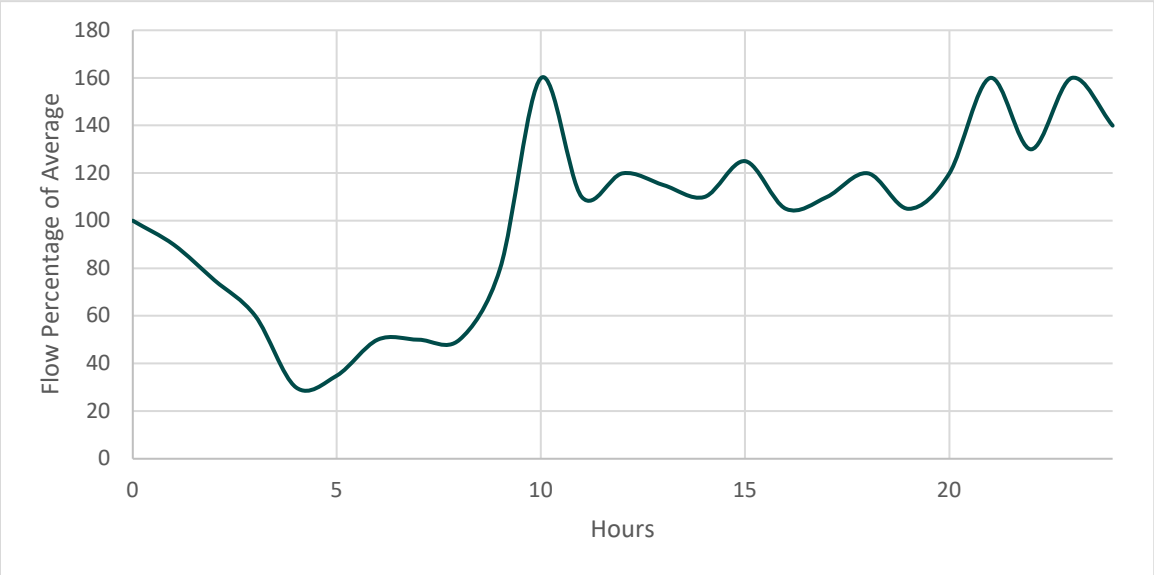


Figure 2-2 presents the Central WWTP effluent diurnal pattern as presented in the 2015 Reclaimed Water Master Plan by DCS Engineering, LLC. The WWTP has lower flows between midnight and 7:00 AM, with most of the flow occurring between 10:00 AM and 12:00 AM.

Figure 2-2: Diurnal Pattern of Central WWTP Effluent Flow



2.3 EXISTING RECLAIMED WATER SYSTEM

Currently, the City has one reclaimed water customer, the Northeast Metropolitan Park (NEMP). The existing reclaimed water pump station consists of three pumps, each capable of producing 200 gallons per minute (gpm) with an approximately 20,000 gallon reclaimed water chamber. The NEMP currently utilizes irrigation ponds that are served by a 10-inch (10") reclaimed waterline, flow control valves, and floats at the ponds. The NEMP then pumps from the irrigation ponds to irrigate the athletic fields. From the City's GIS, there's also a 10-inch (10") reclaimed waterline along Pfluger Farm Lane that is installed but not connected to the system.

In addition to the existing facilities at the Central WWTP, the City is finalizing the design of the Phase 2 expansion that includes a proposed effluent pump station consists of three (3) 12,155 gpm vertical turbine pumps sized to pump the entire plant's effluent. At the time of report, the proposed effluent pump station pumps into an open channel and is only supposed to run in a 100-year flooding event. It was discussed revising the effluent pump station to pump to the proposed reclaimed water pump station, and manually open/close valves to switch the pump station to discharge during a flooding event.

2.4 EXISTING POTABLE WATER LARGE VOLUME USERS

The City's existing LVUs were determined by analyzing monthly billing history from October 2021 – September 2022 and identifying the top 200 customers that used the largest amount of potable water on a monthly average. The billing data also provided the account type such as construction, residential, government, and irrigation. Exhibit A presents the City's top 200 LVUs. From the LVU list, potential reclaimed water customers were assessed by the type of meter, amount of potable water used, and proximity to other potential users or the Central WWTP. The City's top two (2) largest users were wholesale potable water customers: Manville Water Supply Corporation and Windermere Water Utility. These customers were excluded from the potential reclaimed water users at this time. Also, the understanding at the time of the report is the Blackhawk Golf Club is irrigated by a private onsite well. The Blackhawk Golf Club would potentially one of the largest users of reclaimed water, but would require discussions with the golf club owner.

Public Utilities, CIP and Quiddity also met with the City's Parks department in February 2023 to discuss converting existing and upcoming expansion of parks to reclaimed water for irrigation purposes. Several City Parks were within the LVUs list including NEMP, Wells Point Soccer Fields, Falcon Pointe Park, and several others. The NEMP is currently the only reclaimed water user and the City explained there have been no issues or complaints regarding the reclaimed water. Parks with large practice fields or amenity ponds would be potential candidates for reclaimed water. The City mentioned that the 1849 Park is currently served by Manville WSC and the City would like to prioritize converting the park to reclaimed water. The 1849 Park currently has its irrigation system setup as non-potable water because it uses water from an irrigation pond. The existing LVUs were established using billing history and selecting users with separate irrigation meters. The list of existing LVUs and estimated reclaimed water demands per category and pressure zones that were considered as potential reclaimed water customers can be found in Attachment A.

2.5 FUTURE LARGE VOLUME USERS

Potential future LVUs were assessed by using information from the City's Development Activity map and determining potential candidates by type of development, size, and location. The development activity map included both developments under review and developments in active construction. In addition to completely new developments, the additional phases and ultimate buildout of existing developments were included, such as parks and master planned communities. The demands for the developments were

estimated by size, amenities, and comparing to similar existing LVUs. The list of future LVUs that were considered as potential reclaimed water customers can be found in Attachment A.

2.6 RECLAIMED WATER QUESTIONNAIRE

Quiddity and the City developed a questionnaire for the City's existing and future LVUs to better understand the LVUs water usage. The questionnaire included a brief description of reclaimed water, the City's goal to expand the reclaimed water system, questions to determine the current and future water use, and to gauge customer interest in converting to reclaimed water. The questionnaires were sent to both existing and future LVUs via email and mail, with responses logged online through a GIS portal.

Approximately 225 questionnaires were sent to the existing and future LVUs, of which approximately 13% of future LVUs and 14% of existing LVUs were returned. Approximately 75% of the customers that responded indicated they irrigated in the evening, with 20% of customers indicating they irrigate in the morning, and 1 customer irrigating during the day. Out of the customers that responded to how long they irrigate, over 80% indicated they irrigate for 2 hours with the other respondents irrigating over 4 hours. Out of the existing customers, approximately 42% expressed interest in utilizing reclaimed water and out of the respondents that said no, 53% said a financial incentive may change their interest. Out of the future users that responded, a majority indicated they had interest in utilizing reclaimed water with irrigation being their largest usage. This information was utilized to create diurnal patterns for irrigation usage and preliminary alignments for large users expressing interest in utilizing reclaimed water. It is recommended that prior to providing service for each pressure zone, another survey be conducted of the potential customers to better understand the water usage and desire to use reclaimed water.

2.7 SERVICE AREAS AND PRESSURE ZONES

The City's service area has natural ground elevation ranges from approximately 600 feet above mean sea level (AMSL) in the East to 830 feet AMSL in the West. The reclaimed water distribution system is divided into three different pressure zones, determined by elevations and existing infrastructure. The pressure zones were established based on a minimum static pressure of 50 psi and a maximum pressure of 90 psi for the future reclaimed water distribution system. The pressure zones established are similar to those established in the City's Water Master Plan. Exhibit B presents the pressures zones and hydraulic grades established for the proposed reclaimed water system.

2.8 OPERATIONS

Currently, the City has implemented a Water Conservation Plan that designates specific watering days based on type of customer. The plan states single family residential can irrigate Monday – Friday based on the address number, commercial and multifamily customers can irrigate on Saturdays, and Pflugerville Independent School District (PfISD) facilities to irrigate on Sundays. Given that most customers irrigate 2-3 times a week and the City's mandatory water conservation schedule, it was discussed with the City and assumed that private customers, the City parks and PfISD facilities would irrigate on separate days of the week in the reclaimed water system.

When creating the model for the reclaimed water system, the customers were divided into three categories: City Parks, Pflugerville ISD facilities, and private customers. All customers were modeled to irrigate over a two-hour period, with the exception of Northeast Metropolitan Park (NEMP) and 1849 Park. The City currently provides the NEMP with reclaimed water and fills their irrigation ponds over a 24-36 hour period with an estimated demand of over 1 million gallons per day (MGD). The 1849 Park currently has the first phase built out with an irrigation pond, is currently under development and will have a similar number of fields to irrigate as the NEMP. Since the two (2) parks have large demands and irrigation ponds, they were assumed to refill over a 24-hour period. Model scenarios were run for Pressure Zones 1, 2 and 3 utilizing the irrigation times presented in Table 2-1. Private customers were split over two (2) different irrigation times because it's likely that some private customers will irrigate in the morning and some in the evening. These times were assumed and may differ from the actual irrigation times of customers. Through an ordinance, the City will be able to have more control over irrigation timing if desired.

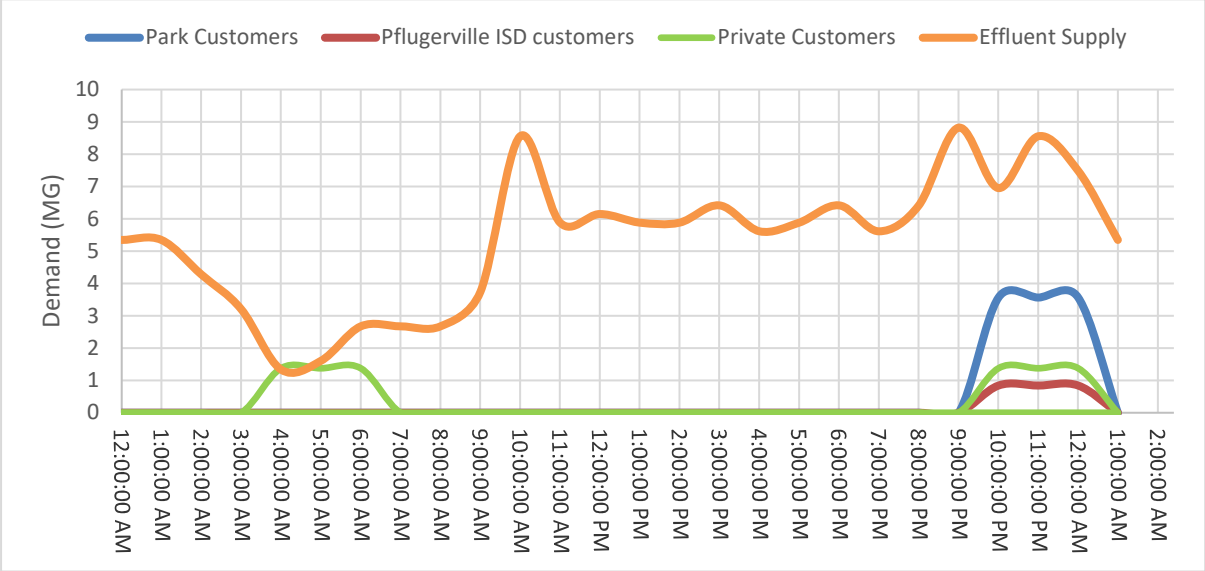
Table 2-1: Irrigation Schedule

CUSTOMER	TIME
NEMP and 1849 Parks	24-hour
All Other Parks	10PM – 12AM
Pflugerville ISD Facilities	10 PM – 12 AM
Private Customers	10 PM – 12 AM 4 AM – 6 AM

Figure 2-1 shows the irrigation demands in comparison with the Central WWTP's average day effluent. As previously stated, each customer type was assumed to irrigate on separate days. For the private

customers assumed diurnal pattern, there is a deficit in the supply versus demand shown during the 4:00 AM to 6:00 AM time frame which storage was sized to account for.

Figure 2-1: Irrigation Demands vs. Effluent Supply



2.8.1 PRESSURE ZONE 1 DEMANDS

Pressure Zone 1 is predominantly the eastern portion of the City limits with base elevations ranging from 612 feet – 681 feet AMSL. The pressure zone consists of several LVUs including the NEMP, 1849 Park, Verona Park, Weiss High School, Jessica Carpenter Elementary School, FedEx, Amazon Services Warehouse, Sorrento Homeowners Association (HOA), Villages of Hidden Lake HOA, and other existing large volume users. The pressure zone also includes future developments such as Cameron 96, Lakeside Meadows, and the Pecan Subdivision. The estimated total demand was calculated using historical billing data from October 2021 – September 2022, assuming irrigation times of 2 hours, and applying a 25% contingency. The approximate total demand for Pressure Zone 1 can be found in Table 2-2.

Table 2-2: Pressure Zone 1 Estimated Demands

CUSTOMER TYPE	BASE DEMAND (gpd)	2 HOUR DEMAND (gpm)
City Parks	2,219,000	2,150[(1)]
Pflugerville ISD	243,625	2,030
Private Customer	960,410	7,800

(1) Includes the take-rate for the NEMP and 1849 Park over a 24-hour period.
(2) The facilities sized and included in the model were sized for the 2-hour demands assuming each customer type uses reclaimed water on separate days.

2.8.2 PRESSURE ZONE 2 DEMANDS

Pressure Zone 2 is predominantly the middle of the City limits with base elevations ranging from 681 feet – 751 feet AMSL. The pressure zone consists of the Falcon Pointe Park, Kelly Lane Park, Hendrickson High School, Kelly Lane Middle School, Pflugerville Elementary School, Falcon Pointe Community Association, Avalon HOA, Swenson Farms HOA, HEB, Walmart, Baylor Scott & White Medical Center, and other existing large volume users. The pressure zone also includes future users such as Lifestyle Communities and Wuthrich Hill Farms. The estimated total demand was calculated using historical billing data from October 2021 – September 2022, assuming irrigation times of 2 hours, and applying a 25% contingency. The approximate total demand for Pressure Zone 2 can be found in Table 2-3.

Table 2-3: Pressure Zone 2 Estimated Demands

CUSTOMER TYPE	BASE DEMAND (gpd)	2 HOUR DEMAND (gpm)
City Parks	404,500	3,370
Pflugerville ISD	291,800	2,430
Private Customer	942,000	7,850

(1) The facilities sized and included in the model were sized for the 2-hour demands assuming each customer type uses reclaimed water on separate days.

2.8.3 PRESSURE ZONE 3 DEMANDS

Pressure Zones 3 is predominantly the western portion of the City limits with base elevations ranging from 751 feet – 820 feet AMSL. The pressure zone consists of the Wells Point Soccer Park, Wilbarger Creek Park, Pflugerville High School, Pflugerville Middle School, several elementary schools, Highland Park Residential Community, FSC Highlands, Presidium Pecan District Apartments, several HOAs, Living Spaces Furniture, and other existing large volume users. The pressure zone also includes future users such as the Pfarm and the Pecan District. The estimated total demand was calculated using historical billing data from October

2021 – September 2022, assuming irrigation times of 2 hours, and applying a 25% contingency. The approximate total demand for Pressure Zone 3 can be found in Table 2-4:

Table 2-4: Pressure Zone 3 Estimated Demands

CUSTOMER TYPE	BASE DEMAND (gpd)	2 HOUR DEMAND (gpm)
City Parks	354,400	2,950
Pflugerville ISD	313,100	2,610
Private Customer	862,800	7,190

(1) The facilities sized and included in the model were sized for the 2-hour demands assuming each customer type uses reclaimed water on separate days.

3.0 RECLAIMED WATER SYSTEM PLANNING

3.1 MODELING PARAMETERS

A model was built of the City's existing and proposed reclaimed water system using InfoWater Pro by Innovyze. The proposed reclaimed water system primarily consists of irrigation demands. When modeling the reclaimed water system, it was assumed the City parks, Pflugerville ISD customers, and private customers would all irrigate on separate days of the week and over a two-hour period. The NEMP and 1849 Park are exceptions, which were modeled to refill their respective ponds over a 24-hour period. Separate 24-hour extended period simulations scenarios were built for each customer base's irrigation day. The pressure zones were modeled to maintain a minimum of 40 psi throughout the system and pipes to have a maximum velocity of 10 feet per second (ft/s) in normal operating conditions.

The TCEQ is in the process of updating the Chapter 217 Reclaimed Water rules for pressure, storage, and distribution system design to be more in line with the potable water system rules. The proposed rules as of April 2023 include maintaining minimum 35 psi throughout the system at 1.5 gpm per connection, maintaining 20 psi minimum if the reclaimed water system is to be used for fire suppression, minimize the number of dead-ends, requiring flushing hydrants at the end of dead-ends, and flushing the system monthly. It is Quiddity's understanding the proposed rule for dead-ends does not apply to supplying irrigation ponds, and the rule is geared towards master planned communities that are installing reclaimed water pipes as part of their infrastructure projects.

3.2 PRESSURE ZONE 1

Pressure Zone 1 is served directly from the Central WWTP and consists of a medium pressure, high service pump station at the Central WWTP including 1-300 gpm booster pump, 5-1,100 gpm booster pumps, a proposed 1.5 MG elevated storage tank at the 1849 Park, 3,200 LF of 16" waterline, approximately 12,700 LF of 12" waterline, and 36,000 LF of 10" waterline. The system's reclaimed water demands were based on the estimated demand projections. The maximum velocity and minimum pressure for each scenario are presented in Table 3-1.

Table 3-1: Pressure Zone 1 Model Results

SCENARIO	LOWEST PRESSURE (psi)	LOCATION	HIGHEST VELOCITY (ft/sec)	LOCATION
City Parks	38.8	Amazon	4.1	10" Cameron Rd
PfISD	52.8	Amazon	6.0	10" Weiss Ln
Private Customers	42.2	Sorrento HOA	6.7	12" Vaughn Blvd

The lowest pressures presented are the minimum pressures in the system during each scenario. Pressure Zone 1 was established with a maximum hydraulic grade line (HGL) 797 feet AMSL and a maximum elevation of 681 ft AMSL for a static pressure of 50 psi. The Amazon facility has an estimated elevation of 671 ft AMSL. Therefore, the Amazon take point has the lowest or one of the lowest pressures in each scenario. In the City Parks scenario, the Amazon pressure drops below 40 psi, but the Amazon facility does not take water in this scenario and therefore would not need the pressure to be above 40 psi.

3.3 PRESSURE ZONE 2

Pressure Zone 2 is served by Pressure Zone 3 pumping facilities (described in Section 3.4), a pressure reducing valve station, approximately 5,000 LF of 16-inch (16") waterline, and the proposed 1.0 MG Elevated Storage Tank. The Pressure Zone 2 distribution system consists of approximately 4,200 LF of 16-inch (16") waterline, 31,700 LF of 12-inch (12") waterline, 6,600 LF of 10-inch (10") waterline, and 12,600 LF of 8-inch (8") waterline. The system's reclaimed water demands were based on the estimated demand projections. The maximum velocity and minimum pressure for each scenario are presented in Table 3-2.

Table 3-2: Pressure Zone 2 Modeling Results

SCENARIO	LOWEST PRESSURE (psi)	LOCATION	HIGHEST VELOCITY (ft/sec)	LOCATION
City Parks	39.7	Hendrickson High School	9.7	8" Falcon Pointe Blvd
PfISD	41.7	Hendrickson High School	7.1	8" Falcon Pointe Blvd
Private Customers	39.8	Lifestyle Communities	7.3	8" Mammoth Cave Blvd

Pressure Zone 2 was established with a maximum HGL of 866 feet AMSL and a maximum elevation of 752 feet AMSL for a static pressure of 50 psi. The Lifestyle Communities take point has an estimated elevation of 757 feet AMSL and therefore has the lowest or one of the lowest pressures in each scenario. Hendrickson High School has lower pressures with it being one of the furthest locations from the proposed North EST.

3.4 PRESSURE ZONE 3

Pressure Zone 3 is served by a 6-1,500 gpm booster pump high pressure, high service pump station at the Central WWTP, approximately 24,000 LF of 24-inch (24") transmission main, and the existing 1.5 MG South Standpipe that is proposed to be converted for reclaimed water upon completion of the proposed potable water elevated storage tank. The Pressure Zone 3 distribution system consists of approximately 4,400 LF of 24-inch (24") waterline, 1,400 LF of 20-inch (20") waterline, 1,400 LF of 16-inch (16") waterline, 16,200 LF of 12-inch (12") waterline, 11,800 LF of 8-inch (8") waterline, and 1,300 LF of 6-inch (6") waterline. The system's reclaimed water demands were based on the demand projections. The maximum velocity and minimum pressure for each scenario are presented in Table 3-3.

Table 3-3: Pressure Zone 3 Modeling Results

SCENARIO	LOWEST PRESSURE (psi)	LOCATION	HIGHEST VELOCITY (ft/sec)	LOCATION
City Parks	44.7	Wells Point	6.2	20" W Pecan St
PfISD	45.2	Wells Point	6.8	8" Immanuel Rd
Private Customers	38.5	Springbrook Glen HOA	7.5	20" W Pecan St

Pressure Zone 3 was established with a maximum HGL of 935 feet AMSL and a maximum elevation of 820 feet AMSL for a static pressure of 50 psi. The Wells Point complex has an estimated take point elevation of 819 feet AMSL and therefore has the lowest or one of the lowest pressures in the service area. The

Springbrook Glen HOA has an estimated take point elevation of 791 feet AMSL and is one of the furthest points away from the South Standpipe.

4.0 RECLAIMED WATER CAPITAL IMPROVEMENTS PLAN

4.1 PROPOSED IMPROVEMENTS

The proposed improvements to serve the LVUs can be divided into four (4) phases. Each phase consists of facility improvements, reclaimed waterline construction, and rehabilitation or repurposing of existing facilities to provide adequate storage, pumping capacity, and pressure to maintain 40 psi minimum pressure throughout the system. The City's existing facilities are proposed to be utilized as much as possible in order to reduce costs and potential land acquisition. Exhibits C and D show the proposed improvements at the City's Central WWTP and within the Reclaimed Water System.

4.1.1 PHASE 1 (1849 PARK)

The first phase of the reclaimed water system will focus on providing water to the 1849 Park. The 1849 Park is currently being expanded and expected to develop to full build-out over the next few years which will increase the irrigation demand as new sports fields are constructed. This will also allow Verona Park to connect to the reclaimed water system. Operationally, the NEMP and 1849 Park will need to take water on separate days as the existing facilities are not big enough to serve both parks simultaneously. In the future, if the City desires, pumping capacity improvements can be made at the existing reclaimed water pump station to provide water to both NEMP and 1849 simultaneously. Phase 1 consists of 3 projects and is estimated to cost approximately $9M, as shown in Attachment B. Phase 1 will allow the City to convert approximately 1.4 MGD of potable water to reclaimed water in addition to the approximately 1.4 MGD demand at the NEMP. The Phase 1 improvements could be coordinated with Project Nos. 3 (36" waterline along Weiss Lane) and 6 (12" Looping Improvements along Sun Light Way) from the City's 2021 Water Master Plan.

4.1.2 PHASE 2 (PZ 1 IMPROVEMENTS)

The second phase allows PfISD facilities and the private customers to connect to the reclaimed water system. To meet minimum pressure requirements, the high service pump station at the Central WWTP will need to be constructed including 1-300 gpm pump, 5-1,100 gpm pumps, a 750,000 gallon concrete ground storage tank, the 1.5 MG elevated storage tank at the 1849 Park, and an additional 12-inch (12")

waterline. Phase 2 consists of 4 projects and costs approximately $28.2M, as shown in Attachment B. Phase 2 will allow the City to convert up to approximately 1.2 MGD of potable water to reclaimed water in addition to the Phase 1 improvements.

4.1.3 PHASE 3 (PZ 3 IMPROVEMENTS)

The third phase will allow LVUs in the Pressure Zone 3 area to connect to the reclaimed water system. Due to a significant change in elevation, a separate pumping station including 3-1,500 gpm pumps and a 750,000 gallon concrete ground storage tank located at the Central WWTP will be necessary to pump to the proposed repurposed and rehabilitated South Standpipe on Club Chase Dr. The South Standpipe cannot be repurposed until the proposed potable water elevated storage has been built and replaced the standpipe. A 24-inch (24”) transmission line is proposed from the Central WWTP to the repurposed standpipe. A 24-inch (24”) / 20-inch (20”) trunk line is proposed as part of Phase 3 to connect the Wells Point Soccer Complex, Pflugerville High School, Park Crest Middle School among other customers. Phase 3 consists of 4 projects and costs approximately $56.3M, as presented in Attachment B. Phase 3 includes investment in facilities to allow the City to serve both Pressure Zones 2 & 3, and connects approximately 0.675 MGD to reclaimed water.

4.1.4 PHASE 4 (PZ 2 IMPROVEMENTS)

The fourth phase will allow additional customers in Pressure Zones 2 and 3 to connect to the reclaimed water system. A 16-inch (16”) waterline with a pressure reducing station is proposed to connect Pressure Zone 3 to a proposed Elevated Storage Tank along Pfennig Ln. This phase also includes additional pumps at the Central WWTP high service pump station to supply water to the customers in Pressure Zones 2 and 3 along with a distribution network to connect additional customers. Phase 4 consists of 6 projects and costs approximately $51.4M, as shown in Attachment B. Phases 3 and 4 will allow the City to convert approximately 1.9 MGD of water to reclaimed water. Phase 4 improvements could be coordinated with Project No. 4 (18” and 12” sewer within the Wilbarger Creek Park) from the City’s 2021 Wastewater Master Plan. The proposed reclaimed improvements could also be coordinated with Projects E (Kelly Lane Phase 3 widening) and I (Immanuel Road widening) from the City’s 2020 Transportation Master Plan.

4.2 FINANCING STRATEGIES

Different financing options are available for funding the Capital Improvements Projects including bonds, loans and grant funding. These include grant funding from the Bureau of Reclamation and grants and low

interest loans from the Texas Water Development Board (TWDB) Clean Water State Revolving Fund (CWSRF), and Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA).

4.2.1 BUREAU OF RECLAMATION GRANT FUNDING

As part of the recent bipartisan infrastructure law, $8.3 billion has been allocated to the US Bureau of Reclamation for investment in Reclamation water infrastructure. This grant funding is comprised of 12 different programs which includes Title XVI for Water Reclamation and Reuse projects. Approximately $1 billion over 5 years has been allocated for water reclamation and reuse funding, including $550 million for the Title XVI Water Reclamation and Reuse Program. Funding opportunities are posted on grants.gov, and applications are typically due 3 months later. Through Title XVI, up to 25% of the project cost could be considered for a grant or up to $20 million, whichever is less. Applications can be for planning, design, and construction, or any combination of the three. A feasibility study must be completed that contains certain sections such as statement of need, description of alternatives, economic analysis, the proposed project, environmental consideration, and legal requirements. Each project is then graded on several categories including stretching water supplies, contributions to water supply sustainability, water quality, economic benefits, obligations and benefits to rural and economically disadvantaged communities, and watershed perspectives. The Bureau of Reclamation recently released funding opportunities in January 2023 with applications due March 2023 for expenditure by September 2025.

4.2.2 TWDB CLEAN WATER STATE REVOLVING FUND

For non-potable reclaimed water projects, TWDB grants and low interest loans are available through the CWSRF. The 2023 CWSRF funding cycle included $408M in total, including $340M in low interest loans and $52.9M in principal forgiveness loans. Additional funding from the bipartisan infrastructure law is expected yearly through 2026. Projects have higher chances of being awarded principal forgiveness if it serves an economically distressed area, qualifies as emergency relief, or as a “green” project. A Project Information Form (PIF) that provides a description of the project is required to be submitted to the TWDB by March 1st to be considered for that year’s funding cycle, though any PIFs submitted after March 1st will be considered for the following year’s funding cycle. Applications can be for planning, design, and construction, or any combination of the three. If a project is selected, it then becomes part of the State’s Intended Use Plan.

4.2.3 EPA WIFIA

WIFIA is a federal credit program that was established in 2014 for eligible water and wastewater projects. WIFIA offers low interest loans up to 49% of the eligible project costs. For large cities, the minimum project size is $20 million and must have regional significance. Often times, many smaller projects may be combined as one larger project for funding purposes. Since the City would be responsible for the remaining 51% of the project cost, WIFIA funds may be used in conjunction with grant funding or funding from other sources. Entities can submit letters of interest at any time and should receive a response from the EPA in 4-6 weeks. There is not a cost associated with submitting letters of interest, but there are closing costs associated with the loan. Approximately 45% of the loans close within 6 months and 85% of the loans close within 12 months. Loans can be re-executed at any time if federal interest rates lower. The City has had recent success utilizing WIFIA funds for the surface water treatment plant expansion and was awarded a $52 million loan in 2022 and saved over $13 million.

4.2.4 FINANCING RECOMMENDATIONS

It's recommended the City pursue financing opportunities with multiple funding opportunities and combine as available. Grant funding can be pursued through the Bureau of Reclamation Title XVI and CWSRF, which can be combined with low interest loans through WIFIA or CWSRF. With the recent passing of the bipartisan infrastructure act, there's a higher amount of funding available than usual for grants and low interest loans over the next several years. The City should consider applying for construction funding for the *Distribution Line to the 1849 Park* and *Weiss Lane Distribution Line* projects (Project Nos. RW-1 and RW-2 as presented in Attachment B and Attachment C) through the TWDB CWSRF by March 1st, 2024 to be considered for grants or low interest loans. These funds will likely be available to the City by the Fall of 2024 at the earliest. These projects will allow the City to convert the 1849 Park to reclaimed water and save the expenses of paying Manville WSC for irrigation water.

Considering that the Bureau of Reclamation Title XVI funds up to 25% of the project cost, it's recommended the larger projects such as the 1849 Park EST, the Pressure Zone 1 pump station, or Pressure Zones 2 & 3 pump station be submitted to maximize the amount of federal grant funding allowed.

The City should also consider pursuing low interest loans from WIFIA for an entire phase of projects at a time. This would allow the City to maximize the amount WIFIA would provide funding for with a single loan and prevent the City from paying closing costs for many loans.

4.3 INCENTIVES AND RATE STRUCTURE

In evaluating incentives for reclaimed water, the neighboring cities' incentives were assessed. Both Austin Water and the City of Round Rock use reduced rates for reclaimed water as an incentive. Austin Water currently has a reclaimed water rate that is separate from the general water and wastewater rates. Their rate structure is created to incentivize large volume users to connect to reclaimed water systems by offering lower rates. Austin Water currently has separate reclaimed water rates for Park land customers ($1.39 per 1,000 gallons), Austin Energy Power Plant ($1.92 per 1,000 gallons), mandatory connections ($4.20 per 1,000 gallons), and non-mandatory connections ($2.82 per 1,000 gallons). This is in comparison to the City's November 2022 commercial water rate of $5.27 per 1,000 gallons during off peak months and $5.66 per 1,000 gallons during peak months.

The City of Round Rock also has a separate rate for reuse water and users have a block volume rate of $1.92 per 1,000 gallons, rather than a tiered rate, compared to a commercial water rate of $2.92 per 1,000 gallons. In addition, the reuse water is not subject to any watering restrictions. The City of Round Rock also has a reuse water fill station, and the water is available free of charge to customers.

The City's current potable water rates consist of a base rate and volumetric rate increase per 1,000 gallons starting at $5.20 per 1,000 gallons. A potential reclaimed water rate structure could include a base rate by meter size and a single volumetric rate for all reclaimed customers, possibly in the $1.50 - $2.50 range per 1,000 gallons to be an incentive for conversion. It's recommended the City conduct a rate analysis to determine the reclaimed water base rates and volumetric rates.

4.4 ADDITIONAL CONSIDERATIONS

The City should consider implementing a reclaimed water system ordinance that dictates an irrigation schedule and whether new development should connect if a reclaimed waterline is nearby the property. Implementing an irrigation schedule that requires Pflugerville ISD customers, City Park Customers, and private customers to use reclaimed water on separate days reduces the capacity needed within the reclaimed water system. Additionally, the City of Austin has an existing ordinance in place that requires

customers within 250 feet of a reclaimed water main to connect for non-potable water uses. The City of Austin also has structured their rates to incentivize the customers that are further than 250 feet away to connect to the reclaimed water system by offering lower rates than the “mandatory” customers. The City should consider taking a similar approach to encourage more customers to connect to the reclaimed water system.

The City is currently developing rapidly and the Master Plan report evaluated future developments known at the time of the report. The Master Plan should be updated every 5-years maximum to evaluate additional development demand and location to determine if any changes are needed to the proposed infrastructure.

5.0 SUMMARY

In assessing the potential reclaimed water uses and demands, a significant portion of the City’s existing usage is irrigation across City Parks, PfISD facilities and private customers such as commercial businesses and HOAs. The reclaimed water model and system are planned for different types of users irrigating on separate days, similar to the current irrigation schedules and patterns. The City will should explore creating a reclaimed water ordinance or mandatory schedule to limit different types of LVUs to specific irrigation days. This will reduce the instantaneous demand and the required facilities to meet minimum pressures. The current average effluent produced is approximately 5.35 MG per day. Once all improvements are completed, approximately 5.2 MG of potable water demand across the different user types can be converted to reclaimed water. The primary use of the reclaimed water will be irrigation of practice fields, parks, and filling of irrigation and amenity ponds. The study was limited to analyzing the top 200 LVUs and large future developments in order to maximize the reclaimed water conversion for infrastructure built.

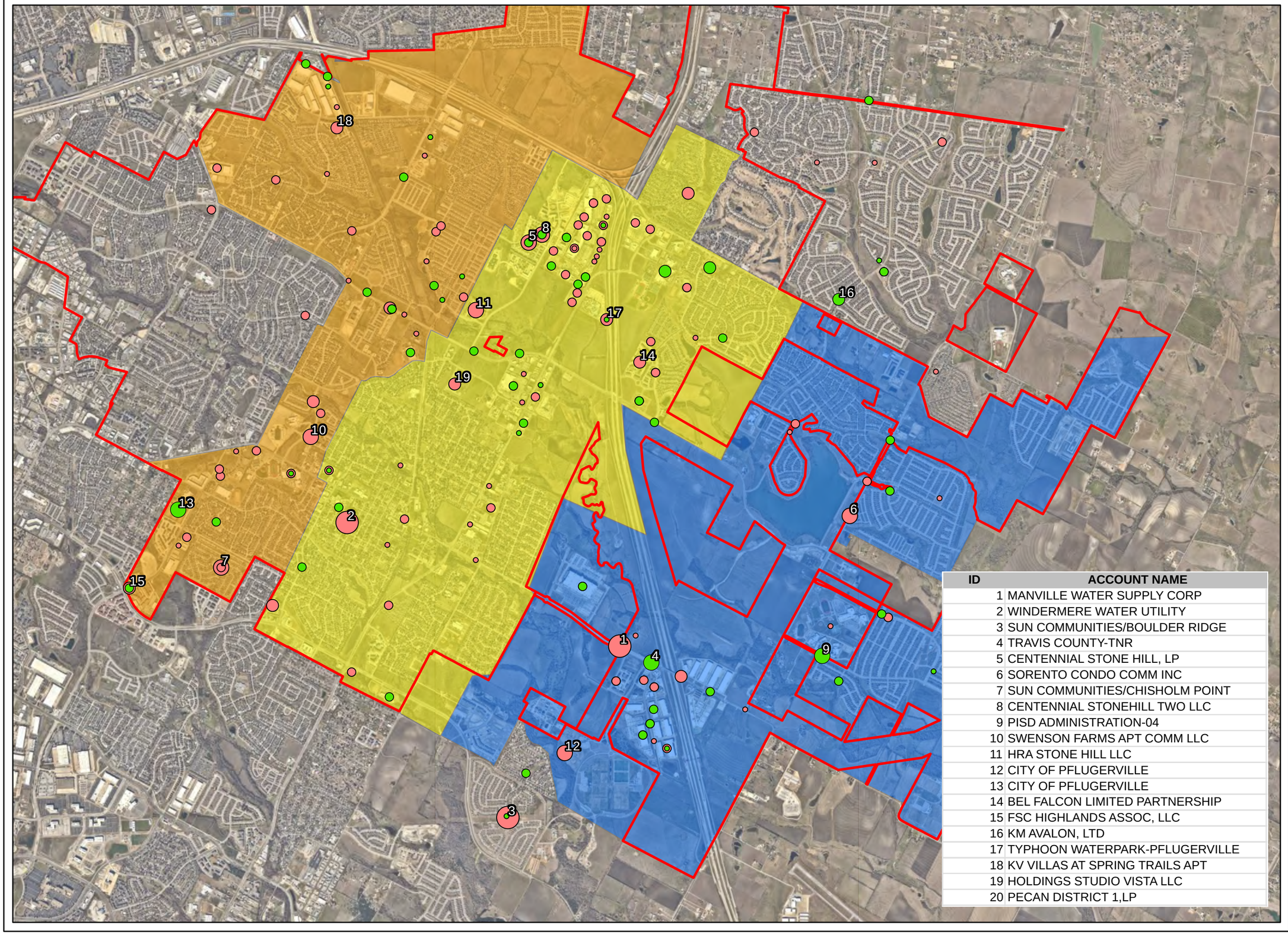
The Reclaimed Water System improvements can be divided into four different phases and is summarized in Table 5-1. Additional details of the projects can be found in Attachment C.

Table 5-1: Reclaimed Water System Proposed Improvements

	Phase 1[1] (FY25-27)	Phase 2 [1] (FY28-32)	Phase 3 [2] (FY33-36)	Phase 4 [2][3] (FY37-42)
6-10" Waterline	21,000 LF	15,000 LF	4,900 LF	43,100 LF
12-16" Waterline	12,200 LF	2,500 LF		37,500 LF
20-24" Waterline			40,500 LF	
Pumping		1 – 300 gpm pump 5- 1,100 gpm pumps	3 – 1,500 gpm pumps	3 – 1,500 gpm pumps
Ground Storage Tank		750,000 gal GST	750,000 gal GST	
Elevated Storage Tank		1.5 MG gal EST	1.5 MG Standpipe Conversion	1.0 MG EST
Other	Rate Study & Ordinance	Master Plan Update	Master Plan Update	Master Plan Update, Pressure Reducing Valve Station
COSTS	**$9,020,000**	**$28,159,000**	**$56,372,000**	**$51,371,000**

(1) Improvements are located in Pressure Zone 1.
(2) Improvements are located in Pressure Zone 3 and setup for future service in Pressures Zones 2 & 3.
(3) Improvements are located in Pressure Zones 2 & 3.

The estimated total for projects from FY25 to FY42 is approximately $144.9M including engineering, contingencies and inflation. The City should consider pursuing grant funding and low interest loans through the Bureau of Reclamation Title XVI Grant, TWDB Clean Water State Revolving Fund, and WIFIA funding. The remaining costs will need to be funded by the City's utility revenues or by issuing bonds. The City should also consider conducting a rate analysis and adding a reclaimed water rate that is significantly lower rate than potable water to incentivize customers to use reclaimed water.



ID	ACCOUNT NAME
1	MANVILLE WATER SUPPLY CORP
2	WINDERMERE WATER UTILITY
3	SUN COMMUNITIES/BOULDER RIDGE
4	TRAVIS COUNTY-TNR
5	CENTENNIAL STONE HILL, LP
6	SORENTO CONDO COMM INC
7	SUN COMMUNITIES/CHISHOLM POINT
8	CENTENNIAL STONEHILL TWO LLC
9	PISD ADMINISTRATION-04
10	SWENSON FARMS APT COMM LLC
11	HRA STONE HILL LLC
12	CITY OF PFLUGERVILLE
13	CITY OF PFLUGERVILLE
14	BEL FALCON LIMITED PARTNERSHIP
15	FSC HIGHLANDS ASSOC, LLC
16	KM AVALON, LTD
17	TYPHOON WATERPARK-PFLUGERVILLE
18	KV VILLAS AT SPRING TRAILS APT
19	HOLDINGS STUDIO VISTA LLC
20	PECAN DISTRICT 1,LP

VICINITY MAP

Scale: 1 inch equals 20 miles

LEGEND

TOTAL WATER USAGE

- 7017 - 10000
- 10001 - 50000
- 50001 - 100000
- 100001 - 500000
- 500001 - 3582624

TOTAL WATER USAGE - IRRIGATION

- 7811 - 10000
- 10001 - 50000
- 50001 - 100000
- 100001 - 453694

Pressure Zones

- Zone 1
- Zone 2
- Zone 3

City Limits

EXHIBIT A
LARGE VOLUME USERS

PFLUGERVILLE

TRAVIS COUNTY, TEXAS

0 9001,800

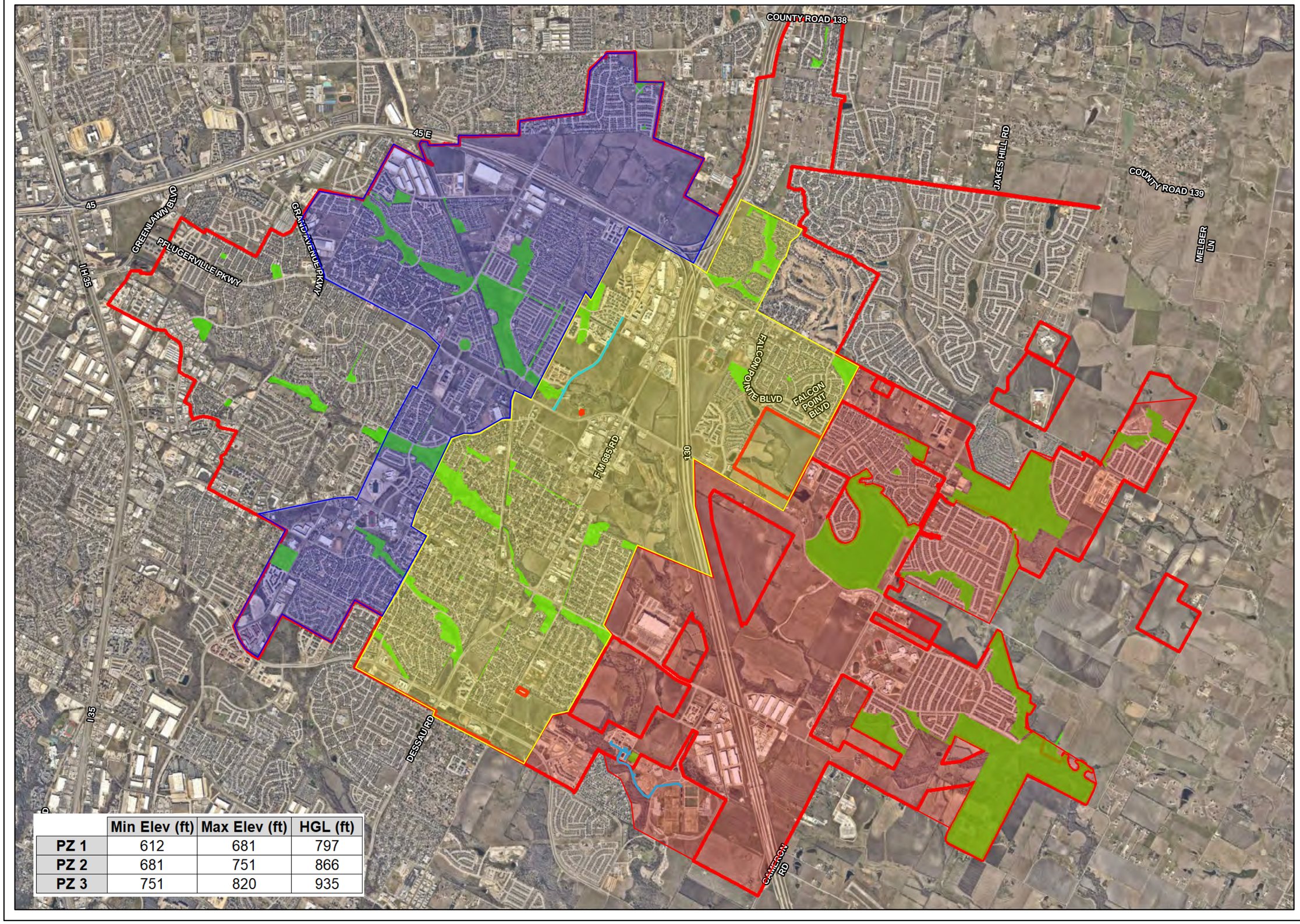
Feet

1 inch equals 1800 feet

N W E S

QUIDDITY

Path: V:\Practice Workspace\Corporate Services\GIS\Projects\0_Individuals\1_Carrasco\PFlugerville\Large_Volume_Users_Map_11x17.aprx Project Number: 056671-0002-00-005-01 Date: 4/18/2023 User Name: atal



	Min Elev (ft)	Max Elev (ft)	HGL (ft)
PZ 1	612	681	797
PZ 2	681	751	866
PZ 3	751	820	935

VICINITY MAP
1 INCH = 10 MILES

LEGEND
- Reuse Lines
- Public Parks
- City Limits
- Pressure Zone 1
- Pressure Zone 2
- Pressure Zone 3

EXHIBIT B
PRESSURE ZONES MAP

CITY OF PFLUGERVILLE
TRAVIS COUNTY, TEXAS

0 3,600
1 INCH : 3,600 FEET
IMAGERY PROVIDED BY NEARMAP

Disclaimer: This product is offered for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property, governmental and/or political boundaries or related facilities to said boundary. No express warranties are made by Quiddity Engineering concerning the accuracy, completeness, reliability, or usability of the information included within this exhibit.

QUIDDITY
Texas Board of Professional Engineers Registration No. F-23290

Project Number: 05971-0102-00-004-103 Date: 3/2/2023 User Name: adall
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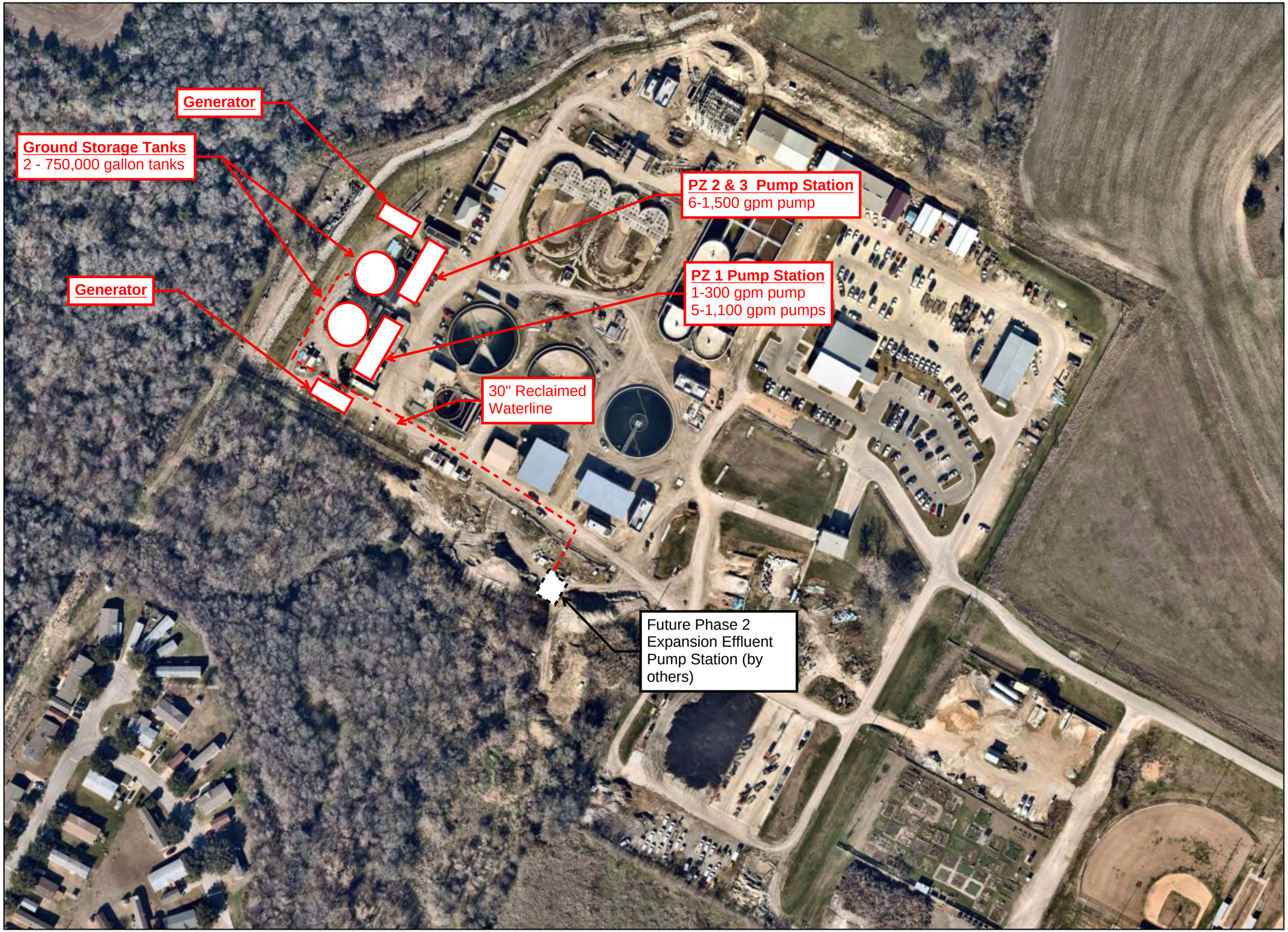

VICINITY MAP

Scale: 1 inch equals 20 miles

LEGEND

EXHIBIT C
CENTRAL
WWTP

PFLUGERVILLE
TRAVIS COUNTY, TEXAS

0 75 150
Feet
1 inch equals 150 feet

N
W E
S

QUIDDITY

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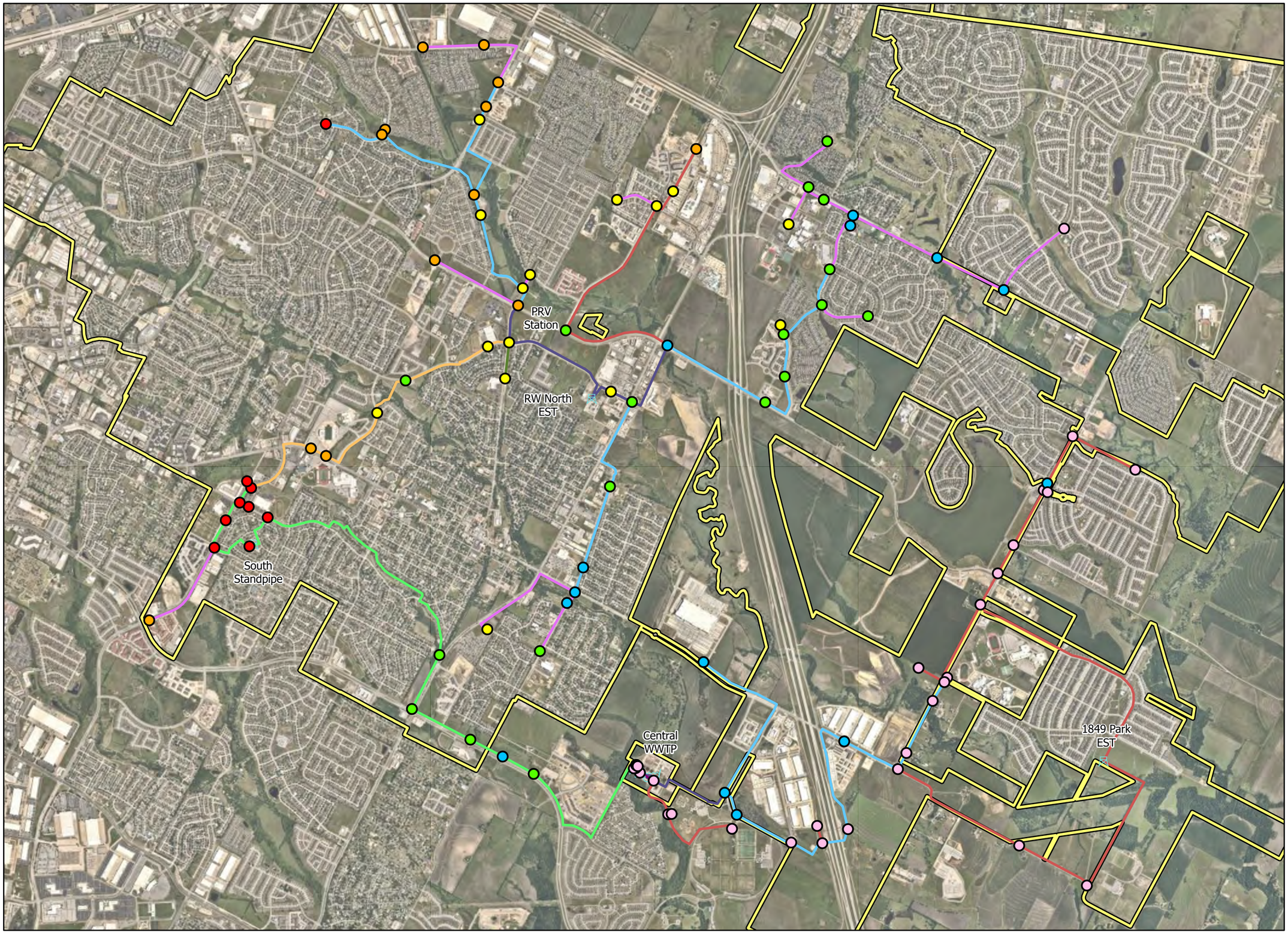

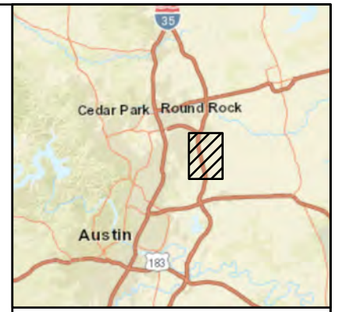

VICINITY MAP

Scale: 1 inch equals 20 miles

LEGEND

Reservoir
- Active

Tank
- Active

Junction

ELEVATION
- 600.00 - 647.00
- 647.01 - 681.00
- 681.01 - 716.00
- 716.01 - 751.00
- 751.01 - 786.00
- 786.01 - 819.00

City Limits

DIAMETER
- 6
- 8
- 10
- 12
- 16
- 20
- 24
- 30

EXHIBIT D
PROPOSED WATERLINE MAP

PFLUGERVILLE
TRAVIS COUNTY, TEXAS

0 1,400 2,800
Feet

1 inch equals 2800 feet

N
W E
S

QUIDDITY

Path: V:\Practice Workspace\Corporate Services\GIS\Projects\U_Individuals\J_Carrasco\Pflugerville\Proposed_Waterline_Map_11x17.aprx Project Number: 05671-0002-00-005-01 Date: 6/13/2023 User Name: Ida

ATTACHMENT A
LARGE VOLUME USERS DEMANDS

PARKS

Customer Name	Base Demand (gpd)	Pressure Zone	2 Hour Demand (gpm)
North East Metro Park	1,110,250	1	963.8
1849 Park	1,083,333	1	940.4
Verona Park	25,417	1	264.8
Kelly Lane Park	63,542	2	529.5
Bohls Park	63,542	2	529.5
Heritage Park	63,542	2	529.5
Falcon Pointe Park	118,531	2	987.8
Stone Hill Park	95,313	2	794.3
Wells Point Park	204,188	3	1,701.6
Willbarger Creek Park	86,677	3	722.3
Pfennig Park	63,542	3	529.5
TOTAL	**2,977,875.00**		**8,492.9**

PFLUGERVILLE ISD

Customer Name	Base Demand (gpd)	Pressure Zone	2 Hour Demand (gpm)
Weiss High School	25,771	1	214.8
Jessica Carpenter Elementary / Bohls Middle School	217,854	1	1,815.5
Hendrickson High School	101,188	2	843.2
Pflugerville Elementary School	127,083	2	1,059.0
Brookhollow Elementary	31,771	2	264.8
Kelly Lane Middle School	54,833	2	456.9
PACE School	31,771	2	264.8
Admin Building	5,177	3	43.1
Park Crest Middle School	77,844	3	648.7
Highland Park Elementary	38,125	3	317.7
Pflugerville High School	20,667	3	172.2
Pflugerville Middle School	52,885	3	440.7
Spring Hill Elementary	31,771	3	264.8
TOTAL	**816,739.58**		**6,806.2**

PRIVATE CUSTOMERS

Customer Name	Base Demand (gpd)	Pressure Zone	2 Hour Demand (gpm)
FedEx	133,635	1	1,113.6
USRLP PFLUGERVILLE LLC	70,052	1	583.8
SORENTO HOA	148,500	1	1,237.5
Villages of Hidden Lake HOA	368	1	3.1
Tacara at Weiss Ranch (1)	6,354	1	53.0
Lakeside Meadows (1)	142,333	1	1,186.1
Cameron 96 (1)	41,938	1	349.5
AMAZON.COM, SERVICES LLC	218,813	1	1,823.4
Becker Farms HOA	7,792	1	64.9
Pecan Subdivision	127,083	1	1,059.0
EVS Metal	31,771	1	53.0
EVS Metal	31,771	1	264.8
KM Avalon	100,250	2	835.4
FALCON POINTE COMMUNITY ASSOC	218,188	2	1,818.2
Lifestyle Communities (1)	95,313	2	794.3
Baylor Scott & White Medical Center	61,698	2	514.1
First Baptist Church	37,885	2	315.7
Om Nama Rama LLC	39,823	2	331.9
Wuthrich Hill Farms (1)	127,083	2	1,059.0
Avalon HOA	85,490	2	712.4
Swenson Farms HOA	8,479	2	70.7
HEB	59,542	2	496.2
IDEA Pflugerville School	42,771	2	356.4
Walmart	65,458	2	545.5
Spring Trails HOA	16,188	3	134.9
Springbrook Glen HOA	59,750	3	497.9
The Pfarm (1)	38,125	3	317.7
Skybox (1)	25,417	3	211.8
Highland Park Res Comm Inc.	274,260	3	2,285.5
FSC Highlands	49,760	3	414.7
Austin Foam Plastics	12,708	3	105.9
Austin Foam Plastics	12,708	3	105.9
Pecan District (1)	127,083	3	1,059.0
Presidium Pecan District Apartments	67,906	3	565.9
Club at Wells Point HOA	76,063	3	633.9
Living Spaces	102,802	3	856.7
TOTAL	**2,765,160**		**22,831.2**

(1) Future development or in active construction.

ATTACHMENT B
CIP OUTLAY
JULY 2023

DRAFT

No.	Pressure Zone	Project	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41	FY42	Total
RW-1	1	Distribution Line to 1849 Park	$868,000	$4,822,000																	$5,690,000
RW-2	2	Weiss Ln Distribution Line		$496,000	$2,758,000																$3,254,000
RW-3	GEN	Rate Study and Ordinance	$75,000																		$75,000
RW-4	GEN	Master Plan Update				$150,000															$150,000
RW-5	1	PZ 1 Pump Station Phase 1					$1,544,000	$4,288,500	$4,288,500												$10,121,000
RW-6	1	1849 Park Elevated Storage Tank						$1,887,000	$5,241,500	$5,241,500											$12,370,000
RW-7	1	Waterline to Connect 1849 Park EST						$590,000	$3,277,000												$3,867,000
RW-8	1	PZ 1 Pump Station Phase 2							$252,000	$1,399,000											$1,651,000
RW-9	GEN	Master Plan Update									$150,000										$150,000
RW-10	2 & 3	PZs 2 & 3 Pump Station Phase 1									$1,385,000	$3,848,500	$3,848,500								$9,082,000
RW-11	3	Transmission Waterline to South Standpipe									$2,270,000	$2,270,000	$12,611,500	$12,611,500							$29,763,000
RW-12	3	South Standpipe Conversion											$100,000	$851,140							$951,140
RW-13	3	Trunk Line 1 (to Park Crest MS)											$2,506,000	$13,920,000							$16,426,000
RW-14	GEN	Master Plan Update													$150,000						$150,000
RW-15	2	Pressure Reducing Valve and Waterline													$681,000	$3,783,000					$4,464,000
RW-16	2	Reclaimed Water North Elevated Storage Tank													$1,734,000	$9,633,000					$11,367,000
RW-17	2 & 3	PZs 2 & 3 Pump Station Phase 2													$360,000	$2,001,000					$2,361,000
RW-18	3	Distribution Line 1 (to Springbook Glen HOA)															$1,048,000	$5,821,000			$6,869,000
RW-19	3	Distribution Line 2 (to Wilbarger Creek Park & Skybox)															$590,000	$3,276,000			$3,866,000
RW-20	2	Trunk Line 1 (from North EST to Kelly Lane)													$1,337,000	$3,715,000	$3,715,000				$8,767,000
RW-21	2	Trunk Line 2 (from Kelly Lane to Falcon Pointe Park)													$726,000	$4,034,000					$4,760,000
RW-22	2	Distribution Waterline 3 (to Stone Hill Park)																	$537,000	$2,984,000	$3,521,000
RW-23	2	Distribution Waterline 4 (to Pflugerville Elementary)																	$800,000	$4,446,000	$5,246,000
		Total	$943,000	$5,318,000	$2,758,000	$150,000	$1,544,000	$6,765,500	$13,059,000	$6,640,500	$3,805,000	$6,118,500	$19,066,000	$27,382,640	$4,988,000	$23,166,000	$5,353,000	$9,097,000	$1,337,000	$7,430,000	**$144,921,140**

PHASE 1	$9,019,000
PHASE 2	$28,159,000
PHASE 3	$56,372,140
PHASE 4	$51,371,000

where quality meets life
PFLUGERVILLE
TEXAS

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
RECLAIMED WATERLINE TO 1849 PARK
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	(1)
1.	Mobilization, Bonds & Insurance	L.S.	1	$300,000	$300,000	
2.	10" Waterline by Open-Cut Construction	L.F.	6,880	85	584,800	
3.	10" Waterline by Trenchless Construction	L.F.	100	130	13,000	
4.	10" Waterline by Trenchless Construction w/ Steel Casing	L.F.	20	250	5,000	
5.	12" Waterline by Open-Cut Construction	L.F.	8,580	100	858,000	
6.	12" Waterline by Trenchless Construction	L.F.	340	160	54,400	
7.	12" Waterline by Trenchless Construction w/ Steel Casing	L.F.	1,100	550	605,000	
8.	16" Waterline by Open-Cut Construction	L.F.	3,180	165	524,700	
9.	Combination Air Valves w/ Manholes	EA.	12	5,000	60,000	
10.	Gate Valves	EA.	4	3,000	10,500	
11.	Trench Safety	L.F.	15,460	1	15,460	
12.	Stormwater Pollution Prevention Plan	L.S.	1	50,000	50,000	
13.	Site Restoration	L.S.	1	50,000	50,000	(3)
14.	Traffic Control Plan	L.S.	1	40,000	40,000	
			SUBTOTAL		$3,170,860	
			Contingencies (30%)		$951,000	
			4 Yr Inflation @ 4%/Yr		$700,000	(2)
			Engineering & Survey (18%)		$868,000	
			TOTAL		**$5,690,000**	(4)

Notes:

(1) This estimate represents my best judgment as a design professional familiar with the construction industry. Quiddity has no control over the cost of labor, materials, or equipment; over the Contractor's methods of determining bid prices; or over competitive bidding or market conditions. Accordingly, we cannot and do not guarantee that bids will not vary from this cost estimate.

(2) Market conditions for construction pricing has been volatile due to, but not limited to, labor shortages, material shortages, and supply chain disruptions since the start of the pandemic and are experiencing added strain due to recent and ongoing global conflicts. The U.S. Bureau of Labor Statistics Consumer Index has reported an overall inflation of 4.0% over the last 12 months (reported for June 2023). The unknown decisions of federal government monetary policy, in connection with the events noted above, may increase or decrease the current inflation rates. In addition to inflation, Quiddity has seen a significant market escalation, on the order of 30-40%, over the past 24 months due to the significant deficit in supply versus demand in the local construction industry in connection with the events noted above.

(3) Site restoration is vegetation only. Does not include cost for roadway or sidewalk repairs.

(4) Does not include cost for easements or easement acquisition.

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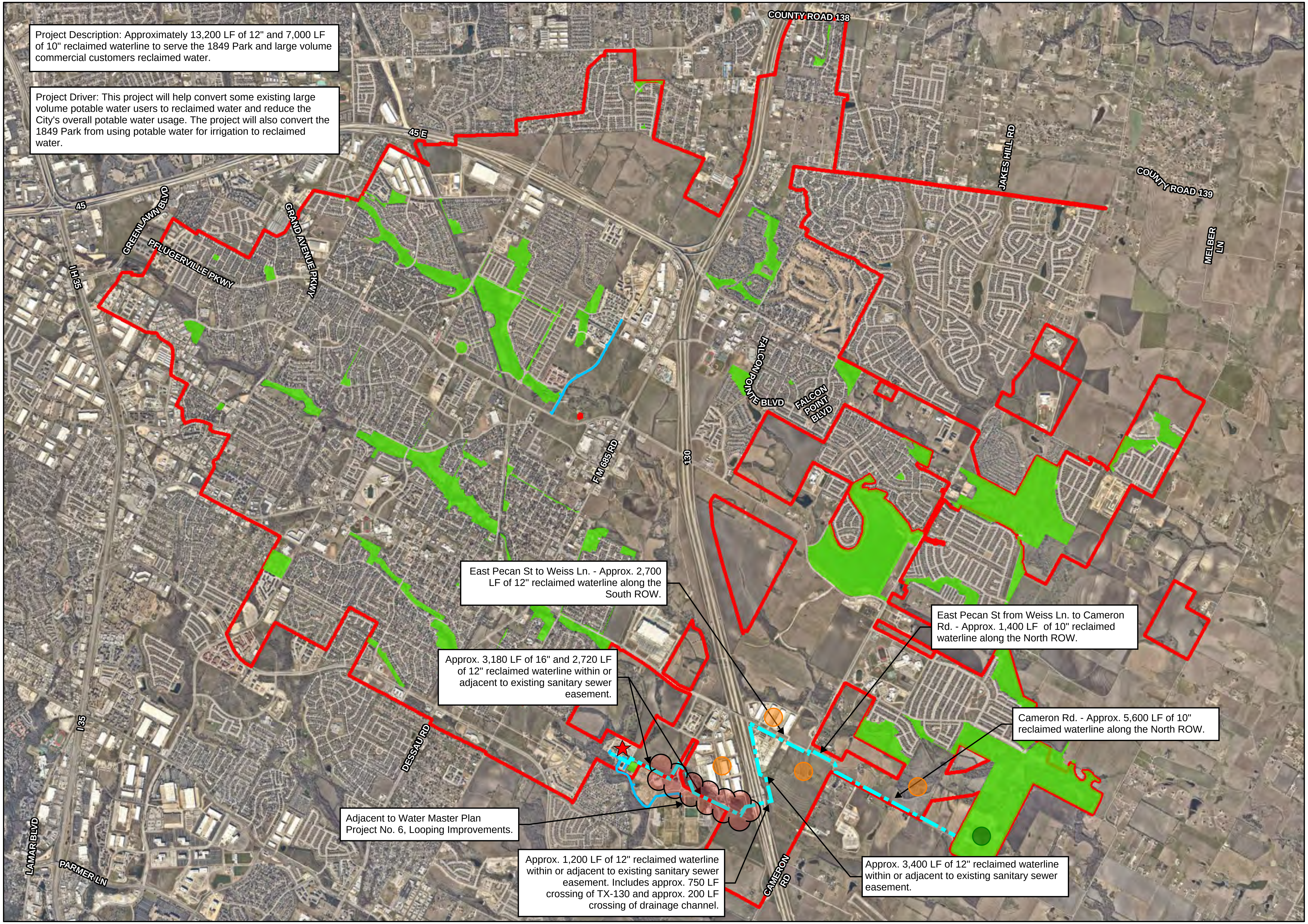
General Financial Planning
Under the Authority of:
Engineer: Alan M. Moon, P.E.
License No.: 123364
It is Preliminary in Nature and not to be Used for Feasibility of Land Purchases, Bond



Project Description: Approximately 13,200 LF of 12" and 7,000 LF of 10" reclaimed waterline to serve the 1849 Park and large volume commercial customers reclaimed water.
Project Driver: This project will help convert some existing large volume potable water users to reclaimed water and reduce the City's overall potable water usage. The project will also convert the 1849 Park from using potable water for irrigation to reclaimed water.
COUNTY ROAD 138
45 E
45
GREENLAWN BLVD
PFLUGERVILLE PKWY
GRAND AVENUE PKWY
I 35
JAKES HILL RD
COUNTY ROAD 139
MELBER LN
FALCON POINTE BLVD
FALCON POINT BLVD
FM 685 RD
130
DESSAU RD
LAMAR BLVD
PARMER LN
CAMERON RD
East Pecan St to Weiss Ln. - Approx. 2,700 LF of 12" reclaimed waterline along the South ROW.
East Pecan St from Weiss Ln. to Cameron Rd. - Approx. 1,400 LF of 10" reclaimed waterline along the North ROW.
Approx. 3,180 LF of 16" and 2,720 LF of 12" reclaimed waterline within or adjacent to existing sanitary sewer easement.
Cameron Rd. - Approx. 5,600 LF of 10" reclaimed waterline along the North ROW.
Adjacent to Water Master Plan Project No. 6, Looping Improvements.
Approx. 1,200 LF of 12" reclaimed waterline within or adjacent to existing sanitary sewer easement. Includes approx. 750 LF crossing of TX-130 and approx. 200 LF crossing of drainage channel.
Approx. 3,400 LF of 12" reclaimed waterline within or adjacent to existing sanitary sewer easement.

VICINITY MAP
1 INCH = 10 MILES

LEGEND
- Reuse Lines
- Public Parks
- City Limits

Potential Reclaimed Water Customers
- City Park
- PfISD
- Private Reclaimed Customer

RECLAIMED WATER MASTER PLAN UPDATE

CITY OF PFLUGERVILLE
TRAVIS COUNTY, TEXAS

N W E S

0 3,600
1 INCH : 3,600 FEET
IMAGERY PROVIDED BY NEARMAP

QUIDDITY
Texas Board of Professional Engineers Registration No. F-23290

Path: V:\Practice Workspace\Corporate Services\GIS\Projects\0_Individuals\A_Moon\Pflugerville\Reclaimed_Water_Master_Plan_11x17.mxd Project Number: 05671-0002-00-004-03 Date: 3/2/2023 User Name: ada1

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
RECLAIMED WATERLINE ALONG WEISS LANE
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	
1.	Mobilization, Bonds & Insurance	L.S.	1	$180,000	$180,000	
2.	10" Waterline by Open-Cut Construction	L.F.	11,190	85	951,150	
3.	10" Waterline by Trenchless Construction	L.F.	1,840	130	239,200	
4.	10" Waterline by Trenchless Construction w/ Steel Casing	L.F.	975	250	243,750	
5.	Combination Air Valves w/ Manholes	EA.	8	5,000	40,000	
6.	Gate Valves	EA.	7	4,000	28,010	
7.	Trench Safety	L.F.	11,190	1	11,190	
8.	Stormwater Pollution Prevention Plan	L.S.	1	40,000	40,000	
9.	Site Restoration	L.S.	1	40,000	40,000	(3)
10.	Traffic Control Plan	L.S.	1	40,000	40,000	
			SUBTOTAL		$1,813,300	
			Contingencies (30%)		$544,000	
			4 Yr Inflation @ 4%/Yr		$400,000	(2)
			Engineering & Survey (18%)		$496,000	
			TOTAL		**$3,254,000**	(4)

Notes:

(1) This estimate represents my best judgment as a design professional familiar with the construction industry. Quiddity has no control over the cost of labor, materials, or equipment; over the Contractor's methods of determining bid prices; or over competitive bidding or market conditions. Accordingly, we cannot and do not guarantee that bids will not vary from this cost estimate.

(2) Market conditions for construction pricing has been volatile due to, but not limited to, labor shortages, material shortages, and supply chain disruptions since the start of the pandemic and are experiencing added strain due to recent and ongoing global conflicts. The U.S. Bureau of Labor Statistics Consumer Index has reported an overall inflation of 4.0% over the last 12 months (reported for June 2023). The unknown decisions of federal government monetary policy, in connection with the events noted above, may increase or decrease the current inflation rates. In addition to inflation, Quiddity has seen a significant market escalation, on the order of 30-40%, over the past 24 months due to the significant deficit in supply versus demand in the local construction industry in connection with the events noted above.

(3) Site restoration is vegetation only. Does not include cost for roadway or sidewalk repairs.

(4) Does not includen cost for easements or easement acquisition.

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License No.: 123364
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Project Description: Approximately 14,000 LF of 10" reclaimed waterline to serve the Lake Pflugerville Park, Verona Park, and large volume commercial customers reclaimed water.

Project Driver: This project will help convert some existing large volume potable water users to reclaimed water and reduce the City's overall potable water usage. The project will also convert the Lake Pflugerville Park and Verona Park from using potable water for irrigation to reclaimed water.

Adjacent to Water Master Plan Project No. 3, 36" Weiss Lane Waterline.

Approx. 2,200 LF of 10" reclaimed waterline within or adjacent to existing sanitary sewer easement.

Weiss Ln. from Pleasanton Pkwy. to Hidden Lake Crossing - Approx. 8,500 LF of 10" reclaimed waterline along the West ROW and within or adjacent to existing sanitary sewer easement.

Weiss Ln. from East Pecan St. to Pleasanton Pkwy - Approx. 3,200 LF of 10" reclaimed waterline along the East ROW. Includes approx. 200 LF crossing of Willbarger Creek.

COUNTY ROAD 138
45 E
45
GREENLAWN BLVD
PFLUGERVILLE PKWY
GRAND AVENUE PKWY
I-35
JAKES HILL RD
COUNTY ROAD 139
MELBER LN
ONION CREEK BLVD
FALCON POINT BLVD
M685 RD
130
DESSAU RD
I35
LAMAR BLVD
PARMER LN
CAMERON RD

VICINITY MAP
1 INCH = 10 MILES

LEGEND
- Reuse Lines
- Public Parks
- City Limits

Potential Reclaimed Water Customers
- City Park
- PfISD
- Private Reclaimed Customer

RECLAIMED WATER MASTER PLAN UPDATE

CITY OF PFLUGERVILLE
TRAVIS COUNTY, TEXAS

N W E S
0 3,600
1 INCH : 3,600 FEET
IMAGERY PROVIDED BY NEARMAP

QUIDDITY
Texas Board of Professional Engineers Registration No. F-23290

Path:V:\Practice Workspace\Corporate Services\GIS\Projects\0_Individuals\A_Moon\Pflugerville\Reclaimed_Water_Master_Plan_11x17.mxd Project Number: 05971-0002-00-004-03 Date: 3/2/2023 User Name: adall

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
RECLAIMED WATER PLANT FACILITIES PRESSURE ZONE 1 - PHASE 1
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	
1.	Mobilization, Bonds & Insurance	L.S.	1	$220,000	$220,000	
2.	Ground Storage Tank	L.S.	1	1,500,000	1,500,000	(4)
3.	Booster Pump and Motor	L.S.	1	370,000	370,000	(5)
4.	Plant Piping, Fittings, Valves, Supports, Protective Coatings, etc.	L.S.	1	440,000	440,000	(6)
5.	Building	L.S.	1	300,000	300,000	(7)
6.	Electrical & Instrumentation	L.S.	1	1,360,000	1,360,000	(8)
7.	SCADA System	L.S.	1	70,000	70,000	(9)
8.	Site Work	L.S.	1	200,000	200,000	(10)
9.	Generator	L.S.	1	940,000	940,000	(11)
10.	Sodium Hypochlorite Disinfection Modifications Including Pump and Piping and Utilizing Existing Tank	L.S.	1	45,000	50,000	
11.	30" Waterline	L.F.	250	750	190,000	
				SUBTOTAL	$5,640,000	
				Contingencies (30%)	$1,692,000	
				4 Yr Inflation @ 4%/Yr	$1,245,000	
				Engineering & Survey (18%)	$1,544,000	
				TOTAL	**$10,121,000**	

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General Financial Planning
Under the Authority of:
Engineer: Stephanie S. Kaspar, P.E.
License No.: 120152
It is Preliminary in Nature and not to be Used for Feasibility of Land Purchases, Bond Applications, Loans or Grants.

Notes:

(1) This estimate represents my best judgment as a design professional familiar with the construction industry. Quiddity Engineering, LLC has no control over the cost of labor, materials, or equipment; over the Contractor's methods of determining bid prices; or over competitive bidding or market conditions. Accordingly, we cannot and do not guarantee that bids will not vary from this cost estimate.

(2) This cost estimate assumes the water plant site is not located within the 1% annual chance floodplain or within existing wetlands. This estimate does not include any costs for wetland mitigation, detention basins, mitigation basins, or any other work related to compensating for wetlands or floodplain impact.

(3) Market conditions for construction pricing has been volatile due to, but not limited to, labor shortages, material shortages, and supply chain disruptions since the start of the pandemic and are experiencing added strain due to recent and ongoing global conflicts. The U.S. Bureau of Labor Statistics Consumer Index has reported an overall inflation of 4.0% over the last 12 months (reported for June 2023). The unknown decisions of federal government monetary policy, in connection with the events noted above, may increase or decrease the current inflation rates. In addition to inflation, Quiddity has seen a significant market escalation, on the order of 30-40%, over the past 24 months due to the significant deficit in supply versus demand in the local construction industry in connection with the events noted above.

(4) This cost estimate includes a 0.75 MG concrete ground storage tank including foundation, riser piping, and tank accessories.

(5) This cost estimate includes 1 - 300 gpm 40 HP vertical turbine pump, 2 - 1,100 gpm 150 HP vertical turbine pumps, 3 cans for future pumps, and foundations.

(6) The cost estimate includes pump control valve and piping installation within the WWTP fence.

(7) The cost estimate includes a CMU block building for the Pressure Zone Nos. 1 & 3 electrical equipment.

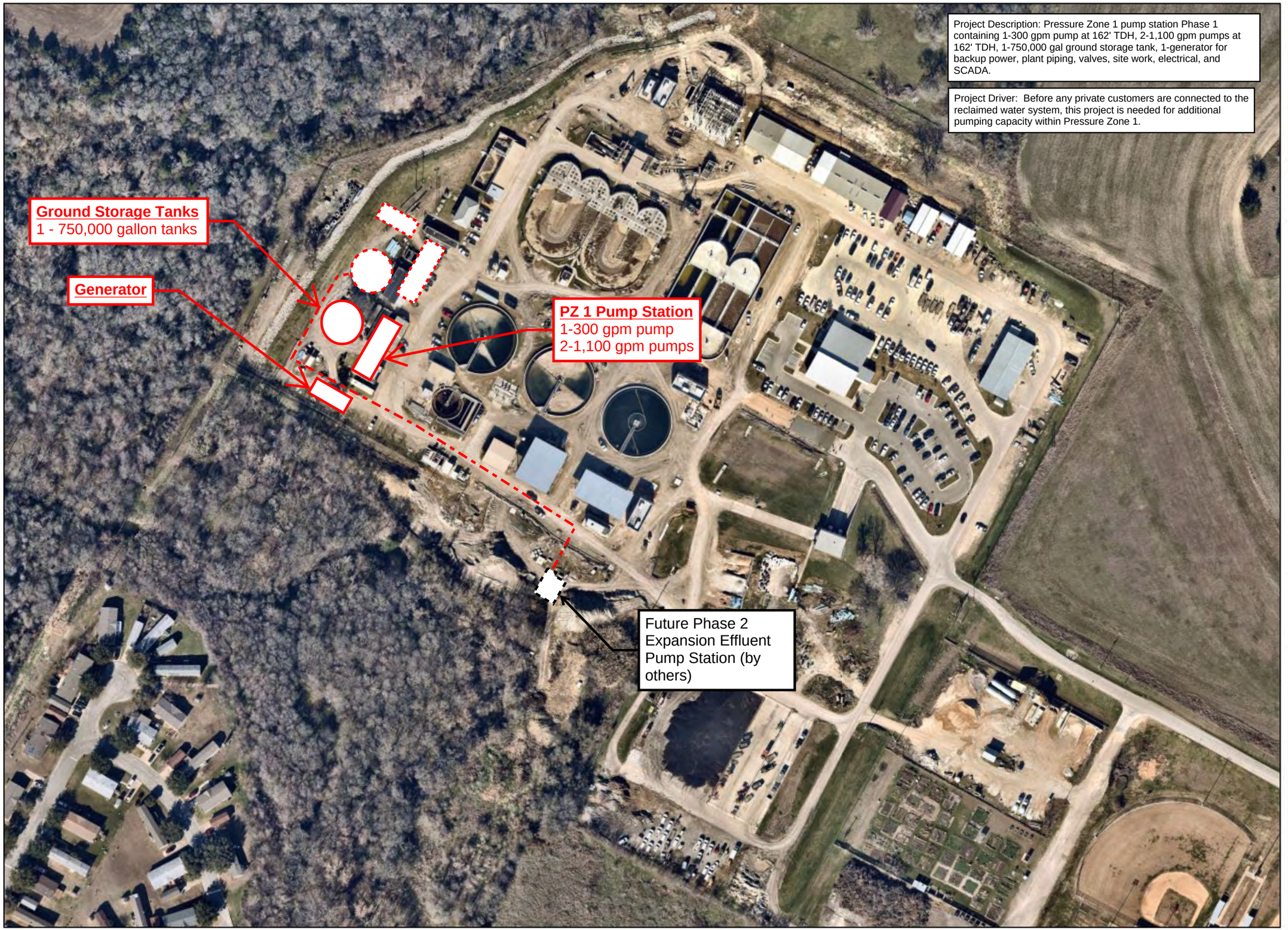
(8) This cost estimate includes the construction of a 3,000A main breaker, 3,000A automatic transfer switch, 3,000A Distribution Panel, 1,000A NEMA 1 motor control center (main breaker, one FVNR starter, two SSRV, 3 feeders), lighting panelboard, dry-type transformer, PLC panel, building lighting & receptacles, grounding ring, power study, electrical ductbank and wiring, pull boxes, site floodlights, instrumentation and electrical service installation including Electrical Utility Company fees for new service.

(9) This cost includes programming the PLC panel for the reclaimed water pressure zone #1 and integration to the existing SCADA system control/monitor of the reclaimed water station.

(10) This cost estimate includes site work includes concrete pavement and on-site site drainage via swales; hydro-mulch seeding, grading, and record drawings.

(11) This cost estimate includes the construction of a 1,000kW diesel generator with sound attenuated enclosure, sub-base fuel tank (24-hour rated), generator slab and platform, and paralleling switchgear and controls.

(12) This cost estimate does not include costs associated with land and easement acquisition; platting; detention; outfalls; offsite drainage; distribution waterlines outside the plant site; aesthetic upgrades; electrical underground service entrance; bringing electrical power to the site; or temporary access road.



Project Description: Pressure Zone 1 pump station Phase 1 containing 1-300 gpm pump at 162' TDH, 2-1,100 gpm pumps at 162' TDH, 1-750,000 gal ground storage tank, 1-generator for backup power, plant piping, valves, site work, electrical, and SCADA.

Project Driver: Before any private customers are connected to the reclaimed water system, this project is needed for additional pumping capacity within Pressure Zone 1.

VICINITY MAP

Scale: 1 inch equals 20 miles

LEGEND

CENTRAL
WWTP

PFLUGERVILLE
TRAVIS COUNTY, TEXAS

0 75 150
Feet
1 inch equals 150 feet

N
W E
S

QUIDDITY

Path: V:\Practice Workspace\Corporate Services\GIS\Projects\0_Individuals\J_Carrasco\Pflugerville\Central_WWTP_Map_11x17.aprx Project Number: 05671-0002-00-005-01 Date: 4/17/2023 User Name: ada1

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
1849 PARK ELEVATED STORAGE TANK
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	(1)
1.	Mobilization, Bonds & Insurance	L.S.	1	$390,000	$390,000	
2.	Elevated Storage Tank	L.S.	1	6,974,000	6,974,000	(4)
3.	Plant Piping, Fittings, Valves, Supports, etc.	L.S.	1	45,000	45,000	(5)
4.	Electrical & Instrumentation	L.S.	1	318,000	318,000	(6)
5.	Site Work	L.S.	1	65,000	65,000	(7)
			SUBTOTAL		$7,792,000	
				Contingencies (15%)	$1,169,000	
				4 Yr Inflation @ 4%/Yr	$1,522,000	(3)
				Engineering & Survey (18%)	$1,887,000	
				TOTAL	**$12,370,000**	

Notes:

(1) This estimate represents my best judgment as a design professional familiar with the construction industry. Quiddity has no control over the cost of labor, materials, or equipment; over the Contractor's methods of determining bid prices; or over competitive bidding or market conditions. Accordingly, we cannot and do not guarantee that bids will not vary from this cost estimate.

(2) This cost estimate assumes the water plant site is not located within the 1% annual chance floodplain or within existing wetlands. This estimate does not include any costs for wetland mitigation, detention basins, mitigation basins, or any other work related to compensating for wetlands or floodplain impact.

(3) Market conditions for construction pricing has been volatile due to, but not limited to, labor shortages, material shortages, and supply chain disruptions since the start of the pandemic and are experiencing added strain due to recent and ongoing global conflicts. The U.S. Bureau of Labor Statistics Consumer Index has reported an overall inflation of 4.0% over the last 12 months (reported for June 2023). The unknown decisions of federal government monetary policy, in connection with the events noted above, may increase or decrease the current inflation rates. In addition to inflation, Quiddity has seen a significant market escalation, on the order of 30-40%, over the past 24 months due to the significant deficit in supply versus demand in the local construction industry in connection with the events noted above.

(4) Cost includes a 1.5 MG composite (steel to concrete) tank with an epoxy interior coating and zinc primer with epoxy exterior coating, standard shallow foundations (assumed 5000 psf net allowable soil bearing capacity at 8'), standard accessories per AWWA D107 and AWWA D100.

(5) Cost includes altitude valve, exterior plant ductile iron piping to tie-in, and internal pedestal piping up to the riser connection.

(6) Cost includes electrical work for the on-site service rack, underground duct bank, lighting panels, site lighting, conduit, and coordination with existing instrumentation program for integration of the new instrumentation and controls.

(7) Cost includes site grading, crushed concrete pavement, and hydromulching.

(3) Does not include cost for property or property acquisition.

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Under the Authority of:
Engineer: Alan M. Moon, P.E.
License No.: 123364
It is Preliminary in Nature and not to be Used for Feasibility of Land Purchases, Bond Applications, Loans or Grants.

Project Description: 1.5 MG composite elevated storage tank at the 1849 Park.

Project Driver: This project will provide pressure maintenance for Pressure Zone 1 of the reclaimed water system and should be constructed prior to connecting private customers.

COUNTY ROAD 138
45 E
45
GREENLAWN BLVD
PFLUGERVILLE PKWY
GRAND AVENUE PKWY
I-H 35
JAKES HILL RD
COUNTY ROAD 139
MELBER LN
FALCONPOINTE BLVD
FALCON POINT BLVD
FM 685 RD
130
I35
DESSAU RD
LAMAR BLVD
PARMER LN
CAMERON RD

1849 Park 1.5 MG
Elevated Storage Tank

VICINITY MAP
1 INCH = 10 MILES

LEGEND
- Reuse Lines
- Public Parks
- City Limits

Potential Reclaimed Water Customers
- City Park
- PfISD
- Private Reclaimed Customer

RECLAIMED WATER MASTER PLAN UPDATE

CITY OF PFLUGERVILLE
TRAVIS COUNTY, TEXAS

N W E S
0 3,600
1 INCH : 3,600 FEET
IMAGERY PROVIDED BY NEARMAP

QUIDDITY
Texas Board of Professional Engineers Registration No. F-23290

Path: V:\Practice Work\spaces\Corporate Services\GIS\Projects\0_Individuals\A_Moon\Pflugerville\Reclaimed_Water_Master_Plan_11x17.mxd Project Number: 05671-00102-00-0304-03 Date: 3/22/2023 User Name: adall

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
RECLAIMED WATERLINE FOR 1849 PARK EST
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	(1)
1.	Mobilization, Bonds & Insurance	L.S.	1	$150,000	$150,000	
2.	10" Waterline by Open-Cut Construction	L.F.	14,245	85	1,210,825	
3.	10" Waterline by Trenchless Construction	L.F.	500	130	65,000	
4.	10" Waterline by Trenchless Construction w/ Steel Casing	L.F.	330	400	132,000	
5.	12" Waterline by Open-Cut Construction	L.F.	2,045	100	204,500	
6.	12" Waterline by Trenchless Construction w/ Steel Casing	L.F.	500	550	275,000	
7.	Combination Air Valves w/ Manholes	EA.	6	5,000	30,000	
8.	Gate Valves	EA.	8	3,000	22,613	
9.	Trench Safety	L.F.	14,245	1	14,245	
10.	Stormwater Pollution Prevention Plan	L.S.	1	10,000	10,000	
11.	Site Restoration	L.S.	1	25,000	25,000	(3)
12.	Traffic Control Plan	L.S.	1	15,000	15,000	
			SUBTOTAL		$2,154,183	
			Contingencies (30%)		$646,000	
			4 Yr Inflation @ 4%/Yr		$476,000	(2)
			Engineering & Survey (18%)		$590,000	
			TOTAL		**$3,867,000**	(4)

Notes:

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(3) Site restoration is vegetation only. Does not include cost for roadway or sidewalk repairs.

(4) Does not include cost for easements or easement acquisition.

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Project Description: Approximately 15,075 LF of 10" and 2,550 LF of 12" reclaimed waterline to connect the proposed 1849 EST to the reclaimed water system, and to serve the Amazon facility reclaimed water.

Project Driver: This project will help convert some existing large volume potable water users to reclaimed water and reduce the City's overall potable water usage.

COUNTY ROAD 138
45 E
45
GREENLAWN BLVD
PFLUGERVILLE PKWY
GRAND AVENUE PKWY
I-H 35
JAKES HILL RD
COUNTY ROAD 139
MELBER LN
FALCONPOINTE BLVD
FALCON POINT BLVD
FM 685 RD
130
E Pecan St from Sun Light Near Way to Amazon - Approx. 3,000 LF of 12" reclaimed waterline along North ROW.
Wolf Pack Drive from the 1849 Park to Weiss Ln - Approx. 9,200 LF of 10" reclaimed waterline along the East and North ROW.
E Pecan St from Sun Light Near Way to Amazon - Approx. 3,700 LF of 12" reclaimed waterline along West ROW.
I35
DESSAU RD
LAMAR BLVD
PARMER LN
CAMERON RD
Approx. 5,875 LF of 10" reclaimed waterline within the 1849 Park.

VICINITY MAP
1 INCH = 10 MILES

LEGEND
- Reuse Lines
- Public Parks
- City Limits

Potential Reclaimed Water Customers
- City Park
- PfISD
- Private Reclaimed Customer

RECLAIMED WATER MASTER PLAN UPDATE

CITY OF PFLUGERVILLE
TRAVIS COUNTY, TEXAS

N W E S
0 3,600
1 INCH : 3,600 FEET
IMAGERY PROVIDED BY NEARMAP

QUIDDITY
Texas Board of Professional Engineers Registration No. F-23290

Path: V:\Practice Work\spaces\Corporate Services\GIS\Projects\JD_Individuals\A_Moon\Pflugerville\Reclaimed_Water_Master_Plan_11x17.mxd Project Number: 156571-00102-00-0304-03 Date: 3/22/2023 User Name: adall

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
RECLAIMED WATER PLANT FACILITIES PRESSURE ZONE 1 - PHASE 2
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	
1.	Mobilization, Bonds & Insurance	L.S.	1	$40,000	$40,000	
2.	Booster Pump and Motor	L.S.	1	280,000	280,000	(4)
3.	Plant Piping, Fittings, Valves, Supports, Protective Coatings, etc.	L.S.	1	315,000	320,000	(5)
4.	Electrical & Instrumentation	L.S.	1	190,000	190,000	(6)
5.	SCADA System	L.S.	1	10,000	10,000	(7)
6.	Sodium Hypochlorite Disinfection Modifications Including Pump and Piping	L.S.	1	15,000	20,000	
7.	Site Work	L.S.	1	60,000	60,000	(8)
				SUBTOTAL	$920,000	
				Contingencies (30%)	$276,000	
				4 Yr Inflation @ 4%/Yr	$203,000	
				Engineering & Survey (18%)	$252,000	
				TOTAL	**$1,651,000**	

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General Financial Planning
Under the Authority of:
Engineer: Stephanie S. Kaspar, P.E.
License No.: 120152
It is Preliminary in Nature and not to be Used for Feasibility of Land Purchases, Bond Applications, Loans or Grants.

Notes:

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(2) This cost estimate assumes the water plant site is not located within the 1% annual chance floodplain or within existing wetlands. This estimate does not include any costs for wetland mitigation, detention basins, mitigation basins, or any other work related to compensating for wetlands or floodplain impact.

(3) Market conditions for construction pricing has been volatile due to, but not limited to, labor shortages, material shortages, and supply chain disruptions since the start of the pandemic and are experiencing added strain due to recent and ongoing global conflicts. The U.S. Bureau of Labor Statistics Consumer Index has reported an overall inflation of 4.0% over the last 12 months (reported for June 2023). The unknown decisions of federal government monetary policy, in connection with the events noted above, may increase or decrease the current inflation rates. In addition to inflation, Quiddity has seen a significant market escalation, on the order of 30-40%, over the past 24 months due to the significant deficit in supply versus demand in the local construction industry in connection with the events noted above.

(4) This cost estimate includes 3 - 1,100 gpm 150 HP vertical turbine pumps.

(5) This cost estimate includes pump control valves for each booster pump.

(6) This cost estimate includes the expansion of the existing Motor Control Center to install a three SSRV starters, existing lighting panel modifications, instrumentation, underground conduit and wiring, above ground conduit and wiring, motor tie-ins, and electrical equipment tie-ins.

(7) This cost includes all necessary adjustments and programming to existing PLC panel.

(8) This cost estimate includes site work includes hydro-mulch seeding, grading, and record drawings.

(9) This cost estimate does not include costs associated with land and easement acquisition; platting; detention; outfalls; offsite drainage; distribution waterlines outside the plant site; aesthetic upgrades; electrical underground service entrance; bringing electrical power to the site; or temporary access road.

Project Description: Pressure Zone 1 pump station Phase 2 containing 3-1,100 gpm pumps at 162' TDH, plant piping, valves, site work, electrical, and SCADA.

Project Driver: As private customers continue to be connected to the Pressure Zone 1 system, this project is needed for additional pumping capacity within Pressure Zone 1.

PZ 1 Pump Station
3-1,100 gpm pumps

Future Phase 2 Expansion Effluent Pump Station (by others)

VICINITY MAP

Scale: 1 inch equals 20 miles

LEGEND

CENTRAL WWTP

PFLUGERVILLE
TRAVIS COUNTY, TEXAS

0 75 150
Feet
1 inch equals 150 feet

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QUIDDITY

Path: V:\Practice Workspace\Corporate Services\GIS\Projects\0_Individuals\J_Carrasco\Pflugerville\Central_WWTP_Map_11x17.aprx Project Number: 05671-0002-00-005-01 Date: 4/17/2023 User Name: ada1

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
RECLAIMED WATER PLANT FACILITIES PRESSURE ZONE 3 - PHASE 1
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	
1.	Mobilization, Bonds & Insurance	L.S.	1	$170,000	$170,000	
2.	Ground Storage Tank	L.S.	1	1,500,000	1,500,000	(4)
3.	Booster Pump and Motor	L.S.	1	400,000	400,000	(5)
4.	Plant Piping, Fittings, Valves, Supports, Protective Coatings, etc.	L.S.	1	485,000	490,000	(6)
5.	Electrical & Instrumentation	L.S.	1	490,000	490,000	(7)
6.	SCADA System	L.S.	1	50,000	50,000	(8)
7.	Site Work	L.S.	1	60,000	60,000	(9)
8.	Generator	L.S.	1	840,000	840,000	(10)
				SUBTOTAL	$4,000,000	
				Contingencies (30%)	$1,200,000	
				10 Yr Inflation @ 4%/Yr	$2,497,000	
				Engineering & Survey (18%)	$1,385,000	
				TOTAL	**$9,082,000**	

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General Financial Planning
Under the Authority of:
Engineer: Stephanie S. Kaspar, P.E.
License No.: 120152
It is Preliminary in Nature and not to be Used for Feasibility of Land Purchases, Bond Applications, Loans or Grants.

Notes:

(1) This estimate represents my best judgment as a design professional familiar with the construction industry. Quiddity Engineering, LLC has no control over the cost of labor, materials, or equipment; over the Contractor's methods of determining bid prices; or over competitive bidding or market conditions. Accordingly, we cannot and do not guarantee that bids will not vary from this cost estimate.

(2) This cost estimate assumes the water plant site is not located within the 1% annual chance floodplain or within existing wetlands. This estimate does not include any costs for wetland mitigation, detention basins, mitigation basins, or any other work related to compensating for wetlands or floodplain impact.

(3) Market conditions for construction pricing has been volatile due to, but not limited to, labor shortages, material shortages, and supply chain disruptions since the start of the pandemic and are experiencing added strain due to recent and ongoing global conflicts. The U.S. Bureau of Labor Statistics Consumer Index has reported an overall inflation of 4.0% over the last 12 months (reported for June 2023). The unknown decisions of federal government monetary policy, in connection with the events noted above, may increase or decrease the current inflation rates. In addition to inflation, Quiddity has seen a significant market escalation, on the order of 30-40%, over the past 24 months due to the significant deficit in supply versus demand in the local construction industry in connection with the events noted above.

(4) This cost estimate includes a 0.75 MG concrete ground storage tank including foundation, riser piping, and tank accessories.

(5) This cost estimate includes 3 - 1,500 gpm 200-250 HP vertical turbine pumps, 3 cans for future pumps, and foundations.

(6) The cost estimate includes pump control valve and piping installation within the WWTP fence.

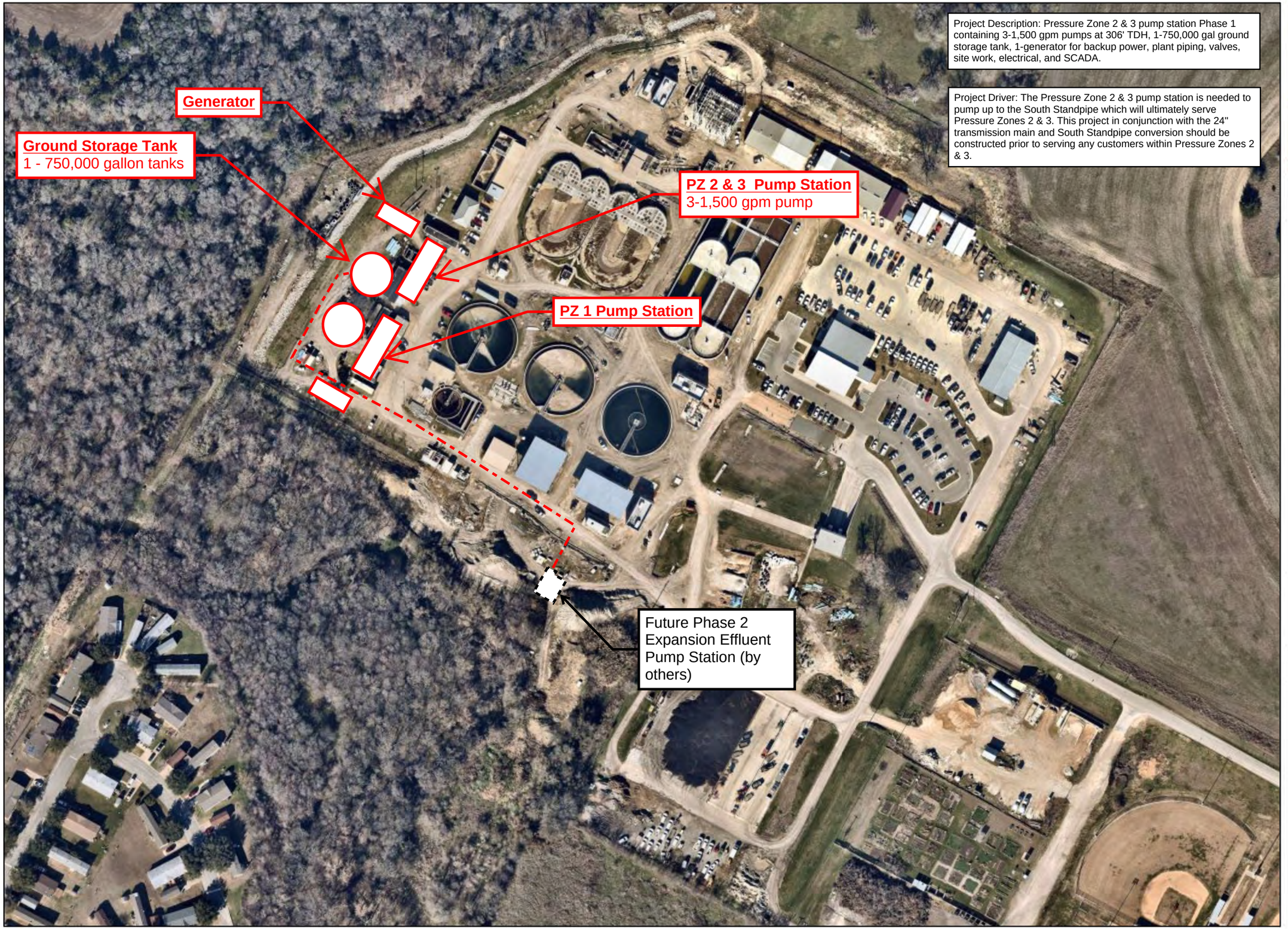
(7) This cost estimate includes the construction of of a 2,000A NEMA 1 motor control center (main breaker, three SSRV), modifications to existing automatic controls, existing lighting panel modifications, instrumentation, underground conduit and wiring, above ground conduit and wiring, motor tie-ins, and electrical equipment tie-ins.

(8) This cost includes programming the PLC panel for the reclaimed water pressure zone #3 and integration to the exsting SCADA system control/monitor of the reclaimed water station.

(9) This cost estimate includes site work includes on-site site drainage via swales; hydro-mulch seeding, grading, and record drawings.

(10) This cost estimate includes the construction of a 1,000kW diesel generator with sound attenuated enclosure, sub-base fuel tank (24-hour rated), generator slab and platform, and modifications to the existing paralleling switchgear and controls for an complete and operational paralleling

(11) This cost estimate does not include costs associated with land and easement acquisition; platting; detention; outfalls; offsite drainage; distribution waterlines outside the plant site; aesthetic upgrades; electrical underground service entrance; bringing electrical power to the site; or temporary access road.



Project Description: Pressure Zone 2 & 3 pump station Phase 1 containing 3-1,500 gpm pumps at 306' TDH, 1-750,000 gal ground storage tank, 1-generator for backup power, plant piping, valves, site work, electrical, and SCADA.

Project Driver: The Pressure Zone 2 & 3 pump station is needed to pump up to the South Standpipe which will ultimately serve Pressure Zones 2 & 3. This project in conjunction with the 24" transmission main and South Standpipe conversion should be constructed prior to serving any customers within Pressure Zones 2 & 3.

VICINITY MAP

Scale: 1 inch equals 20 miles

LEGEND

CENTRAL WWTP

PFLUGERVILLE
TRAVIS COUNTY, TEXAS

0 75 150
Feet
1 inch equals 150 feet

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QUIDDITY

Path: V:\Practice Workspace\Corporate Services\GIS\Projects\0_Individuals\J_Carrasco\Pflugerville\Central_WWTP_Map_11x17.aprx Project Number: 05671-0002-00-005-01 Date: 4/17/2023 User Name: ada1

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
PRESSURE ZONE 3 TRANSMISSION RECLAIMED WATERLINE TO SOUTH STANDPIPE
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	
1.	Mobilization, Bonds & Insurance	L.S.	1	$1,300,000	$1,300,000	
2.	24" Waterline by Open-Cut Construction	L.F.	20,260	350	7,091,000	
3.	24" Waterline by Trenchless Construction	L.F.	3,050	1,000	3,050,000	
4.	24" Waterline by Trenchless Construction w/ Steel Casing	L.F.	875	1,600	1,400,000	
5.	Combination Air Valves w/ Manholes	EA.	8	5,000	40,000	
6.	Gate Valves	EA.	12	3,000	36,278	
7.	Trench Safety	L.F.	20,260	1	20,260	
8.	Stormwater Pollution Prevention Plan	L.S.	1	50,000	50,000	
9.	Site Restoration	L.S.	1	80,000	80,000	(3)
10.	Traffic Control Plan	L.S.	1	40,000	40,000	
			SUBTOTAL		$13,107,538	
			Contingencies (30%)		$3,932,000	
			10 Yr Inflation @ 4%/Yr		$8,183,000	(2)
			Engineering & Survey (18%)		$4,540,000	
			TOTAL		**$29,763,000**	(4)

Notes:

(1) This estimate represents my best judgment as a design professional familiar with the construction industry. Quiddity has no control over the cost of labor, materials, or equipment; over the Contractor's methods of determining bid prices; or over competitive bidding or market conditions. Accordingly, we cannot and do not guarantee that bids will not vary from this cost estimate.

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(3) Site restoration is vegetation only. Does not include cost for roadway or sidewalk repairs.

(4) Does not include cost for easements or easement acquisition.

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General Financial Planning
Under the Authority of:
Engineer: Alan M. Moon, P.E.
License No.: 123364
It is Preliminary in Nature and not to be Used for Feasibility of Land Purchases, Bond

Project Description: Approximately 24,000 LF of 24" reclaimed waterline to serve large volume commercial customers reclaimed water.

Project Driver: This project will supply reclaimed water from the Central WWTP to Pressure Zone 3 and subsequently Pressure Zone 2.

Settlers Valley Drive from Smoke Signal Pass to Champions Point Dr. - Approx 2,340 LF of 24" reclaimed waterline within the North ROW .

Champions Point Dr and Club Chase Dr from Settlers Valley Dr to South Standpipe - Approx 1,190 LF of 24" reclaimed waterline within the West and South ROW .

Dessau Rd. from Wells Branch Pkwy. to Drainage Channel - Approx 2,175 LF of 24" reclaimed waterline within the West ROW .

Alon Drainage Channel from Dessau Rd. to Smoke Signal Pass. - Approx 7,125 LF of 24" reclaimed waterline within proposed sanitary sewer easements

Wells Branch Pkwy. from E. Pfennig Ln. to Dessau Rd. - Approx 8,250 LF of 24" reclaimed waterline along the North ROW.

From WWTP to Wells Branch Pkwy. - Approx 3,100 LF of 24" reclaimed waterline within or adjacent to existing sanitary sewer easement.

COUNTY ROAD 138
45 E
45
GREENLAWN BLVD
PFLUGERVILLE PKWY
GRAND AVENUE PKWY
I-H 35
JAKES HILL RD
COUNTY ROAD 139
MELBER LN
FALCONPOINTE BLVD
FALCON POINT BLVD
FM 685 RD
130
DESSAU RD
I35
LAMAR BLVD
PARMER LN

VICINITY MAP
1 INCH = 10 MILES

LEGEND
- Reuse Lines
- Public Parks
- City Limits

Potential Reclaimed Water Customers
- City Park
- PfISD
- Private Reclaimed Customer

RECLAIMED WATER MASTER PLAN UPDATE

CITY OF PFLUGERVILLE
TRAVIS COUNTY, TEXAS

N W E S
0 3,600
1 INCH : 3,600 FEET
IMAGERY PROVIDED BY NEARMAP

QUIDDITY
Texas Board of Professional Engineers Registration No. F-23290

Path: Y:\Practice Workspaces\Corporate Services\GIS\Projects\0_Individuals\A_Moon\Pflugerville\Reclaimed_Water_Master_Plan_11x17.mxd Project Number: 05671-01002-000-004-103 Date: 3/2/2023 User Name: adall

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
PRESSURE ZONE 3 RECLAIMED WATERLINE TO PARK CREST MIDDLE SCHOOL
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	(1)
1.	Mobilization, Bonds & Insurance	L.S.	1	$700,000	$700,000	
2.	6" Waterline by Open-Cut Construction	L.F.	1,080	75	81,000	
3.	6" Waterline by Trenchless Construction	L.F.	100	110	11,000	
4.	6" Waterline by Trenchless Construction w/ Steel Casing	L.F.	125	250	31,250	
5.	8" Waterline by Open-Cut Construction	L.F.	3,310	80	264,800	
6.	8" Waterline by Trenchless Construction	L.F.	250	120	30,000	
7.	8" Waterline by Trenchless Construction w/ Steel Casing	L.F.	100	300	30,000	
8.	20" Waterline by Open-Cut Construction	L.F.	11,140	225	2,506,500	
9.	20" Waterline by Trenchless Construction	L.F.	750	500	375,000	
10.	20" Waterline by Trenchless Construction w/ Steel Casing	L.F.	675	1,100	742,500	
11.	24" Waterline by Open-Cut Construction	L.F.	3,770	350	1,319,500	
12.	24" Waterline by Trenchless Construction	L.F.	300	1,000	300,000	
13.	24" Waterline by Trenchless Construction w/ Steel Casing	L.F.	350	1,600	560,000	
14.	Combination Air Valves w/ Manholes	EA.	14	5,000	70,000	
15.	Gate Valves	EA.	11	3,000	32,925	
16.	Trench Safety	L.F.	19,300	1	19,300	
17.	Stormwater Pollution Prevention Plan	L.S.	1	40,000	40,000	
18.	Site Restoration	L.S.	1	80,000	80,000	(3)
19.	Traffic Control Plan	L.S.	1	40,000	40,000	
			SUBTOTAL		$7,233,775	
			Contingencies (30%)		$2,170,000	
			10 Yr Inflation @ 4%/Yr		$4,516,000	(2)
			Engineering & Survey (18%)		$2,506,000	
			TOTAL		**$16,426,000**	(4)

Notes:

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(3) Site restoration is vegetation only. Does not include cost for roadway or sidewalk repairs.

(4) Does not include cost for easements or easement acquisition.

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General Financial Planning
Under the Authority of:
Engineer: Alan M. Moon, P.E.
License No.: 123364
It is Preliminary in Nature and not to be Used for Feasibility of Land Purchases, Bond

Project Description: Approximately 22,000 LF of reclaimed waterline to serve the Wells Point Soccer Park, Pfennig Park and large volume commercial customers reclaimed water.

Project Driver: This project will help convert some existing large volume potable water users to reclaimed water and reduce the City's overall potable water usage. The project will also convert the Wells Point Soccer Park and Pfennig Park from using potable water for irrigation to reclaimed water.

Gilleland Creek/Pfennig Park - Approx 1,190 LF of 20" reclaimed waterline within proposed sanitary sewer easements.

Swenson Farms Blvd. from Pecan St. to Gilleland Creek - Approx 2,600 LF of 20" reclaimed waterline along East ROW.

Heatherwilde Blvd. from Olympic Dr. to Pecan St. - Approx 2,670 LF of 24" and 2,225 LF of 20" reclaimed waterline along West and East ROW.

Heatherwilde Blvd. from Olympic Dr. to Pecan St. - Approx 3,660 LF of 8" reclaimed waterline along East ROW.

N Railroad Ave from E Pfennig to Railroad Ave. to Spring Hill Elementary - Approx 1,300 LF of 6" reclaimed waterline along East ROW.

Pfennig Ln. from Swenson Farms Blvd. to Railroad Ave. - Approx 4,400 LF of 20" reclaimed waterline along North and South ROW.

Pecan St. from Heatherwilde to Swenson Farms Blvd. - Approx 2,150 LF of 20" reclaimed waterline along North ROW.

Cherokee Run, Champions Point Dr and Olympic Drive - Approx 1,750 LF of 24" reclaimed waterline along North and East ROWs.

COUNTY ROAD 138
45 E
45
GREENLAWN BLVD
PFLUGERVILLE PKWY
GRAND AVENUE PKWY
JAKES HILL RD
COUNTY ROAD 139
MELBER LN
FALCON POINT BLVD
I35
LAMAR BLVD
PARMER LN
CAMERON RD

VICINITY MAP
1 INCH = 10 MILES

LEGEND
- Reuse Lines
- Public Parks
- City Limits

Potential Reclaimed Water Customers
- City Park
- PfISD
- Private Reclaimed Customer

RECLAIMED WATER MASTER PLAN UPDATE

CITY OF PFLUGERVILLE
TRAVIS COUNTY, TEXAS

N W E S
0 3,600
1 INCH : 3,600 FEET
IMAGERY PROVIDED BY NEARMAP

QUIDDITY
Texas Board of Professional Engineers Registration No. F-23290

Path: Y:\Practice Workspaces\Corporate Services\GIS\Projects\0_Individuals\A_Moon\Pflugerville\Reclaimed_Water_Master_Plan_11x17.mxd Project Number: 05671-01002-00-0004-103 Date: 3/2/2023 User Name: adall

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
PRESSURE ZONE 2 RECLAIMED WATERLINE AND PRESSURE REDUCING VALVE STATION
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	
1.	Mobilization, Bonds & Insurance	L.S.	1	$225,000	$225,000	
2.	Pressure Reducing Valve Station	L.S.	1	200,000	200,000	
3.	Electrical	L.S.	1	400,000	400,000	
4.	16" Waterline by Open-Cut Construction	L.F.	4,120	165	679,800	
5.	16" Waterline by Trenchless Construction	L.F.	80	250	20,000	
6.	Combination Air Valves w/ Manholes	EA.	2	5,000	8,240	
7.	Gate Valves	EA.	2	4,000	8,400	
8.	Trench Safety	L.F.	4,120	1	4,120	
9.	Stormwater Pollution Prevention Plan	L.S.	1	25,000	25,000	
10.	Site Restoration	L.S.	1	25,000	25,000	(3)
11.	Traffic Control Plan	L.S.	1	20,000	20,000	
			SUBTOTAL		$1,615,560	
			Contingencies (30%)		$485,000	
			15 Yr Inflation @ 4%/Yr		$1,682,000	(2)
			Engineering & Survey (18%)		$681,000	
			TOTAL		**$4,464,000**	(4)

Notes:

(1) This estimate represents my best judgment as a design professional familiar with the construction industry. Quiddity has no control over the cost of labor, materials, or equipment;

(2) Market conditions for construction pricing has been volatile due to, but not limited to, labor shortages, material shortages, and supply chain disruptions since the start of the pandemic and are experiencing added strain due to recent and ongoing global conflicts. The U.S. Bureau of Labor Statistics Consumer Index has reported an overall inflation of 4.0% over the last 12 months (reported for June 2023). The unknown decisions of federal government monetary policy, in connection with the events noted above, may increase or decrease the current inflation rates. In addition to inflation, Quiddity has seen a significant market escalation, on the order of 30-40%, over the past 24 months due to the significant deficit in supply versus demand in the local construction industry in connection with the events noted above.

(3) Site restoration is vegetation only. Does not include cost for roadway or sidewalk repairs.

(4) Does not includen cost for easements or easement acquisition.

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General Financial Planning
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Engineer: Alan M. Moon, P.E.
License No.: 123364
It is Preliminary in Nature and not to be Used for Feasibility of Land Purchases, Bond

Project Description: Pressure reducing valve station, rehabilitation and conversion of existing North Standpipe, and approximately 4,200 LF of 16" reclaimed waterline to serve large volume commercial customers reclaimed water.

Project Driver: Reduces the pressure from Pressure Zone 3 and establishes the hydraulic grade for Pressure Zone 2.

Pressure Reducing Valve Station

Pfennig Ln. from Railroad Ave. to RW North EST - Approx 4,200 LF of 16" reclaimed waterline along the North ROW.

RW NORTH 1.0 MG Elevated Storage Tank

COUNTY ROAD 138
45 E
45
GREENLAWN BLVD
PFLUGERVILLE PKWY
GRAND AVENUE PKWY
IH 35
JAKES HILL RD
COUNTY ROAD 139
MELBER LN
FALCONPOINTE BLVD
FALCON POINT BLVD
FM 685 RD
130
DESSAU RD
I35
LAMAR BLVD
PARMER LN
CAMERON RD

VICINITY MAP
1 INCH = 10 MILES

LEGEND
- Reuse Lines
- Public Parks
- City Limits

Potential Reclaimed Water Customers
- City Park
- PfISD
- Private Reclaimed Customer

RECLAIMED WATER MASTER PLAN UPDATE

CITY OF PFLUGERVILLE
TRAVIS COUNTY, TEXAS

N W E S

0 3,600
1 INCH : 3,600 FEET
IMAGERY PROVIDED BY NEARMAP

QUIDDITY
Texas Board of Professional Engineers Registration No. F-23290

Path: V:\Practice Workspaces\Corporate Services\GIS\Projects\0_Individuals\A_Moon\Pflugerville\Reclaimed_Water_Master_Plan_11x17.mxd Project Number: 085071-0002-00-0004-03 Date: 3/2/2023 User Name: adall

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
RECLAIMED WATER NORTH ELEVATED STORAGE TANK
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	(1)
1.	Mobilization, Bonds & Insurance	L.S.	1	$280,000	$280,000	
2.	Elevated Storage Tank	L.S.	1	4,970,000	4,970,000	(4)
3.	Plant Piping, Fittings, Valves, Supports, etc.	L.S.	1	45,000	45,000	(5)
4.	Electrical & Instrumentation	L.S.	1	318,000	318,000	(6)
5.	Site Work	L.S.	1	46,000	46,000	(7)
			SUBTOTAL		$5,659,000	
				Contingencies (15%)	$849,000	
				10 Yr Inflation @ 4%/Yr	$3,125,000	(3)
				Engineering & Survey (18%)	$1,734,000	
				TOTAL	**$11,367,000**	

Notes:

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(2) This cost estimate assumes the water plant site is not located within the 1% annual chance floodplain or within existing wetlands. This estimate does not include any costs for wetland mitigation, detention basins, mitigation basins, or any other work related to compensating for wetlands or floodplain impact.

(3) Market conditions for construction pricing has been volatile due to, but not limited to, labor shortages, material shortages, and supply chain disruptions since the start of the pandemic and are experiencing added strain due to recent and ongoing global conflicts. The U.S. Bureau of Labor Statistics Consumer Index has reported an overall inflation of 4.0% over the last 12 months (reported for June 2023). The unknown decisions of federal government monetary policy, in connection with the events noted above, may increase or decrease the current inflation rates. In addition to inflation, Quiddity has seen a significant market escalation, on the order of 30-40%, over the past 24 months due to the significant deficit in supply versus demand in the local construction industry in connection with the events noted above.

(4) Cost includes a 1.0 MG composite (steel to concrete) tank with an epoxy interior coating and zinc primer with epoxy exterior coating, standard shallow foundations (assumed 5000 psf net allowable soil bearing capacity at 8'), standard accessories per AWWA D107 and AWWA D100.

(5) Cost includes altitude valve, exterior plant ductile iron piping to tie-in, and internal pedestal piping up to the riser connection.

(6) Cost includes electrical work for the on-site service rack, underground duct bank, lighting panels, site lighting, conduit, and coordination with existing instrumentation program for integration of the new instrumentation and controls.

(7) Cost includes site grading, crushed concrete pavement, and hydromulching.

(3) Does not include cost for property or property acquisition.

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It is Preliminary in Nature and not to be Used for Feasibility of Land Purchases, Bond Applications, Loans or Grants.

Project Description: 1.0 MG composite elevated storage tank.

Project Driver: This project will provide pressure maintenance for Pressure Zone 2 and 3 of the reclaimed water system.

North RW 1.0 MG Elevated Storage Tank

COUNTY ROAD 138
45 E
45
GREENLAWN BLVD
PFLUGERVILLE PKWY
GRAND AVENUE PKWY
I-H 35
JAKES HILL RD
COUNTY ROAD 139
MELBER LN
FALCONPOINTE BLVD
FALCON POINT BLVD
FM 685 RD
130
I35
DESSAU RD
LAMAR BLVD
PARMER LN
CAMERON RD

VICINITY MAP
1 INCH = 10 MILES

LEGEND
- Reuse Lines
- Public Parks
- City Limits

Potential Reclaimed Water Customers
- City Park
- PfISD
- Private Reclaimed Customer

RECLAIMED WATER MASTER PLAN UPDATE

CITY OF PFLUGERVILLE
TRAVIS COUNTY, TEXAS

N W E S

0 3,600
1 INCH : 3,600 FEET
IMAGERY PROVIDED BY NEARMAP

QUIDDITY
Texas Board of Professional Engineers Registration No. F-23290

Path: V:\Practice Work\spaces\Corporate Services\GIS\Projects\0_Individuals\A_Moon\Pflugerville\Reclaimed_Water_Master_Plan_11x17.mxd Project Number: 05671-0002-00-0304-03 Date: 3/22/2023 User Name: adall

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
RECLAIMED WATER PLANT FACILITIES PRESSURE ZONE 3 - PHASE 2
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	
1.	Mobilization, Bonds & Insurance	L.S.	1	$50,000	$50,000	
2.	Booster Pump and Motor	L.S.	1	260,000	260,000	(4)
3.	Plant Piping, Fittings, Valves, Supports, Protective Coatings, etc.	L.S.	1	360,000	360,000	(5)
4.	Electrical & Instrumentation	L.S.	1	280,000	280,000	(6)
5.	SCADA System	L.S.	1	10,000	10,000	(7)
6.	Sodium Hypochlorite Disinfection Modifications	L.S.	1	15,000	20,000	
7.	Site Work	L.S.	1	60,000	60,000	(8)
			SUBTOTAL		$1,040,000	
			Contingencies (30%)		$312,000	
			10 Yr Inflation @ 4%/Yr		$649,000	
			Engineering & Survey (18%)		$360,000	
			TOTAL		**$2,361,000**	

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(2) This cost estimate assumes the water plant site is not located within the 1% annual chance floodplain or within existing wetlands. This estimate does not include any costs for wetland mitigation, detention basins, mitigation basins, or any other work related to compensating for wetlands or floodplain impact.

(3) Market conditions for construction pricing has been volatile due to, but not limited to, labor shortages, material shortages, and supply chain disruptions since the start of the pandemic and are experiencing added strain due to recent and ongoing global conflicts. The U.S. Bureau of Labor Statistics Consumer Index has reported an overall inflation of 4.0% over the last 12 months (reported for June 2023). The unknown decisions of federal government monetary policy, in connection with the events noted above, may increase or decrease the current inflation rates. In addition to inflation, Quiddity has seen a significant market escalation, on the order of 30-40%, over the past 24 months due to the significant deficit in supply versus demand in the local construction industry in connection with the events noted above.

(4) This cost estimate includes 3 - 1,500 gpm 200-250 HP vertical turbine pumps.

(5) The cost estimate includes pump control valve and piping installation within the WWTP fence.

(6) This cost estimate includes the expansion of the existing Motor Control Center to install a three SSRV starters, existing lighting panel modifications, instrumentation, underground conduit and wiring, above ground conduit and wiring, motor tie-ins, and electrical equipment tie-ins.

(7) This cost includes all necessary adjustments and programming to existing PLC panel.

(8) This cost estimate includes site work includes on-site site drainage via swales; hydro-mulch seeding, grading, and record drawings.

(9) This cost estimate does not include costs associated with land and easement acquisition; platting; detention; outfalls; offsite drainage; distribution waterlines outside the plant site; aesthetic upgrades; electrical underground service entrance; bringing electrical power to the site; or temporary access road.

Project Description: Pressure Zone 2 & 3 pump station Phase 2 containing 3-1,500 gpm pumps at 306' TDH, plant piping, valves, site work, electrical, and SCADA.

Project Driver: The Pressure Zone 2 & 3 pump station is needed to pump up to the South Standpipe which will ultimately serve Pressure Zones 2 & 3. As customers continue to connect to the reclaimed water system within Pressure Zones 2 & 3, Phase 2 of the pump station adds pumping capacity to keep up with the demand.

PZ 2 & 3 Pump Station
3-1,500 gpm pump

PZ 1 Pump Station

Future Phase 2 Expansion Effluent Pump Station (by others)

VICINITY MAP

Scale: 1 inch equals 20 miles

LEGEND

CENTRAL WWTP

PFLUGERVILLE
TRAVIS COUNTY, TEXAS

0 75 150
Feet
1 inch equals 150 feet

N
W E
S

QUIDDITY

Path: V:\Practice Workspace\Corporate Services\GIS\Projects\0_Individuals\J_Carrasco\Pflugerville\Central_WWTP_Map_11x17.aprx Project Number: 05671-0002-00-005-01 Date: 4/17/2023 User Name: ada1

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
PRESSURE ZONE 3 RECLAIMED WATERLINE TO SPRINGBROOK GLEN HOA
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	(1)
1.	Mobilization, Bonds & Insurance	L.S.	1	$240,000	$240,000	
2.	8" Waterline by Open-Cut Construction	L.F.	2,950	80	236,000	
3.	8" Waterline by Trenchless Construction	L.F.	200	120	24,000	
4.	8" Waterline by Trenchless Construction w/ Steel Casing	L.F.	150	300	45,000	
5.	12" Waterline by Open-Cut Construction	L.F.	10,590	100	1,059,000	
6.	12" Waterline by Trenchless Construction	L.F.	200	160	32,000	
7.	12" Waterline by Trenchless Construction w/ Steel Casing	L.F.	400	650	260,000	
8.	16" Waterline by Open-Cut Construction	L.F.	1,100	165	181,500	
9.	16" Waterline by Trenchless Construction w/ Steel Casing	L.F.	250	800	200,000	
10.	Combination Air Valves w/ Manholes	EA.	9	5,000	45,000	
11.	Gate Valves	EA.	8	3,000	23,760	
12.	Trench Safety	L.F.	14,640	1	14,640	
13.	Stormwater Pollution Prevention Plan	L.S.	1	35,000	35,000	
14.	Site Restoration	L.S.	1	50,000	50,000	(3)
15.	Traffic Control Plan	L.S.	1	40,000	40,000	
			SUBTOTAL		$2,485,900	
				Contingencies (30%)	$746,000	
				15 Yr Inflation @ 4%/Yr	$2,589,000	(2)
				Engineering & Survey (18%)	$1,048,000	
				TOTAL	**$6,869,000**	(4)

Notes:

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(3) Site restoration is vegetation only. Does not include cost for roadway or sidewalk repairs.

(4) Does not include cost for easements or easement acquisition.

This Document is Released for the Purpose of:
General Financial Planning
Under the Authority of:
Engineer: Alan M. Moon, P.E.
License No.: 123364
It is Preliminary in Nature and not to be Used for Feasibility of Land Purchases, Bond

Project Description: Approximately 16,000 LF of reclaimed waterline to serve the large volume commercial customers reclaimed water.

Project Driver: This project will help convert some existing large volume potable water users to reclaimed water and reduce the City's overall potable water usage.

Springbrook Rd. from Wilbarger Creek to Gantry Dr. - Approx 2,200 LF of 12" reclaimed waterline within North ROW.

Adjacent to Wastewater Master Plan Project No. 4, 18" Wastewater Line

E Pflugerville Pkwy. - Approx 3,300 LF of 8" reclaimed waterline within North ROW.

Wilbarger Creek from Heatherwilde to Springbrook Rd. - Approx 3,000 LF of 12" reclaimed waterline within proposed sanitary sewer easements.

Great Basin Ave. from Cascades Ave to Heatherwilde Blvd. - Approx 5,400 LF of 12" reclaimed waterline within or adjacent to existing sanitary sewer easements.

Railroad Ave. from Pfennig Ln. to Cascades Ave. - Approx 1,350 LF of 16", 585 LF of 12" reclaimed waterline along the North and East ROW.

COUNTY ROAD 138
45 E
45
GREENLAWN BLVD
PFLUGERVILLE PKWY
GRAND AVENUE PKWY
IH 35
JAKES HILL RD
COUNTY ROAD 139
MELBER LN
FM 685 RD
130
I35
DESSAU RD
LAMAR BLVD
PARMER LN
CAMERON RD

VICINITY MAP
1 INCH = 10 MILES

LEGEND
- Reuse Lines
- Public Parks
- City Limits

Potential Reclaimed Water Customers
- City Park
- PfISD
- Private Reclaimed Customer

RECLAIMED WATER MASTER PLAN UPDATE

CITY OF PFLUGERVILLE
TRAVIS COUNTY, TEXAS

N W E S

0 3,600
1 INCH : 3,600 FEET
IMAGERY PROVIDED BY NEARMAP

QUIDDITY
Texas Board of Professional Engineers Registration No. F-23290

Path: V:\Practice Work\spaces\Corporate Services\GIS\Projects\0_Individuals\A_Moon\Pflugerville\Reclaimed_Water_Master_Plan_11x17.mxd Project Number: 05671-00102-00-0304-03 Date: 3/22/2023 User Name: adall

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
PRESSURE ZONE 3 RECLAIMED WATERLINE TO SKYBOX/LIVING SPACES
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	
1.	Mobilization, Bonds & Insurance	L.S.	1	$150,000	$150,000	
2.	8" Waterline by Open-Cut Construction	L.F.	4,430	80	354,400	
3.	8" Waterline by Trenchless Construction	L.F.	300	120	36,000	
4.	8" Waterline by Trenchless Construction w/ Steel Casing	L.F.	100	300	30,000	
5.	12" Waterline by Open-Cut Construction	L.F.	3,450	100	345,000	
6.	12" Waterline by Trenchless Construction	L.F.	1,300	160	208,000	
7.	12" Waterline by Trenchless Construction w/ Steel Casing	L.F.	250	650	162,500	
8.	Combination Air Valves w/ Manholes	EA.	6	5,000	30,000	
9.	Gate Valves	EA.	5	3,000	14,745	
10.	Trench Safety	L.F.	7,880	1	7,880	
11.	Stormwater Pollution Prevention Plan	L.S.	1	20,000	20,000	
12.	Site Restoration	L.S.	1	20,000	20,000	(3)
13.	Traffic Control Plan	L.S.	1	20,000	20,000	
			SUBTOTAL		$1,398,525	
				Contingencies (30%)	$420,000	
				15 Yr Inflation @ 4%/Yr	$1,457,000	(2)
				Engineering & Survey (18%)	$590,000	
				TOTAL	**$3,866,000**	(4)

Notes:

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(3) Site restoration is vegetation only. Does not include cost for roadway or sidewalk repairs.

(4) Does not include cost for easements or easement acquisition.

This Document is Released for the Purpose of:
General Financial Planning
Under the Authority of:
Engineer: Alan M. Moon, P.E.
License No.: 123364
It is Preliminary in Nature and not to be Used for Feasibility of Land Purchases, Bond

Project Description: Approximately 10,000 LF of reclaimed waterline to serve the Wilbarger Creek Park and large volume commercial customers reclaimed water.

Project Driver: This project will help convert some existing large volume potable water users to reclaimed water and reduce the City's overall potable water usage. The project will also convert the Wilbarger Creek Park from using potable water for irrigation to reclaimed water.

New Meister Ln. from Heatherwilde Blvd. to Skybox- Approx 3,360 LF of 8" reclaimed waterline within the North ROW.

Craters of the Moon Blvd. from Wilbarger Creek to Heatherwilde Blvd. - Approx 960 LF of 12" reclaimed waterline within the South ROW.

Heatherwilde Blvd. from Craters of the Moon Blvd. to New Meister Ln. - Approx 2,750 LF of 12" and 1,470 LF of 8" reclaimed waterline within the East and West ROW.

Willbarger Creek - Approx 1,290 LF of 12" reclaimed waterline within or adjacent to existing and proposed sanitary sewer easements.

COUNTY ROAD 138
45 E
45
GREENLAWN BLVD
PFLUG
GRAND
IH35
JAKES HILL RD
COUNTY ROAD 139
MELBER LN
FALCONPOINT BLVD
FALCON POINT BLVD
FM 685 RD
130
I35
DESSAU RD
LAMAR BLVD
PARMER LN
CAMERON RD

VICINITY MAP
1 INCH = 10 MILES

LEGEND
- Reuse Lines
- Public Parks
- City Limits

Potential Reclaimed Water Customers
- City Park
- PfISD
- Private Reclaimed Customer

RECLAIMED WATER MASTER PLAN UPDATE

CITY OF PFLUGERVILLE
TRAVIS COUNTY, TEXAS

N W E S

0 3,600
1 INCH : 3,600 FEET
IMAGERY PROVIDED BY NEARMAP

QUIDDITY
Texas Board of Professional Engineers Registration No. F-23290

Path: V:\Practice Work\spaces\Corporate Services\GIS\Projects\0_Individuals\A_Moon\Pflugerville\Reclaimed_Water_Master_Plan_11x17.mxd Project Number: 05671-00102-00-0304-03 Date: 3/22/2023 User Name: adall

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
PRESSURE ZONE 2 RECLAIMED WATERLINE TO KELLY LANE
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	
1.	Mobilization, Bonds & Insurance	L.S.	1	$300,000	$300,000	
2.	8" Waterline by Open-Cut Construction	L.F.	3,770	80	301,600	
3.	8" Waterline by Trenchless Construction	L.F.	100	120	12,000	
4.	8" Waterline by Trenchless Construction w/ Steel Casing	L.F.	150	300	45,000	
5.	12" Waterline by Open-Cut Construction	L.F.	9,870	100	987,000	
6.	12" Waterline by Trenchless Construction	L.F.	500	160	80,000	
7.	12" Waterline by Trenchless Construction w/ Steel Casing	L.F.	600	650	390,000	
8.	16" Waterline by Open-Cut Construction	L.F.	3,740	165	617,100	
9.	16" Waterline by Trenchless Construction	L.F.	300	250	75,000	
10.	16" Waterline by Trenchless Construction w/ Steel Casing	L.F.	150	800	120,000	
11.	Combination Air Valves w/ Manholes	EA.	8	5,000	40,000	
12.	Gate Valves	EA.	10	4,000	38,360	
13.	Trench Safety	L.F.	17,380	1	17,380	
14.	Stormwater Pollution Prevention Plan	L.S.	1	50,000	50,000	
15.	Site Restoration	L.S.	1	50,000	50,000	(3)
16.	Traffic Control Plan	L.S.	1	50,000	50,000	
			SUBTOTAL		$3,173,440	
			Contingencies (30%)		$952,000	
			15 Yr Inflation @ 4%/Yr		$3,304,000	(2)
			Engineering & Survey (18%)		$1,337,000	
			TOTAL		**$8,767,000**	(4)

(1) applies to the Total column header.

Notes:

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(3) Site restoration is vegetation only. Does not include cost for roadway or sidewalk repairs.

(4) Does not includen cost for easements or easement acquisition.

This Document is Released for the Purpose of:
General Financial Planning
Under the Authority of:
Engineer: Alan M. Moon, P.E.
License No.: 123364
It is Preliminary in Nature and not to be Used for Feasibility of Land Purchases, Bond

Project Description: Approximately 19,000 LF of reclaimed waterline to serve large volume commercial customers reclaimed water.

Project Driver: This project will help convert some existing large volume potable water users to reclaimed water and reduce the City's overall potable water usage. The project will also convert the Kelly Lane Middle School and other private customers from using potable water for irrigation to reclaimed water.

Colorado Sand Dr. and Lone Star Ranch Blvd - Approx 4,685 LF of 12" reclaimed waterline along the North and West ROW.

Pflugerville Pkwy. from FM 685 Road to Colorado Sand Dr. - Approx 4,880 LF of 12" reclaimed waterline along the North ROW.

Pfennig Ln. from North EST to FM 685 Road - Approx 1,550 LF of 16" reclaimed waterline along the North ROW.

Falcon Pointe Blvd. - Approx 1,400 LF of 12" and 4,020 LF of 8" reclaimed waterline along the West and East ROW.

Within Easements along Private Road from Pfennig Ln. to Pflugerville Pkwy. - Approx 2,640 LF of 16" reclaimed waterline within or adjacent to existing sanitary sewer easement.

COUNTY ROAD 138
45 E
45
GREENLAWN BLVD
PFLUGERVILLE PKWY
GRAND AVENUE PKWY
I-35
JAKES HILL RD
COUNTY ROAD 139
MELBER LN
FALCON POINTE BLVD
FALCON POINT BLVD
FM 685 RD
I-30
DESSAU RD
LAMAR BLVD
PARMER LN
CAMERON RD

VICINITY MAP
1 INCH = 10 MILES

LEGEND
- Reuse Lines
- Public Parks
- City Limits

Potential Reclaimed Water Customers
- City Park
- PfISD
- Private Reclaimed Customer

RECLAIMED WATER MASTER PLAN UPDATE

CITY OF PFLUGERVILLE
TRAVIS COUNTY, TEXAS

N W E S

0 3,600
1 INCH : 3,600 FEET
IMAGERY PROVIDED BY NEARMAP

QUIDDITY
Texas Board of Professional Engineers Registration No. F-23290

Path: V:\Practice Workspaces\Corporate Services\GIS\Projects\0_Individuals\A_Moon\Pflugerville\Reclaimed_Water_Master_Plan_11x17.mxd Project Number: 195071-0002-00-0004-03 Date: 3/2/2023 User Name: adall

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
PRESSURE ZONE 2 RECLAIMED WATERLINE TO FALCON POINTE PARK
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	
1.	Mobilization, Bonds & Insurance	L.S.	1	$180,000	$180,000	
2.	8" Waterline by Open-Cut Construction	L.F.	14,880	80	1,190,400	
3.	8" Waterline by Trenchless Construction	L.F.	400	120	48,000	
4.	8" Waterline by Trenchless Construction w/ Steel Casing	L.F.	475	300	142,500	
5.	Combination Air Valves w/ Manholes	EA.	8	5,000	40,000	
6.	Gate Valves	EA.	8	4,000	31,510	
7.	Trench Safety	L.F.	14,880	1	14,880	
8.	Stormwater Pollution Prevention Plan	L.S.	1	25,000	25,000	
9.	Site Restoration	L.S.	1	25,000	25,000	(3)
10.	Traffic Control Plan	L.S.	1	25,000	25,000	
			SUBTOTAL		$1,722,290	
			Contingencies (30%)		$517,000	
			15 Yr Inflation @ 4%/Yr		$1,794,000	(2)
			Engineering & Survey (18%)		$726,000	
			TOTAL		**$4,760,000**	(4)

Notes:

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(4) Does not includen cost for easements or easement acquisition.

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General Financial Planning
Under the Authority of:
Engineer: Alan M. Moon, P.E.
License No.: 123364
It is Preliminary in Nature and not to be Used for Feasibility of Land Purchases, Bond

Project Description: Approximately 16,000 LF of reclaimed waterline to serve the Falcon Pointe Park and large volume commercial customers reclaimed water.

Project Driver: This project will help convert some existing large volume potable water users to reclaimed water and reduce the City's overall potable water usage. The project will also convert the Falcon Pointe Park from using potable water for irrigation to reclaimed water.

Benning Dr. - Approx 1,510 LF of 8" reclaimed waterline along the West ROW.

Murchison Ridge Trail from Kelly Ln. to Tranquility Ln. - Approx 2,050 LF of 8" reclaimed waterline along the North and West ROW.

Kelly Ln. from Falcon Pointe Blvd. to Murchison Ridge Trail - Approx 3,060 LF of 8" reclaimed waterline along the North ROW.

Kelly Ln. from Falcon Pointe Blvd. to Jakes Hill Rd - Approx 6,010 LF of 8" reclaimed waterline along the North ROW.

Jakes Hill Rd from Kelly Ln to Grail Hollows Rd - Approx 3,120 LF of 8" reclaimed waterline along the East ROW.

Adjacent to Transportation Master Plan Project E, Kelly Lane Widening

COUNTY ROAD 138
COUNTY ROAD 139
GREENLAWN BLVD
PFLUGERVILLE PKWY
GRAND AVENUE PKWY
I-35
FALCON POINTE BLVD
FALCON POINT BLVD
MELBER LN
FM 685
130
DESSAU RD
LAMAR BLVD
PARMER LN
CAMERON RD

VICINITY MAP
1 INCH = 10 MILES

LEGEND
- Reuse Lines
- Public Parks
- City Limits

Potential Reclaimed Water Customers
- City Park
- PfISD
- Private Reclaimed Customer

RECLAIMED WATER MASTER PLAN UPDATE

CITY OF PFLUGERVILLE
TRAVIS COUNTY, TEXAS

N W E S

0 3,600
1 INCH : 3,600 FEET
IMAGERY PROVIDED BY NEARMAP

QUIDDITY
Texas Board of Professional Engineers Registration No. F-23290

Path:V:\Practice Workspace\Corporate Services\GIS\Projects\0_Individuals\A_Moon\Pflugerville\Reclaimed_Water_Master_Plan_11x17.mxd Project Number: 05671-0002-00-004-03 Date: 3/2/2023 User Name: adall

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
PRESSURE ZONE 2 RECLAIMED WATERLINE TO STONE HILL PARK
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	(1)
1.	Mobilization, Bonds & Insurance	L.S.	1	$110,000	$110,000	
2.	8" Waterline by Open-Cut Construction	L.F.	1,370	80	109,600	
3.	8" Waterline by Trenchless Construction	L.F.	100	120	12,000	
4.	8" Waterline by Trenchless Construction w/ Steel Casing	L.F.	75	300	22,500	
5.	10" Waterline by Open-Cut Construction	L.F.	5,950	85	505,750	
6.	10" Waterline by Trenchless Construction	L.F.	300	130	39,000	
7.	10" Waterline by Trenchless Construction w/ Steel Casing	L.F.	350	400	140,000	
8.	Combination Air Valves w/ Manholes	EA.	4	5,000	20,000	
9.	Gate Valves	EA.	4	4,000	16,290	
10.	Trench Safety	L.F.	7,320	1	7,320	
11.	Stormwater Pollution Prevention Plan	L.S.	1	25,000	25,000	
12.	Site Restoration	L.S.	1	20,000	20,000	(3)
13.	Traffic Control Plan	L.S.	1	20,000	20,000	
			SUBTOTAL		$1,047,460	
				Contingencies (30%)	$314,000	
				20 Yr Inflation @ 4%/Yr	$1,622,000	(2)
				Engineering & Survey (18%)	$537,000	
				TOTAL	**$3,521,000**	(4)

Notes:

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(4) Does not includen cost for easements or easement acquisition.

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General Financial Planning
Under the Authority of:
Engineer: Alan M. Moon, P.E.
License No.: 123364
It is Preliminary in Nature and not to be Used for Feasibility of Land Purchases, Bond

Project Description: Approximately 8,200 LF of reclaimed waterline to serve the Stone Hill Park and large volume commercial customers reclaimed water.

Project Driver: This project will help convert some existing large volume potable water users to reclaimed water and reduce the City's overall potable water usage. The project will also convert the Stone Hill Park from using potable water for irrigation to reclaimed water.

Town Center Dr. and Hill Top Commercial Dr. - Approx 2,700 LF of 10" and 1,540 LF of 8" reclaimed waterline along the South and East ROW.

Utilize existing 10" reclaimed waterline along Pfluger Farm Ln

Pflugerville Pkwy. from FM 685 Road to Pfluger Farm Ln. - Approx 3,900 LF of 10" reclaimed waterline along the North ROW.

COUNTY ROAD 138
45 E
45
GREENLAWN BLVD
PFLUGERVILLE PKWY
GRAND AVENUE PKWY
I-35
JAKES HILL RD
COUNTY ROAD 139
MELBER LN
FM 685 RD
130
DESSAU RD
I35
LAMAR BLVD
PARMER LN
CAMERON RD

VICINITY MAP
1 INCH = 10 MILES

LEGEND
- Reuse Lines
- Public Parks
- City Limits

Potential Reclaimed Water Customers
- City Park
- PfISD
- Private Reclaimed Customer

RECLAIMED WATER MASTER PLAN UPDATE

CITY OF PFLUGERVILLE
TRAVIS COUNTY, TEXAS

N W E S

0 3,600
1 INCH : 3,600 FEET
IMAGERY PROVIDED BY NEARMAP

QUIDDITY
Texas Board of Professional Engineers Registration No. F-23290

Path: V:\Practice Work\spaces\Corporate Services\GIS\Projects\0_Individuals\A_Moon\Pflugerville\Reclaimed_Water_Master_Plan_11x17.mxd Project Number: 05671-00102-00-0304-03 Date: 3/22/2023 User Name: adall

CLASS 4 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR CONSTRUCTION OF
PRESSURE ZONE 2 RECLAIMED WATERLINE TO PFLUGERVILLE ELEMENTARY
CITY OF PFLUGERVILLE
July 2023

Item No.	Description	Unit	Qty.	Unit Price	Total	
1.	Mobilization, Bonds & Insurance	L.S.	1	$150,000	$150,000	
2.	8" Waterline by Open-Cut Construction	L.F.	6,090	80	487,200	
3.	8" Waterline by Trenchless Construction	L.F.	400	120	48,000	
4.	8" Waterline by Trenchless Construction w/ Steel Casing	L.F.	600	300	180,000	
5.	12" Waterline by Open-Cut Construction	L.F.	4,550	100	455,000	
6.	12" Waterline by Trenchless Construction	L.F.	350	160	56,000	
7.	Combination Air Valves w/ Manholes	EA.	6	5,000	30,000	
8.	Gate Valves	EA.	6	4,000	23,980	
9.	Trench Safety	L.F.	10,640	1	10,640	
10.	Stormwater Pollution Prevention Plan	L.S.	1	40,000	40,000	
11.	Site Restoration	L.S.	1	40,000	40,000	(3)
12.	Traffic Control Plan	L.S.	1	40,000	40,000	
			SUBTOTAL		$1,560,820	
			Contingencies (30%)		$468,000	
			20 Yr Inflation @ 4%/Yr		$2,417,000	(2)
			Engineering & Survey (18%)		$800,000	
			TOTAL		**$5,246,000**	(4)

Notes:

(1) This estimate represents my best judgment as a design professional familiar with the construction industry. Quiddity has no control over the cost of labor, materials, or equipment; over the Contractor's methods of determining bid prices; or over competitive bidding or market conditions. Accordingly, we cannot and do not guarantee that bids will not vary from this cost estimate.

(2) Market conditions for construction pricing has been volatile due to, but not limited to, labor shortages, material shortages, and supply chain disruptions since the start of the pandemic and are experiencing added strain due to recent and ongoing global conflicts. The U.S. Bureau of Labor Statistics Consumer Index has reported an overall inflation of 4.0% over the last 12 months (reported for June 2023). The unknown decisions of federal government monetary policy, in connection with the events noted above, may increase or decrease the current inflation rates. In addition to inflation, Quiddity has seen a significant market escalation, on the order of 30-40%, over the past 24 months due to the significant deficit in supply versus demand in the local construction industry in connection with the events noted above.

(3) Site restoration is vegetation only. Does not include cost for roadway or sidewalk repairs.

(4) Does not includen cost for easements or easement acquisition.

This Document is Released for the Purpose of:
General Financial Planning
Under the Authority of:
Engineer: Alan M. Moon, P.E.
License No.: 123364
It is Preliminary in Nature and not to be Used for Feasibility of Land Purchases, Bond

Project Description: Approximately 12,000 LF of reclaimed waterline to serve the Heritage Park, Bohls Park, and large volume commercial customers reclaimed water.

Project Driver: This project will help convert some existing large volume potable water users to reclaimed water and reduce the City's overall potable water usage. The project will also convert the Heritage Park and Bohls Park from using potable water for irrigation to reclaimed water.

FM 685 Road from Pfennig Ln. to Old Austin Hutto Rd. - Approx 2,400 LF of 12" reclaimed waterline along the East ROW.

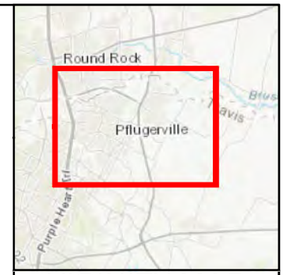
Adjacent to Transportation Master Plan Project I, Immanuel Road Widening.

E. Pecan St and Dessau Road to Oxford Dr - Approx 4,560 LF of 8" reclaimed waterline within South ROW and East ROW

Old Austin Hutto Rd. from FM 685 Road to E. Pecan St. - Approx 2,500 LF of 12" reclaimed waterline within or adjacent to existing sanitary sewer easement.

Immanuel Rd. from E. Pecan St to Pflugerville Elementary - Approx 2,530 LF of 8" reclaimed waterline within or adjacent to existing sanitary sewer easement.

COUNTY ROAD 138
45 E
45
GREENLAWN BLVD
PFLUGERVILLE PKWY
GRAND AVENUE PKWY
I-35
JAKES HILL RD
COUNTY ROAD 139
MELBER LN
FALCONPOINTE BLVD
FALCON POINT BLVD
FM 685 RD
130
I35
DESSAU RD
LAMAR BLVD
PARMER LN
CAMERON RD



VICINITY MAP
1 INCH = 10 MILES

LEGEND
- Reuse Lines
- Public Parks
- City Limits

Potential Reclaimed Water Customers
- City Park
- PfISD
- Private Reclaimed Customer

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