

NBU NEW BRAUNFELS UTILITIES

NEW BRAUNFELS UTILITIES

WATER & WASTEWATER IMPACT FEE UPDATE REPORT

2022

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FREESE AND NICHOLS

Water & Wastewater Impact Fee Update Report
September 2022



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NEW BRAUNFELS UTILITIES
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EXECUTIVE SUMMARY

In 2021, New Braunfels Utilities (NBU), authorized Freese and Nichols, Inc. (FNI) to perform an impact fee analysis on the water and wastewater systems. The purpose of this report is to summarize the methodology used in the development and calculation of water and wastewater impact fees for NBU. The methodology used herein satisfies the requirements of the Texas Local Government Code Section 395 for the update of water and wastewater impact fees.

As part of this study, land use assumptions, growth projections, and water/wastewater loading criteria from the *2021 Water & Wastewater Master Plan Update* by FNI were used to develop 10-year load projections for both the water and wastewater systems. Impact fee capital improvements plans (CIP) were developed for both systems to serve projected growth through 2032. The hydraulic models of the water and wastewater systems, along with pumping and storage planning criteria developed by FNI, were employed to calculate the percentage of each project's capacity projected to be utilized in the 10-year planning period (2022-2032). A summation of each project's estimated cost, including financing costs less credits for existing projects partially funded through rate increases, multiplied by the percentage of that project being utilized in the 10-year planning period was used to calculate a total impact fee eligible CIP cost for both water and wastewater. These costs were divided by the projected growth in living unit equivalents (LUE) for water and wastewater, respectively, to determine the maximum allowable impact fees. **Table ES-1** and **Table ES-2** summarize the maximum allowable impact fee calculations for water and wastewater, respectively. **Table ES-3** shows the maximum allowable impact fee for each meter size distributed by NBU.

Table ES-1 Maximum Water Impact Fee Calculation

Water Impact Fee	
Total Eligible Capital Improvement Costs	$228,540,978
Total Eligible Financing Costs	$168,389,936
Total Eligible Impact Fee Costs	$396,930,914
Total Impact Fee Credits	($837,433)
Maximum Allowable Cost	$396,093,481
Growth in Service Units	20,367
Maximum Allowable Water Impact Fee	**$19,448**

Table ES-2 Maximum Wastewater Impact Fee Calculation

Wastewater Impact Fee	
Total Eligible Capital Improvement Costs	$85,710,012
Total Eligible Financing Costs	$37,415,837
Total Eligible Impact Fee Costs	$123,125,849
Total Impact Fee Credits	($2,813,220)
Maximum Allowable Cost	$120,312,629
Growth in Service Units	19,269
Maximum Allowable Wastewater Impact Fee	**$6,244**

Table ES-3 Maximum Allowable Impact Fee by Meter Size

Meter Size	Maximum Flow Rate for Continuous Duty (gallons per minute)	Service Unit Equivalent	Maximum Allowable Water	Maximum Allowable Wastewater	Maximum Allowable Total
5/8"	10	1.0	$19,448	$6,244	$25,692
1"	25	2.5	$48,620	$15,610	$64,230
1 1/2"	50	5.0	$97,240	$31,220	$128,460
2"	80	8.0	$155,584	$49,952	$205,536
3"	175	17.5	$340,340	$109,270	$449,610
4"	300	30.0	$583,440	$187,320	$770,760
6"	675	67.5	$1,312,740	$421,470	$1,734,210
8"	2,400	240.0	$4,667,520	$1,498,560	$6,166,080
10"	3,500	350.0	$6,806,800	$2,185,400	$8,992,200

1.0 BACKGROUND

Chapter 395 of the Texas Local Government Code requires an impact fee analysis before impact fees can be created and assessed. Chapter 395 defines an impact fee as "a charge or assessment imposed by a political subdivision against new development in order to generate revenue for funding or recouping the costs of capital improvements or facility expansions necessitated by and attributable to the new development." In September 2001, Senate Bill 243 amended Chapter 395 thus creating the current procedure for implementing impact fees. Chapter 395 identifies the following items as impact fee eligible costs:

- Construction contract price
- Surveying and engineering fees
- Land acquisition costs
- Fees paid to the consultant preparing or updating the capital improvements plan (CIP)
- Projected interest charges and other finance costs for projects identified in the CIP

Chapter 395 also identifies items that impact fees **cannot** be used to pay for, such as:

- Construction, acquisition, or expansion of public facilities or assets other than those identified on the capital improvements plan
- Repair, operation, or maintenance of existing or new capital improvements
- Upgrading, updating, expanding, or replacing existing capital improvements to serve existing development in order to meet stricter safety, efficiency, environmental, or regulatory standards
- Upgrading, updating, expanding, or replacing existing capital improvements to provide better service to existing development
- Administrative and operating costs of the political subdivision
- Principal payments and interest or other finance charges on bonds or other indebtedness, except as allowed above

In 2021, New Braunfels Utilities (NBU) authorized Freese and Nichols, Inc. (FNI) to perform an impact fee analysis on the water and wastewater systems. The purpose of this report is to summarize the

methodology used in the development and calculation of water and wastewater impact fees for NBU. The methodology used herein satisfies the requirements of the Texas Local Government Code Section 395 for the update of water and wastewater impact fees. **Table 1-1** provides a list of abbreviations used in this report.

Table 1-1 List of Abbreviations

Abbreviation	Full Nomenclature
AWWA	American Water Works Association
CCN	Certificate of Convenience and Necessity
CIP	Capital Improvements Plan
EST	Elevated Storage Tank
ETJ	Extra-territorial Jurisdiction
FNI	Freese and Nichols, Inc.
GBRA	Guadalupe-Blanco River Authority
gpm	gallons per minute
GST	Ground Storage Tank
HGL	Hydraulic Grade Line
LUE	Living Unit Equivalent
mgd	million gallons per day
NBU	New Braunfels Utilities
PS	Pump Station
PZ	Pressure Zone
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
WRF	Water Reclamation Facility
WRP	Water Resources Plan
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

2.0 LAND USE ASSUMPTIONS

Population and land use are important elements in the analysis of water and wastewater systems. Water demands and wastewater flows depend on the customers served by the systems and determines the sizing and location of system infrastructure. A thorough analysis of service area and land use provides the basis for projecting future water demands and wastewater flows.

2.1 Service Areas

The service areas for NBU's water and wastewater systems differ slightly in terms of extent. The Water Service Area contains much of the area within the New Braunfels city limits and extends past the extra-territorial jurisdiction (ETJ) in one area. Any areas within the ETJ and within the certificate of convenience and necessity (CCN) of other utilities were excluded from the Water Service Area. The Wastewater Service Area is smaller than the Water Service Area, but still includes most of the area within the city limits, as well as a few areas outside the city limits. **Figure 2-1** and **Figure 2-2** illustrate the water and wastewater service areas, respectively.

FIGURE 2-1

NEW BRAUNFELS UTILITIES

WATER SERVICE AREA

LEGEND

- Water Service Area
- Surrounding CCNs
- City Limits
- Road
- Stream
- Lake
- ETJ

NBU

FREESE AND NICHOLS

AQUA UTILITIES INC
SJWTX INC
GUADALUPE BLANCO RIVER AUTHORITY
O RIVER AUTHORITY
WATER SERVICES INC
SERVICES INC
CITY OF SAN MARCOS
TEXAS COUNTRY WATER INC
RIVER ROAD COMMUNITY COOP
4-D WATER COMPANY LLC
AQUA UTILITIES INC
CRYSTAL CLEAR SUD
TBM RESIDENT WSC
SIESTA VILLAGE WSC
KT WATER DEVELOPMENT LTD
SAN ANTONIO WATER SYSTEM
GREEN VALLEY SUD
CITY OF GARDEN RIDGE
CITY OF SCHERTZ
CITY OF MARION
WATER SERVICES INC
SPRINGS HILL WSC
GREEN VALLEY SUD

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FIGURE 2-2

NEW BRAUNFELS UTILITIES

WASTEWATER SERVICE AREA

LEGEND

- Wastewater Service Area
- Surrounding CCNs
- City Limits
- Road
- Stream
- Lake
- ETJ

NBU

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GUADALUPE-BLANCO RIVER AUTHORITY

SJWTX INC

SJWTX INC

CITY OF SAN MARCOS

CRYSTAL CLEAR WSC

SAN ANTONIO WATER SYSTEM

CITY OF SCHERTZ

GREEN VALLEY SUD

GREEN VALLEY SUD

ZIPP ROAD UTILITY COMPANY, LLC

GUADALUPE-BLANCO RIVER AUTHORITY

CITY OF SEGUIN

GREEN VALLEY SUD

HARVEST HILLS TREATMENT LTD

GREEN VALLEY SUD

Dry Bear Creek
Bear Creek
Mountain Creek
Turkey Creek
Deep Creek
Elm Creek
Guadalupe River
Cibolo Creek
Mesquite Creek
Alligator Creek
Long Creek
Clear Fork Creek
York Creek
Fancy Creek

BENDEL RANCH RD
OLD SATTLER RD
BUCK TRL
FM 2673
SUMMIT DR
HILL TOP RDG
APPALACHIAN TRL
SHADY HOLW
LOST TRL
WESTIN HILLS
WINDIN GVW
RIVER CHASE WAY
CAMBRIDGE DR
FM 2439
FM 1102
SUN V ALLEY DR
SUMMER MEADOWS
PORTSMOUTH DR
GAINSBOROUGH DR
CORNWALL DR
FIRE CANDLE
MITCHELL DR
FM 311
FLAT CRK
CO MAL SPGS
SARAH
DAMAR DR
ALLEN VIEW DR
LARIAT RDG
PONDEROSA DR
CLEAR RDG
RIVER CHASE DR
RIDGE COUNTRY
RIVER RD
FM 3159
STONEY CREEK DR
S CRANES MILL RD
BEAR CREEK TRL
VANTAGE WAY
LACKEY RANCH RD
RIVER OAKS DR
KRONA CT
HOFFMANN LN
FM 306
SMITHSON VALLEY RD
RIDGE CREEK LN
CATALINA WAY
RUSTLING RDG
LONGHORN TRL
DERBY WAY
PFEIFFER RD
PICKLE
BECK RD
FM 1863
SEAY LN
FALLEN OAK
LONE OAK RD
ELM CREEK RD
MILLIES LN
GOLDEN OAK
HUNTER RD
BRETZKE LN
WHITE WATER RD
ORION DR
GOODWIN LN
CONRADS LN
IH 35 ACCESS RD
ACME RD
WATSON LN E
SCHECHTING RD
YORK CREEK RD
CENTER POINT RD
HUBER RD
KOEHLENBERG RD
46
RANGE RD
STATE HWY 46 W
FM 2722
OAK HILL DR
HUECO SPRINGS LOOP RD
OLD FM 306
EDGEWOOD BLVD
EDGEWOOD TERRACE
HANZ DR
IH 35 N
FM 493
FM 1101
AIRPORT RD
SCHWARTZ ROSE RD
SWANSON RD
FM 758
WESTMEYER RD
337
OAKWOOD BLVD
N UNION AVE
E COMMON ST
POST RD
RIVER TERRACE
OAK GLEN
OAK GROVE
MISSION VALLEY RD
FRIENDLY PATH
LARK LN
HUNTERS CREEK DR
FREDERICKSBURG RD
TERLICK LN
LOOP 337
LANDA ST
KATY ST
LEE ST
S SEGUIN AVE
RUSK ST
STATE HWY 46 S
ALVES LN
BAUR LN
KUEHLER AVE
GAENGERHALLER RD
CLOUD LN
MARY BLVD
WELTNER RD
AVERY PKWY
PIE PER RD
GOLD WAY
BARBAROSSA RD
HUBER RD
FERRYBOAT LN
EWALD RD
LINK RD
EMILY LN
CORDOVA RD
TIMBER ELM
JW LN
ELMONS RD
WEIL RD
CREEK RD
FM 1044
W ZIPP RD
UNION WINE RD
LAKESIDE PASS
FM 725
STATE HWY 46 N
RANGE RD
OHLRICH RANCH
KRIPPIE KOVE
COUNTRY SIDE DR
WORD RANCH RD
KRUEGER CANYON
SIERRA DR
EASY ST
CYNTHIA DR
SCHOENTHAL RD
DEDEKE DR
CEDAR CREEK DR
RED IRON
WALD RD
IH 35 S
SCHMIDT AVE
S WALNUT AVE
MCQUEENEY RD
MORNINGSIDE DR
S SEGUIN RD
ENGEL RD
PRESS PT
BUNKER ST
SCHWAB RD
OLD NACOGDOCHES RD
ABBEY RD
FM 482
IH 35 N
COLUMBIA
FM 1103
HOLLY LN
FM 1863
CIBOLO CREEK RD
FM 3009
IH 35
CIBOLO CREEK
SAN ANTONIO WATER SYSTEM
CITY OF SCHERTZ
GREEN VALLEY SUD
GREEN VALLEY SUD
ZIPP ROAD UTILITY COMPANY, LLC
GUADALUPE-BLANCO RIVER AUTHORITY
CITY OF SEGUIN
GREEN VALLEY SUD
HARVEST HILLS TREATMENT LTD
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CITY OF SAN MARCOS
CRYSTAL CLEAR WSC
SJWTX INC
SJWTX INC
GUADALUPE-BLANCO RIVER AUTHORITY

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2.2 Growth Projections

Growth projections from the *2021 Water and Wastewater Master Plan Update* by FNI were used to determine the 10-year growth in the Water and Wastewater Service Areas. These growth projections were developed through collaboration between FNI and NBU, with input from the City of New Braunfels (CNB) and Arcadis, Inc., who developed the *2020 Water Resource Plan (WRP) Update*. The unit of growth used for the study was a "connection," as defined in §290.38(16) of the Texas Administrative Code (TAC).

NBU requested that the annual growth rates for the *2021 Water and Wastewater Master Plan Update* match the system-wide growth rates by customer group from the *2020 WRP Update*. Below is a brief description of each customer group. The development of these customer groups is described further in the *Peak Demand Management Phase 1 Report* submitted by FNI to NBU in August 2019. It should be noted that all customer groups except for SF1 include more than one meter size.

- SF1 – single-family meters equal to 5/8-inch
- SF2 – single-family meters greater than 5/8-inch
- MF1 – multi-family meters with 2 to 50 living units
- MF2 – multi-family meters with 51 to 100 living units
- MF3 – multi-family meters with more than 100 living units
- COM – all commercial meters
- INST – all public and interdepartmental meters

Table 2-1 summarizes the annual growth rates by customer group from the *2020 WRP Update*, which were calculated by Arcadis, Inc. based on the previous five years of historical billing meter data. Overall, the projected growth rate for 2022-2032 is 3.7%.

Table 2-1 Annual Growth Rate by Customer Group from *2020 WRP Update*

Customer Group	WRP Phase 1 Growth Rate (2020-2026)	WRP Phase 2 Growth Rate (2027-2042)	WRP Phase 3 Growth Rate (2043-2070)
SF1	5.0%	2.5%	1.7%
SF2	4.9%	2.4%	1.6%
MF1	7.4%	3.7%	2.5%
MF2	2.0%	1.0%	0.7%
MF3	1.6%	0.8%	0.5%
COM	4.8%	2.4%	1.6%
INST	3.0%	1.5%	1.0%

To spatially distribute the projected growth, undeveloped parcels within the NBU Water and Wastewater Service Areas were identified. Future land use data provided by the City of New Braunfels was used to estimate the type of development that would occur within the undeveloped areas. Typical meter densities were developed for each land use type by reviewing existing developments and acreages. **Table 2-2** shows the selected meter densities, in meters per acre, by land use type. For residential medium and high density parcels, several parcels were assigned to the MF2 and MF3 customer groups to match the required growth rates for each customer group. The remainder of the residential medium and high density parcels were assigned to the MF1 customer group. These values were selected to align with calculated meter densities from similar developed parcels in the NBU service area. For each parcel, a "developable" area was calculated based on 80% of the parcel's total acreage. This 80% value was selected based on an analysis of master planned developments in the NBU service areas. The selected meter densities were then applied to the developable area of each undeveloped parcel to estimate the future number of meters anticipated for that parcel.

Since the TCEQ evaluates water systems based on the number of connections served, the projected meters were converted to connections in accordance with TAC §290.38(16). The conversion rates for connections per meter for each customer group are summarized in **Table** 2-3. The definition of a connection can be paraphrased as follows:

- All meters except those serving multi-family developments are assigned one connection per meter
- All meters serving multi-family developments are assigned the number of connections equal to the number of multi-family units being served by each meter

Table 2-2 Meters per Acre and Customer Group by Land Use

Land Use	Customer Group	Selected Meters per Acre
Mixed Use	½ COM, ½ SF1	7.50
Residential High Density	MF3 or MF1	0.33
Residential Med Density	MF2 or MF1	0.40
Manufactured Homes	SF1	5.50
Residential Low Density	SF1	5.00
Commercial	COM	0.80
Government	INST	3.00
Private Recreation	COM	0.20
Industrial	COM	0.20
Institutional	INST	2.00
Open-Parks	SF1	2.00
Residential Large Lot	SF2	2.00
School	INST	2.00
Commercial Industrial	COM	0.30
Utilities	INST	1.00
Quarry	COM	0.50
Drainage	-	0.00
Cemetery	-	0.00

Table 2-3 Connections per Meter by Customer Group

Customer Group	Connections per Meter
MF1	25
MF2	75
MF3	200
COM	1
SF1	1
SF2	1
INST	1

The timing of each development was based on recent requests for service, development information provided to NBU by developers, and proximity to existing infrastructure. NBU staff and FNI collaborated to identify the projected growth timeline of each undeveloped parcel. Parcels were assigned a planning

year for development or identified as a phased development (e.g., a development that would begin developing in the 5-year time frame but would not be completely built out until the 25-year time frame), such that the resulting total annual growth in connections for each customer group aligned with the growth rates calculated in the *2020 WRP Update*. It should be noted that not all undeveloped parcels in the NBU service areas were projected to develop by 2045.

Using the process described above, projected connection counts were developed for the planning years of 2021, 2022, 2023, 2024, 2025, 2030, and 2045. The 2032 projections were interpolated using the 2030 and 2045 projections from the *2021 Water and Wastewater Master Plan Update*. For the purposes of the current study, only the planning years of 2022, 2032, and 2045 are pertinent. **Table 2-4** presents the growth projections by planning year for the NBU Water and Wastewater Service Areas. The difference between the number of projected water connections and wastewater connections is due to the difference in service area. **Figure 2-3** and **Figure 2-4** show the parcels identified to develop for water and wastewater, respectively.

Table 2-4 Water and Wastewater Growth Projections

Year	Water Connections	Wastewater Connections
2022	46,108	41,343
2032	66,114	59,865
2045	89,861	76,384

FIGURE 2-3

NEW BRAUNFELS UTILITIES

PROJECTED DEVELOPMENT - WATER

LEGEND

Undeveloped Parcels

- Phased Development
- 2022-2032 Development
- 2033-2045 Development
- Water Service Area

- City Limits
- Road
- Stream
- Lake
- ETJ

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FIGURE 2-4

NEW BRAUNFELS UTILITIES

PROJECTED DEVELOPMENT - WASTEWATER

LEGEND

Undeveloped Parcels

- Phased Development
- 2022-2032 Development
- 2033-2045 Development
- Wastewater Service Area

- City Limits
- Road
- Stream
- Lake
- ETJ

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3.0 WATER AND WASTEWATER CAPITAL IMPROVEMENTS PLAN

As part of the *2021 Water and Wastewater Master Plan Update*, capital improvement plans (CIP) were developed for NBU to serve projected growth through 2045. The CIPs were developed using hydraulic models of both the water and wastewater systems. The impact fee update utilized these CIPs to calculate the maximum allowable impact fees. The recommended impact fee eligible improvements will provide the required capacity to meet projected water demands and wastewater flows through year 2032.

3.1 Existing Water and Wastewater Systems

The existing water distribution system consists of a network of lines ranging in size from 0.75 inches to 36 inches in diameter, 25 pump stations (PS), 14 elevated storage tanks (EST), 4 standpipes, 1 hydropneumatic tank, and 14 ground storage tanks (GST). NBU has seven Edwards Aquifer groundwater wells and five Trinity Aquifer groundwater wells that supply the distribution system, as well as a surface water supply at the Surface Water Treatment Plant (WTP). NBU operates 12 pressure zones (PZ): River Chase, Hoffmann, Bretzke, Kohlenberg, Downtown, Morningside, Loop, Texas, Kerlick, Westpointe, Mission, and Copper Ridge. A map of the existing water distribution system is shown on **Figure 3-1.**

The existing wastewater system has 23 lift stations, a network of lines ranging from 4 inches to 48 inches in diameter, and four wastewater treatment plants (WWTP): Gruene, North Kuehler, South Kuehler, and McKenzie. The McKenzie and Gruene facilities are also referred to as water reclamation facilities (WRF). **Figure 3-2** displays a map of the existing wastewater collection system.

FIGURE 3-1

NEW BRAUNFELS UTILITIES

EXISTING WATER SYSTEM

LEGEND

- Valve
- Well
- Water Treatment Plant (WTP)
- Pump Station (PS)
- Standpipe (SP)
- Ground Storage Tank (GST)
- Elevated Storage Tank (EST)
- Hydropneumatic Tank (HPT)
- 10" and Smaller Water Line
- 12" and Larger Water Line
- Road
- Stream
- Lake
- Water Service Area
- City Limits
- ETJ

PRESSURE ZONES

- Bretzke
- Copper Ridge
- Downtown
- Hoffmann
- Kerlick
- Kohlenberg
- Loop
- Mission
- Morningside
- River Chase
- Texas
- Westpointe

NBU

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SCALE IN FEET

FIGURE 3-2

NEW BRAUNFELS UTILITIES

EXISTING WASTEWATER SYSTEM

LEGEND

- Lift Station
- WWTP
- 8" and Smaller Wastewater Line
- 10" and Larger Wastewater Line
- Force Main
- Road
- Stream
- Lake
- Wastewater Service Area
- City Limits
- ETJ

WWTP BASINS

- Gruene
- McKenzie
- North Kuehler
- South Kuehler

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Mission Hills Ranch LS
Manor Creek LS
Newkomerhof LS
Enclave LS
Trinity LS
Valley View LS
Mauerbach LS
Cole Street LS
Guada Coma LS
Wimmer LS
Gruene LS
Albert LS
Granite Water Reclamation Facility
WWTP
VFW LS
Heather Glen LS
Cloud Country LS
Creekside LS
Airport LS
Sagengerhalle LS
Tiger LS
North Kuehler WWTP
South Kuehler WWTP
Pecan Crossing LS
Dove Crossing LS
Clear Spring LS
McKenzie Water Reclamation Facility
Dahlia LS
Colonial LS

Lake Dunlap

0 2,500 5,000

SCALE IN FEET

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3.2 Water Demand and Wastewater Load Projections

As part of the *2021 Water and Wastewater Master Plan Update*, land use data, historical water demands, and historical wastewater flows were used to develop future water demands and wastewater flows. For water, projected maximum day demands were developed for 2022, 2032, and 2045 using per connection demands. Existing customers were assigned different per connection maximum day demand rates based on which pressure zone served them. All projected connections were assigned a maximum day demand rate of 0.45 gallons per minute (gpm) per connection. The planning criteria used to project demands were selected based on historical water demand trends.

For wastewater, projected average daily flows were developed by WWTP basin using a per connection flow based on historical wastewater flow trends. The peak wet weather flow was determined by applying a 5-year, 6-hour design storm to the calibrated hydraulic model for each planning period. The development of the design storm is discussed in more detail in the *2021 Water and Wastewater Master Plan Update*. **Table 3-1** presents the projected water demands, and **Table 3-2** presents the projected wastewater flows in million gallons per day (mgd) for NBU.

Table 3-1 Projected Water Demands

Year	Maximum Day Demand (mgd)
2022	32.97
2032	45.93
2045	61.32

Table 3-2 Projected Wastewater Flows

WWTP Basin	2022		2032		2045	
	Average Daily Flow (mgd)	Peak Wet Weather Flow (mgd)	Average Daily Flow (mgd)	Peak Wet Weather Flow (mgd)	Average Daily Flow (mgd)	Peak Wet Weather Flow (mgd)
Gruene	1.36	6.17	2.63	11.43	2.88	13.09
McKenzie	1.80	7.16	3.68	13.36	5.29	17.29
North Kuehler	2.44	15.12	2.82	16.98	3.76	20.21
South Kuehler	2.82	13.10	3.01	17.09	3.51	19.17
Total	**8.43**	**41.54**	**12.14**	**58.87**	**15.44**	**69.76**

3.3 Impact Fee Eligible Projects

Only system improvements that serve future growth are eligible for impact fee collection. Therefore, projects or portions of projects that resolve existing system deficiencies are not eligible and cannot be included in the impact fee CIP. Additionally, existing projects that have excess capacity to serve future growth can be included in the impact fee calculations. However, projects serving growth beyond the 10-year time period are not eligible for impact fee cost recovery. A 10-year impact fee CIP was developed based on the magnitude and location of the projected growth occurring in the next 10 years. The recommended improvements will provide NBU with the required capacity to meet projected water demands and wastewater flows through the year 2032. The proposed 10-year water system projects are shown on **Figure 3-3** and the proposed wastewater projects are shown on **Figure 3-4**.

The hydraulic model was used as a tool to determine the portion of the pipeline projects that is impact fee eligible. Utilization percentages for water and wastewater system facilities (i.e., water/wastewater treatment plants, pump/lift stations, storage tanks) were calculated based on the recommended capacities developed for the existing and projected demands. The 2022 percentages account for existing system deficiencies or projects needed to serve existing customers while the 2032 percentages indicate the portion of the capacity that will be utilized within the 10-year timeframe.

The following provides example calculations for each type of project:

- *Pipeline Project*

  Existing Flow = 5 mgd

  10-Year Flow = 10 mgd

  2045 Flow = 20 mgd

  2022 % Utilization = $\frac{Existing\ Flow}{2045\ Flow} = \frac{5\ mgd}{20\ mgd} = 0.25 = 25\%$

  2032 % Utilization = $\frac{10\text{–}Year\ Flow}{2045\ Flow} = \frac{10\ mgd}{20\ mgd} = 0.50 = 50\%$

  Eligible % = 2032 % Utilization – 2022 % Utilization = 50% - 25% **= 25%**

- *Water Production Facility Expansion*

  Existing Production Capacity = 10.0 mgd

  Expanded Production Capacity = 20.0 mgd

  2022 Production Requirement = 15.0 mgd

  2032 Production Requirement = 25.0 mgd

  2022 % Utilization = $\frac{2022\ Production\ Req.\text{–}Existing\ Cap.}{Expanded\ Cap.\text{–}Existing\ Cap.} = \frac{15.0\ mgd\text{–}10.0\ mgd}{20.0\ mgd\text{–}10.0\ mgd} = 0.5 = 50\%$

  2032 % Utilization = $\frac{2032\ Production\ Req.\text{–}\ Existing\ Cap.}{Expanded\ Cap.\text{–}Existing\ Cap.} = \frac{25.0\ mgd\text{–}10.0\ mgd}{20.0\ mgd\text{–}10.0\ mgd} = 1.5 = 100\%$

  Eligible % = 2032 % Utilization – 2022 % Utilization = 100% - 50% **= 50%**

- *Wastewater Treatment Plant Expansion*

  Existing Treatment Capacity = 5.0 mgd

  Expanded Treatment Capacity = 10.0 mgd

  2022 Average Daily Flow = 4.0 mgd

  2032 Average Daily Flow = 8.0 mgd

2022 % Utilization = $\frac{2022\ ADF - Existing\ Cap.}{Expanded\ Cap. - Existing\ Cap.} = \frac{4.0\ mgd - 5.0\ mgd}{10.0\ mgd - 5.0\ mgd} = -0.2 = 0\%$

2032 % Utilization = $\frac{2032\ ADF - Existing\ Cap.}{Expanded\ Cap. - Existing\ Cap.} = \frac{8.0\ mgd - 5.0\ mgd}{10.0\ mgd - 5.0\ mgd} = 0.6 = 60\%$

Eligible % = 2032 % Utilization – 2022 % Utilization = 60% - 0% **= 60%**

- *New Water Pump Station (Serving Pressure Zone A)*

  Existing Pumping Capacity = 0.0 mgd

  New Pumping Capacity = 5.0 mgd

  2022 Pumping Requirement for Pressure Zone A = 1.0 mgd

  2032 Pumping Requirement for Pressure Zone A = 4.0 mgd

  2022 % Utilization = $\frac{2022\ Pumping\ Req. - Existing\ Cap.}{Expanded\ Cap. - Existing\ Cap.} = \frac{1.0\ mgd - 0.0\ mgd}{5.0\ mgd - 0.0\ mgd} = 0.2 = 20\%$

  2032 % Utilization = $\frac{2032\ Pumping\ Req. - Existing\ Cap.}{Expanded\ Cap. - Existing\ Cap.} = \frac{4.0\ mgd - 0.0\ mgd}{5.0\ mgd - 0.0\ mgd} = 0.8 = 80\%$

  Eligible % = 2032 % Utilization – 2022 % Utilization = 80% - 20% **= 60%**

- *Wastewater Lift Station Expansion*

  Existing Pumping Capacity = 2.0 mgd

  Expanded Pumping Capacity = 6.0 mgd

  2022 Peak Wet Weather Flow = 2.0 mgd

  2032 Peak Wet Weather Flow = 4.0 mgd

  2022 % Utilization = $\frac{2022\ PWWF - Existing\ Cap.}{Expanded\ Cap. - Existing\ Cap.} = \frac{2.0\ mgd - 2.0\ mgd}{6.0\ mgd - 2.0\ mgd} = 0.0 = 0\%$

  2032 % Utilization = $\frac{2032\ PWWF - Existing\ Cap.}{Expanded\ Cap. - Existing\ Cap.} = \frac{4.0\ mgd - 2.0\ mgd}{6.0\ mgd - 2.0\ mgd} = 0.5 = 50\%$

  Eligible % = 2032 % Utilization – 2022 % Utilization = 50% - 0% **= 50%**

- *Elevated Storage Tank (Located in Pressure Zone B)*

  Existing Elevated Storage Capacity in Pressure Zone B = 1.0 MG

  Additional Elevated Storage Capacity in Pressure Zone B = 3.0 MG

  2022 Elevated Storage Requirement Pressure Zone B = 1.5 MG

  2032 Elevated Storage Requirement Pressure Zone B = 2.5 MG

  2022 % Utilization = $\frac{2022\ EST\ Req.-Existing\ Cap.}{Expanded\ Cap.-Existing\ Cap.} = \frac{1.5\ MG-1.0\ MG}{3.0\ MG-1.0\ MG} = 0.25 = 25\%$

  2032 % Utilization = $\frac{2032\ EST\ Req.-Existing\ Cap.}{Expanded\ Cap.-Existing\ Cap.} = \frac{2.5\ MG-1.0\ MG}{3.0\ MG-1.0\ MG} = 0.75 = 75\%$

  Eligible % = 2032 % Utilization – 2022 % Utilization = 75% - 25% **= 50%**

These calculations were conducted for each project recommended in the impact fee CIP using the planning criteria and hydraulic models to determine the portion of the project that is impact fee eligible. **Table 3-3** and **Table 3-4** show the 2022 and 2032 percent utilizations along with the total and impact fee eligible costs for each project on the water and wastewater CIP, respectively. Costs listed for the existing projects and the Guadalupe-Blanco River Authority (GBRA) Mid-Basin Infrastructure project are based on actual design and construction costs provided by NBU. Costs estimates for all other proposed projects were developed as part of the *2021 Water and Wastewater Master Plan Update.* The costs are in 2022 dollars and include an allowance for engineering, surveying, and contingencies, with the exception of several projects that are already in the process of design. For these projects, cost estimates provided to NBU by the design engineer were used with no added allowances.

Table 3-3 Water System Impact Fee Eligible Projects

Project ID	Project Description	Percent Utilization			Cost Allocation	
		2022*	2032	2022 To 2032	Total Project Cost	Impact Fee Eligible Cost
EXISTING ELIGIBLE						
2-C19WPPS	Water Plant Pump #5	78%	100%	22%	$6,950,719	$1,529,158
2-C17WELL4	Well 4 Discharge Line	29%	60%	31%	$1,608,523	$498,642
2-C20GPSEX	Grandview Pump Station Expansion	71%	100%	29%	$6,077,320	$1,762,423
2-C18CR1PS	Highway 46 Water System Expansion	50%	65%	15%	$12,231,194	$1,834,679
2-C14MSR	MSR Reconstruction (CNB) - W	55%	100%	45%	$4,053,223	$1,823,950
2-C14LIVEO	Live Oak & Katy St Improvements (CNB) – W	55%	100%	45%	$678,573	$305,358
2-C19SAST2	San Antonio St Rehabilitation Phase 2 (CNB) – W	55%	100%	45%	$1,490,961	$670,932
2-C17306GT	Old FM 306 Ground Storage Tank	20%	42%	22%	$3,353,369	$737,741
2-C14ALVES	Alves Ln Improvements (CNB) – W	51%	100%	49%	$1,905,928	$933,905
2-C17AP20	Avery Park 30" Water Main	21%	37%	16%	$17,052,481	$2,728,397
2-C19WRGST	Weltner Road Ground Storage Tank and Pump Station – Phase 1	0%	100%	100%	$11,828,245	$11,828,245
2-C20BRTZC	3.0 MG Bretzke EST and 24-inch Bretzke Waterline	81%	100%	19%	$8,954,705	$1,701,394
2-C19VTFCV	Veramendi 1.5 MG EST	15%	75%	60%	$286,906	$172,144
-	Water Impact Fee Study	0%	100%	100%	$110,323	$110,323
PROPOSED ELIGIBLE						
-	GBRA Mid-Basin Infrastructure	0%	100%	100%	$113,640,000	$113,640,000
2-C30RCEST	New River Chase EST (RC-01)	45%	50%	5%	$13,059,000	$652,950
2-C29BZHMW	Bretzke PS to Hoffmann PZ Discharge Water Line (HM-02)	0%	10%	10%	$7,628,000	$762,800
2-C29BZHMP	Bretzke PS to Hoffmann PZ and PRV to Bretzke PZ (HM-03)	4%	10%	6%	$4,064,600	$243,876
2-C21GLWL	Goodwin Lane Water Main	30%	75%	45%	$7,383,130	$3,322,409
2-C21GEST	Conrads EST	17%	78%	61%	$10,116,542	$6,171,091
2-C21306PS	FM 306 Pump Station and Discharge Pipeline	30%	100%	70%	$8,610,747	$6,027,523
2-C261101W	FM 1101 PS Discharge Water Line	10%	34%	24%	$10,738,100	$2,577,144
2-C261101P	FM 1101 PS and GST	0%	45%	45%	$14,759,600	$6,641,820
2-C20SWDIS	30/24-Inch SWTP Discharge Line	0%	40%	40%	$11,828,363	$4,731,345
2-C20SWEXP	SWTP Expansion - Water Supply Facilities	0%	40%	40%	$52,556,400	$21,022,560
2-C20IH35W	I-35 Water Line	0%	70%	70%	$8,157,804	$5,710,463
2-C16CASTL	Castell Ave Rehabilitation (CNB) - W	20%	83%	63%	$13,052,474	$8,223,059
2-C20MQPWL	24-Inch McQueeney Road Parallel Water Line	20%	80%	60%	$4,816,153	$2,889,692
2-C30AGEST	Altgelt EST	0%	20%	20%	$16,126,800	$3,225,360
2-C20SLGST	Solms Ground Storage Tank and Flow Control Valve	55%	70%	15%	$4,390,393	$658,559
2-C30CNYLW	County Line PS Discharge Water Line (MO-04)	0%	5%	5%	$8,927,700	$446,385
2-C30CNYLP	County Line PS Expansion	0%	5%	5%	$10,264,000	$513,200
2-C221044T	FM 1044 EST	40%	60%	20%	$11,651,554	$2,330,311
2-C21W4PDL	Well 4 Pump and Discharge Line Upgrades	50%	100%	50%	$2,685,509	$1,342,755
2-C21GVDL	Grandview Discharge Line Upgrades	71%	100%	29%	$3,480,509	$1,009,348
2-C20OBEST	Oakbrook EST, Pipeline & Flow Control Valve	0%	35%	35%	$6,392,036	$2,237,213
2-C23MWCW	Mission/Westpointe Connection Waterlines	0%	25%	25%	$5,452,236	$1,363,059
2-C21TEXP	Trinity Expansion - Water Supply Facilities	0%	25%	25%	$20,139,136	$5,034,784
2-C21CPS46	Highway 46 Phase 2 Water Line	0%	27%	27%	$4,170,300	$1,125,981
	Total Capital Improvements Cost – Water				**$450,673,555**	**$228,540,978**

* Utilization in 2022 on Proposed Projects indicates a portion of the project that will be used to address deficiencies within the existing system, and therefore are not eligible for impact fee cost recovery for future growth.

Table 3-4 Wastewater System Impact Fee Eligible Projects

Project ID	Project Description	Percent Utilization			Cost Allocation	
		2022*	2032	2022 To 2032	Total Project Cost	Impact Fee Eligible Cost
EXISTING ELIGIBLE						
3-C19NK30	North Kuehler Interceptor Phase 2	81%	96%	15%	$26,021,185	$3,903,178
3-C17NK36	North Kuehler Interceptor Phase 1	83%	94%	11%	$13,664,201	$1,503,062
3-C20SHLSE	Saengerhalle Lift Station Expansion and Force Main	13%	83%	70%	$1,931,697	$1,352,188
3-C20RLEXP	Rio Lift Station Expansion	33%	59%	26%	$1,647,380	$428,319
3-C16GWWTP	Gruene WRF Relocation and Expansion	54%	100%	46%	$59,004,401	$27,142,024
3-C18SKINT	McQueeney Road	60%	70%	10%	$2,146,113	$214,611
-	McKenzie Water Reclamation Facility	72%	100%	28%	$36,903,848	$10,333,077
-	Wastewater Impact Fee Study	0%	100%	100%	$110,323	$110,323
PROPOSED ELIGIBLE						
3-C20MKEXP	McKenzie WRF Expansion	0%	9%	9%	$59,735,434	$5,376,189
3-C21MKINT	McKenzie Interceptor Upgrade	49%	85%	36%	$35,022,909	$12,608,247
3-C20SLSEX	Solms Lift Station Expansion	51%	100%	49%	$1,824,538	$894,024
3-C22NKI3	North Kuehler Interceptor Phase 3	75%	95%	20%	$7,610,300	$5,707,725
3-C25GRNLS	Gruene Lift Station Expansion	60%	80%	20%	$1,509,600	$301,920
3-C20GREHA	Gruene Road Siphon	75%	95%	20%	$1,568,000	$313,600
3-C2135INT	I-35 Interceptor	50%	60%	10%	$9,377,400	$937,740
3-C21SNINT	Saengerhalle North Wastewater Main	50%	80%	30%	$5,084,500	$1,525,350
3-C25SKIP1	South Kuehler Interceptor Phase 1	60%	80%	20%	$7,210,800	$1,442,160
3-C28SKIP2	South Kuehler Interceptor Phase 2	40%	75%	35%	$7,886,700	$2,760,345
3-C30SKIP3	South Kuehler Interceptor Phase 3	25%	75%	50%	$10,831,000	$5,415,500
3-C27337S	Loop 337 South Wastewater Main	75%	95%	20%	$2,870,000	$574,000
3-C30RGINT	River Gardens Wastewater Main	93%	98%	5%	$3,126,300	$156,315
3-C28GTPEX	Gruene WWTP Expansion	0%	5%	5%	$44,490,000	$2,224,500
3-C30SLSEV	Solms Force Main and Lift Station Evaluation	0%	40%	40%	$11,678,200	$4,671,280
	Total Capital Improvements Cost – Wastewater				**$351,254,828**	**$85,710,012**

* Utilization in 2022 on Proposed Projects indicates a portion of the project that will be used to address deficiencies within the existing system, and therefore are not eligible for impact fee cost recovery for future growth.

FIGURE 3-3

NEW BRAUNFELS UTILITIES

WATER SYSTEM IMPACT FEE CIP

LEGEND

Existing System

- Pump Station (PS)
- Elevated Storage Tank (EST)
- Standpipe (SP)
- Water Treatment Plant (WTP)
- 10" and Smaller Water Line
- 12" and Larger Water Line

Existing Eligible Projects

- Pump Facilities
- Elevated Storage Tank
- Ground Storage Tank
- Water Line

Proposed Eligible Projects

- Valve
- Pumping Facilities
- Elevated Storage Tank
- Ground Storage Tank
- Water Treatment Plant
- Water Line
- Road
- Stream
- Lake
- City Limits
- ETJ

FREESE AND NICHOLS

NBU

PRESSURE ZONES

Bretzke	Loop
Copper Ridge	Mission
Downtown	Morningside
Hoffmann	River Chase
Kerlick	Texas
Kohlenberg	Westpointe

PROJECTS NOT SHOWN ON MAP

Water Impact Fee Study

GBRA Mid-Basin Infrastructure

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Date: Thursday, April 20, 2023
Location: H:\06_GIS_PLANNING\01_CIP_IF\FIGURES\06-Final_Report\Figure_3-3-Water_IF_CIP.mxd
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FIGURE 3-4

NEW BRAUNFELS UTILITIES

WASTEWATER SYSTEM IMPACT FEE CIP

LEGEND

Existing System

- Wastewater Treatment Plant
- Lift Station
- 8" and Smaller Wastewater Line
- 10" and Larger Wastewater Line
- Force Main

Existing Eligible Projects

- Lift Station
- Gravity Main
- Force Main

Proposed Eligible Projects

- Wastewater Treatment Plant
- Lift Station
- Gravity Main
- Force Main
- Road
- Stream
- Lake
- City Limits
- ETJ

FREESE AND NICHOLS

NBU

WWTP BASINS

- Gruene
- McKenzie
- North Kuehler
- South Kuehler

PROJECTS NOT SHOWN ON MAP

Wastewater Impact Fee Study

Mission Hills Ranch LS

Manor LS

Newkcombes LS

Enclave LS

Trinity LS

Valley View LS

Gruene LS (3-C24GRNLS)

Gruene WWTP (3-C16WWTP & 3-C25GRNEX)

Albert LS

Meusebach LS

Coll Street LS

Warnecke LS

Guada Coma LS

VFW LS

Rio LS (3-C20RLEXP)

Kuehler WWTPs

Cloud Country LS

Creekside LS

Heather Glen LS

Saengerhalle LS (3-CZ0SHLSE)

Airport LS

Clear Springs LS

McKenzie WRF (3-C20MKEXP)

Solms LS (3-CZ0SLSEX & 3-C30SLSEV)

Dahlia LS

Pecan Crossing LS

Dove Crossing LS

Lake Dunlap

0 2,500 5,000

SCALE IN FEET

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4.0 IMPACT FEE ANALYSIS

The impact fee analysis involves determining the cost of projects associated with 10-year growth and the number of service units projected within the 10-year period. Impact fees are calculated and charged on a per service unit basis. Additionally, impact fees cannot be charged for capital costs that will also be included in a customer's water and sewer rates.

4.1 Service Units

According to Chapter 395 of the Texas Local Government Code, the maximum impact fee may not exceed the amount determined by dividing the cost of capital improvements required by the total number of service units attributed to new development during the 10-year impact fee eligibility period. A water service unit is defined as service equivalent to a water connection for a single-family residence. NBU does not directly meter wastewater flows and bills for wastewater services based on the customer's water consumption. Therefore, a wastewater service unit is defined as the wastewater service provided to a customer with a water connection for a single-family residence. To remain consistent with the current *NBU Capital Recovery Policy* nomenclature, service units are referred to as living unit equivalents (LUE).

The service associated with larger water meters not serving multi-family residential units is converted into LUEs based on the capacity of the meter used to provide service. The number of LUEs required to represent each meter size is determined by the safe maximum operating capacity as defined by the American Water Works Association (AWWA) standards C700 (Cold Water Meters – Displacement Type, Bronze Main Case) and C702 (Cold Water Meters – Compound Type). The LUE for each meter size used by NBU is listed in **Table 4-1**.

Table 4-1 Living Unit Equivalents – Non-Multi-Family

Meter Size	Maximum Flow Rate for Continuous Duty (gpm)	Living Unit Equivalent
5/8"	10	1.0
1"	25	2.5
1 1/2"	50	5.0
2"	80	8.0
3"	175	17.5
4"	300	30.0
6"	675	67.5
8"	2,400	240.0
10"	3,500	350.0

Typically, NBU serves single-family residences with 5/8-inch water meters. Larger meters represent mostly commercial and industrial water use. LUEs for these types of uses were determined based on the meter equivalencies. LUEs for multi-family master meters were calculated using 0.5 LUEs per dwelling unit. To determine the breakdown of meter sizes for 2032 (excluding multi-family meters), it was assumed that the relative meter count for each size would remain consistent into the future, so the overall 10-year growth rate for non-multi-family meters was applied to the existing meter count for each size. The overall 10-year growth rate was applied to the 2022 multi-family dwelling unit count from the *2021 Water and Wastewater Master Plan Update* to determine the 2032 multi-family dwelling unit count. The existing LUEs and the projected 2032 LUEs for water are shown in **Table 4-2** and **Table 4-3**, respectively. **Table 4-4** summarizes the growth in LUEs for the 10-year impact fee eligible period. For wastewater, the 2032 meter counts for each meter were calculated in the same way as the water meter counts. The existing LUEs and the projected 2032 LUEs for wastewater are shown in **Table 4-5** and **Table 4-6**, respectively. **Table 4-7** summarizes the growth in wastewater LUEs for the 10-year impact fee eligible period.

Table 4-2 2022 LUEs – Water

Customer Type	Meter Size	Number of Meters	Service Unit Equivalent or Number of Dwelling Units	LUEs
Single-Family & Non-Residential	5/8"	35,992	1.0	35,992
	1"	824	2.5	2,060
	1 1/2"	284	5.0	1,420
	2"	377	8.0	3,016
	3"	34	17.5	595
	4"	18	30.0	540
	6"	1	67.5	68
	10"	1	350.0	350
Multi-Family Residential	-		8,591	4,295
			TOTAL LUEs	**48,336**

Table 4-3 2032 LUEs – Water

Customer Type	Meter Size	Number of Meters	Service Unit Equivalent or Number of Dwelling Units	LUEs
Single-Family & Non-Residential	5/8"	50,868	1.0	50,868
	1"	1,164	2.5	2,910
	1 1/2"	402	5.0	2,010
	2"	533	8.0	4,264
	3"	48	17.5	840
	4"	26	30.0	780
	6"	2	67.5	135
	10"	1	350.0	350
Multi-Family Residential	-		13,093	6,546
			TOTAL LUEs	**68,703**

Table 4-4 2022-2032 Growth in LUEs – Water

Customer Type	Meter Size	2022 Total LUEs	2032 Total LUEs	2022-2032 Growth in LUEs
Single-Family & Non-Residential	5/8"	35,992	50,868	14,876
	1"	2,060	2,910	850
	1 1/2"	1,420	2,010	590
	2"	3,016	4,264	1,248
	3"	595	840	245
	4"	540	780	240
	6"	68	135	67
	10"	350	350	0
Multi-Family Residential	-	4,295	6,546	2,251
			TOTAL GROWTH IN LUEs	**20,367**

Table 4-5 2022 LUEs – Wastewater

Customer Type	Meter Size	Number of Meters	Service Unit Equivalent or Number of Dwelling Units	LUEs
Single-Family & Non-Residential	5/8"	31,913	1.0	31,913
	1"	665	2.5	1,663
	1 1/2"	266	5.0	1,330
	2"	344	8.0	2,752
	3"	30	17.5	525
	4"	16	30.0	480
	6"	1	67.5	68
	10"	1	350.0	350
Multi-Family Residential	-		8,120	4,060
			TOTAL LUEs	**43,141**

Table 4-6 2032 LUEs – Wastewater

Customer Type	Meter Size	Number of Meters	Service Unit Equivalent or Number of Dwelling Units	LUEs
Single-Family & Non-Residential	5/8"	46,260	1.0	46,258
	1"	963	2.5	2,408
	1 1/2"	385	5.0	1,925
	2"	499	8.0	3,992
	3"	44	17.5	770
	4"	24	30.0	720
	6"	2	67.5	135
	10"	1	350.0	350
Multi-Family Residential	-		11,704	5,852
			TOTAL LUEs	**62,410**

Table 4-7 2022-2032 Growth in LUEs– Wastewater

Customer Type	Meter Size	2022 Total LUEs	2032 Total LUEs	2022-2032 Growth in LUEs
Single-Family & Non-Residential	5/8"	31,913	46,258	14,345
	1"	1,663	2,408	745
	1 1/2"	1,330	1,925	595
	2"	2,752	3,992	1,240
	3"	525	770	245
	4"	480	720	240
	6"	68	135	67
	10"	350	350	0
Multi-Family Residential	-	4,060	5,852	1,792
TOTAL GROWTH IN LUEs				**19,269**

4.2 Impact Fee Calculations

To calculate the maximum allowable impact fees, the capital costs associated with providing capacity to new customers from both existing and new projects were considered, as well as any interest and financing costs associated with meeting the infrastructure needs to serve growth in the water and wastewater systems. Credits to the impact fees were also considered, where applicable.

Credit Analysis

Chapter 395 requires a plan that addresses possible duplication of payments for capital improvements. This plan can either provide a credit for the portion of utility service revenues generated by new development that is used for the payment of eligible improvements, including payment of debt, or reduce the total eligible project costs by 50 percent. NBU has selected to provide a credit for the portion of utility service revenues generated by new development that is used for the payment of eligible improvements to determine the maximum allowable impact fees.

The list of impact fee eligible water projects includes several existing projects in the NBU system that have capacity available to serve new customers, which have a total cost of $76,582,469, with $26,637,291 of that total cost projected to serve growth in the 10-year planning period. Several of the existing eligible water projects have been funded and continue to be funded through debt issuance. On these projects, a portion of the total cost has been covered through past debt funding, with the rest funded using impact fees. Therefore, because available capacity from these projects will be used to serve new customers, and because there is debt associated with these projects that is being recovered through rate revenues, a credit must be calculated to ensure that new customers joining the system will not be paying for any costs of their service twice: once through impact fees and a second time through rates. In this case, collectively, $837,433 will be paid by new development through utility rates for eligible facilities, and therefore must be excluded from the maximum allowable impact fee calculations.

There are also existing wastewater projects that have available capacity to serve new growth in the system. Using a similar method, a credit of $2,813,220 was calculated for the amount that new development will pay towards eligible facility costs through the rates.

For new capital projects NBU intends to use bond funding, as detailed in the next section. However, the portion of the capital costs attributable to new development during the 10-year period, including interest, will not be incorporated into the rate base. Instead, the entire cost of this portion of the debt, principal

and interest, will be paid through collection of water and wastewater impact fees. As a result, no credit will accrue for new projects.

Financing Costs

Financing costs associated with the capacity of each project being utilized in the 10-year planning period from 2022-2032 have been included. Any portion of the projects' costs associated with meeting existing deficiencies or providing capacity for growth outside the 10-year period were not included. This was done under the assumption that all of the project costs for the 10-year period will be recovered through the collection of impact fees, which will place the burden of providing additional capacity on the new customers and not the existing customers. Also, for the purposes of this study it is assumed that the proposed projects will be funded through a series of bond issuances throughout the 10-year planning period. As such, the interest from each debt issue was included in the cost calculations. Along with the interest expenses, the cost of acquiring each of the debt issues has also been included in the impact fee calculation per Texas Local Government Code §395.012.

The interest and funding fee expenses were addressed in the same way for both water and wastewater. The total financing costs for water and wastewater CIP projects were $81,095,230 and $37,415,837, respectively. However, there is an additional cost that had to be addressed in providing water service for NBU's new customers, the cost associated with the GBRA Mid-Basin Infrastructure. The capital cost associated with this project is $113,640,000, which is passed along to NBU from GBRA. The full cost of this project is included as an eligible impact fee capital component because the entire capacity of the project is needed to serve new customers in the 2022-2032 planning period. GBRA also passes through to NBU their financing costs, which include interest expenses and additional coverage requirements. The financing costs associated with the GBRA Mid-Basin Infrastructure project total $87,294,706.

Maximum Allowable Impact Fees

Chapter 395 of the Texas Local Government Code states that the maximum impact fee may not exceed the amount determined by dividing the cost of capital improvements required by the total number of service units attributed to new development during the impact fee eligibility period less the credit to account for water and wastewater revenues used to fund capital improvement plans. **Table 4-8** and

Table 4-9 display a summary of the maximum allowable impact fee calculations for water and wastewater, respectively. **Table 4-10** presents the maximum allowable impact fee by meter size based on the service unit equivalent associated with each meter size.

Table 4-8 Maximum Water Impact Fee Calculation

Water Impact Fee	
Total Eligible Capital Improvement Costs	$228,540,978
Total Eligible Financing Costs	$168,389,936
Total Eligible Impact Fee Costs	$396,930,914
Total Impact Fee Credits	($837,433)
Maximum Allowable Cost	$396,093,481
Growth in Service Units	20,367
Maximum Allowable Water Impact Fee	**$19,448**

Table 4-9 Maximum Wastewater Impact Fee Calculation

Wastewater Impact Fee	
Total Eligible Capital Improvement Costs	$85,710,012
Total Eligible Financing Costs	$37,415,837
Total Eligible Impact Fee Costs	$123,125,849
Total Impact Fee Credits	($2,813,220)
Maximum Allowable Cost	$120,312,629
Growth in Service Units	19,269
Maximum Allowable Wastewater Impact Fee	**$6,244**

Table 4-10 Maximum Allowable Impact Fee by Meter Size

Meter Size	Maximum Flow Rate for Continuous Duty (gallons per minute)	Service Unit Equivalent	Maximum Allowable Water	Maximum Allowable Wastewater	Maximum Allowable Total
5/8"	10	1.0	$19,448	$6,244	$25,692
1"	25	2.5	$48,620	$15,610	$64,230
1 1/2"	50	5.0	$97,240	$31,220	$128,460
2"	80	8.0	$155,584	$49,952	$205,536
3"	175	17.5	$340,340	$109,270	$449,610
4"	300	30.0	$583,440	$187,320	$770,760
6"	675	67.5	$1,312,740	$421,470	$1,734,210
8"	2,400	240.0	$4,667,520	$1,498,560	$6,166,080
10"	3,500	350.0	$6,806,800	$2,185,400	$8,992,200