

TOWN OF
Marana

**Water Infrastructure, Water Resources,
and Water Reclamation Impact Fee
Report**

Final Report / January 3, 2023



January 3, 2023

Ms. Jing Luo, PhD, PE
Director
Marana Water Department
Town of Marana
11555 W. Civic Center Dr.
Tucson, AZ 85653

Subject: Water Infrastructure, Water Resources, and Water Reclamation Impact Fee Report

Dear Ms. Luo,

Raftelis is pleased to provide this Water Infrastructure, Water Resources, and Water Reclamation Impact Fee Report (Report) for the Town of Marana (Town) to determine utility impact fees to recover the cost of serving new development within the Town. The Town's utility impact fees were last updated in 2017. The Town anticipates a rapid pace of growth over the next 10 years and needed to revise its impact fees to ensure that the costs of providing water infrastructure, water resources, and water reclamation service to these new customers are appropriately recovered from them.

We have carefully reviewed the Town's infrastructure improvements plans (IIP) and Land Use Assumptions (LUA) documents to understand the growth and capacity required to serve new development over the next 10 years. Based on these documents, discussions with Town staff and other Town consultants, we have applied industry standard methodologies to determine utility impact fees which comply with Arizona Revised Statutes (ARS) § 9-463.05.

This report summarizes the key findings and recommendations related to the development of the impact fees. It has been a pleasure working with you, and we thank you and Town staff for the support provided during the course of this study.

Sincerely,

A handwritten signature in black ink that reads 'Todd Cristiano'.

Todd Cristiano
Senior Manager

A handwritten signature in black ink that reads 'Collin Drat'.

Collin Drat
Manager

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1. Executive Summary

1.1. Introduction

The Town of Marana (Town) retained Raftelis to conduct a comprehensive update to its water infrastructure, water resources, and water reclamation impact fees pursuant to the requirements of Arizona Revised Statutes (ARS) § 9-463.05 (Statute). These fees were last updated in 2017. The requirements of the Statute include 3 major components to determine fees:

1. **Land Use Assumptions (LUA) Report**, which identifies the level of residential and non-residential growth anticipated in the Town's utility service area from January 1, 2023 to December 31, 2032 (the Study Period). This document was developed by the Town and Psomas.
2. **Infrastructure Improvements Plan (IIP) Reports**, which identifies the current and future facilities required to serve development identified in the LUA. The Town retained Westland Resources, Inc. to develop the water infrastructure and water resources IIP (Water IIP) and HDR to develop the water reclamation IIP (Sewer IIP).
3. **Impact Fee Report (Fee Report)**, the subject of this document, which outlines the calculation of impact fees, which will appropriately recover the costs of the identified infrastructure improvements to support growth throughout the Study Period.

This report includes updates to the following fees:

Water Infrastructure Impact Fees. These fees recover the cost of water system improvement to serve new development within the North Marana, Twin Peaks, and Saguaro Bloom benefit areas.

Water Resources Impact Fees. These system-wide fees recover the cost to secure water resources for new customers, which include 50% of the Town's water reclamation facility (WRF), whose effluent is used for groundwater recharge, and the cost of acquiring additional water resources. Currently, reclaimed water/effluent makes up 22% of Marana's designation of assured water supply authorized by Arizona Department of Water Resources (ADWR).

Water Reclamation Impact Fees. These system-wide fees recover the cost incurred to provide wastewater collection and treatment services to new customers within Marana's Water Reclamation Designated Management Area (DMA) and includes the cost wastewater collection system improvements, and 50% of the cost of the Town's WRF.

1.2. Findings and Conclusions

Arizona Revised Statutes §9-463.05 (Statute) identifies the specific requirements for municipalities to assess impact fees. Impact fees can only be calculated and assessed for expansion-related existing or proposed improvements included in an approved IIP. The IIP must be tied to the LUA or growth projections that are tied to the service area in which fees will be enacted. The Statute also provides for strict notification, public hearing, and implementation schedules, among other provisions.

This fee report describes the methodology used to determine impact fees which recover the cost of growth anticipated in the Town over the next ten years (2023 – 2032). The proposed fees are anticipated to be effective 75 days after they are formally adopted by the Town Council. **Table 1** compares the existing and calculated fees. The fees calculated in this report represent supportable fees under the Statute. The Town may choose to adopt fee levels up to these amounts and still be within the legal requirements of the Statute.

Table 1: Comparison of Existing and Calculated Fees

Description	Water Infrastructure			Water Resources [1]	Water Reclamation
	North Marana	Twin Peaks	Saguaro Bloom		
Existing					
5/8" [1]	\$ 2,331	\$ 2,740	\$ 838	\$ 3,050	\$ 3,930
3/4" [1]	3,497	4,110	1,257	4,575	5,895
1"	5,828	6,850	2,095	7,626	9,824
1 1/2"	11,656	13,700	4,189	15,251	19,648
2"	18,650	21,920	6,703	24,402	31,437
Calculated Fee					
5/8" [1]	\$ 3,356	\$ 2,967	\$ 838	\$ 5,358	\$ 4,995
3/4" [1]	5,033	4,450	1,257	8,036	7,493
1"	8,388	7,416	2,095	13,394	12,488
1 1/2"	16,776	14,832	4,189	26,787	24,975
2"	26,841	23,731	6,703	42,859	39,960
Change					
5/8"	\$ 1,025	\$ 227	\$ -	\$ 2,308	\$ 1,065
3/4"	1,536	340	-	3,461	1,598
1"	2,560	566	-	5,768	2,664
1 1/2"	5,120	1,132	-	11,536	5,327
2"	8,191	1,811	-	18,457	8,523

[1] Water meter sizes are determined by the total number of fixtures. In cases where the number of fixtures may be served by a 5/8" meter, but a 3/4" meter is required ONLY for the purpose of providing adequate flows for a residential sprinkler system, the Town will charge a Water Resources impact fee based on a 5/8" meter.

2. Introduction

2.1. Report Organization and Relationship to Other Reports

Our report to the Town includes the following sections:

1. Executive Summary
2. Introduction
3. Water Infrastructure Fees
4. Water Resources Fees
5. Water Reclamation Fees

The recommendations outlined in this report are based on information from the Town's Water and Sewer IIP reports. References to those reports are made throughout and this report is intended to be read alongside those reports.

2.2. Impact Fee Methodology

Impact fees are one-time fees assessed to new development in the Town to fund the additional capacity required to serve new development; the impact fee represents the unit cost of this capacity. The Statute states that a municipality may assess fees to offset the costs to provide necessary public services. This includes the cost of infrastructure, improvements, property, architectural services, financing and professional services to develop the fees. Under Arizona law the development of the fees must meet the following requirements:

- Provide a beneficial use to the development
- Fees must be calculated based on an IIP
- Fees must not exceed the proportionate share of capacity costs of public facilities, based on service units, needed to provide the necessary public services to the development
- Costs for necessary public service shall not exceed the current level of service (LOS)
- Fees may only be used to fund projects identified in the approved infrastructure improvements plan for expansion-related facilities. Fee cannot be used to correct existing deficiencies or to fund operating expenses.

An impact fee is designed to recover the capital cost of system capacity dedicated to or "used up" by new development. There are three generally accepted methodologies used to calculate impact fees. They are described below.

- **Recoupment (Buy-in).** New development pays its proportionate share of existing facilities that have available capacity to serve growth. Revenue from these fees is 'recouped' by existing rate payers thereby compensating them for their initial investment to serve existing and future growth.
- **Incremental Expansion.** This method develops the existing level of service for each of the facilities based on specific characteristics of the facility. It is assumed there are no existing deficiencies or future capacity in facility infrastructure. New development pays for its proportionate share of growth-related facilities that is sufficient to maintain current LOS standards. Revenue from fees under incremental expansion will be reserved for funding future development.

- **Hybrid.** This method considers the amount and cost of available capacity along with the cost and amount of future capacity. The available capacity costs and future capacity costs are divided by the sum of available and projected capacity to calculate the unit costs (per EDU) of the service.

For this study, Raftelis used the following approaches for each impact fee:

- Water Infrastructure – Incremental
- Water Resources – Hybrid
- Water Reclamation – Hybrid

2.3. Reliance on External Data

Throughout the project, the Town provided Raftelis with a variety of information including financial reports and projected capital expenditures for each fee area. Raftelis has reviewed the data for reasonableness and general representation of cost and related activities. Raftelis did not independently assess or verify the accuracy of such data – historic or projected. We have relied on this data in the formulation of our findings and recommendations, as well as in the preparation of this report. After the projects are completed, there will be differences between actual and projected data, and the differences will be reconciled in a future impact fee study. Raftelis takes no responsibility for the accuracy of the costs and/or projections provided by or prepared on behalf of the Town by others, nor does Raftelis have any responsibility for updating this report for events occurring after this report has been finalized. The primary sources of information relied upon for this report are the “Water Facilities Infrastructure Improvement Plan” (Water IIP) prepared by Westland Resources, Inc and the “Wastewater Facilities Infrastructure Improvement Plan (Sewer IIP)” prepared by HDR.

3. Water Infrastructure Fees

3.1. Benefit Areas

Currently, the Town’s water service area is comprised of seven (7) individual water systems:

1. North Marana
2. Tangerine Business Park
3. Hartman Vistas
4. Picture Rocks
5. Marana Airport
6. Saguaro Bloom
7. Palo Verde

In addition to these 7 water systems, the Town also wheels water to customers through the City of Tucson’s (City) water system, pursuant to an intergovernmental agreement (IGA) with the City. The Town’s water system will become increasingly interconnected as the improvements are completed. Accordingly, many of the identified projects will benefit more than one water system. To recognize these shared benefits, the Water IIP consolidates the 7 water systems to the 5 benefit areas identified in **Table 2** below. The Town’s Water IIP identifies infrastructure improvements in 5 water systems (North Marana, Tangerine Business Park, Hartman Vista, Picture Rocks, and Marana Airport) only. No infrastructure improvements have been identified for Palo Verde or the IGA area. The fee for the Saguaro Bloom benefit area recovers the cost of debt issued by the Town to fund growth related infrastructure improvements. The existing Saguaro Bloom fees will continue to be collected until the previous cost/debt is repaid.

Table 2: Water Infrastructure Benefit Areas

Water Systems	Benefit Areas
North Marana	North Marana
Tangerine Business Park	
Hartman Vistas	Twin Peaks
Picture Rocks	
Marana Airport	
Saguaro Bloom	Saguaro Bloom
Palo Verde	Palo Verde
IGA	IGA

Source(s): Water IIP p. 1-2

3.2. Water Infrastructure EDUs

The Town’s water system must deliver water to customers at appropriate pressures under average and peak conditions. The projects identified in the Water IIP are based on engineering design criteria which are: 1) the same for all benefit areas and 2) the same for new customers as for existing customers.¹ The level of service for the

¹ See Water IIP p. 2-4 for further detail on level of service for water customers.

Town’s water systems is expressed in terms of equivalent dwelling units (EDUs) with one EDU equal to the demand of one single family residence.

The Town’s LUA report projects the level and type of development which is anticipated to occur over the Study Period. Using these projections, the Water IIP then develops a projection of EDUs for the Study Period. **Table 3** identifies the projected number of EDUs by benefit area. The total number of EDUs included in the Water IIP is 12,205. While the Water IIP anticipates 850 additional EDUs in the Saguaro Bloom water system and 546 EDUs in the IGA area, there are no water infrastructure projects associated with these benefit areas. Accordingly, only 10,809 EDUs are included as the basis for the water infrastructure impact fee calculation.

Table 3: Water Infrastructure EDUs by Benefit Area

IIP Benefit Areas	Study Period Growth
North Marana	8,821
Twin Peaks	1,988
Saguaro Bloom	850
Palo Verde	-
IGA	546
Grand Total	12,205

Source(s): Water IIP Table 4

3.3. Water Infrastructure Impact Fee Costs

Expansion-related capital costs include the cost of infrastructure improvements required to support growth in the two benefit areas, as well as other costs which support the funding and delivery of these improvements. In both cases the costs represent the *incremental* costs to serve new development during the Study Period.

Table 4 lists the 15 expansion-related projects that are required to serve the EDUs added over the Study Period. Projects 1-6 will address development needs throughout both the North Marana and Twin Peaks benefit areas. The remaining projects are specific to supporting growth in either the North Marana benefit area or the Twin Peaks benefit area. The cost of projects 1 through 4 will be 50% funded through the water infrastructure impact fee with the remainder funded through water rates or other funding sources. The Marana Park Reservoir project, which partially addresses an existing deficiency, will be partially funded through impact fees and a partially forgivable WIFA loan, which will be repaid through water rates. This is in proportion to the storage deficiency in the North Marana benefit area. The Town has been approved for another WIFA loan for the Twin Peaks and Picture Rocks interconnect projects. This loan includes \$3,454,431 in principal forgiveness, with the balance (\$1,000,982) funded by the water infrastructure impact fee. All other projects will be 100% impact fee funded.

In addition to the infrastructure improvements identified above, there are three other costs which will be recovered via the water infrastructure impact fee. The Town issued bonds to construct improvements to support development in the Hartman Vistas water system (included in the consolidated Twin Peaks benefit area). The remaining payments for these bonds total \$1,573,010 and will be recovered via the Twin Peaks impact fee. Costs for a water system master plan (\$150,000²) and the next impact fee study (\$60,000), have also been included for both the North Marana and Twin Peaks benefit areas.

² Per Water IIP p. 22

Table 4: Water Infrastructure Impact Fee Costs

#	Description	Total Cost	% Fee Funded	\$ Included
Project Costs				
1	50% Airport Connection to NRWWS Pipeline	\$ 4,050,163	50%	\$ 2,025,081
2	50% Partnered NRWWS Project	7,471,788	50%	3,735,894
3	50% Marana Booster at NRWWS	4,215,549	50%	2,107,775
4	50% Blending Plan	120,000	50%	60,000
5	B-Zone Booster and Transmission Line	4,413,278	100%	4,413,278
6	B-Zone Reservoir	617,700	100%	617,700
7	C-Zone Booster	1,819,375	100%	1,819,375
8	Tangerine 16" with Break Tanks	5,307,960	100%	5,307,960
9	Tangerine 16" at I-10	2,634,128	100%	2,634,128
10	Marana Park Well	991,302	100%	991,302
11	Marana Park Reservoir	4,566,723	78%	3,566,723
12	Sanders Road 24" Pipeline	4,878,502	100%	4,878,502
13	Twin Peaks/Picture Rocks Interconnect	4,455,413	22%	1,000,982
14	Honea East Well	216,550	100%	216,550
15	Heritage Park Water Plant	<u>5,328,123</u>	100%	<u>5,328,123</u>
Subtotal: Project Costs		\$ 51,086,554	76%	\$ 38,703,373
Other Costs				
16	Master Plan	\$ 150,000	100%	\$ 150,000
17	Impact Fee Study	60,000	100%	60,000
18	Hartman Debt Service Reimbursements	<u>1,573,010</u>	100%	<u>1,573,010</u>
Subtotal: Other Costs		\$ <u>1,783,010</u>		\$ <u>1,783,010</u>
Total Water Impact Fee Costs		\$ 52,869,564		\$ 40,486,383

Source(s): Project Costs (Water IIP Table 18), Hartman Vistas Debt and Master Plan (Water IIP p. 22)

3.4. Water Infrastructure Fees and Projected Revenue

Table 5 shows the water infrastructure impact fee calculation per EDU. As noted above, the Water IIP has identified water infrastructure projects for the North Marana and Twin Peaks benefit areas only. Projects which support growth in both benefit areas have been allocated to each benefit area in proportion to the projected Study Period EDUs. North Marana represents 82% of the Study Period EDUs of the North Marana and Twin Peaks benefit areas combined. Accordingly, the North Marana fee has been allocated 82% of these costs, with the balance (18%) included in the Twin Peaks fee. The remaining projects have been allocated directly based on the benefit area they support. The master plan (\$150,000) and the impact fee study (\$60,000) will support both benefit areas and have been allocated in proportion to Study Period EDUs.

The calculation also includes a credit for the fund balance in the water infrastructure impact fee fund. This balance represents the difference between the fees which have been collected to date and the project costs which have been incurred and provides credit for funds collected in previous years in advance of the projects being constructed. As noted above, the project costs indicated below represent the incremental cost to serve the Study Period EDUs only. Accordingly, the fee per EDU is calculated by summing the costs, by benefit area, and dividing by the incremental Study Period EDUs.

Table 5: Water Infrastructure Impact Fee per EDU

Description	System-Wide	North Marana	Twin Peaks
Impact Fee Costs			
50% Airport Connection to NRWWDs Pipeline	\$ 2,025,081	\$ 1,652,627 [1]	\$ 372,455 [1]
50% Partnered NRWWDs Project	3,735,894	3,048,785 [1]	687,109 [1]
50% Marana Booster at NRWWDs	2,107,775	1,720,111 [1]	387,664 [1]
50% Blending Plan	60,000	48,965 [1]	11,035 [1]
B-Zone Booster and Transmission Line	4,413,278	3,601,584 [1]	811,694 [1]
B-Zone Reservoir	617,700	504,092 [1]	113,608 [1]
C-Zone Booster	1,819,375	-	1,819,375
Tangerine 16" with Break Tanks	5,307,960	5,307,960	-
Tangerine 16" at I-10	2,634,128	2,634,128	-
Marana Park Well	991,302	991,302	-
Marana Park Reservoir	3,566,723	3,566,723	-
Sanders Road 24" Pipeline	4,878,502	4,878,502	-
Twin Peaks/Picture Rocks Interconnect	1,000,982	-	1,000,982
Honea East Well	216,550	216,550	-
Heritage Park Water Plant	5,328,123	5,328,123	-
Master Plan	150,000	122,412 [1]	27,588 [1]
Impact Fee Study	60,000	48,965 [1]	11,035 [1]
Hartman Debt Service Reimbursements	<u>1,573,010</u>	<u>-</u>	<u>1,573,010</u>
Total Impact Fee Costs	\$ 40,486,383	\$ 33,670,829	\$ 6,815,554
Divided by: New EDUs	10,809	8,821	1,988
Equals: Infrastructure Cost per EDU		\$ 3,817	\$ 3,428
Less: Balance on 8/23/2022	\$ 4,993,825	\$ 4,075,357 [1]	\$ 918,468 [1]
Divided by: New EDUs	10,809	8,821	1,988
Equals: Credit for Balance per EDU		\$ 462	\$ 462
Water Infrastructure Fee per EDU (Infrastructure Cost - Balance)		\$ 3,355	\$ 2,967

Source(s): Impact Fee Costs (Table 4), Balance on 8/23/2022 (per Town), EDUs (Table 3)

[1] Split proportionate to EDUs

Table 6 indicates the calculated water infrastructure impact fees. The Town's fee structure is based on water meter size, with a 5/8" meter representing the size for a 1 EDU customer. The fee is scaled up based on the capacity of each larger size meter, relative to the 5/8" meter size based on meter flow equivalency ratios from the American Water Works Association (AWWA) and rounded to the nearest \$1. As noted above, the water infrastructure impact fees for Saguaro Bloom will remain at their current levels.

Table 6: Water Infrastructure Impact Fees by Meter Size

Size	Ratio [1]	North Marana	Twin Peaks	Saguaro Bloom
1 EDU	1	\$ 3,355	\$ 2,967	\$ 838

Calculated Fee by Size (Rounded)

5/8"	1	\$ 3,356	\$ 2,967	\$ 838
3/4"	1.5	5,033	4,450	1,257
1"	2.5	8,388	7,416	2,095
1 1/2"	5	16,776	14,832	4,189
2"	8	26,841	23,731	6,703
3"	15	50,327	44,496	13,408
4"	25	83,878	74,159	20,950
6"	50	167,756	148,318	41,900
8"	80	268,410	237,308	67,040

Source(s): Fee per EDU (Table 5)

[1] AWWA Manual M1, 7th Edition p. 386

Table 7 illustrates the impact fee revenue that will be realized over the Study Period if development occurs at the pace identified in the Town’s LUA report and Water IIP.

Table 7: Water Infrastructure Impact Fee Revenue Projection

Year	North Marana			Twin Peaks			Total Revenue
	EDUs	Fee	Revenue	EDUs	Fee	Revenue	
2023	837	\$ 3,356	\$ 2,808,972	228	\$ 2,967	\$ 676,476	\$ 3,485,448
2024	837	3,356	2,808,972	229	2,967	679,443	3,488,415
2025	837	3,356	2,808,972	229	2,967	679,443	3,488,415
2026	837	3,356	2,808,972	229	2,967	679,443	3,488,415
2027	837	3,356	2,808,972	229	2,967	679,443	3,488,415
2028	927	3,356	3,111,012	168	2,967	498,456	3,609,468
2029	927	3,356	3,111,012	169	2,967	501,423	3,612,435
2030	927	3,356	3,111,012	169	2,967	501,423	3,612,435
2031	927	3,356	3,111,012	169	2,967	501,423	3,612,435
2032	928	3,356	3,114,368	169	2,967	501,423	3,615,791
Total	8,821		\$ 29,603,276	1,988		\$ 5,898,396	\$ 35,501,672

Source(s): Fee per EDU (Table 6), EDUs (Water IIP Table 4)

4. Water Resources Fees

4.1. Benefit Areas

The water resources fee is a system-wide fee because the need for water resources is the same per EDU, regardless of where that EDU is located. Accordingly, the water resources fee recommended in this report (described in further detail below) is the same for all water systems including the IGA areas.

4.2. Water Resources EDUs

The Water IIP identifies an average day demand of 270 gallons per day (gpd) of renewable water resources for 1 EDU. The anticipated growth of 12,205 EDUs will increase the Town's water resource needs to 7,371 acre-feet per year (AFY). The Town will meet the needs of existing and new customers from three sources: recharge of the effluent from the Town's Water Reclamation Facility (WRF), the purchase of Non-Indian Agricultural Central Arizona Project water (NIA/CAP), and the purchase of renewable water supplies with a 100-year assurance. The projected EDUs which can be served from each source are indicated in **Table 8**. Note that the EDUs for the Marana WRF represent the full capacity of the plant (including a 1.5 mgd expansion), in recognition of all the customers (existing and future) who will benefit from the renewable water supply provided by the WRF.

Table 8: Water Resources EDUs

Description	Acre-Feet	GPD	GPD/EDU	EDUs
Marana WRF (Phase I&II)	3,360	3,000,000	270	11,111
NIA/CAP	242	216,044	270	800
Add'l Water Resources	773	690,090	270	2,556
Total	4,375	3,906,134		14,467

Source(s): Water IIP p. 24-26

4.3. Water Resources Impact Fee Costs

In order to calculate the per EDU (unit) cost of water resources, the cost of the water reclamation facility (WRF) acquisition and expansion, the cost of recharge basins, the cost of acquiring renewable water supply, and the costs supporting the funding and delivery of renewable resources are included to calculate the total costs. This *total* cost represents the *total* cost to serve all customers (existing and new). Then the unit cost is calculated by dividing the *total* cost by *total* customers benefiting from these projects.

4.3.1. WATER RECLAMATION FACILITY (WRF) COSTS

In addition to its water reclamation function, the Town's WRF also serves as a source of renewable water supply. As indicated above, the Town's WRF (Phase I & II) will meet 3,360 acre-feet of the projected water resources needs for Town customers. The treated effluent (reclaimed water) from the WRF will be recharged generating groundwater recharge credits, which are an important source of the Town's water supply. Currently, reclaimed water/treated effluent represents 22% of Marana's designation of assured water supply authorized by Arizona Department of Water Resources (ADWR).

The existing WRF has a capacity of 1.5 million gallons per day (mgd) and was acquired and expanded to its current capacity at a cost of \$50.5 million. The Town's General Fund contributed \$3.1 million, reducing the cost to

\$47.4 million. The remaining funding came from a combination of loans from the Town's Transportation, Water, and Wastewater Funds. The loans include the cost of the original acquisition (2013), the expansion to 1.5 mgd (2017A) and the recharge project (2017C). The total cost of the existing WRF and recharge basins, including the cost of financing the project, is \$80.4 million. The Town's \$3.1 million contribution reduces the cost to be recovered from impact fees to \$77.3 million.

As noted in the Water IIP (p. 25) and the Sewer IIP (p. 14), the WRF is projected to reach capacity by 2027. Accordingly, the Sewer IIP recommends a 1.5 mgd (Phase II) expansion to the WRF by 2027. The design and construction cost of the 1.5 mgd WRF and recharge basin expansion is \$43.2 million.³ The total cost, including the projected cost to finance the project is \$69.3 million.⁴

As noted above, the WRF serves a dual role for water reclamation and as a source of renewable water supply. Accordingly, 50% of the WRF costs have been included in the water resources fee and 50% have been included in the water reclamation fee described in **Section 5** of this report.

4.3.2. ADDITIONAL WATER RESOURCES COST

Over the Study Period the Town will acquire an additional 1,015 AFY of water supplies from NIA/CAP and the purchase of renewable water supplies with a 100-year assurance. The Water IIP includes the cost of 242 AFY⁵ of NIA/CAP water at a cost of \$1,072,743 over the Study Period. The remaining renewable resource acquisition included in the Water IIP is 773 AFY of market purchases which are available from a variety of potential water sources. The purchase will provide 773 AFY, for 100 years, at an estimated cost of \$11,500 per acre-foot.⁶ The cost under those terms would be \$8,889,500. Purchases will be made as supplies are available and contracts are negotiated. The costs of capital projects that are particularly designed and constructed to generate long-term water credits shall also be considered as eligible expenses for water resources acquisition. An alternative approach would be to purchase water annually from the Central Arizona Groundwater Replenishment District (CAGRDR). The cost for CAGRDR water is approximately \$800 per acre-foot per year, but the required 773 acre-feet would need to be purchased every year. The cost of the CAGRDR alternative would be \$61,840,000 over the same 100-year period.⁷

Costs for an integrated water resources plan (\$435,000⁸) and the next impact fee study (\$60,000), have also been included. **Table 9** indicates the water resources costs which are included in the water resources impact fee calculation.

³ See Water IIP p. 25

⁴ Based on a 20-year loan at 5% annual interest. See Appendix A for estimated principal and interest payments.

⁵ See Water IIP p. 26

⁶ This estimate is based upon known dollar amounts used in current negotiations between several Arizona municipalities and entities owning groundwater outside of an AMA that have the legal right to deliver groundwater into an AMA.

⁷ 773 acre-feet per year x \$800 per acre-foot x 100 years

⁸ Per Water IIP p. 23

Table 9: Water Resources Impact Fee Costs

Project Description	Total Cost	% Fee Funded	\$ Included
Water Reclamation Facility (WRF)			
WRF 2013 Principal and Interest	\$ 34,527,164	50%	\$ 17,263,582
WRF 2017A Principal and Interest	32,096,067	50%	16,048,033
WRF 2017C Principal and Interest	4,702,544	50%	2,351,272
WRF Loaned from Transportation Fund	2,400,000	50%	1,200,000
WRF Loaned from Water Fund	367,388	50%	183,694
WRF Loaned from Wastewater Fund	3,169,279	50%	1,584,640
WRF Expansion Principal and Interest	62,847,780	50%	31,423,890
Recharge Expansion Principal and Interest	<u>6,427,056</u>	50%	<u>3,213,528</u>
Subtotal: Water Reclamation Facility (WRF)	\$ 146,537,278		\$ 73,268,639
All Other Water Resources			
NIA/CAP	1,072,743	100%	1,072,743
Additional Water Resources	<u>8,889,500</u>	100%	<u>8,889,500</u>
Subtotal: All Other Water Resources	\$ 9,962,243		\$ 9,962,243
Other Costs			
Integrated Water Resources Plan	\$ 435,000	100%	\$ 435,000
Impact Fee Study	<u>60,000</u>	100%	<u>60,000</u>
Subtotal: Other Costs	<u>495,000</u>		<u>495,000</u>
Total Water Resources Impact Fee Cost	\$ 156,994,521		\$ 83,725,882

Source(s): WRF Costs (per Town), Expansion Costs (Water IIP p. 25 amortized 20 years @ 5%), NIA/CAP, Additional Water Resources (Water IIP p. 26), Integrated Water Resource Plan (Water IIP p. 23)

4.4. Water Resources Fees and Projected Revenue

Table 10 indicates the water resources impact fee calculation per EDU. The fee includes 50% of WRF costs in recognition of the fact that the facility serves as a source of renewable water supply in addition to its role in water reclamation. The remaining costs relate specifically to water resources. 100% of these costs have been included in the water resources impact fee calculation. The calculation also includes a credit for the impact fee fund balance in the water resources impact fee fund. This balance represents the difference between impact fees which have been collected to date and the costs which have been incurred and provides credit for funds collected in previous years in advance of the costs being incurred. The resources costs indicated below represent the total cost to serve all customers (existing and new). Accordingly, the resources cost per EDU is calculated by dividing the total cost by the EDUs supported by the three sources of renewable resources (WRF, NIA/CAP and Additional Water Resources). The credit for the beginning balance is divided by new EDUs.

Table 10: Water Resources Impact Fee per EDU

Description	System-Wide	Water Resources
Impact Fee Costs		
WRF 2013 Principal and Interest	\$ 34,527,164	\$ 17,263,582
WRF 2017A Principal and Interest	32,096,067	16,048,033
WRF 2017C Principal and Interest	4,702,544	2,351,272
WRF Loaned from Transportation Fund	2,400,000	1,200,000
WRF Loaned from Water Fund	367,388	183,694
WRF Loaned from Wastewater Fund	3,169,279	1,584,640
WRF Expansion Principal and Interest	62,847,780	31,423,890
Recharge Expansion Principal and Interest	6,427,056	3,213,528
NIA/CAP	1,072,743	1,072,743
Additional Water Resources	8,889,500	8,889,500
Integrated Water Resources Plan	435,000	435,000
Impact Fee Study Expenses	60,000	60,000
Total Impact Fee Costs	\$ 156,994,521	\$ 83,725,882
Divided by: Total EDUs		14,467
Equals: Resources Cost per EDU		\$ 5,787
Less: Balance on 8/23/2022	\$ 5,248,244	\$ 5,248,244
Divided by: New EDUs		12,205
Equals: Credit for Balance per EDU		\$ 430
Water Resources Fee per EDU (Resources Cost - Balance)		\$ 5,358
Source(s): Impact Fee Costs (Table 9), Balance on 8/23/2022 (per Town), EDUs (Table 8)		

Table 11 indicates the calculated water resources impact fees. The Town’s fee structure is based on water meter size, with a 5/8” meter representing the size for a 1 EDU customer. The fee is scaled up based on the capacity of each larger size meter, relative to the 5/8” meter size based on meter flow equivalency ratios from the American Water Works Association (AWWA) and rounded to the nearest \$1.

Table 11: Water Resources Impact Fees by Meter Size

Size	Ratio [1]	System-Wide [2]
1 EDU	1	\$ 5,358
Calculated Fee by Size (Rounded)		
5/8" [2]	1	\$ 5,358
3/4" [2]	1.5	8,036
1"	2.5	13,394
1 1/2"	5	26,787
2"	8	42,859
3"	15	80,360
4"	25	133,933
6"	50	267,865
8"	80	428,584

Source(s): Fee per EDU (Table 10)

[1] AWWA Manual M1, 7th Edition p. 386

[2] Water meter sizes are determined by the total number of fixtures. In cases where the number of fixtures may be served by a 5/8" meter, but a 3/4" meter is required ONLY for the purpose of providing adequate flows for a residential sprinkler system, the Town will charge a Water Resources impact fee based on a 5/8" meter.

Table 12 illustrates the impact fee revenue that will be realized over the Study Period if development occurs at the pace identified in the Town's LUA report and Water IIP.

Table 12: Water Resources Impact Fee Revenue Projection

Year	System-Wide		Total Revenue
	EDUs	Fee	
2023	1,334	\$ 5,358	\$ 7,147,572
2024	1,335	5,358	7,152,930
2025	1,336	5,358	7,158,288
2026	1,336	5,358	7,158,288
2027	1,336	5,358	7,158,288
2028	1,104	5,358	5,915,232
2029	1,105	5,358	5,920,590
2030	1,106	5,358	5,925,948
2031	1,106	5,358	5,925,948
2032	1,107	5,358	5,931,306
Total	12,205		\$ 65,394,390

Source(s): Fee per EDU (Table 11), EDUs (Water IIP Table 4)

5. Water Reclamation Fees

5.1. Benefit Areas

The Town provides sewer service within the Designated Management Area (DMA), which is generally the western portion of the Town and areas beyond the Town limits to the west and south. Generally this coincides with the North Marana and Saguaro Bloom water benefit areas. The Town also provides service to the Marana Regional Airport, though—as noted below—no sewer projects have been identified for the Marana airport system. The Town’s water reclamation fee is the same throughout the Town’s sewer service area because the nature of the service provided does not vary throughout the Town's sewer service area.

5.2. Water Reclamation EDUs

The projects identified in the Sewer IIP are based on engineering design criteria which are: 1) the same throughout the Town’s active sewer area and 2) the same for new customers as for existing customers.⁹ The level of service for the Town’s sewer system is expressed in terms of the number of equivalent dwelling units (EDUs) with one EDU equal to the demand of one single family household.

The Town’s LUA report projects the level and type of development which is anticipated to occur over the Study Period. Using these projections, the Sewer IIP then develops a projection of EDUs for the Study Period. The Sewer IIP projects that 9,267¹⁰ EDUs will be added over the Study Period. These incremental EDUs will be used to determine the cost per EDU for expansion related collection system projects. In addition to the collection system costs, the water reclamation fees will also recover the cost of the Town’s WRF, which serves existing and new customers. This component of the fee will be calculated using total EDUs which can be served by the WRF (including the 1.5 mgd expansion noted in Section 4). **Table 13** indicates the EDUs for the water reclamation fee calculation.

Table 13: Water Reclamation EDUs

Description	GPD	GPD/EDU	EDUs
Existing Flow	842,278	139.6	6,034
New EDUs [1]	1,293,673	139.6	9,267
Additional Capacity	864,049	139.6	6,189
Total	3,000,000		21,490

Source(s): Flow and GPD/EDU (Sewer IIP Table 7-2), New EDUs (Sewer IIP Table 7-1)

[1] Excludes Airport

5.3. Water Reclamation Impact Fee Costs

The costs which are eligible for inclusion in the water reclamation impact fee are a portion of the cost of the WRF, and the cost of constructing collection system improvements to support growth throughout the Town’s active sewer area. In order to calculate the per EDU (unit) cost of the WRF, the cost of the water reclamation facility (WRF)

⁹ See Sewer IIP p. 4-8 for further detail on level of service for sewer customers.

¹⁰ 9,267 excludes 40 EDUs anticipated to be added at the Marana Regional Airport, which is a separate, standalone sewer system, with no projects identified in the Sewer IIP.

acquisition and expansion, the cost of recharge basins, and the financing costs are included to calculate the total costs. This *total* cost represents the *total* cost to serve all benefiting customers (existing and new). Then the unit cost is calculated by dividing the *total* cost by *total* customers.

The remaining costs represent the *incremental* cost to serve new customers only.

5.3.1. WATER RECLAMATION FACILITY COSTS

As described in Section 4, the WRF is projected to reach its capacity by 2027. Accordingly, the Sewer IIP recommends a 1.5 mgd expansion to 3 mgd prior to 2027. The cost to construct the expansion to the WRF and recharge basins is \$39.2 million and \$4.0 million, respectively, for a total project cost of \$43.2 million. The total cost of the expansion, including the cost to finance the project, is \$69.3 million.¹¹ The cost for the Town's existing WRF was \$80.4 million (including the cost of financing), \$3.1 million of which was funded by the Town, reducing the cost to \$77.3 million. As noted in **Section 4**, given the dual role of the WRF 50% of WRF costs are allocated to the water resources fee and 50% of WRF costs are allocated to the water reclamation fee.

5.3.2. COLLECTION SYSTEM COSTS

The Sewer IIP has identified \$27.6 million in collection system improvements which are needed to support growth during the Study Period. Improvement 1 has been completed and was developer funded, therefore no costs were included. Improvements 3 through 7 will be funded 50% by impact fees and 50% by American Recovery Plan Act (ARPA) funds available to the Town. Improvements 2, 9, 10 and 11 will be funded 100% by impact fees. Improvement 8, as identified in Table 8-2 of the Sewer IIP, is the WRF expansion and is shown under the "Water Reclamation Facility (WRF)" heading.

Costs for a sewer master plan (\$180,000) and the next impact fee study (\$60,000), have also been included. **Table 14** indicates the water reclamation costs which are included in the water reclamation impact fee calculation.

¹¹ Based on a 20-year loan at 5% annual interest. See Appendix A for estimated principal and interest payments.

Table 14: Water Reclamation Impact Fee Costs

Project Description	Total Cost	% Fee Funded	\$ Included
Water Reclamation Facility (WRF)			
WRF 2013 Principal and Interest	\$ 34,527,164	50%	\$ 17,263,582
WRF 2017A Principal and Interest	32,096,067	50%	16,048,033
WRF 2017C Principal and Interest	4,702,544	50%	2,351,272
WRF Loaned from Transportation Fund	2,400,000	50%	1,200,000
WRF Loaned from Water Fund	367,388	50%	183,694
WRF Loaned from Wastewater Fund	3,169,279	50%	1,584,640
WRF Expansion Principal and Interest	62,847,780	50%	31,423,890
Recharge Expansion Principal and Interest	<u>6,427,056</u>	50%	<u>3,213,528</u>
Subtotal: Water Reclamation Facility (WRF)	\$ 146,537,278		\$ 73,268,639
Collection System			
Improvement 1	\$ -	100%	\$ -
Improvement 2	325,297	100%	325,297
Improvement 3 [1]	2,745,062	50%	1,372,531
Improvement 4 [1]	3,066,315	50%	1,533,158
Improvement 5 [1]	1,696,982	50%	848,491
Improvement 6 [1]	3,034,513	50%	1,517,257
Improvement 7 [1]	3,371,261	50%	1,685,631
Improvement 9	3,034,513	100%	3,034,513
Improvement 10	5,809,844	100%	5,809,844
Improvement 11	<u>4,500,690</u>	100%	<u>4,500,690</u>
Subtotal: Collection System	\$ 27,584,477		\$ 20,627,411
Sewer Master Plan	\$ 150,000	100%	\$ 150,000
Impact Fee Study	<u>60,000</u>	100%	<u>60,000</u>
Total Water Reclamation Impact Fee Cost	\$ 174,331,755		\$ 94,106,049

Source(s): WRF Costs (per Town), WRF Expansion Costs (Sewer IIP Table 8-2 amortized 20 years @ 5%), Recharge Expansion Costs (Water IIP p. 25 amortized 20 years @ 5%), Collection System Costs (Sewer IIP Tables 8-2 and 8-3)

[1] 50% funded by ARPA Grant

5.4. Water Reclamation Fees and Projected Revenue

Table 15 indicates the water reclamation impact fee calculation. The fee includes 50% of WRF costs in recognition of the fact that the facility serves as a source of renewable water supply in addition to its role in water reclamation. The remaining costs (Collection System and Other) relate specifically to water reclamation. The calculation also includes a credit for the impact fee fund balance in the water reclamation impact fee fund. This balance represents the difference between impact fees which have been collected to date and the costs which have been incurred and provides credit for funds collected in previous years in advance of the costs being incurred. To determine a cost per EDU, the calculation below segregates the costs which are incurred to serve existing and new customers (WRF) from those incurred to serve new development only (collection system, sewer master plan, new impact fee study). The costs incurred to serve all customers are divided by total EDUs. As described above total EDUs represent the

full capacity of the WRF (3 mgd), expressed on an EDU basis. The costs incurred to serve new customers only are divided by new EDUs only. The credit for the beginning balance is divided by new EDUs.

Table 15: Water Reclamation Fee per EDU

Description	System-Wide	Water Rec Share
WRF Costs		
WRF 2013 Principal and Interest	\$ 34,527,164	\$ 17,263,582
WRF 2017A Principal and Interest	32,096,067	16,048,033
WRF 2017C Principal and Interest	4,702,544	2,351,272
WRF Loaned from Transportation Fund	2,400,000	1,200,000
WRF Loaned from Water Fund	367,388	183,694
WRF Loaned from Wastewater Fund	3,169,279	1,584,640
WRF Expansion Principal and Interest	62,847,780	31,423,890
Recharge Expansion Principal and Interest	<u>6,427,056</u>	<u>3,213,528</u>
Subtotal: Water Reclamation Facility (WRF)	\$ 146,537,278	\$ 73,268,639
Divided by: Total EDUs		21,490
Equals: WRF Cost per EDU		\$ 3,409
Collection System Costs		
Improvement 1	\$ -	\$ -
Improvement 2	325,297	325,297
Improvement 3	2,745,062	1,372,531
Improvement 4	3,066,315	1,533,158
Improvement 5	1,696,982	848,491
Improvement 6	3,034,513	1,517,257
Improvement 7	3,371,261	1,685,631
Improvement 9	3,034,513	3,034,513
Improvement 10	5,809,844	5,809,844
Improvement 11	<u>4,500,690</u>	<u>4,500,690</u>
Subtotal: Collection System	\$ 27,584,477	\$ 20,627,411
Divided by: New EDUs		9,267
Equals: Collection System Cost per EDU		\$ 2,226
Sewer Master Plan	\$ 150,000	\$ 150,000
Impact Fee Study	\$ 60,000	\$ 60,000
Divided by: New EDUs		9,267
Equals: Impact Fee Study and Master Plan Cost per EDU		\$ 23
Less: Balance on 8/23/2022	\$ 6,144,392	\$ 6,144,392
Divided by: New EDUs		9,267
Equals: Credit for Balance per EDU		\$ 663
Water Reclamation Fee per EDU (WRF + Collection + IF Study - Balance)		\$ 4,995
Source(s): Impact Fee Costs (Table 14), Balance on 8/23/2022 (per Town), EDUs (Table 13)		

Table 16 indicates the maximum recommended water reclamation impact fees. The Town’s fee structure is based on water meter size, with a 5/8” meter representing the size for a 1 EDU customer. The fee is scaled up based on the capacity of each larger meter size, relative to the 5/8” meter size based on meter flow equivalency ratios from the American Water Works Association (AWWA) and rounded to the nearest \$1.

Table 16: Water Reclamation Impact Fees by Meter Size

Size	Ratio [1]	System-Wide
1 EDU	1	\$ 4,995
Calculated Fee by Size (Rounded)		
5/8"	1	\$ 4,995
3/4"	1.5	7,493
1"	2.5	12,488
1 1/2"	5	24,975
2"	8	39,960
3"	15	74,925
4"	25	124,874
6"	50	249,748
8"	80	399,597

Source(s): Fee per EDU (Table 15)

[1] AWWA Manual M1, 7th Edition p. 386

Table 17 illustrates the impact fee revenue that will be realized over the Study Period if development occurs at the pace identified in the Town’s LUA report and Sewer IIP.

Table 17: Water Reclamation Impact Fee Revenue Projection

Year	System-Wide		Total Revenue
	EDUs [1]	Fee	
2023	931	\$ 4,995	\$ 4,650,345
2024	931	4,995	4,650,345
2025	931	4,995	4,650,345
2026	931	4,995	4,650,345
2027	931	4,995	4,650,345
2028	923	4,995	4,610,385
2029	923	4,995	4,610,385
2030	922	4,995	4,605,390
2031	922	4,995	4,605,390
2032	922	4,995	4,605,390
Total	9,267		\$ 46,288,665

Source(s): Fee per EDU (Table 16), EDUs (Sewer IIP Table 7-1)

[1] EDUs spread equally from 2023-2027 and 2028-2032

APPENDIX A

Debt Service Schedules

Appendix A1 – WRF Expansion Debt Service Schedule

Year	Principal	Interest	Total	Water Resources (50%)	Water Reclamation (50%)
1	\$ 1,184,333	\$ 1,958,056	\$ 3,142,389	\$ 1,571,195	\$ 1,571,195
2	1,243,550	1,898,839	3,142,389	1,571,195	1,571,195
3	1,305,728	1,836,661	3,142,389	1,571,195	1,571,195
4	1,371,014	1,771,375	3,142,389	1,571,195	1,571,195
5	1,439,565	1,702,824	3,142,389	1,571,195	1,571,195
6	1,511,543	1,630,846	3,142,389	1,571,195	1,571,195
7	1,587,120	1,555,269	3,142,389	1,571,195	1,571,195
8	1,666,476	1,475,913	3,142,389	1,571,195	1,571,195
9	1,749,800	1,392,589	3,142,389	1,571,195	1,571,195
10	1,837,290	1,305,099	3,142,389	1,571,195	1,571,195
11	1,929,154	1,213,235	3,142,389	1,571,195	1,571,195
12	2,025,612	1,116,777	3,142,389	1,571,195	1,571,195
13	2,126,893	1,015,496	3,142,389	1,571,195	1,571,195
14	2,233,237	909,152	3,142,389	1,571,195	1,571,195
15	2,344,899	797,490	3,142,389	1,571,195	1,571,195
16	2,462,144	680,245	3,142,389	1,571,195	1,571,195
17	2,585,251	557,138	3,142,389	1,571,195	1,571,195
18	2,714,514	427,875	3,142,389	1,571,195	1,571,195
19	2,850,239	292,150	3,142,389	1,571,195	1,571,195
20	<u>2,992,751</u>	<u>149,638</u>	<u>3,142,389</u>	<u>1,571,195</u>	<u>1,571,195</u>
Total	\$ 39,161,113	\$ 23,686,667	\$ 62,847,780	\$ 31,423,890	\$ 31,423,890

Source: Project Cost - Sewer IIP Table 8-2

Appendix A2 – Recharge Basins Expansion Debt Service Schedule

Year	Principal	Interest	Total	Water Resources (50%)	Water Reclamation (50%)
1	\$ 121,114	\$ 200,238	\$ 321,353	\$ 160,676	\$ 160,676
2	127,170	194,183	321,353	160,676	160,676
3	133,529	187,824	321,353	160,676	160,676
4	140,205	181,148	321,353	160,676	160,676
5	147,215	174,137	321,353	160,676	160,676
6	154,576	166,777	321,353	160,676	160,676
7	162,305	159,048	321,353	160,676	160,676
8	170,420	150,933	321,353	160,676	160,676
9	178,941	142,412	321,353	160,676	160,676
10	187,888	133,464	321,353	160,676	160,676
11	197,283	124,070	321,353	160,676	160,676
12	207,147	114,206	321,353	160,676	160,676
13	217,504	103,849	321,353	160,676	160,676
14	228,379	92,973	321,353	160,676	160,676
15	239,798	81,554	321,353	160,676	160,676
16	251,788	69,564	321,353	160,676	160,676
17	264,378	56,975	321,353	160,676	160,676
18	277,597	43,756	321,353	160,676	160,676
19	291,476	29,876	321,353	160,676	160,676
20	<u>306,050</u>	<u>15,303</u>	<u>321,353</u>	<u>160,676</u>	<u>160,676</u>
Total	\$ 4,004,766	\$ 2,422,290	\$ 6,427,056	\$ 3,213,528	\$ 3,213,528

Source: Project Cost - Water IIP p. 25