

REVISED FINAL DRAFT

TOWN OF MARANA

**PIMA ASSOCIATION OF GOVERNMENTS
208 PLAN AMENDMENT**

Prepared for:

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LIST OF ACRONYMS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
af	acre feet
af/yr	acre-feet/year
AMA	Active Management Area
APP	Aquifer Protection Permit
AWS	Assured Water Supply
AZPDES	Arizona Pollutant Discharge Elimination System
BADCT	Best Available Demonstrated Control Technology
bls	below land surface
<u>BNROD</u>	<u>Biological Nutrient Removal Oxidation Ditch</u>
CAAG	Central Arizona Association of Governments
CAGR	Central Arizona Groundwater Replenishment District
CAP	Central Arizona Project
CAWCD	Central Arizona Water Conservation District
CCR	Consumer Confidence Report
CDO	Cañada del Oro
CFR	Code of Federal Regulations
CIP	Capital Improvement Plan
CMID	Cortaro-Marana Irrigation District
CRRWWPS	Continental Ranch Regional Wastewater Pumping System
CWA	Clean Water Act
DCR	Design Concept Report
DES	Department of Economic Security
DIP	Ductile iron pipe
DMA	Designated Management Agency
DWS	Drinking Water Standards
EDCs	Endocrine disrupting chemicals
EDUs	Equivalent dwelling units
EPA	Environmental Protection Agency
GIS	Geographic information systems
gpcd	gallon per capita per day
gpd	gallons per day
GSF	Groundwater Saving Facility
I-10	Interstate-10
IGA	Intergovernmental Agreement
lf	linear-feet
LSCR	Lower Santa Cruz Recharge Project
MBR	membrane bioreactor
mg/L	milligrams per liter

mgd	million gallons per day
MLSS	mixed liquor suspended solids
MTC	Management and Training Corporation
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
PAG	Pima Association of Governments
PCRWRD	Pima County Regional Wastewater Reclamation Department
POPTAC	Population Technical Advisory Committee
PPCPs	Pharmaceutical and personal care products
PVC	Polyvinyl chloride
ROMP	Regional Optimization Master Plan
RRU	Red Rock Utilities, L.L.C.
SBR	Sequencing batch reactor
SDWA	Safe Drinking Water Act
SROG	Sub-regional Operating Group
SRTs	Solids retention times
SWPPP	Stormwater Pollution Prevention Plan
TAZ	Transportation Analysis Zone
TDS	Total dissolved solids
TMUD	Town of Marana Utilities Department
<u>Town</u>	<u>Town of Marana</u>
USF	Underground Storage Facility
UV	Ultraviolet
VCP	Vitrified clay pipe
WRF	Water reclamation facility <u>Reclamation Facility</u> (acronym used for any type of wastewater treatment facility)
<u>WRFs</u>	<u>Water Reclamation Facilities</u>
WWPS	Wastewater pumping system(s)

EXECUTIVE SUMMARY

The purpose of the Pima Association of Governments (PAG) 208 Plan Amendment for the Town of Marana (Town) is to provide the necessary authority to obtain Designated Management Agency (DMA) status and to construct and operate new Water Reclamation Facilities (WRFs) within the Pima County portion of the Town's planning area.

The Town is committed to providing the necessary planning and management of its available water/wastewater resources to ensure that existing and future development within the Town's planning area meets local, state, and federal regulations. To meet this commitment, the Town intends to become the Designated Management Agency (DMA) for its planning area, located within Pima and Pinal Counties. As a DMA, the Town will put the its effluent from its the new Water Reclamation Facilities (WRFs) to its highest beneficial use as part of the Town's water resources portfolio. The Town will then be in a position to better manage and control water resources within its planning area.

The Town's decision to manage and control water resources is supported by a 1986 Marana water and wastewater service voter referendum, the 2007 Marana General Plan, and the 2009 Marana Strategic Plan. Becoming the DMA for the Town's planning area will allow the Town to implement this decision its planning objectives.

The Town is establishing a wastewater utility to provide sanitary sewage collection and treatment services, and effluent reuse within its planning area. A detailed sewer basin study The Town intends to provide wastewater collection and rate analysis performed treatment services to users served by the Town demonstrated the technical of Marana Utility Department (TMUD) within its planning area. Areas outside of the Town's planning area and financial feasibility needed to support areas served by other water providers within the Town's creation planning area requesting wastewater collection and operation of a wastewater utility. As a result, treatment services may be served based on appropriate agreements developed between the Town initiated this 208 Plan Amendment process to obtain DMA status.

and the water provider. The Town has prepared two 208 Plan Amendments to be processed separately by the Pima Association of Governments (PAG) and the Central Arizona Association of Governments (CAAG) for the Pima County and Pinal County portions of its planning area, respectively. The Town intends to coordinate these planning efforts on parallel tracks with PAG and CAAG.

The purpose of this 208 Plan Amendment is to conform to the PAG Areawide Water Quality Management Plan, to become the DMA, and to provide sanitary sewage collection and wastewater treatment and effluent reuse services for residential and commercial uses within the Town's planning area. This 208 Plan Amendment describes the sanitary sewage collection system, proposed WRFs, treatment alternatives, reclaimed water use, and acquisition and transition planning for the Town's planning area within Pima County. As necessary, the Town will submit 208 Plan consistency reports for

specific WRFs described in this amendment.

The Town's planning area is located in eastern Pima County and southern Pinal County. The Pima County portion of the Town's planning area encompasses approximately 178 square miles within the Upper Santa Cruz Valley and Avra Valley Sub-basins of the Tucson Active Management Area (AMA). The Pinal County portion of the Town's planning area includes an additional 39 square miles that extends to the Eloy Sub-basin of the Pinal AMA. Elevation in the planning area ranges from 3,300 feet (in the Tortolita Mountains) to 1,730 feet (near the northwest corner of the Town planning area). A significant portion of the planning area has minimal slope conditions. The Santa Cruz River flows in a north-northwesterly direction and is the major waterway in the planning area. The Santa Cruz River is effluent-dominated throughout the planning area and flows year round due to upstream discharges from the Roger Road and Ina Road ~~wastewater facilities~~ WRFs.

The Town projected population and wastewater flow is based on a Geographic Information System (GIS) database developed for the supporting Sewer Basin Study. Wastewater flows were based on planned land uses ~~(the 2007 Marana General Plan was used unless specific plans for developments were available)~~ and corresponding unit flows per land use category. The estimated 20-year and buildout population ~~projection~~ projections for the Town's planning area for PAG are 106,700 650 and ~~187,500~~ 196,900, respectively. Land use-based population projections developed by the Town were used in lieu of the PAG-generated estimates. After a formal review process, the PAG Population Technical Advisory Committee (POPTAC) accepted the Town's methodology and resulting population estimates.

Based on the 2008 Town of Marana Sewer Basin Study, the planning area has been separated into 24 sewer basins. The majority of the basins are located within Pima County, except for Basins 1 and 2 and a small ~~portion~~ portions of Basins 3 and 6, which are located in Pinal County.

Flow projections for the planning area are provided for infrastructure planning purposes. Sewer flows are projected within each basin for current, 5-year (~~2013~~ 2015), 10-year (~~2018~~ 2020), 20-year (~~2028~~ 2030), and buildout conditions. Phasing for the 5-, 10-, and 20-year projections are provided in this 208 Plan Amendment for comparison, in addition to the estimated buildout projections.

There are six existing wastewater treatment facilities within the Town's planning area. These include the Ina Road, Rillito Vista and Marana WRFs that are currently owned and operated by Pima County. Three small private WRFs include the Adonis Sanitary Sewerage Facility, Marana High School, and the Management and Training Corporation (MTC) facilities. As new public WRFs are constructed, the Town will coordinate with the owners and operators of these other smaller public and private systems to evaluate treatment alternatives for connection to the public system.

Six proposed WRF alternative sites were identified and evaluated during the planning process. Four sites were selected—two within PAG's jurisdiction and two within CAAG's jurisdiction. The WRF site locations were determined based on projected wastewater flows, existing and likely future collection

system alignments, land ownership and acquisition, site and environmental constraints, and reclaimed water use opportunities. Specific site locations will be finalized in future phases as Town-wide development occurs. The final locations will be presented in the 208 Plan Consistency Report for individual facilities.

The 2008 Town of Marana Sewer Basin Study developed three alternative configurations for the WRFs and described the advantages and disadvantages of each alternative. The three alternatives were evaluated in detail to select a preferred alternative for the planning area located in Pima County. While all three alternatives are presented in this 208 Plan Amendment, the Town chose Alternative 3 as its preferred alternative. Alternative 3 includes the Sandario and Cottonwood WRFs ~~in~~within the PAG planning area.

The Town ~~recognizes that special consideration must be given~~will provide the opportunity to boundary areas where provide wastewater collection and treatment services for water service providers outside of the Town's water service areas. In addition, existing private wastewater treatment facilities located within the Town's planning area will have the option to close by either diverting flows to the Town's wastewater collection and treatment system.

Litigation between Marana and Pima County ~~or Marana facilities would be feasible. When new~~has resolved certain critical issues that do not appear to be the subject of further disagreement between the parties. One is that Marana has legal authority under Arizona law to operate a wastewater utility. Another is that Marana is entitled to ownership of all wastewater collection system infrastructure in north Marana, and all wastewater collection system infrastructure in south Marana except 19 specific flow-through sewer service is requested in these boundary areas, the project should be jointly evaluated mains in south Marana, which continue to be owned by Pima County ~~and the Town to determine which entity will serve the area. [Outcome of-~~. The resolution of these critical issues eliminates any legal hurdle to Marana's operation of its own wastewater utility.

Certain issues in the litigation ~~will be inserted here.~~are still pending final resolution, including Pima County's right to operate a wastewater utility in Marana town limits without Marana's consent and the cost and other terms for Pima County's treatment of sewage from Marana customers. Although these issues will affect the cost and number of existing customers billed by Marana's wastewater utility, they will not interfere with Marana's ability to operate its own wastewater utility and need not be resolved before Marana's proposed 208 Plan Amendment is adopted.

Alternative wastewater treatment technologies will continue to be evaluated by the Town. Each new WRF will be designed to meet Arizona Department of Environmental Quality (ADEQ) A+ Reclaimed Water Quality standards. A detailed Design Concept Report (DCR) for the new WRFs that meet ADEQ Best Available Demonstrated Control Technology (BADCT) under an Individual Aquifer Protection Permit (APP) will be prepared by the Town following obtaining DMA status through the approval of this 208 Plan Amendment ~~or obtaining DMA status.~~

Reclaimed water generated by the new WRFs within the Town’s planning area will be put to its highest beneficial use to offset groundwater pumping. The proposed locations of the WRFs provide opportunities to distribute reclaimed water effectively and efficiently to end users while minimizing delivery infrastructure requirements. Reclaimed water will be used to irrigate parks, residential non-potable systems, school yards, ~~road~~roadway medians, and golf courses; for environmental, agricultural, construction and industrial purposes; and for underground storage at recharge facilities. The direct use of reclaimed water will be maximized based on area demand and will be further evaluated during the APP application process. To accommodate excess reclaimed water due to seasonal demand, each WRF will be designed to convey its entire volume of reclaimed water to constructed recharge basins for storage and recovery.

The Town has adequate financial capability to meet the responsibilities of a wastewater utility and, at this time, no financial constraints have been identified. The Town meets the financial requirements of Arizona Administrative Code (A.A.C.) R18-9-A203(B)(2). The Town has the financial capability to administer, design, permit, construct, operate, close, and ensure proper post-closure activities of the utility. ~~Methods of financing and financial resources available to the Town are provided in this 208 Plan Amendment. The Town developed an economic model to evaluate the potential costs and wastewater fees, including impact fees, required to support the Town’s planned comprehensive wastewater services.~~

The Town will construct WRFs according to specified engineering plans and permitting requirements for the facility. The WRF design report and construction drawings will be submitted to ADEQ as part of the APP application review and approval process. Each WRF will be constructed in phases to meet the wastewater treatment needs as areas develop. Consistency of each new WRF with the PAG Areawide Water Quality Management Plan will be ~~determined either~~established through a 208 Plan Consistency Report ~~or 208 Plan Amendment. The two facilities that will be constructed are based on the Town’s preferred alternative and include the Cottonwood and Sandario WRFs.~~ Upon completion of this 208 Plan Amendment process ~~or~~and the establishment of the Town as a DMA, the design, permitting, and construction of the WRFs first phase treatment volume will be initiated. With ~~the authorities of a DMA authority~~, the Town will provide the operations and maintenance required for sewer collection and wastewater treatment services for customers within its planning area.

BACKGROUND

MARANA UTILITIES DEPARTMENT—WATER/WASTEWATER

The Town of Marana Utilities Department (TMUD) provides potable and non-potable water service to its customers. Arizona Department of Water Resources (ADWR) requires water providers to develop long-term plans to mitigate groundwater mining. To that end, the Town has evaluated water portfolio options that meet the legal requirements and to provide long-term water resources for potable and non-potable uses. Most Arizona water service providers have three water sources in their portfolio—groundwater, surface water, and reclaimed water. Reclaimed water is the only resource that increases with population growth.

For over a decade, the Town has been expanding its water utility service and planning for and developing a non-potable water delivery system. Previous negotiations to obtain reclaimed water were limited by high costs and the inability to acquire long-term supplies. Control and ownership of effluent as a renewable water resource helps the Town meet its 100-year Assured Water Supply (AWS) obligation. ~~Designating Pima County as the~~ By obtaining Designated Management Agency (DMA for the Town's planning area prevents) status, the Town ~~from controlling~~ can provide consolidated services to its residential and commercial development community and control its own destiny ~~and~~ by owning and ~~controlling this valuable resource~~ managing effluent resources.

The Town's decision to provide all water services has been publicly supported by the 1986 voter referendum to provide water and wastewater service, the 2007 Town General Plan, and the 2009 Town of Marana Strategic Plan. Designating the Town as the DMA for its own planning area will allow the Town to implement this policy.

~~{AFTER THE SEWER LITIGATION ENDS, A DESCRIPTION OF THE LITIGATION'S OUTCOME WILL BE INSERTED HERE.}~~

Litigation between Marana and Pima County has resolved certain critical issues that do not appear to be the subject of further disagreement between the parties. One is that Marana has legal authority under Arizona law to operate a wastewater utility. Another is that Marana is entitled to ownership of all wastewater collection system infrastructure in north Marana, and all wastewater collection system infrastructure in south Marana except 19 specific flow-through sewer mains in South Marana, which continue to be owned by Pima County. The resolution of these critical issues eliminates any legal hurdle to Marana's operation of its own wastewater utility.

Certain issues in the litigation are still pending final resolution, including Pima County's right to operate a wastewater utility in Marana town limits without Marana's consent and the cost and other terms for Pima

County's treatment of sewage from Marana customers. Although these issues will affect the cost and number of existing customers billed by Marana's wastewater utility, they will not interfere with Marana's ability to operate its own wastewater utility and need not be resolved before Marana's proposed 208 Plan Amendment is adopted.

The Town is establishing a wastewater utility to provide collection ~~and~~, treatment, and effluent reuse services. To this end, the Town developed a sewer basin study and rate analysis, and began this 208 Plan Amendment process to obtain DMA status. Upon approval of this 208 Plan Amendment ~~or~~and establishment as the DMA, the Town will design, permit, and construct WRFs.~~Town ownership of~~ As necessary, the Town will submit 208 Plan Consistency Reports for the specific WRFs described in this amendment.

Owning the WRFs will give the Town control and legal ownership of ~~the~~its effluent ~~from the Town's WRFs, which~~and will allow the Town to assure that this valuable renewable water resource is put to its highest beneficial use, consistent with Town-adopted policies. The Council has indicated its support of a proposed policy to assure that water providers who serve Town wastewater utility customers will be offered the same opportunity to own the effluent generated from those customers ~~as they currently enjoy under the~~which is comparable to standard City of Tucson intergovernmental ~~agreement~~agreements relating to effluent.

TOWN OF MARANA ~~WATER UTILITY~~UTILITIES DEPARTMENT (TMUD)

The Town operates a municipal water utility that serves approximately ~~4,900~~5,020 residential and commercial connections (TMUD ~~2008~~2009). ADWR has issued the Town a designation of AWS in the amount of 7,580-~~acre~~-feet per year (af/yr) (ADWR 2007). The Town is able to meet the water demands for current and anticipated population growth for the next ten years within the service area based upon its existing Central Arizona Groundwater Replenishment District (CAGR¹) Member Service Agreement with the Central Arizona Water Conservation District (CAWCD) (CAWCD 1995). The Town will modify its AWS designation, as required, in response to population or service area growth. The Town will rely on stored recharge credits, effluent utilization, CAGR membership, and Central Arizona Project (CAP) water ~~direct~~-delivery to meet the future groundwater replenishment obligations of the AWS program.

The Town's water utility was established in ~~1997~~1991 with the acquisition of the Honea Water Company; in 1997, the Cortaro-Marana Irrigation District (CMID)/Cortaro Water Users Association potable system, portions of the I.M. Water Company, and portions of the potable system owned by Marana-Picture Rocks Water Service. were acquired. The Town later purchased other privately owned water companies and

¹ Membership in CAGR does not waive the requirement under AWS Rules to demonstrate the physical and legal availability of groundwater.

consolidated them into the Town's water utility. The Town currently serves residential single-family homes and mixed commercial/government office uses.

The Town relies primarily on groundwater for its potable water source. The existing well fields lie mainly within the Upper Santa Cruz Valley sub-basin of the Tucson AMA. The TMUD service area is made up of ten separate public water systems: Airline/Lambert, Airport, Amole, Continental Reserve, Cortaro Ranch, Falstaff Flats, Hartman Vistas, North Marana, Palo Verde, and Pioneer.

In ~~2008~~2009, TMUD delivered approximately 2,000031 acre feet (af) of water to its customers. ~~The Town, primarily from its well system. Of this amount, the Town purchased wholesale water from CMID for a portion of these deliveries. CMID supplied approximately 197 af of surface water and 757.95 af of groundwater to the Town in 2008. The Town supplemented this with approximately 856 af of groundwater pumped from its well system, and from CMID. The Town reported 11.30 af of groundwater delivered to Tucson Water (ADWR 2009), 2010).~~ In 2008, Tucson Water ~~delivered~~reported the delivery of 2,897 af of potable water (groundwater and CAP), and 2,875 af of reclaimed water within the Town limits (Tucson Water, 2009).

ADWR's May 14, 2007 Decision and Order recognizes that 7,580 af/yr are physically, legally, and continuously available to the Town to support its AWS designation. ADWR Rules require the Town to meet depth to groundwater criteria and to have the legal right to withdraw groundwater from the identified points of withdrawal.

In accordance with the Town's CAGRD Member Service Agreement, 1011/30th (~529672 af) of the groundwater delivered by the Town within the service area was considered excess groundwater use in ~~2008~~2009² (CAWCD 1995). This excess groundwater use was offset by accumulated recharge credits and the recharge of excess CAP water in the Lower Santa Cruz Recharge Project (LSCR).³

AREA DESIGNATED WATER PROVIDERS

Other ADWR-designated water providers located within or near the Town include the City of Tucson, Town of Oro Valley, Metropolitan Domestic Water Improvement District, Metropolitan Domestic Water Improvement District—West, and the Flowing Wells Irrigation District.

² The percentage of pumped groundwater that is considered excess groundwater is calculated on a sliding scale, beginning as 1/30th of the groundwater pumped in 1999 to 16/30th of the groundwater pumped in 2014.

³ As a member of CAGRD, TMUD could have purchased replenishment credits directly from CAGRD to satisfy its AWS requirements.

INTRODUCTION

This 208 Plan Amendment describes the wastewater collection system, WRF alternatives, the proposed WRFs, treatment alternatives, reclaimed water use, and acquisition and transition planning within the Town's planning area. Appendix A contains the checklist for the 208 Plan Amendment.

PURPOSE

The purpose of this 208 Plan Amendment is to amend the PAG Areawide Water Quality Management Plan to designate the Town as the DMA authorized to provide sewage collection and wastewater treatment services for residences and commercial uses served by the Town's water utility within the Town's projected planning area ~~as depicted~~. The first phase of plan implementation will include the purchase of the Marana WRF from Pima County or the construction of a new WRF in the north Marana area to serve the Town's projected planning area (Figure 1). The Town has submitted an offer to Pima County for the purchase of the Marana WRF (Appendix B); however, Pima County has reiterated its position that it will not sell the Marana WRF. The Town is reviewing the best value options for its customers. Concurrently, the Sandario WRF location will be evaluated for construction start up to serve projected development in south Marana. DMA status will provide the Town with the ownership and control of its available effluent ~~supplies produced from Town WRFs. This will allow the Town to assure that effluent is put to its highest beneficial use, consistent with Town adopted policies, including a proposed policy to assure that water providers who serve Town wastewater utility customers will be offered the same opportunity to own effluent generated from those customers as they currently enjoy under the standard City of Tucson intergovernmental agreement relating to effluent.~~

Figure 1. Location Map

supplies produced from the Town’s water service areas. This will allow the Town to assure that its effluent is put to its highest beneficial use. Upon request, water service providers within the Town’s DMA may be provided wastewater utility services.

These water providers will be offered the same opportunity to enter into an intergovernmental agreement (IGA) with the Town to own the effluent generated from their customers. These IGAs are proposed to be comparable to existing City of Tucson agreements with other area water service providers.

The Town plans to conserve groundwater resources by directly utilizing or recharging reclaimed water. The Town expects to use reclaimed water to irrigate parks, school yards, road medians, and golf courses, and for environmental, agricultural, construction and industrial purposes. ~~Seasonally available excess reclaimed~~ Reclaimed water that is not used directly will be recharged and incorporated into a recovery plan for direct beneficial use.

This PAG 208 Plan Amendment has been developed specifically for the Town’s planning ~~areas~~area located within Pima County. Another 208 Plan Amendment, developed for the Pinal County portion of the Marana planning area, is being processed through CAAG. The concurrent CAAG 208 Plan Amendment will establish the Town as a DMA in the Pinal County portion of its planning area. As part of this effort, the Town coordinated with the City of Eloy and Red Rock Utilities, LLC (RRU) to refine the Town’s planning area and define the boundaries of the future DMA authorities for the City of Eloy and RRU service area expansion.

STUDY AREA

The Town is located approximately 15 miles northwest of Tucson in the northeastern part of Pima County and the southern portion of Pinal County. The Marana planning area encompasses approximately 217 square miles, of which 178 square miles are in Pima County and are addressed directly by this 208 Plan Amendment. ~~The Town is generally bounded by Pinal County to the north, Trico Road to the west, Ina Road and Twin Peaks Road to the south, and Camino de Oeste and Thornydale Road to the east. The study area is essentially the Pima County portion of the 2007 Town of Marana General Plan.~~

~~A vicinity map for the Town, the 208~~Town’s PAG planning area, ~~and surrounding existing wastewater facilities are shown on Figures 1 and 2.~~

Figure 1. Location Map

Figure 2. Existing Area Water Reclamation Facilities

~~The Town is surrounded by~~ boarders Pinal County to the north, State Land and agricultural property to the west, Oro Valley to the east, and the City of Tucson to the south. Dominant features include the Tortolita Mountains, the Tucson Mountains, the Santa Cruz River, Interstate-10 (I-10), the Union Pacific Railroad, the proposed Bartlett Channel, and the CAP aqueduct. Elevations range from 3,300 feet (in the Tortolita Mountains) to 1,730 feet (near the northwest corner of the town boundary), but the topography in certain areas has a shallow surface gradient. The planning area for the PAG 208 Plan Amendment is within the Tucson AMA.

A location map for the Town, the 208 planning area is shown on Figure 1. The existing wastewater facilities surrounding the Town's planning area are shown on Figure 2.

Figure 2. Existing Area Water Reclamation Facilities

RATIONALE FOR AMENDING PLAN

The Town's Mayor and Council authorized Town staff to pursue the right, ownership, administration and operation of the sanitary sewerage facilities serving Marana's current and future customers. The Town must develop and control all available ~~water~~wastewater resources to more fully control and determine its growth and development. In furtherance of ~~those~~these goals, this 208 Plan Amendment is submitted to designate the Town as the DMA for the Town's planning area and to identify proposed locations for future WRFs to ~~serve the drainage basins in~~ the planning area. The Town acknowledges, recognizes, and accepts responsibility for ~~having to follow through diligently with the bureau~~eraticthe administrative, fiscal, and regulatory steps ~~needed for~~required to construct and operate the Town's wastewater utility ~~to develop and prosper~~.

NATURAL SETTING

The Town's PAG 208 Plan Amendment Area is located within portions of the Upper Santa Cruz and Avra Valley sub-basins, in northern area of the Tucson AMA. The area is surrounded by the Silver Bell, Tucson, Tortolita, and Santa Catalina mountain ranges. The main water drainage within the Tucson AMA is the Santa Cruz River, which runs from south to north in the Upper Santa Cruz sub-basin and then northwest into the Avra Valley sub-basin. The Brawley Wash is also a large drainage that flows north from the south (Altar Valley) along the western part of the Town's planning area. Major upstream Santa Cruz River tributaries ~~upstream of the Town~~ include the Cañada del Oro Wash, Rillito Creek, and ~~their~~its tributaries, the Pantano Wash and ~~the~~ Tanque Verde Wash. These drainages are ephemeral and flow only in response to ~~rainfall events~~precipitation. However, ~~an~~ approximately a nine-mile reach of the Santa Cruz River is perennial as a result of treated effluent discharged into the channel at the Roger Road and Ina Road WRFs (ADWR 1999). Stormwater runoff from the Tucson and Tortolita Mountains, coupled with stormwater infiltration along the Lower Santa Cruz River and its tributaries, contribute to the aquifer which supplies the Town.

Historical records indicate that impacts from agricultural irrigation, municipal use, and industrial water supplies have considerably altered groundwater levels in the Tucson AMA since the 1940s. Fissuring and land subsidence have been attributed to aquifer dewatering in northern Avra Valley. Field data demonstrates a change in surface elevation from 0.02-foot to 0.18-foot at seven locations in the Upper Santa Cruz sub-basin and from 0.01-foot to 0.11-foot at seven locations in Avra Valley (ADWR 1999). There has been some recovery of groundwater levels along the Santa Cruz River and in northern Avra Valley due to decreased agricultural and mine pumping and increased flood flows (ADWR 1999). The use of CAP water for agriculture in lieu of groundwater has also contributed to rising groundwater levels. The stability of the water supply relies on the management of renewable water supplies as demand continues to increase.

GEOLOGY

The Tucson AMA lies within the Basin and Range physiographic province. The geologic framework of the alluvial basins in the study area is similar to most of the other basins in the southwestern Arizona Basin and Range physiographic province. The basins are filled with alluvium sediments that accumulated in structural basins formed in response to regional movements during the Basin and Range structural disturbance 15 to 10 million years ago (Eberley and Stanley, 1978).

The mountains that border the basins were uplifted in relation to the intervening structural troughs during the Basin and Range disturbance. These mountains are composed of sedimentary, volcanic, and granitic rocks. The rocks exposed in the mountains and underlying the basin fills are considered to be the boundaries of the groundwater aquifers. These older sedimentary rocks and the volcanic and granitic rocks are considered bedrock and the surface extent of this “hard rock” is considered to be the boundary of the alluvial basin.

GROUNDWATER HYDROLOGY

The main water-bearing units in the Tucson AMA are the alluvial deposits of the basin-fill sediments. These sediments are composed of consolidated and unconsolidated materials of Tertiary to Quaternary age. The basin fill has been divided into upper and lower units based on regional hydrogeologic characteristics (Mason and Bota, 2006). The upper basin fill is the main water-bearing unit and consists of clayey silt, sand, and gravel. The upper basin-fill ranges from a few hundred feet to as much as 1,000 feet thick in both sub-basins. The lower basin fill consists of mudstones, clayey silt, sand, and gravel and conglomerates. The lower basin-fill is as much as several thousand feet thick (Mason and Bota, 2006).

Groundwater in the sub-basins generally flows from southeast to northwest, except in the northeastern portion of the Upper Santa Cruz sub-basin. The southwestward-trending groundwater flow in that area shows the effect of recharge in the Cañada del Oro drainage.

Inflow to the regional aquifers occurs from groundwater underflow from adjacent basins and recharge within the basin, including mountain-front recharge, natural recharge from stream flow, incidental recharge from water use (irrigation), direct CAP water recharge, and effluent recharge ~~of effluent~~. Groundwater discharge from the regional aquifer occurs as pumpage for municipal, industrial, and agricultural uses, evapotranspiration from limited areas adjacent to stream channels, and groundwater underflow from the Avra Valley sub-basin to the Pinal AMA Eloy sub-basin.

~~Depths~~Depth to groundwater ~~range in the planning area ranges~~ from over 500 feet below land surface (bls) to less than 100 feet bls. Depths to groundwater reflect both the slope of the groundwater surface and the land surface and tend to be deeper near the mountain fronts and shallower along the stream channels.

Groundwater has been the most extensively developed water resource in the Tucson AMA. Groundwater pumpage in the Tucson AMA has been in excess of natural recharge since the mid-1940s and widespread water level declines have occurred in the Tucson AMA as a result of this overdraft. ~~Water~~Groundwater

level declines have decreased in recent years in the Tucson AMA and particularly in the Town's planning area as a result of the ~~agricultural use of~~ in-lieu use of CAP water for agricultural, reduced agricultural acreage, stormwater events, and ~~activities related to~~ the recharge of CAP water and effluent. Most of the Town's planning area has had a rebound in groundwater levels since the 1990s as indicated by measured increases in aquifer water levels.

Although historic declines in groundwater levels have occurred within the Pima County portion of the Town's planning area, recent trends have indicated groundwater level increases in the Avra Valley Sub-basin. Based on information contained in ADWR's Arizona Water Atlas (Volume 8, July 2008), the water level has increased up to 60 feet along I-10 and Santa Cruz River corridor between 1995 and 2005. ~~Groundwater level rise is primarily due to a combination of CAP water use for agriculture, effluent discharges to the Santa Cruz River, and constructed recharge facilities.~~

GROUNDWATER QUALITY

Groundwater quality in the Tucson AMA is generally acceptable for most uses, as evidenced by the extensive use of the resource. However, in some areas of the Tucson AMA, natural and anthropogenic causes have impacted groundwater quality. The ADWR discusses these impacts on a regional basis in more detail in the Third Management Plan for the Tucson AMA (ADWR, 1999).

~~Potable water supply wells in the Town's service area meet the current Safe Drinking Water Act (SDWA) regulations. Constituents of concern in the Tucson AMA can be divided into groups that are indicative of natural sources and anthropogenic contamination sources.~~ Nitrates are the most common groundwater contaminants detected in Arizona and are attributed to natural sources as well as anthropogenic sources, such as industrial facilities, wastewater treatment plants, residential septic systems, agricultural fertilizers, and animal production facilities.

~~Sulfates occur from natural sources and mine wastes.~~ Elevated total dissolved solids (TDS) concentrations in water are often due to natural sources, but include mine wastes as well as municipal and industrial wastewater discharges. Levels of TDS in effluent are typically higher than ambient groundwater levels in the Town's planning area and can increase aquifer TDS levels as a result of natural and artificial recharge. The introduction of CAP water into the aquifer through direct and incidental recharge can also increase TDS concentrations in groundwater. Many of the CAP recharge projects south of the planning area also incorporate recovery from wells that would minimize the migration of these constituents.

In the late 1990s, ADWR analyzed ~~late 1990s~~ Tucson AMA groundwater quality data to characterize usability of the resource (ADWR, 1999). A review of this analysis shows no exceedances of groundwater quality standards within the planning area, except for nitrates. Regulated drinking water quality parameters are routinely monitored for compliance with State Drinking Water Standards (DWS). Potable water supply wells in the Town's service area meet the current Safe Drinking Water Act (SDWA) regulations.

More recent data based on the ADWR Arizona Water Atlas (Chapter 8 Draft, Section 8.5, July 2008) indicates that DWS were equaled or exceeded in some wells not used for potable supply. Water quality exceedances in the area along the Santa Cruz River and I-10 corridor north of Marana to the Pinal County boundary included primarily Nitrate/Nitrite (NO₃). Other constituents identified included Arsenic (As), Beryllium (Be), Manganese (Mg), Cadmium (Cd), Lead (Pb), and Organics. DWS have not been exceeded in Town wells used for potable water deliveries.

The Town complies with the regulatory requirements established by ADEQ, including scheduled monitoring and reporting of water delivered to customers. As a part of this requirement under the SDWA, the Town produces and distributes an annual Consumer Confidence Report (CCR) describing the water source, levels, and possible sources of contaminants found, corrective action taken, health effects, and delivered water quality information.

SURFACE WATER HYDROLOGY

~~Surface~~Natural surface water flows ~~in the area are ephemeral,~~ occurring in the Santa Cruz River and its tributaries are ephemeral. The Santa Cruz River enters the Tucson AMA from the Santa Cruz AMA ~~into~~ the south. The Santa Cruz River is the primary surface water drainage within the Tucson AMA with outflows into Pinal County. As noted, the major tributaries to the Santa Cruz River in the area are the Cañada del Oro Wash and the Rillito River.

The Santa Cruz River receives discharges of treated effluent at the outflow of the Roger Road and Ina Road WRFs. Effluent-dominated surface flows in the Santa Cruz River are regularly visible beyond the Pima/Pinal County line. Riparian habitat has been established in areas downstream of the Roger Road and Ina Road WRFs as a result of effluent discharges to the Santa Cruz River. Additionally, Pima County is permitted to use the effluent from the Marana WRF for the Marana Riparian Habitat Restoration site.

ADEQ requires all ~~facilities either~~WRFs to be located outside of or protected from the 100-year floodplain ~~during the to obtain APP application process and development of design parameters for a new WRF approval.~~ As part of the WRF site selection process and design, the Town will coordinate with ADEQ to meet these requirements. Any WRF located within a 100-year floodplain will be designed to be protected from a 24 hour, 100-year storm event. Figure 3 provides floodplain zone information for the Town's planning area.

Figure 3. PAG Planning Area Floodplain Zones

SURFACE WATER QUALITY

The following information was provided by Pima County:

Surface water quality in the effluent dominated reach of the Santa Cruz River from Prince Road to Pima/Pinal County boundary is composed primarily of effluent discharges from the Ina Road, Roger Road and Marana wastewater reclamation facilities except during periods when stormwater flow. Aquifer Protection Permits (APP) and Arizona Pollutant Discharge Elimination System (AZPDES) permits issued by ADEQ govern discharges of effluent from these reclamation facilities. AZPDES and APP permits establish effluent quality limitations and monitoring requirements to establish and ensure that discharges will meet applicable water quality standards. Water quality resulting from these discharges meets or exceeds all applicable surface water and aquifer quality limits, as well as all regulatory requirements for reuse and recharge.

The Roger Road WRF began operation in 1955 and continues to provide treatment for up to 41 million gallons per day (~~MGD~~mgd). Since 2000, the Roger Road WRF has received two Gold Awards and four Silver Awards from the National Association of Clean Water Agencies. Gold Awards honor treatment works that have achieved 100 percent compliance with their ~~NPDES~~National Pollutant Discharge Elimination System (NPDES)/AZPDES permit for an entire calendar year while Silver Awards recognize facilities that have received no more than five NPDES/AZPDES permit exceedences per calendar year. The Roger Road WRF currently performs over 3,000 analyses per year with five or fewer exceedences per year. In addition, the Roger Road WRF received Arizona Water Pollution Control Association Peak Performance Awards in 2002 and 2007 for wastewater facilities serving large populations.

The Ina Road WRF began operation in 1977 and provides treatment for up to 37.5 million gallons per day. Since 2000, the Ina Road WRF has performed approximately 3,000 analyses per year and received five Silver Awards for receiving no more than five NPDES/AZPDES permit exceedences per calendar year.

At the time of construction of the pre-1993 Pima County WRFs, secondary treatment and disinfection were required wastewater treatment technologies. Recent changes to water quality standards require all new treatment facilities to meet BADCT for which nitrification and denitrification are necessary. Any WRFs proposed for the Town will be required to meet BADCT standards. All Pima County RWRD facilities constructed since 1993 meet current BADCT standards including the 12.5 ~~MGD~~mgd expansion at the Ina Road WRF and the 0.5 ~~MGD~~mgd expansion at the Marana WRF which began operation in 2006.

In 2008, the Marana WRF underwent further improvements and added filtration and ultraviolet (UV) disinfection. The effluent generated from the Marana WRF meets Class A+ Reclaimed Water quality standards and has over 250,000 gallons of excess capacity available for future growth and a 1.5 MGD expansion designed and ready for implementation when necessary. This facility has ample ability to accommodate both future flows and A+ water quality standards.

Both the Ina Road WRF and Roger WRF AZPDES permits contain variances for ammonia toxicity to *Pimephales promelas* and *Ceriodaphnia dubia* and for copper in the current permit terms since the effluent does not consistently meet the toxicity and the copper standards. However, the AZPDES permits require actions to upgrade these facilities to current BADCT standards. These facilities are currently on schedule to address compliance with ammonia toxicity by January 2014 and copper standards by December 2010.

The Town does not intend to discharge to the Santa Cruz River or its tributaries except ~~in an~~ emergency conditions. If discharge ~~occurs~~ is inevitable, the Town will meet all applicable discharge standards established in rule by ADEQ under an Arizona Pollution Discharge Elimination Systems (AZPDES) permit. ~~Recharge~~ The public process to obtain an AZPDES permit will include coordination with all downstream users; however, to avoid stream discharge recharge basins will be designed to accept all of the effluent generated from the WRFs, ~~and emergency discharges are unlikely to occur~~. Given the improbable event of a discharge to the Santa Cruz River and effluent meeting A+ Reclaimed Water Quality standards, negative impacts to downstream land owners are not considered an issue.

HABITAT

There are four general habitat types within and adjacent to the Town's planning area—upland, xeroriparian, riparian, and wetland communities. Denser xeroriparian vegetation along ephemeral drainages provides the best wildlife habitat because of higher plant density or vegetation volume. Xeroriparian wash habitats provide correspondingly higher habitat values for some wildlife, particularly birds and small to medium-sized mammals. Vegetation associated with washes provides foraging resources and cover for wildlife species that use both uplands and washes, such as coyotes, some reptiles, and most birds. Most of these species use both uplands and washes for movement and are not strictly dependent on washes as movement corridors. However, due to low cover in desert scrub areas, larger wildlife tends to move along washes.

Mesoriparian and hydroriparian habitats, including wetlands, occur in association with portions of the Santa Cruz River that receive effluent from adjacent wastewater treatment plants. Hydroriparian habitats on banks adjacent to and on islands within the Santa Cruz River are associated with perennial water flow and are characterized by plant communities dominated by obligate or preferential wetland species. Important Riparian Areas are identified along portions of the Santa Cruz River. Named drainages that cross the Town's service areas include Cañada Agua 1, Santa Cruz River, Cottonwood Wash, Picture

Rocks Wash, and Yuma Mine Wash. Numerous unnamed drainages tributary to the Santa Cruz River traverse the area.

Special status species likely to occur within the planning area include the southwestern willow flycatcher, yellow-billed cuckoo, and the lesser long-nosed bat. Sightings of California brown pelicans are rare and the birds' presence in the area is considered accidental. Riparian habitat for the southwestern willow flycatcher and yellow-billed cuckoo is present along effluent-supported portions of the Santa Cruz River within the Town. Undisturbed areas of Sonoran desert scrub where saguaros and agave are present provide potential forage for the lesser long-nosed bat.

PROJECT DESCRIPTION

OVERVIEW

The Town will manage ~~water~~wastewater resources within its planning area to ensure ~~physical~~compliance with all regulatory and ~~legal availability of water~~permitting requirements, and to meet the demands of existing and proposed development.

Through the ownership and operation of WRFs within its planning area, the Town will have the ability to acquire and use effluent resources and reduce groundwater mining. The Town intends to construct and operate new WRFs within its PAG 208 planning area to treat wastewater to ADEQ Class A+ Reclaimed Water Quality standards. The Town will also consider the use of its available reclaimed water supplies for irrigation of parks, schools, existing residential reclaimed water system, road medians, and golf courses; environmental, agricultural, industrial, and construction uses; and recharge. The Town intends to use all of the available effluent to its highest and most beneficial use, and will discharge to a stream under emergency conditions only.

To meet the intent of the Clean Water Act (CWA) and the general goals of the Environmental Protection Agency (EPA), the Town has addressed the following five goals:

1. Clean Air and Global Climate Change: The Town will use its allocation of Parker-Davis hydropower ~~and any Cortaro-Marana Irrigation District Hoover hydropower allocation that is available~~ to power wastewater reclamation and conveyance facilities. Hydropower is a renewable resource.
2. Clean and Safe Water: The Town will build wastewater reclamation facilities that produce A+ quality reclaimed water.
3. Land Preservation and Restoration: The Town has actively worked toward the development of the Tres Rios del Norte Project and anticipates that reclaimed water produced by the Town's WRFs may be used for this restoration project.

4. Healthy Communities and Ecosystems: Marana has committed to building healthy communities and ecosystems and developing a sustainable community since its inception.
5. Compliance and Environmental Stewardship: Marana has a history of complying with all applicable environmental laws and regulations in its stewardship of the environment.

~~Through~~ The Town can provide for responsible community growth through the implementation of its established goals, having access to increasing effluent supplies, and being in control of its own destiny; ~~the Town can provide for responsible community growth.~~

PLAN AREA

The Town's planning area is primarily located in Eastern Pima County extending into areas in the southern portion of Pinal County as indicated on Figure 1.

CURRENT AND FUTURE CONDITIONS

The current population of the Town is approximately 32,300 (2007 population estimate). The Town's population does not significantly change seasonally. The land use is mixed residential, commercial, industrial, and agricultural. Agricultural crop production consists primarily of cotton, alfalfa, wheat, and sorghum. During the previous decade there has been a trend of decreasing agricultural acreage and an increase in residential and commercial growth. Sand and gravel operations are located predominately along the Santa Cruz River corridor. Existing local and regional wastewater facilities and proposed new WRFs are described in greater detail in later sections of this report.

POPULATION

The Arizona Department of Economic Security (DES) has published its official population projections for the State and all counties: 2006 – 2055. The projected population for the Town based on DES data in ~~year~~ years 2028 and 2055 is 86,757 and 121,292, respectively. These forecasts conform to Pima County Control Totals adopted by DES in 2006.

To provide better estimates for sewer basin flow rates, the Town developed a GIS database to evaluate sewer flow based on land use projections. As described in the following sections, the estimated wastewater flows for the Town are based on planned land uses (2007 Marana General Plan and specific plans where available) and corresponding unit flows per land use category. The 20-year and buildout population projection for the Town's planning area are 106,650 ~~900~~ and 196,900, respectively. The land use projections are ~~more~~ comprehensive and relevant to wastewater planning, since sewer flow projections can be made for commercial as well as residential uses. Therefore, the land use-based projections prepared for this 208 Plan Amendment were used in lieu of the DES; Transportation Analysis Zone (TAZ); and PAG Population Technical Advisory Committee (POPTAC) estimates.

The Town's methodology to project population growth was presented to POPTAC. The Town coordinated with PAG staff to provide the information and assumptions used to establish planned land

uses, and the resulting population and wastewater flow estimates are described in this 208 Plan Amendment.

The Town attended two POPTAC meetings to present and discuss the methodology used for population projections, and to obtain support for the projections presented in the Town’s 208 Plan Amendment. The methodology presented by the Town was well received by POPTAC members. A comparison of population projections used by the Town and those developed by PAG were considered to differ negligibly. The POPTAC recommended approval and adoption of the Town’s estimates for the 208 Plan Amendment, and recommended that the Town’s estimates be used as a reference for future PAG planning activities.

SEWER BASINS

Based on the 2008 Town of Marana Sewer Basin Study, the planning area has been separated into 24 sewer basins: Basins 1 through 24 as shown on Figure 4. All the sewer basins except Basin 22 are within the 2007 Marana General Plan planning area. Basin 22 is located outside the planning area, but wastewater currently flows into Basin 21. Basin 24 is located in the Town’s planning area and flows by gravity to the Ina Road WRF. The majority of the basins are located within Pima County, except for Basins 1 and 2 and a small portion of Basins 3 and 6, which are located within Pinal County.

The sewer basin delineation is primarily based on distinct natural and man-made features within the planning area:

- Interstate Highway 10 and the Union Pacific Railroad
- The Santa Cruz River
- The Central Arizona Project Canal
- The future Barnett Channel

The five major basins were further subdivided into a total of 24 sewer basins to account for topography, existing sewers, major roadways, and possible locations of treatment plants and lift stations.

Generally, onsite gravity sewers will collect wastewater generated within each basin and convey it to an existing or proposed WRF. Due to the flat slope of the existing site topography, lift stations and force mains will be constructed in some cases to convey the sewage to a WRF or a gravity sewer main. The Town may also use pumping facilities to interconnect basins for practical WRF phasing.

SEPTIC SYSTEMS

This 208 Plan Amendment recognizes that there may be parcels and subdivisions that do not currently have access to public sewage collection and treatment services. If public sewage collection is not available and the utilization of an onsite system can meet established regulatory requirements, private septic systems may be permitted. The Town may need flexibility regarding what can and cannot be served

by the proposed WRFs due to restrictive conditions including, but not limited to distance from existing or planned public sewer mains, topography, and cost.

Figure 4. Sewer Basin Delineation & Existing Sewer Infrastructure

Septic systems currently exist on many larger properties (e.g. greater than one acre) within the planning area, primarily due to the lack of available public wastewater collection and treatment facility infrastructure. ~~Existing areas with~~ Areas of existing homes on septic systems are ~~indicated~~displayed on Figure ~~7~~5. The Town will evaluate opportunities to allow and encourage the conversion from septic to sanitary sewer service where appropriate.

The Town anticipates adopting a code comparable to Pima County's Title 7, Environmental Quality, Chapter 7.21 Liquid Waste. In general, an application for an onsite disposal system will be denied if available sewer capacity is within 200 feet of the parcel property line. Subdivisions more than 200 feet from a public sewer using onsite disposal systems will be required to record permanent rights-~~of-~~way for future public sewer construction and covenants requiring connection within five years of public sewer availability. Waivers could be granted upon review provided that ~~it~~the request meets certain conditions.

In addition to meeting the code requirements established by Pima County, the Town will implement the guidelines established in the A.A.C. R18-9-A309 (A)(5) that state:

A person constructing a new onsite wastewater treatment facility or replacing the treatment works or disposal works of an existing onsite wastewater treatment facility shall connect to a sewage collection system if:

- a. One of the following applies:
 - i. A provision of a Nitrogen Management Area designation under R18-9-A317(C) requires connection; or
 - ii. A county, municipal, or sanitary district ordinance requires connection; or
 - iii. The onsite wastewater treatment facility is located within an area identified for connection to a sewage collection system by a Certified Areawide Water Quality Management Plan adopted under 18 A.A.C. 5 or a master plan adopted by a majority of the elected officials of a board or council for a county, municipality, or sanitary district;
- b. A sewer service line extension is available at the property boundary and both of the following apply:
 - i. The service connection fee is not more than \$6,000 for a dwelling or \$10.00 times the daily design flow in gallons for a source other than a dwelling, and
 - ii. The cost of constructing the building sewer from the wastewater source to the service connection is not more than \$3,000 for a dwelling or \$5.00 times the daily design flow in gallons for a source other than a dwelling.

Figure 5. Parcels with Existing Septic Systems

WASTEWATER FLOW PROJECTIONS

Wastewater flows have been projected within each sewer basin according to the land use categories in the 2007 Marana General Plan, development plans, and specific plans where available. [Table 1 and Figure 5 shows](#) [6 identify](#) future land use based on the Town’s General Plan and specific plans. Specific plans within the Town’s limit include 34,393 single-family residential units and 2,505 acres of industrial/commercial area. Table 1 shows the planning density in equivalent dwelling units (EDUs) ~~that was~~ assumed for each land use category and the total land area for each category within the planning area. The use of EDUs for flow rate calculations allows all types of land uses to be represented in terms of the equivalent wastewater flow produced by an average single-family residence. For example, as shown in Table 1, it is assumed that one acre of commercial land use will produce the same amount of wastewater as four single-family residences (that is, four EDUs).

The EDU values assigned for each land use category presented in Table 1 were established by a combination of residential density ranges and estimates prepared by the Town’s Planning Department. Information from the Town’s General Plan, specific plans, and historical data was used in this determination. The PAG POPTAC concurred with the methodology presented by the Town and adopted the projections for future planning activities.

Table 1. Planning Density and General Plan Area by Land Use Category

Land Use Category	Equivalent Dwelling Units per Acre	Land Area* (Acres)
Airport	0.25	6,703
Commercial	4.0	6,070
Industrial	4.0	16,290
Industrial (Low Density)	0.4	1,713
Low-density Residential	1.5	17,576
Medium-density Residential	4.0	9,414
Mixed Rural	0.5	241
Rural-density Residential	0.1	70,188
Special Planning Area	4.0	868

* Area includes portions in both Pima and Pinal Counties.

Two other assumptions were made when calculating flow projections:

- 2.7 persons per dwelling unit based on the 2000 census for Marana.
- 25 percent of the homes in the rural-density residential land use areas will be connected to the sewer system; the remainder will use onsite septic systems.

Figure 5.6. Marana General Plan and Specific Plans

5-YEAR, 10-YEAR, 20-YEAR, AND BUILDOUT PROJECTIONS

The 2008 Town of Marana Sewer Basin Study projects the sewer flow within each basin for existing, 5-year (~~2013~~2015), 10-year (~~2018~~2020), 20-year (~~2028~~2030), and buildout conditions. Phasing for the 5-, 10-, and 20-year projections are provided for comparison, in addition to the estimated buildout projections. The pattern of development for the first ten years is based on the assumption that growth during this time will occur in the specific plan areas and in the area surrounding the Marana Airport. The Town's Planning Department provided estimates of the percentage of growth of each specific plan for each phase.

~~Growth of the area surrounding the Marana Airport was also divided by phase, with 125 EDUs of total growth during the period from 2009 to 2013, and 650 EDUs of total growth during the period from 2014 to 2018. The Marana Airport currently has approximately 50 EDUs, which produce flows that are treated and disposed of onsite using conventional septic systems. These flows will ultimately be included in a wastewater collection and treatment system.~~

Table 2 shows the projected EDUs for each sewer basin for 20-year (~~2028~~2030) and ultimate buildout. The projected wastewater flows for 5-year, 10-year, 20-year, and buildout conditions are presented in Table 3. The wastewater flows were calculated assuming 62 gallons per capita per day (gpcd) and 85 gpcd. The lower number represents the currently-observed flow rate within the Town's planning area; the higher number represents the flow rate accepted by Pima County Regional Wastewater Reclamation Department (PCRWRD) and is typically used for sewer collection system planning. Flows for Basin 22 are based on the number of parcels currently in the basin. Sewer flows generated from Basin 24 are projected to be served by the Ina Road WRF.

Table 2. Projected Population and EDUs by Sewer Basin for 20-Year and Buildout

Sewer Basin	20 –Year Projection				Buildout Projection			
	Population	Residential Units	Non-Residential Aeres** Acres ¹	Equivalent Dwelling Units	Population	Residential Units	Non-Residential Aeres** Acres ¹	Equivalent Dwelling Units
1*	270	100	722	2,987	4,728	1,751	8,835	22,935
2*	--	--	--	--	4,630	1,715	2,864	13,172
3 ³	--	--	--	--	1,036	384	1,246	5,368
4	--	--	--	--	1,587	588	2,934	9,463
5	3,692	1,368	444	3,145	24,825	9,194	1,640	15,755
6 ³	19,116	7,080	57	7,309	31,372	11,619	101	12,025
7	--	--	--	--	418	155	--	155
8	--	--	125	500	470	174	235	1,116
9	11,671	4,322	181	5,046	16,789	6,218	397	7,807
10	14,726	5,454	44	5,630	17,690	6,552	796	9,735
11	1,555	576	51	782	6,636	2,458	104	2,875
12	5,371	1,989	347	3,378	5,371	1,989	347	3,378
13	--	--	856	3,425	--	--	2,611	5,051
14	162	60	319	1,335	162	60	577	2,339
15	--	--	125	500	1,300	482	1,001	4,484
16	12,066	4,469	150	5,069	20,859	7,726	437	9,473
17	--	--	--	--	1,498	555	--	555
18	--	--	--	--	4,769	1,766	3,103	11,538
19	7,730	2,863	236	3,807	20,545	7,609	2,162	12,434
20	18,936	7,013	1,014	11,070	18,936	7,013	1,014	11,071
21	5,337	1,977	59	2,214	6,882	2,549	108	2,982
22	6,256	2,317	3	2,329	6,256	2,317	3	2,329
23	--	--	--	--	41	15	311	140
24	30	11	430	1,731	84	31	1,318	3,998
TOTAL	106,917	39,599	5,164	60,256	196,885	72,920	32,147	170,177

* Basins located in CAAG 208 planning area

**Notes: 1. Non-residential refers to non-residential sources of wastewater, including commercial, industrial, airport, and public/institutional.

2. Basins located in CAAG 208 planning area

3. Northern portions of basins are located in Pinal County and are part of the CAAG 208 planning area

Table 3. Estimated Wastewater Flow for 5-Year, 10-Year, 20-Year, and ~~Buildout~~Buildout¹

Sewer Basin	Wastewater Flow (mgd) Assuming 62 gpcd					Wastewater Flow (mgd) Assuming 85 gpcd				
	Existing	2013 <u>15</u>	2018 <u>20</u>	2028 <u>30</u>	Buildout	Existing	2013 <u>2015</u>	2018 <u>020</u>	2028 <u>030</u>	Buildout
1 ²	--	0.13	0.25	0.50	3.84	--	0.17	0.34	0.69	5.26
2 ²	--	--	--	--	2.20	--	--	--	--	3.02
3 ³	--	--	--	--	0.90	--	--	--	--	1.23
4	--	--	--	--	1.58	--	--	--	--	2.17
5	0.05	0.06	0.09	0.53	2.64	0.07	0.09	0.12	0.72	3.62
6 ³	--	0.20	0.79	1.22	2.01	--	0.27	1.08	1.68	2.76
7	--	--	--	--	0.03	--	--	--	--	0.04
8	--	--	--	0.08	0.19	--	--	--	0.11	0.26
9	0.44	0.62	0.76	0.84	1.31	0.60	0.85	1.04	1.16	1.79
10	0.18	0.30	0.51	0.94	1.63	0.24	0.40	0.70	1.29	2.23
11	--	0.02	0.05	0.13	0.48	--	0.03	0.06	0.18	0.66
12	--	0.57	0.57	0.57	0.57	--	0.78	0.78	0.78	0.78
13	0.01	0.02	0.14	0.57	0.85	0.01	0.03	0.19	0.79	1.16
14	0.01	0.03	0.14	0.22	0.39	0.01	0.04	0.19	0.31	0.54
15	--	--	--	0.08	0.75	--	--	--	0.11	1.03
16	0.03	0.16	0.41	0.85	1.59	0.04	0.22	0.57	1.16	2.17
17	--	--	--	--	0.09	--	--	--	--	0.13
18	--	--	--	--	1.93	--	--	--	--	2.65
19	--	0.08	0.20	0.64	2.08	--	0.10	0.28	0.87	2.85
20	1.30	1.85	1.85	1.85	1.85	1.78	2.54	2.54	2.54	2.54
21	0.12	0.17	0.34	0.37	0.50	0.17	0.23	0.46	0.51	0.68
22	0.39	0.39	0.39	0.39	0.39	0.53	0.53	0.53	0.53	0.53
23	--	--	--	--	0.02	--	--	--	--	0.03
24	0.26	0.26	0.26	0.29	0.67	0.35	0.35	0.35	0.40	0.92
TOTAL	2.79	4.85	6.74	10.09	28.49	3.83	6.65	9.24	13.83	39.06

¹Includes flows associated with the CAAG 208 planning area

²Basins located in CAAG 208 planning area

³Northern portions of basins are located in Pinal County and are part of the CAAG 208 planning area

EXISTING CONDITIONS

EXISTING PUBLIC SANITARY SEWAGE CONVEYANCE FACILITIES

The layout and type of public sewage conveyance facilities presently in use within the Town's planning area have been dictated primarily by topography, and to a slightly lesser degree by the order in which the overall planning area was developed.

The public gravity conveyance facilities within the Town include approximately 200 miles of gravity main (8-inch thru 48-inch ID) comprised of vitrified clay pipe (VCP), polyvinyl chloride (PVC), lined concrete, and ductile iron pipe (DIP), and approximately 500 manholes and several cleanouts. The conveyance facilities range from new to over 40 years ~~of age~~ old.

The following active public wastewater pumping systems (WWPSs) exist within the sewer infrastructure serving the Town:

Active:

- Continental Ranch Regional WWPS (CRRWWPS)
- Dove Mountain WWPS
- Rillito Vista WWPS
- Saguaro Springs WWPS (constructed but not yet accepted or in service)

Inactive (Standby):

- Cortaro Farms Road WWPS
- Peppertree Ranch WWPS
- Twin Peaks Road WWPS
- El Uno Minor WWPS

Figure ~~6~~7 displays the location of each of these WWPS and the routes and sizes of the associated force mains.

The existing sanitary sewage flows from Basins 9, 16, 20, 21, 22, and 24 are currently conveyed by either gravity alone or a combination of gravity and pumping to the Ina Road WRF for treatment. The current flow rate projections are provided in Table 4. The current flows from the other basins in the planning area are conveyed by either gravity or a combination of gravity and pumping to the Marana WRF for treatment, except for the Rillito Vista area, which is served by the public Rillito Vista WRF. [Appendix C contains Pima County maps that show the flow through sewers.](#)

Figure 6.7. Public Wastewater Pumping Systems

Table 4. Tabulation of Currently Sewered Basins and the Involved Public WRF

Basin ³¹	Existing Flow Range (62 to 85 gpcd) (PDWF mgd)	Means of Conveyance to Public WRF	Public WRF
9	.44 – .60	Gravity and CRRWWPS ⁴²	Ina Road ²³
16	.03 – .04	Gravity and CRRWWPS ⁴²	Ina Road ²³
22	.39 – .53	Gravity and CRRWWPS ⁴²	Ina Road ²³
21	.12 – .17	Gravity and CRRWWPS ⁴²	Ina Road ²³
20	1.30 – 1.78	Gravity and CRRWWPS ⁴²	Ina Road ²³
24	.26 – .35	Gravity	Ina Road ²³
TOTAL	2.54 – 3.47		Ina Road ²³
14	.010 – .014	Gravity	Rillito Vista
TOTAL	.010 – .014		Rillito Vista
10	.18 – .24	Gravity	Marana
5	.05 – .07	Gravity	Marana
TOTAL	.23 – .31		Marana

Notes: 1. ~~All basins in the proposed Marana service area not specifically noted in Table 4 currently have no sewage tributary to a Public WRF.~~

2. CRRWWPS is the Continental Ranch Regional Wastewater Pumping System.

²³. Basins 9, 16, 20, 21, and 22 flow to the CRRWWPS. The CRRWWPS conveys all flow tributary to it to the Ina Road WRF. Basin 24 flow is conveyed by gravity to the Ina Road WRF.

~~3. All basins in the proposed Marana service area not specifically noted in Table 4 currently have no sewage tributary to a Public WRF.~~

Some of the existing conveyance facilities within the Town's planning area carry significant volumes of sanitary sewage generated in areas upgradient from and outside of the Town's planning area tributary to the Ina Road WRF. ~~Three examples include the North Rillito Interceptor and the Cañada del Oro (CDO) Interceptor entering Basin 24, and the Cortaro Farms Road Trunk Sewer flowing by gravity from Basin 22 to the CRRWWPS. The Cortaro Farms Road Trunk Sewer flow can be redirected by placing the Cortaro Farms WWPS (currently in inactive status) into active status, sending the tributary sewage directly to the Ina Road WRF via the CDO Interceptor. Refer to Appendix C for Pima County maps that display flow through sewers.~~

The sewage conveyance facilities serving Basins 9, 16, 19, 20, 21, and 22 have evolved through the implementation of a phased series of public WWPSs. Currently, only the CRRWWPS is in active service (the Saguaro Springs WWPS and its force main have been constructed but are not yet ~~approved~~, accepted and/or placed into active service). Three other public WWPSs within the gravity system tributary to the CRRWWPS are in standby status (Cortaro Farms Road WWPS, Peppertree Ranch WWPS, and Twin Peaks WWPS). These facilities are ready to be re-activated if a significant operational problem occurs within the CRRWWPS.

Figure ~~7~~⁸ displays the sewer basin areas currently being served by the three existing public wastewater treatment facilities within the Town's planning area. Existing wastewater flows from Basins 9, 16, 20, 21, 22, and 24 are treated by the Ina Road WRF. The Marana WRF accepts flows from Basins 5 and 10.

Figure 7.8. Sewer Basins Currently Served by the Three Existing WRFs and Impact of Significant Infrastructure Features on Positioning of Basin Boundaries

Basin 14 is served by the Rillito Vista WRF. Figure 7 also illustrates how topographic and infrastructure features within the planning area were used to establish boundaries for the sewer basins within the planning area.

TOPOGRAPHY AND POTENTIAL IMPACTS ON SEWERAGE SYSTEM PLANNING

The Town’s planning area contains a variety of topographic features ranging from steep terrain to flat agricultural areas. These areas can be effectively serviced with the appropriate combinations of gravity sewers and WWPSs.

Significant sections of farmland in the Town’s planning area are being developed for residential and commercial projects. Low-slope land surface features create sewage collection system planning, design, installation, and maintenance challenges. Low-slope terrain can affect the positioning of the sewer drainage basin boundaries and the WRF locations (Town of Marana Sewer Basin Study 2008).

The planning for each WRF noted in this 208 Plan Amendment includes a provision of a relatively deep (25 feet to 35 feet) influent sewage lift station at the headworks. Headworks lift stations are more important when the portions of the service area immediately upstream of the respective WRF have lower-sloped terrain. In the event of a long run of low-slope gravity sewers, it may become necessary to install one or more WWPSs at intervals along the main system.

To keep low-slope terrain gravity sewers functioning properly at varying levels of liquid flow, internal diameter sizing and pipe gradients will need to be carefully evaluated, especially where “oversizing” is needed to facilitate future sewage flows. The primary goal is to achieve sewage conveyance systems that operate with minimal off-gassing of odor, solids deposition and/or internal corrosion potential. The proper maintenance schedule for cleaning gravity sewer mains is also vital to its proper functioning.

EXISTING WASTEWATER TREATMENT FACILITIES

The infrastructure currently serving the wastewater demands within the Town’s planning area consists of one regional wastewater treatment plant, and several smaller public and private treatment facilities, as shown on Figure 2. Figure 6 displays the existing public wastewater pumping systems located within the planning area. The primary existing wastewater treatment plants serving the Town are the Ina Road WRF and the Marana WRF.

Several relatively small wastewater treatment plants are located within the planning area. The private facilities include the Adonis Sanitary Sewerage Facility, the Marana High School WRF, and the MTC WRF. Pima County operates the Rillito Vista WRF. As new public WRFs are constructed, the Town will coordinate with the owners and operators of these smaller public and private systems to evaluate treatment service alternatives and retirement of these facilities.

The Adonis Sanitary Sewerage Facility serves the wastewater needs of the Adonis Mobile Home Park. This subdivision is located near Grier Road, east of I-10, in Sewer Basin 12. The Adonis Homeowners’

Association owns and operates the facility, which serves approximately 150 units in the subdivision. The 208 Plan update for the Marana area, as completed by Malcolm Pirnie in 2000, recommends that wastewater from this subdivision be conveyed to the Marana WRF or to the facility being planned for the La Mirage Estates subdivision.

The Marana School District operates the Marana High School WRF, which serves the Marana High School, located between Sanders and Sandario Roads north of Emigh Road in Sewer Basin 19. Marana High School was once served by a septic system, but is currently served by a 0.07 mgd package plant.

MTC privately owns and operates a wastewater treatment plant that serves the wastewater needs of a 450-person correctional facility. The MTC treatment plant is located in Sewer Basin 5, west of Sanders Road and north of Silverbell Road. It consists of primary treatment, secondary treatment, disinfection, filtration, and sludge dewatering. Treated effluent is used for turf and agricultural irrigation. The design capacity of the treatment facility was recently expanded from 65,000 to 130,000 gallons per day (gpd)

The Rillito Vista WRF serves the 60-lot Rillito Vista subdivision. This facility is located between Avra Valley Road and Tangerine Road, and between I-10 and the Santa Cruz River, in Sewer Basin 15. The facility is a stabilization/evaporation pond with a design capacity of 0.020 mgd. Based on the 2006 PAG Areawide Water Quality Plan, the current flows average 0.010 mgd. The facility is owned and operated by PCRWRD.

The Ina Road WRF is located within the Town limits in Section 1, Township 13 South, Range 12 East, at I-10 and Ina Road in Sewer Basin 24, and is currently operated by PCRWRD. According to publicly available information, the facility was originally designed for 25 mgd, with a peak capacity of 53 mgd. Until recently, the facility operated as a Class B, high-purity oxygen-activated sludge system with influent screening, grit removal, primary sedimentation, activated sludge with high-purity oxygen, secondary sedimentation, effluent disinfection, and de-chlorination. In 2006, an additional 12.5 mgd Class B+ Biological Nutrient Removal Activated Sludge process was added, increasing the total plant capacity to 37.5 mgd. The methods of disposal include onsite irrigation and discharge into the Santa Cruz River, resulting in recharge in the Lower Santa Cruz Managed Recharge Project (e.g., in-channel recharge). The sludge produced as a byproduct of treatment is gravity-thickened, anaerobically digested, and dewatered.

~~According to the Regional Optimization Master Plan (ROMP), Pima County plans to upgrade the Ina Road facility to 50 mgd and achieve a reclaimed water quality standard of B+ or A+. As stated in the ROMP,~~

~~“if the effluent is Class A+, Tucson Water would be able to decommission its pressure filter treatment system at Roger Road WRF and feed effluent directly into the reclaimed water distribution system after chlorination to meet residual requirements. Tucson Water will construct the necessary filtration system (as required for Class B+), pump station, reservoir, pipeline and chlorine feed facility at Ina Road WRF to provide its reclaimed water needs.”~~

The Marana WRF is located within the Town limits in Section 14, Township 11 South, Range 10 East, adjacent to Lockett Road in Sewer Basin 5, but is not currently operated by the Town. The original 0.23 mgd design capacity plant opened in 1986, and consisted of two facultative/evaporation ponds operated in series. Since then, the WRF has been expanded to accommodate development within its service area. The current total capacity of the Marana WRF is 0.7 mgd. The original facultative/evaporation ponds were decommissioned in the year 2000, and one has been converted to an emergency influent storage basin. The system currently consists of four 0.05 mgd Smith & Loveless packaged plants (total capacity of 0.2 mgd), and one 0.5 mgd BIOLAC® treatment system. Reclaimed water is permitted by ADEQ to be used onsite for irrigation and for the Marana Riparian Habitat Restoration site. Effluent is also discharged to the Santa Cruz River under an AZPDES permit.

The Marana WRF currently receives flow from various locations in north Marana. ~~The Town anticipates that the facility will continue to provide WRF services for an unknown period of time. The Town's Sewer Basin Study provides a plan for the design and construction of new wastewater facilities which would intercept flows from various locations in the north Marana area. As new facilities are designed and constructed, the functions performed at the Marana WRF may be amended to provide ancillary or emergency treatment. The ultimate role of the Marana WRF is unknown at this time, but the facility may be integrated into the operations of the Town as the services provided by the Town continue to increase~~ There are no flow-through sewer lines tributary to the Marana WRF. The Town has offered to purchase the Marana WRF from Pima County; however, Pima County has reiterated its position that it will not sell the Marana WRF. The Town is reviewing the best value options for its customers. If an agreement to purchase the Marana WRF is reached between the Town and Pima County, the Town would continue operations of the facility. If the Town cannot reach an agreement with Pima County to purchase the Marana WRF, the Town will exercise other options for wastewater treatment as provided herein.

EXISTING SEWER BASINS

Basins 5, 9, 10, 14, 16, 20, 21, 22, and 24 contain existing sewer connections and deliver to existing treatment plants. Table 5 provides a summary of the flows in these basins. There are no existing public sewers in Basins 11, 12, and 18. Private facilities currently provide wastewater treatment in Basin 11 (Adonis) and Basin 18 (Marana High School).

Table 5. Estimate of Existing Wastewater Connections and Flows by Sewer Basin

Basin	Residential Units	Non-Residential Acres	Total Equivalent Dwelling Units	Existing Flow Range (62 to 85 gpcd) (mgd)	
5	147	22	324	0.05	0.07
9	1,895	26	2,619	0.44	0.60
10	1,060	--	1,060	0.18	0.24
14	60	--	60	0.01	0.01
16	189	--	189	0.03	0.04
20	6,301	362	7,770	1.30	1.78
21	739	--	739	0.12	0.17
22	2,317	3	2,329	0.39	0.53

24	11	408	1,531	0.26	0.35
TOTAL	12,719	821	16,621	2.78	3.81

The Town intends to provide wastewater collection and treatment services to ~~all basins~~ users served by **TMUD** within its planning area. Areas outside of the Town’s planning area ~~requiring~~ requesting wastewater collection and treatment services may be served based on appropriate agreements developed by the affected parties. ~~The 208 Plan Amendment, planning area, and DMA boundaries will be updated to reflect changes in the wastewater service area.~~ between the Town and water provider.

WATER RECLAMATION FACILITY ALTERNATIVES

TREATMENT SYSTEM DESCRIPTION

Six proposed WRF alternative sites were identified and evaluated at ~~specified~~ locations throughout the Town’s planning area, including one in the northwest corner of the Pinal County portion of the Town’s planning area and one just north of the Pima/Pinal County line. As described later in this section, two WRFs are expected to be constructed pursuant to ~~the~~ this PAG 208 Plan Amendment, but all six of the sites were evaluated as part of the Town’s Sewer Basin Study. The WRF site locations were determined based on sewer basin flows, existing and likely future collection system alignments, land ownership and acquisition, site and environmental constraints, and reclaimed water use opportunities.

Biosolids generated from wastewater treatment will be dewatered for landfill disposal and/or used for agricultural land application.

The following six locations were analyzed:

Potential locations within Pima County (PAG 208):

- Rillito Narrows WRF located in Basin 20 near the existing CRRWWPS
- Sandario WRF located ~~in~~ within or adjacent to Basin 19 as an alternative to serve flows from the Rillito Narrows
- Cottonwood WRF located in Basin 10 south of the Barnett drainage channel
- Airport WRF located in Basin 13 near Avra Valley and High Plains recharge project site

Potential locations within Pinal County (CAAG 208):

- County Line WRF located north of the Pima County line near the northern boundary of Basin 5
- North Pinal WRF located near the northwestern corner of Basin 1 in Pinal County

The 2008 Town of Marana Sewer Basin Study evaluated three alternative configurations for the WRFs, and described the advantages and disadvantages of each alternative. ~~As noted in the Sewer Basin Study,~~

~~the six existing wastewater treatment plants in the planning area (two public and four private) could eventually be removed from service following the development of the planned wastewater infrastructure.~~ Of the three alternatives, Alternative 3 was ~~chosen~~selected as the preferred alternative.

The following sections provide a description of the three alternatives considered in the Marana Sewer Basin Study. These three alternatives are presented with the preferred alternative (Alternative 3) first, followed by Alternatives 1 and 2. Detailed descriptions and comparison of these three alternatives are provided in the Sewer Basin Study. The Capital Improvement Plan (CIP) and capital cost estimates for Alternatives 3 WRFs are provided in the following section.

ALTERNATIVE 3 (PREFERRED ALTERNATIVE)

Alternative 3, the Town's preferred alternative, includes two new WRFs in Pima County as illustrated in Figure ~~8~~9. The sewer basins that would be served by this alternative and the projected average daily sewer flow rates are provided in Table 6. Flows ~~from~~originating in Pima County are projected to be served by WRFs in Pinal County, as illustrated in Figure ~~9~~10. Pinal County WRFs will be authorized under a CAAG 208 Plan Amendment. The Town selected Alternative 3 based upon balancing the number and size of treatment plants against the cost and issues related to operation and maintenance (O&M), and capital improvement costs associated with the collection system, and the reclaimed water recharge and ~~use~~reuse system. Reclaimed water use options will be investigated during design and permitting phase of the WRFs and could include, but are not limited to, direct delivery to parks, existing residential reclaimed system, schools, road medians, golf courses, and other landscaping demands, as well as recharge, environmental, agricultural, industrial ~~and~~, construction uses.

The siting of the WRFs as illustrated on Figure 8 and the associated conveyance system will be finalized during the design development phase, and presented within subsequent 208 Consistency Reports. Siting alternatives will be further considered if the Town of Marana acquires the existing Marana WRF. Flexibility is provided in this plan to better evaluate final WRF locations based on growth patterns, land ownership, proximity to reuse and recharge, and sewerage conveyance issues. Final siting studies may locate the WRFs in adjacent basins to provide sewer system optimization. In the event sewer service is required by an entity outside the planning area boundary, the Town will enter into an Intergovernmental Agreement (IGA) or service agreement, as necessary.

Advantages:

- Provides gravity service from Sewer Basin 9 to the Cottonwood WRF.
- The Sandario WRF site is in an industrial area and near potential reclaimed water use and recharge locations.
- Reduced capacities for collection system and reclaimed distribution system components will allow for lower overall capital costs and O&M costs.
- Certain facilities may use hydropower, which will result in reduced O&M costs.

- The WRF locations near the Santa Cruz River will allow the Town to better support reuse and recharge opportunities in the Tres Rios del Norte project.
- WRF locations will be farther from residential and commercial areas, and closer to industrial sectors, which enhances potential direct reuse opportunities and reduces potential issues associated with WRFs in residential areas.
- The Cottonwood WRF can supply reclaimed water to parks along the Santa Cruz River and existing landscaping, median, and other similar uses through the Town's existing non-potable delivery system.

Disadvantages:

- ~~Keeps the CRRWWPS lift station in service.~~
- Likely requires the Airport lift station near the Marana Airport and the Santa Cruz River.
- Proposed Cottonwood WRF is located near planned low-density development.
- Requires crossing the CAP pipeline near Tangerine Road.

Figure 8.9. Preferred Alternative 3 – 20-Year Proposed Water Reclamation Facilities

Figure 9.10. Preferred Alternative 3 Water Reclamation Facilities and collection system at Buildout

Table 6. Alternative 3 – Wastewater Reclamation Facilities and Flow Projection

WRF	Basins Served*	Projected Wastewater Flow (mgd)			
		2013 2015	2018 2020	2028 2030	Buildout
Cottonwood WRF	8, 9, 10, 12, 13, 14, 15, 18	0.9	1.3	3.3	7.6
Sandario WRF	16, 19, 20, 21, 22, 23	3.3	4.0	4.1	6.4
TOTAL	--	4.2	5.3	7.4	14.0

*The basins served may be modified upon completion of detailed design.

As indicated in Table 6, the Cottonwood WRF and the Sandario WRF are projected to be operational within five years from the approval of this 208 Plan Amendment. ~~The Cottonwood WRF will be the first facility to be designed, permitted and constructed.~~ The Town will offer to provide service in the new WRFs to replace smaller existing wastewater facilities.

ALTERNATIVE 3 CAPITAL IMPROVEMENT PROJECTS AND COSTS

The Sewer Basin Study presents 5-year, 10-year, 20-year, and buildout CIPs to implement the proposed wastewater infrastructure. Cost estimates are provided in Tables 7 and 8 for the Alternative 3 CIP, and assume all water providers within the DMA will request service from the Town. CIP costs are allocated to existing system and growth-related benefits. The following provides a breakdown of CIP components. Table 7 provides the cost breakdown for the 5-year CIP and Table 8 provides the 10-year CIP costs.

5-Year CIP Components

WRFs:

- ~~1.5 mgd Cottonwood WRF~~
- ~~3.5 mgd Sandario WRF~~

Gravity Mains:

- ~~13,000 lf of 21-inch gravity main in Basin 9~~
- ~~10,100 lf of 21-inch gravity main in Basin 12~~
- ~~20,700 lf of 36-inch in Basin 19~~

Lift Stations:

- ~~Existing CRRWWPS upgrade~~

Force Mains:

- ~~Continental Ranch West Force Main~~

10-Year CIP Components

WRFs:

- ~~Upgrade Sandario WRF to 4.0 mgd~~

Lift Stations:

- ~~Airport Lift Station~~

Table 7. Town of Marana Sewer Basin Study CIP – 5-Year Alternative 3⁽¹⁾

	Project	Description	Sewer Length (ft)	Buildout Capacity ⁽²⁾	20-Year Capacity ⁽²⁾	2013 2015 Projected Capacity (mgd)			Phase I (2013 2015)		
						Total	Existing	Growth	Phase I Cost	Allocated to Existing	Allocated to Growth
WRFs	Cottonwood WRF	Located in northwest corner of Basin 10; projected 20-year flow is 3.3 mgd	--	7.6	3.3	1.5	0.6	0.9	\$ 22,500,000	\$ 9,000,000	\$ 13,500,000
	Sandario WRF	Located in northwest corner of Basin 10; projected 20-year flow is 4.1 mgd	--	6.4	4.1	3.5	1.9	1.6	\$ 52,500,000	\$ 28,500,000	\$ 24,000,000
Gravity Mains	Basin 9 Gravity Main	18-inch gravity sewer serving Basin 9	13,000	1.3	0.84	—	0.45	0.2	\$ 1,950,000	\$ 680,000	\$ 1,270,000
	Basin 12 Gravity Main	Upsizing 15-inch sewer that serves Basin 12 only to 24-inch that will serve Basins 8, 9, 12, and 15	10,100	2.1	1.5	—	0.4	0.8	\$ 760,000	\$ 150,000	\$ 610,000
	Basin 19 Gravity Main	36-inch gravity sewer serving Basins 16, 19, 20, 21, 22, and 23	20,700	6.4	4.1	—	1.8	0.8	\$ 6,210,000	\$ 1,750,000	\$ 4,460,000
Lift Station	Existing CRRWWPS	Upgrade to existing CRRWWPS	—	4.3	3.5	—	1.8	0.7	\$ 1,000,000	\$ 420,000	\$ 580,000

Force Main Total	Continental Ranch West Force Main ⁽²⁾	30-inch force main connects to CRRWWP S and conveys flow generated in Basins 16, 20, 21, and 22 to the Basin 19 gravity sewer	3,500	2.1	3.5	—	1.8	0.7	\$3,500,000	\$75,000,000	\$3,000,000	\$37,500,000	\$
Total									\$88,420,000	\$43,500,000	\$44,920,000		

⁽¹⁾ The cost and flow projections assume 100% participation from water service providers within the DMA

⁽²⁾ Sewer capacity shown here is ADWF based on 62 gpcd only used for calculating the percentage of contribution from existing customers or growth

⁽²⁾ Additional studies should be completed to determine if a gravity main can be installed by tunneling or similar to avoid an extended length of force main
All costs in 2008 dollars

Table 8. Town of Marana Sewer Basin Study CIP – 10-year Alternative 3*

Project		Description	5-year CIP	10-year Upgrade	Phase II (2018)
WRF	Sandario WRF	Located in northwest corner of Basin 10	3.5	4.0	\$ 7,500,000
Total					\$ 7,500,000

*All costs in 2008 dollars

Table 8. Town of Marana Sewer Basin Study CIP—10-year Alternative 3⁽⁴⁾

Project		Description	5-year CIP	10-year Upgrade	Phase II (2018)
WRF	Sandario WRF	Located in northwest corner of Basin 10	3.5	4.0	\$—7,500,000
Lift Station	Airport Lift Station ⁽²⁾	Located on the border of Basin 13 and Basin 10	—	7.8	\$—6,500,000
Total					\$—14,000,000

⁽⁴⁾ Sewer lines are not addressed in the 10-year CIP

⁽²⁾ Design flow (PDWF plus 25 percent more)
All costs in 2008 dollars

ALTERNATIVE 1

Alternative 1 includes three new WRFs in Pima County at buildout as illustrated in Figure 10.11. The sewer basins and the projected average daily sewer flow rates for this alternative are provided in Table 9. This alternative requires the most WRFs, and places the Rillito Narrows WRF near residential developments and in an area with known cultural resources.

Table 9. Alternative 1 – Wastewater Reclamation Facilities and Flow Projection

WRF	Basins Served	Projected Wastewater Flow (mgd)			
		20132015	20182020	20282030	Buildout
Cottonwood WRF	8, 10, 12, 14, 15	0.9	1.2	1.9	3.5
Airport WRF	13, 18, 19, 23	--	0.3	1.2	4.9
Rillito Narrows WRF	9, 16, 20, 21, 22	3.3	3.8	4.3	5.6
TOTAL	--	4.2	5.3	7.4	14.0

Advantages:

- ~~By taking advantage of existing force mains, reclaimed water from the proposed Rillito Narrows WRF can supply the reclaimed water distribution system that currently serves the Dove Mountain golf courses.~~
- Distributed WRFs enable reclaimed water use in the local area, with smaller distribution system infrastructure than a regional WRF system. Reclaimed water from each of the WRFs can be used in parks, schools, road medians, golf courses, and other landscaping demands, as well as environmental, agricultural, industrial and construction uses.
- The Airport WRF is located in an area that has favorable recharge characteristics, and a planned municipal park near the WRF site will use reclaimed water.

- The Cottonwood WRF can supply reclaimed water to parks along the Santa Cruz River and existing landscaping, median, and other similar uses through the Town’s existing non-potable delivery system.

Disadvantages:

- Alternative 1 has the largest number of WRFs to administer, operate, and maintain.
- The proposed Rillito Narrows WRF site is near an existing residential area.
- There are known archeological sites in the vicinity of the proposed Rillito Narrows WRF.
- Two WRFs (Airport and Cottonwood) are less than three miles apart.
- This alternative may require a lift station to cross the CAP canal near Avra Valley Road.

Figure 10.11. Alternative 1 – 20-Year Proposed Water Reclamation Facilities

ALTERNATIVE 2

Alternative 2 includes one new WRF in Pima County at buildout as illustrated in Figure ~~11~~12. The sewer basins and the projected average daily sewer flow rates for this alternative are provided in Table 10. Although this alternative requires only one WRF, it is the most expensive alternative and would require at least three additional lift stations and larger infrastructure for collection and reclaimed/recharge delivery systems. In addition, the Cottonwood WRF, located near low-density development, would be almost double the size of the same facility per Alternative 3.

Table 10. Alternative 2 – Wastewater Reclamation Facility and Flow Projection

WRF	Basins Served	Projected Wastewater Flow (mgd)			Buildout
		2013 2015	2018 2020	2028 2030	
Cottonwood WRF	8, 9, 10, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23	4.2	5.3	7.4	14.0

Advantages:

- Of the three alternatives, this alternative has the fewest WRFs to administer, operate, and maintain.
- This alternative takes advantage of the economies of scale with respect to the cost of constructing WRFs.
- There are fewer WRFs near expected higher density residential areas.

Disadvantages:

- Larger infrastructure required for collection and reclaimed delivery systems due to one centrally located regional WRF. The size, complexity, and cost associated with modifications to a centralized facility are formidable.
- The CRRWWPS would remain in service. However, its tributary area would be reduced by routing Basin 9 flows across I-10 at Tangerine Road.
- ~~Requires~~This alternative requires two new major lift stations to pump sewage to the Cottonwood WRF basin.

Figure ~~11~~.12. Alternative 2 – 20-Year Proposed Water Reclamation Facilities

WASTEWATER SERVICE AGREEMENTS

The Town recognizes that special consideration must be given to areas within the Town's planning area where continued service by Pima County facilities may be appropriate, and that areas outside of the planning area may actually be better served by the Town's future facilities. The Town intends to provide effective and efficient wastewater collection and treatment services to its entire planning area.

Pima County and the Town need to have further discussions regarding transitional and permanent service to Basin 24, which currently flows by gravity into the Ina Road WRF. Additionally, conditions exist in other basins (e.g. 9, 16, 22, and 23), where flows from outside the planning area flow by gravity into the Town's planning area.

When new sewer service is requested within certain fringe areas, the project should be evaluated by Pima County and the Town to determine which entity would better serve the area. Sewer service provided by the Town outside of the planning area, as well as flows treated by Pima County facilities originating from within the Town's planning area, should be addressed by an Intergovernmental Agreement (IGA) between the Town and Pima County.

Multi-jurisdictional and cooperative wastewater planning is necessary and occurs in other Arizona communities. The Sub-regional Operating Group (SROG) in the Phoenix metropolitan area is the result of a Joint Exercise of Powers Agreement between the cities of Glendale, Mesa, Phoenix, Scottsdale, and Tempe for the liability, ownership, and operation of the jointly owned wastewater treatment facilities.⁴ SROG membership includes representation for the industrial pretreatment programs within their own jurisdiction with multi-city coordination to encourage compliance with federal requirements.⁵ Each SROG city owns a percentage of the 91st Avenue wastewater treatment facility operated by the City of Phoenix. SROG members and representatives from other local jurisdictions hold monthly meetings to provide collaboration on wastewater treatment issues.

WATER RECLAMATION FACILITY PROCESS ALTERNATIVES

The WRF process alternatives being considered for implementation in the Town include treatment systems capable of meeting setback requirements (see Table 11, page 51) for full aesthetic, noise, and odor control as well as producing high quality effluent. These systems include the sequencing batch reactor (SBR), membrane bioreactor (MBR), and oxidation ditch Biological Nutrient Removal Oxidation Ditch (BNROD) as further described below. Each new WRF will be designed to meet A+ Reclaimed Water Quality standards. A detailed DCR for the new WRFs will be prepared by the Town following the approval of this 208 Plan Amendment. The WRF process and associated process diagrams will be

⁴ <http://www.amwua.org/srog.html>

⁵ <http://phoenix.gov/PCD/srog.html>

provided upon selection of the preferred treatment method and described in a 208 Consistency Report, if required.

SEQUENCING BATCH REACTOR

The sequencing batch reactor is a fill-and-draw activated sludge system for wastewater treatment. In this system, wastewater is added to a single “batch” reactor, treated to remove undesirable components, and then discharged. Equalization, aeration, and clarification can all be achieved using a single batch reactor. SBR systems have been successfully used to treat both municipal and industrial wastewater. An SBR system would include a filtration system to meet A+ Reclaimed Water Quality standards. SBRs are uniquely suited for wastewater treatment applications characterized by low or intermittent flow conditions (EPA, 1999).

An advantage of the SBR is that wastewater treatment process steps are completed in a single reactor vessel. This leads to operating flexibility and control. There is also a minimal site footprint, and capital cost savings can be achieved through the elimination of clarifiers and other equipment.

Compared to conventional systems, SBR plants require a higher level of sophistication for operations and a higher level of maintenance primarily due to more complicated controls, automated switches, and automated valves.

MEMBRANE BIOREACTOR

The membrane bioreactor (~~MBR~~) combines biological processes and membrane technology to treat wastewater. Like the SBR, treatment is achieved within one process unit. The membrane pore openings generally range from 0.1–0.5 mm. The most common MBR configuration is to have the membrane immersed in the wastewater. Another approach is the sidestream configuration, where the wastewater is pumped through the membrane module and then returned to the bioreactor. The mixed liquor suspended solids (MLSS) concentration is very high (up to 20,000 mg/L) compared to conventional activated sludge plants. One advantage includes the very high standard of treatment. The dependence on disinfection is also reduced, since the membranes trap a significant proportion of pathogenic organisms. Also, MBRs offer a very small footprint (WIOA, ~~2007~~ 2001).

BIOLOGICAL NUTRIENT REMOVAL OXIDATION DITCH

An oxidation ditch is a modified activated sludge biological treatment process that uses long solids retention times (SRTs) to remove biodegradable organics. Oxidation ditches are typically complete mix systems, but they can be modified to approach plug flow conditions. Typical oxidation ditch treatment systems consist of a single- or multi-channel configuration within a ring-, oval-, or horseshoe-shaped basin. As a result, oxidation ditches are called “racetrack type” reactors. Horizontally or vertically mounted aerators provide circulation, oxygen transfer, and aeration in the ditch. Preliminary treatment, such as bar screens and grit removal, normally precedes the oxidation ditch. Primary settling prior to an oxidation ditch is sometimes practiced, but is not typical. Tertiary filters may be required after clarification, depending on effluent quality requirements. Disinfection is required and reiteration may be

necessary prior to final discharge. Flow to the oxidation ditch is aerated and mixed with return sludge from a secondary clarifier (EPA, 2000).

Advantages of the oxidation ditch include the ability to achieve removal performance objectives with low operational requirements and operation and maintenance costs. Oxidation ditches also provide an added measure of reliability and performance over other biological processes owing to a constant water level and continuous discharge, thus eliminating the periodic effluent surge common to other biological processes such as SBRs. Another advantage is the long hydraulic retention time and complete mixing, minimizing the impact of a shock load or hydraulic surge. This technology also produces less sludge than other biological treatment processes owing to extended biological activity during the activated sludge process. This process is also energy efficient, resulting in reduced energy costs compared with other biological treatment processes.

Disadvantages of the oxidation ditch include relatively high effluent-suspended solids concentrations compared to other modifications of the activated sludge process and the need for a larger land area than other activated sludge treatment options. The larger land area can prove costly, limiting the feasibility of oxidation ditches in urban and suburban areas where land acquisition costs are relatively high (EPA, 2000).

ENHANCED TREATMENT

Many chemicals and microbial constituents that have not historically been considered contaminants are present in the environment on a global scale. These “emerging contaminants” are commonly derived from municipal, agricultural, and industrial wastewater sources and pathways (USGS, 2007). Endocrine disrupting chemicals (EDCs) and pharmaceuticals and personal care products (PPCPs) are two groups of emerging contaminants that have been receiving significant recent media exposure. EDCs are a vast group of chemicals that impact hormone function in animals. PPCPs include detergents, antimicrobials, over-the-counter medicines, and various household chemicals (AwwaRF, 2007). These compounds are being detected in trace concentrations in waters around the world. Although the health risks of these contaminants are not fully understood and regulatory standards have not been established, they pose a concern for the future of wastewater treatment methods. Local monitoring and testing programs will likely increase to evaluate the problem of EDCs and PPCPs, as well as implementing source control prevention. Research is currently underway to enhance treatment methods to remove these compounds from wastewater treatment facilities and to prevent them from entering the environment. Enhanced treatment methods include advanced oxidation processes, activated carbon, reverse osmosis, and nanofiltration (AwwaRF, 2007).

RECLAIMED WATER

~~Through the ownership and operation of the Town’s WRFs, effluent will become an available and valuable renewable water resource.~~ Reclaimed water generated within the Town’s planning area will be

put to its highest beneficial use to augment water supplies with a non-groundwater source. The reuse components associated with the WRFs will be funded and managed by the Town water utility. The proposed locations of the WRFs, as described in preferred Alternative 3, provide opportunities for the water utility to distribute reclaimed water effectively and efficiently to end ~~users~~uses while minimizing delivery infrastructure requirements. Reclaimed water ~~will~~is expected to be used to irrigate parks, residential non-potable systems, school yards, road medians, and golf courses; for environmental, agricultural, construction and industrial purposes; and for underground storage at recharge facilities. Reclaimed water use will be evaluated during the WRF design and permitting phase. The direct use of reclaimed water will be maximized based on area demand and will be further evaluated during the APP application process. ~~To accommodate seasonal excess reclaimed water, each~~ Each WRF will be designed to convey the entire volume of reclaimed water to constructed recharge basins for underground storage and recovery to avoid non-emergency stream discharge and to accommodate groundwater replenishment.

The Town's existing non-potable water distribution system extends to North Marana customers and is primarily used for the irrigation of common areas, and residential landscaping. As effluent becomes available, and demands increase, the reclaimed water delivery system will expand accordingly. This system has delivered an annual average of 238 af in the past three years. ~~Tucson Water delivered 2,875 af in 2008 to meet Dove Mountain's reclaimed water demand.~~

The Town recognizes that other water service providers may elect to have their wastewater treated by the Town. Agreements between the Town and the water service providers will be developed at that time. Reclaimed water from wastewater originating in Pima County and treated by a WRF in Pinal County will also be put to its highest beneficial use through direct use and recharge. Effluent utilization as a renewable water supply is consistent with the ADWR water management goals for the Tucson AMA and the AWS program. The Town will use its reclaimed water to reduce groundwater pumping and provide a renewable water supply to offset CAGR groundwater replenishment obligations and recharge activities.

IMPACTS OF PROPOSED FACILITIES

The proposed WRFs planned within the Town's planning area will have certain beneficial impacts. Each new WRF will be designed to treat wastewater to achieve A+ reclaimed water quality standards by applying BADCT for the selected WRF ~~based on the future DCR.~~ Other positive impacts of new WRF technologies include reduced land area requirements (i.e. smaller footprint), aesthetics, and full noise and odor control to meet more restrictive setback requirements. Reclaimed water will be put to its highest beneficial use. The Town can increase the basin-wide use of reclaimed water supplies, reduce groundwater dependency, and manage water resources consistent with the ADWR management plan goals. There are no impacts associated with treatment and reuse of Pima County generated wastewater at a Pinal County facility, as the water will remain within the Tucson Active Management Area (AMA).

Future development based on service area expansion will provide housing and employment opportunities

in the planning area. Commercial development will provide retail sales tax revenues and an increased tax base for the Town.

FINANCING

~~The Town has adequate financial capacity to meet the responsibilities of a wastewater utility. No financial constraints have been identified. There are no anticipated impacts to existing or proposed wastewater facilities in the Town's planning area.~~

FINANCING

The Town is a legally incorporated Arizona municipal corporation that can meet the financial requirements and demonstration of A.A.C. R18-9-A203(B)(2). The Town has the ability and financial capacity to administer, design, permit, construct, operate, close, and ensure proper post-closure activities of ~~the~~ a wastewater utility. ~~Methods~~ The Town has programmed funds into its Capital Improvement Program (CIP) budget for the purposes of financing and designing and constructing such systems. Infrastructure for the wastewater facility and related systems will be financed through a variety of financial resources available to the Town which include:

- User fee rate structure
- Impact fees
- Connection and hookup fees
- Turn-on fees, penalties, interest, and miscellaneous non-rate revenues
- Developer contributions
- Grants and other funding
- Other special improvement districts
- Long or short term debt

~~The Town issued a 2007 contract to develop an economic model of the potential costs and wastewater fees, including impact fees, required to support comprehensive wastewater services planned by the Town. The firm that performed the analysis is a nationally recognized financial consultant used by several Arizona communities for rate modeling and by the Water Infrastructure Finance Authority of Arizona for statewide water and wastewater rate analysis. The Town's evaluation included the following:~~

- ~~Identification of customer base, annual growth projections, and phase in approach~~
- ~~Development of operational assumptions~~
- ~~Development of CIP:

 - ~~Plant location, capacity and estimated costs~~
 - ~~Plant phasing for immediate versus future needs~~
 - ~~Additional collection system infrastructure needed~~
 - ~~Potential treatment costs by Pima County~~~~
- ~~Identification of existing customer versus future customer breakdown for each CIP~~
- ~~Determination of operation by Town staff or private firm~~

- ~~Cost differential between the Town providing service versus Pima County~~
- ~~Debt financing~~

~~Assumptions for the development of the wastewater fees and impact fees include:~~

- ~~Wastewater treatment service would be provided by Pima County under contract until such time a new WRF is completed. Pima County would charge the Town a flat cost per 1,000 gallons for treatment.~~
- ~~Assuming that new WRFs will be replacement facilities, a portion of the overall costs is attributable to impact fees, while the remainder is generated by the rate payers.~~
- ~~The Town will negotiate with Pima County for interim pretreatment service for a fee.~~
- ~~The Town will operate the collection system within the Town limits. Operation and maintenance costs were based on contracting with a private firm on an interim basis.~~
- ~~A separate agreement would be developed for the operation of lift stations.~~

The Town's proposed rate structure ~~is~~ and other related revenues are projected to be sufficient to fund all anticipated operating costs, capital outlays, debt service requirements of the CIP and WRFs; and maintain bondholder debt coverage. ~~CIP financial rate studies requirements. Debt will be updated annually repaid through a combination of user fees and new impact fees. The CIP and rate models will be developed for the Town's review and approval.~~ are reviewed and updated annually, as required.

~~Pima County is currently the largest provider of~~ The Town's phasing approach yields a wastewater service within Town limits and most of Pima County, so residents and businesses are familiar enterprise fund which increases treatment capacity with PCRWRD's level of service and costs. Key Town goals are community growth. The Town will utilize its current rate-making process to ensure quality service and to adopt a rate structure comparable to and not exceeding Pima County's. ~~The Town's rate analysis indicates that the Town will meet these key goals.~~

~~The 2008/2009 Town budget for the Sewer Fund is \$40,000,000. The construction of new WRFs~~ the wastewater utility operates within State and Federal mandates (i.e. pretreatment, treatment, and solids handling will likely be funded financed by the sale of bonds. The debt will be serviced by a combination of wastewater user fees and; increased facility capacity to support growth will be financed through impact fees. Other financing sources may include impact fees and/or developer contributions. Estimated costs to construct WRFs associated with Alternative 3 were described previously). Reuse costs are allocated in the Water Reclamation Facility section water utility budget.

CONSTRUCTION

The Town will construct WRFs according to specified engineering plans for the facility. The WRF design report and construction drawings will be submitted to ADEQ as part of the APP application approval

process. Each WRF will be constructed in phases to meet the wastewater treatment needs as areas develop. Consistency of each new WRF with the PAG Areawide Water Quality Management Plan will be determined either through a 208 Plan Consistency Report or 208 Plan Amendment.

An AZPDES permit and Stormwater Pollution Prevention Plan (SWPPP) will be required for the construction of any of the sewage facilities. The SWPPP is required to prevent any discharges of contaminants or sediment from the construction site to a navigable waterway of the United States. The SWPPP permit will go into effect once the Notice of Intent (NOI) is filed with ADEQ and approved. The SWPPP is effective from initial grading to final site stabilization and filing of a Notice of Termination (NOT). In addition to the SWPPP and prior to the construction of a sewer collection system, Construction Authorization will be obtained from ADEQ.

INDUSTRIAL PRETREATMENT PROGRAM

The Town will develop ordinances that regulate commercial and industrial pretreatment requirements to prevent unwanted substances from entering the sewer collection and treatment system. ~~During the interim period to adopt these requirements, the Town plans to implement the best management practices established by the Pima County Industrial Pretreatment Program.~~ Pre-treatment ordinances will be adopted to manage the acceptance of industrial wastewater into the Town's sanitary system and provide protection to groundwater resources from effluent use, sludge disposal, and operating personnel. The Town will develop industrial wastewater ordinances in compliance with all federal and state requirements for publicly-owned treatment works. The Town will implement industry best management practices.

ENVIRONMENTAL IMPACT OF PROPOSED CONSTRUCTION

~~Development~~ The development of the Town's new WRFs is expected to have positive environmental impacts. Best management practices to prevent stormwater runoff will mitigate any negative impacts to surface water and groundwater from construction activities. Facilities will be designed to prevent damage from a 100-year storm event. The WRFs will be located outside or above the 100-year floodplain and protected from the erosion hazard setback if necessary. Possible pollutants resulting from excavation during construction could be construction debris, fuels, and sediment from the erosion of cleared soils. The construction documents for the proposed improvements will include erosion control, fuel storage, and site cleanup requirements that minimize the potential for pollution. The contractor will be required to comply with all applicable construction requirements.

SETBACK REQUIREMENTS

The setback requirements per A.A.C. Section R18-9-B201.I for a treatment plant will be satisfied based on the flow rate of each WRF. Each plant will be designed to meet the setback requirements for buildout capacity as listed in Table 11. Future 208 Consistency Reports for individual WRFs will include site location maps with set back conditions.

Table 11. Setback Requirements

Sewage Treatment Facility Design Flow (gallons per day)	No Noise, Odor, or Aesthetic Controls (feet)	Full Noise, Odor, and Aesthetic Controls (feet)*
3,000 to less than 24,000	250	25
24,000 to less than 100,000	350	50
100,000 to less than 500,000	500	100
500,000 to less than 1,000,000	750	250
1,000,000 or greater	1,000	350

* "Full noise, odor, and aesthetic controls" means that all treatment components are fully enclosed, odor scrubbers are installed on all vents, and fencing is aesthetically matched to that in the area surrounding the facility.

Note: The owner or operator may decrease setbacks if setback waivers are obtained from affected property owners in which the property owner acknowledges awareness of the established setbacks, the basic design of the sewage treatment facility, and the potential for noise and odor.

PERMITS

All permits that are required for construction and operation of the WRF will be obtained by the Town in a timely manner. The following permits or approvals are required:

- Section 208 Plan Amendment – PAG is the Designated Planning Agency for Pima County, and has the responsibility to implement an Areawide Water Quality Management Plan under Section 208 of the CWA. The approval of this 208 Plan Amendment for Marana will establish the Town as the DMA for the Town’s planning area and meet 208 planning requirements.
- Section 208 Consistency Report – If required, upon final determination of each individual WRF site location, analysis, and design, the Town will prepared a 208 Consistency Report for approval through PAG’s 208 Planning Process.
- Aquifer Protection Permit – An individual APP will be obtained, as required, for ~~wastewater treatment facilities~~ WRFs. The individual APP application will be submitted to ADEQ upon completion of the WRF design and demonstration of BADCT. Industrial pretreatment of wastewater will be addressed under agreements between Marana and the commercial or industrial facility.
- Reclaimed Water Use Permit – An appropriate Reclaimed Water Use Permit will be obtained from ADEQ prior to using treated effluent for any identified reuse option. A NOI for a Type 2 Reclaimed Water General Permit for Direct Use of Class A+ Reclaimed Water will be submitted to ADEQ upon approval of the APP.
- ADWR Underground Storage Facility (USF) Permit – A USF permit will be obtained to allow the Town to accrue effluent storage credits from recharge activities.
- ADWR Groundwater Savings Facility (GSF) Permit – A GSF permit will be obtained to allow the Town to accrue “in-lieu” storage credits for effluent delivered for agricultural use.
- ADWR Recovery Well Permit – A Recovery Well permit will provide the authority to withdraw effluent recharge credits for intended uses.
- Construction Authorization – Authorization to construct a WRF will be obtained from ADEQ.
- Pima County Air Quality Permit – This permit will be required for the WRF backup power generators.
- AZPDES SWPPP – A SWPPP will be required for the construction phase of the WRF. Erosion control procedures outlined in the AZPDES Construction General Permit will prevent sediment runoff from the temporary land disturbance caused by excavations.

- AZPDES Discharge Permit – The Town will acquire an AZPDES discharge permit for emergency discharge only. The AZPDES permitting program also regulates sewage sludge under Section 405 of the CWA. Title 40 of the Code of Federal Regulations (CFR), Part 503 regulates the quality and disposal of sludge. In addition, if required, the NPDES Form 2S, Part 2, Biosolids will be submitted. Disposal alternatives for sludge generated by the WRF are dewatering and disposal at an ADEQ certified sanitary landfill and/or agricultural land application.

The closest lined landfill accepting dewatered sludge for disposal is:

Cactus Regional Landfill
22481 E. Deep Well Ranch Road (at Highway 79)
Florence, Arizona 85232
Telephone: (602) 268-5060

Operated By:

Cactus Waste Systems, L.L.C.
955 E. Javelina Avenue, #B-111
Mesa, Arizona 85204

An alternative disposal location is:

Butterfield Station Municipal Solid Waste Landfill
40404 S. 99th Avenue
Mobile, Arizona 85239
Telephone: (602) 437-3165

Operated By:

Waste Management, Inc.
2425 South 40th Street
Phoenix, Arizona 85034
Telephone: (602) 256-0630

CONSTRUCTION SCHEDULE

Construction will be phased based upon the demand for wastewater services within the Town’s planning area. The Cottonwood WRF and the Sandario WRF will be the first two facilities constructed per the Town’s Sewer Basin Study. The Town will initiate the construction of the first phase facilities for these WRFs upon completion of this 208 Plan Amendment process. The anticipated implementation schedule for the construction of the WRFs is provided in Table 12.

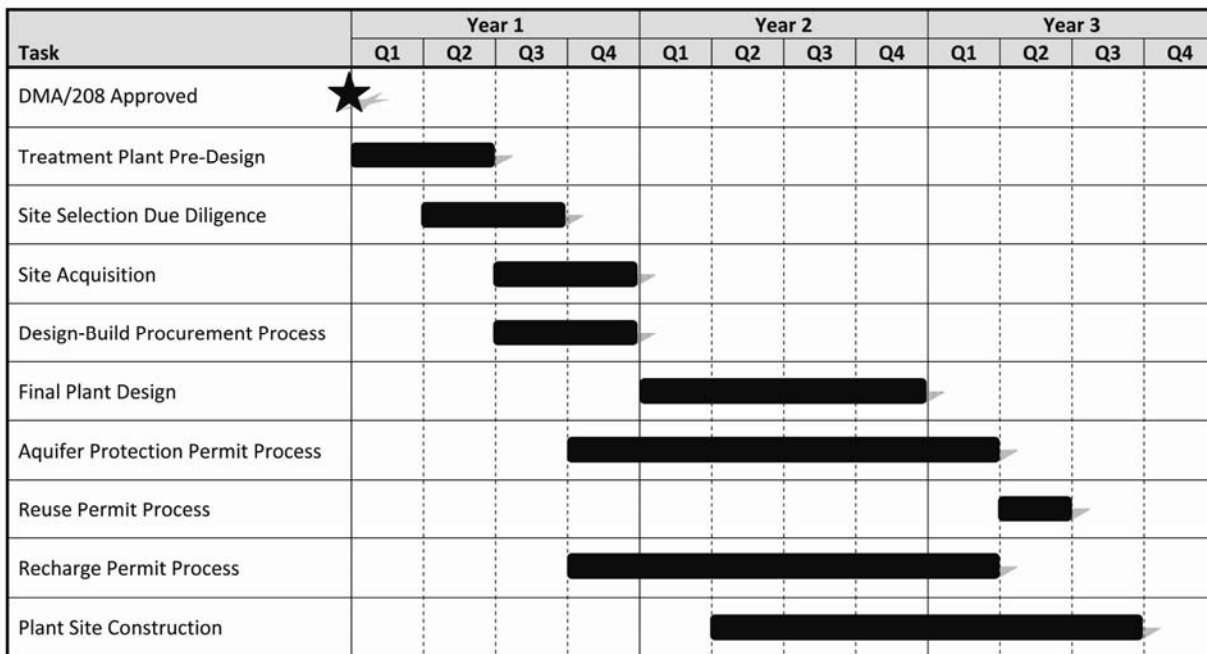
Table 12. Preferred Alternative WRF – Accumulative Phased Construction Schedule

WRF	Phase 1* (5-Year)	Phase 2* (10-Year)	Phase 3* (20-Year)	Buildout*
Cottonwood WRF (mgd)	1.5	1.5	3.5	7.6
Sandario WRF (mgd)	3.5	4.0	4.5	6.4
TOTAL	5.0	5.5	8.0	14.0

*Flow projections assume all water providers within the DMA will request wastewater service from the Town.

The 20-year capacity for the Cottonwood WRF is anticipated to be 3.5 mgd, and the 20-year Capacity for the Sandario WRF is anticipated to be 4.5 mgd. The capacity of these facilities will be phased according to the development of flows within the basins served by these plants, with first phase capacities capacity estimates of 1.5 mgd and 3.5 mgd for Cottonwood WRF and Sandario WRF, respectively. Figure 12 provides a template for the anticipated design, permitting, and construction timeline projected for each WRF.

Figure 12.13. Design, Permitting and Construction Timeline Template



NON-POINT SOURCE ISSUES AND MITIGATION PROCEDURES

The denitrification process at the WRFs will produce high quality reclaimed water (i.e. Class A+) and will minimize non-point source issues. Reclaimed irrigation systems will be designed to maximize application efficiency and minimize runoff. Grading plans and stormwater drainages will be properly designed, and construction SWPPPs will be implemented for required construction activities.

IMPLEMENTABILITY

The WRFs will ~~provide wastewater service to the first phase development~~ be constructed in locations and ~~subsequent phasing requirements within~~ at capacities required to accommodate growth throughout the Town's planning area. Subsequent WRF phases will begin prior to reaching practical operational capacity to ensure adequate sewer service for continued development until buildout or as delineated in the APP. Specific individual APP and Reuse Permit requirements will be followed according to ADEQ regulations.

OPERATION AND MAINTENANCE OF PROPOSED WASTEWATER TREATMENT FACILITY

The Town will operate and maintain the WRFs in its planning area. ADEQ Certified Wastewater Treatment Operators will be employed or contracted to operate the WRFs.

ENFORCEMENT ACTIONS AND REMEDIES

ADEQ has brought no enforcement actions and sought no remedies against the Town. Contingency Plan requirements outlined in the approved APP will be followed.

DESIGNATED MANAGEMENT AGENCY BOUNDARY EXPANSION

This 208 Plan Amendment will establish the Town as the DMA for the planning area as presented. With the authority granted to it by virtue of its DMA designation, the Town will provide sewer collection and wastewater treatment services for the planning area. As an established DMA, the Town will have the authority to implement Section 208 of the CWA Sections 208(b)(2)(C)(iii), 208(b)(2)(D), and 208(c)(1) and regulations in 40 CFR 130.6(c)(5).

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APPENDIX A

**208
AMENDMENT
CHECKLIST**

APPENDIX A
208 AMENDMENT CHECKLIST
Section 208 Clean Water Act
40 CFR Part 130.6

Requirement	Provide Brief Summary On How Requirements Are Addressed	Addressed On Page
<p><u>AUTHORITY</u></p> <p>Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.</p>	<p>The Town self-certifies that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its planning and service areas.</p>	<p>Appendix B<u>D</u></p>
<p><u>20-YEAR NEEDS</u></p> <p>Clearly describe the existing wastewater treatment (WWT) facilities:</p> <ul style="list-style-type: none"> Describe existing WWT facilities. 	<p>Refer to Figure 2 (<u>page 10</u>) for existing wastewater facilities in the Town's planning area. The existing wastewater facilities infrastructure currently serving the <u>wastewater demands within the</u> Town's planning area include<u>consists of</u> one regional WRF wastewater treatment plant, and several smaller wastewater treatment facilities. The primary wastewater facilities located in the Town's planning area are the Ina Road public and the Marana WRFs. The smaller private treatment facilities include the <u>Pima County operates the Ina Road WRF, Marana WRF, and Rillito Vista WRF. The private treatment plants are the Adonis Sanitary Sewerage Facility, the Rillito Vista WRF, the Marana High School WRF, and the Management and Training Corporation (MTC) WRF.</u></p>	<p>9, 31<u>10, 33-35</u></p>
<ul style="list-style-type: none"> Show WWT certified and service areas for private utilities and sanitary district boundaries if possible. 	<p>Refer to Figure 1 (<u>page 8</u>) for the Town's planning area. The Town is pursuing DMA status to provide wastewater collection and treatment services to customers within its planning area. <u>There is no sanitary district within the planning area. Each of the existing private wastewater treatment plants in the Town's planning area typically serves only one entity (e.g. a small subdivision, a school, etc.)</u></p>	<p>7, 8<u>9</u></p>
<p>Clearly describe alternatives and the recommended WWT plan:</p> <ul style="list-style-type: none"> Provide POPTAC population estimates (or COG-approved estimates only where POPTAC not available) over 20-year period. 	<p>The PAG POPTAC adopted the population estimates and projections provided by the Town as described in the Population section. The methodology used by the Town to estimate population and projected wastewater flow rates were based primarily on planned land uses described in the Marana General Plan, development plans, and available specific plans. <u>The 20-year population projection for the Town's planning area is 106,900 based on planned land uses.</u></p>	<p>18,<u>19-20</u></p>

APPENDIX A
208 AMENDMENT CHECKLIST
Section 208 Clean Water Act
40 CFR Part 130.6

Requirement	Provide Brief Summary On How Requirements Are Addressed	Addressed On Page
<ul style="list-style-type: none"> Provide wastewater flow estimates over the 20-year planning period. 	<p>The estimated 20-year wastewater flow for the proposed WRFs within <u>the</u> PAG 208 planning area for the Town is 7.4 mgd. The <u>For the preferred alternative, the</u> Cottonwood and Sandario WRFs are projected to ultimately operate at 3.3 mgd and 4.1 mgd, respectively, <u>over the 20-year planning period.</u></p>	<p>36, 38, 40—44</p>
<ul style="list-style-type: none"> Illustrate the WWT planning and service areas. 	<p>Refer to Figures <u>Figure 1 and 2 (page 8)</u> for the Town’s planning area. Figures 89 and 10 (pages 38 and 939) display the proposed WRFs for the Town’s preferred alternative for the 20-year and buildout projections, respectively.</p>	<p>8, 9, 35—38-39</p>
<ul style="list-style-type: none"> Describe the type and capacity of the recommended WWT Plant. 	<p>The WRF design will be selected based on an evaluation of alternative treatment processes. The Town has expressed specific interest in membrane bioreactor and sequencing batch reactor technology, membrane bioreactor, and biological nutrient removal oxidation ditch treatment technologies, although other processes will be considered. The effluent will be treated to meet ADEQ Class A+ Reclaimed Water standards. <u>The WRF process and associated process diagram will be provided upon selection of the preferred treatment process and described in a 208 Consistency Report, if required.</u> For the preferred alternative, the projected 20-year treatment capacity is 4.1 mgd for Sandario WRF and 3.3 mgd for the Cottonwood WRF.</p>	<p>36, 38, 45—47 40, <u>46-48</u></p>
<ul style="list-style-type: none"> Identify water quality problems, consider alternative control measures, and recommend solution for implementation. 	<p>No water quality problems are anticipated. Effluent treatment <u>Each new WRF</u> will be designed to meet <u>treat wastewater to achieve</u> ADEQ Class A+ Reclaimed Water Reuse <u>reclaimed water quality</u> standards by applying BADCT.</p>	<p>45 <u>48-49</u></p>
<ul style="list-style-type: none"> If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when? 	<p>The <u>As new public WRFs constructed, the Town will coordinate with the owners and operators of the existing smaller private and public wastewater treatment plants will be provided the opportunity to retire operations to evaluate treatment service alternatives and connect to the Town’s WRF systems when the new WRFs are operational. Infrastructure requirements to connect to the Town’s collection system will be evaluated if the private or public plant</u></p>	<p>31 <u>33</u></p>

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	decides to close its existing facility <u>retirement of these facilities.</u>	
<ul style="list-style-type: none"> Describe method of effluent disposal and reuse sites (if appropriate). 	<p>All available reclaimed water will be used for irrigation and/or recharge. Reuse sites include, but are not limited to turf facilities, parks, school yards, road medians, and agriculture. Recharge basins will be designed to accommodate the disposal of 100 percent of the generated effluent to avoid discharge and accommodate potential seasonal reductions in reclaimed water deliveries.<u>Reclaimed water generated within the Town's planning area will be put to its highest beneficial use to augment water supplies. Reclaimed water is expected to be used to irrigate parks, residential non-potable systems, school yards, road medians, and golf courses; for environmental, agricultural, construction and industrial purposes; and for underground storage at recharge facilities. Each WRF will be designed to convey the entire volume of reclaimed water to constructed recharge basins for underground storage and recovery to avoid non-emergency stream discharge and to accommodate groundwater replenishment.</u> Recharge projects will be permitted through ADWR to allow the accumulation of storage credits based on an Underground Storage Facility or a Groundwater Savings Facility permit.</p>	47, 48, 52
<ul style="list-style-type: none"> If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when. 	No sanitary districts are located within the planning area.	N/A
<ul style="list-style-type: none"> Describe ownership of land proposed for plant sites and reuse areas. 	The Town will own the land proposed for the plant <u>WRF</u> sites. Reuse areas would include public areas, private land holdings, and Town owned facilities.	N/A

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<ul style="list-style-type: none"> Address time frames in the development of the treatment works. 	<p>The proposed WRFs will be constructed in phases based on the demand for the existing and future developments <u>wastewater services</u> within the Town's planning area. The processes to permit, design, and construct the Cottonwood and Sandario WRFs will begin immediately following the Town obtaining DMA status <u>be the first two facilities constructed per the Town's Sewer Basin Study</u>. The Town will initiate the construction of the first phase of the Cottonwood and Sandario facilities for these WRFs are planned to have a treatment capacity upon completion of 0.9 mgd and 3.3 mgd, respectively <u>this 208 Plan Amendment process</u>.</p>	53, 54
<ul style="list-style-type: none"> Address financial constraints in the development of the treatment works. 	<p>The Town has no anticipated financial constraints for the development of the treatment works.</p>	49, 50
<ul style="list-style-type: none"> Describe how discharges will comply with EPA municipal and industrial stormwater discharge regulations (Section 405, CWA). 	<p><u>An AZPDES permit and Stormwater Pollution Prevention Plan (SWPPP)</u> will be diverted away from <u>required as necessary for the WRFs</u>. Stormwater originating onsite will be managed according to regulations <u>construction and operation of any of sewage facilities</u>.</p>	50
<ul style="list-style-type: none"> Describe how open areas & recreational opportunities will result from improved water quality and how those will be used. 	<p>Class A+ reclaimed water will is expected to be used, but not limited to <u>for the irrigation of turf facilities, residential reclaimed water system</u>, regional parks, community parks, and school yards, providing open areas and recreational opportunities.</p>	47, 48
<ul style="list-style-type: none"> Describe potential use of lands associated with treatment works and increased access to water-based recreation, if applicable. 	<p>The land associated with the WRFs will be dedicated specifically to wastewater treatment. Water based recreational facilities are not planned <u>expected</u>.</p>	N/A

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<p><u>REGULATIONS</u></p> <ul style="list-style-type: none"> Describe types of permits needed, including NPDES, APP and reuse. 	<p>As a DMA, the Town will start the process to obtain the permits needed to construct and operate a WRF. This process includes preparing a 208 Plan Consistency Report or 208 Plan Amendment, obtaining an Individual APP and Reclaimed Water Reuse permit for each WRF, and an AZPDES for emergency discharges. In addition, AZPDES SWPPPs will be applied for construction purposes.</p>	<p><u>51-52, 53</u></p>
<ul style="list-style-type: none"> Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal. 	<p>AZPDES Discharge Permit is expected to be acquired for emergency discharge only. It is expected that 100 percent of the reclaimed water would either be directly used reused or recharged. If it is determined that an AZPDES Discharge Permit is required due to Disposal into a Waters of the United States, this permit will be obtained from at an ADEQ. <u>certified sanitary landfill and/or agricultural land application.</u></p>	<p><u>5352</u></p>
<ul style="list-style-type: none"> Provide documentation of communication with ADEQ Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits. 	<p>Additional documentation of communication with ADEQ Permitting Section will be provided 30 to 60 days prior to any public noticing or hearing requirements.</p>	<p>Appendix D <u>F</u></p>
<ul style="list-style-type: none"> Describe pretreatment requirements and method of adherence to requirements (Section 208 (b)(2)(D), CWA). 	<p>The Town will require pretreatment of wastewater originating from industrial uses. Initially the Town may enter into an agreement with Pima County to provide these services on an interim basis. Upon completion and operation of its WRFs, the Town will develop a pretreatment program that meets CWA requirements. <u>The Town will develop ordinances that regulate commercial and industrial pretreatment requirements to prevent unwanted substances from entering the sewer collection and treatment system. Pre-treatment ordinances will be adopted to manage the acceptance of industrial wastewater into the Town's sanitary system and provide protection to groundwater resources from effluent use, sludge disposal, and operating personnel. The Town will develop industrial wastewater ordinances in compliance with all federal and state requirements for publicly owned treatment works. The Town will implement industry best management practices.</u></p>	<p><u>5450</u></p>

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<ul style="list-style-type: none"> Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA). 	Sediment erosion control procedures will be a requirement in construction documents. <u>A</u> SWPPP will be developed and implemented during <u>prior to</u> construction activities.	50
<ul style="list-style-type: none"> Describe alternatives and recommendation in the disposition of sludge generated. (Section 405 CWA) 	Sludge will be treated to meet the regulations for agricultural land application and/or landfill disposal.	<u>52-53</u>
<ul style="list-style-type: none"> Define any nonpoint issues related to the proposed facility and outline procedures to control them. 	There are no nonpoint issues related to the proposed WRFs. The WRF will be protected from stormwater runoff with proper site grading. The denitrification process at the WRFs will produce high quality reclaimed water (i.e. Class A+) and will minimize non-point source issues. The reclaimed irrigation system will be designed to maximize application efficiency and minimize runoff. Grading plans and stormwater drainages will be properly designed, and construction SWPPPs will be implemented for required construction activities.	54
<ul style="list-style-type: none"> Describe process to handle all mining runoff, orphan sites and underground pollutants, if applicable. 	Not Applicable	N/A
<ul style="list-style-type: none"> If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas. 	Not Applicable	N/A
<ul style="list-style-type: none"> If mining related, define what specialized procedures will be initiated for orphan sites, if applicable. 	Not Applicable	N/A

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<p><u>CONSTRUCTION</u></p> <ul style="list-style-type: none"> Define construction priorities and time schedules for initiation and completion. 	<p><u>Construction will be phased based upon the demand for wastewater services within the Town's planning area. The Cottonwood WRF and/or the Sandario WRF will be the first two facilities constructed. The Town will initiate the permitting and design of the Cottonwood and Sandario WRFs upon obtaining DMA authority. Following the approval of the necessary permits, the Town will likely start with the construction of the Cottonwood WRF. The construction period first phase WRF(s) upon completion of this 208 Plan Amendment process. The time required from initiation to completion of a WRF is expected to take be approximately 1.5-3 years.</u></p>	<p>53, 54</p>
<ul style="list-style-type: none"> Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan. 	<p>As the DMA, the Town will be responsible to carry out the components of the plan including <u>the construction</u>, operation and maintenance of the said facilities. The WRF(s) contractor information will be available following bid review and contractor selection.</p>	<p>53-50, 55</p>
<ul style="list-style-type: none"> Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources. 	<p>Possible pollutants could include sediment from the erosion of cleared soils and construction debris. Erosion <u>An AZPDES permit and construction SWPPPs</u> will be control based on grading plans and implemented stormwater pollution protection plans (under AZPDES); <u>for required construction activities.</u></p>	<p>50</p>
<p><u>FINANCING AND OTHER MEASURES NECESSARY TO CARRY OUT THE PLAN</u></p> <ul style="list-style-type: none"> If plan proposes to take over certificated private utility, describe how, when and financing will be managed. 	<p>It is the Town's intent to provide wastewater collection and treatment services to customers <u>users served by the Town's water utility</u> within its entire <u>the</u> planning area. The Town will provide an opportunity for <u>coordinate with the owners and operators of the existing</u> smaller public and private <u>and public</u> wastewater facilities <u>treatment plants</u> within its planning area to connect to the Town's system <u>evaluate treatment service alternatives and retirement of these facilities.</u> The retirement (closure) of these systems will be addressed on an individual basis.</p>	<p>34, N/A</p>

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<ul style="list-style-type: none"> Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc. 	<p>There are no significant measures necessary to carry out the plan other than that to obtain the proper permitting. Agreements with Pima County to provide interim service while new infrastructure is being constructed may be necessary. The Town has no financial or economic limitations.</p>	<p>49, 50</p>
<ul style="list-style-type: none"> Describe proposed method(s) of community financing. 	<p>The proposed methods of financing includes user fees, impact fees, connection and hookup fees, turn-on fees, accepting grants or other funding, and/or incurring long or short term debt.</p>	<p>49, 50</p>
<ul style="list-style-type: none"> Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life. 	<p>The Town under contract with a rate consultant developed an economic model of the potential costs and wastewater fees required to support comprehensive wastewater services planned by the Town. The Town's proposed rate structure is <u>and other related revenues are</u> projected to be sufficient to fund all anticipated operating costs, capital outlays, debt service requirements on <u>of</u> the CIP and WRF, WRFs and debt coverage by the <u>maintain</u> bondholder, debt coverage requirements. <u>Debt will be repaid through a combination of user fees and impact fees.</u> The Town has the legal and ethical onus to operate its infrastructure with fiscal responsibility. CIP and rate models are reviewed and updated annually, as required.</p>	<p>49, 50</p>
<ul style="list-style-type: none"> Provide a time line outlining period of time necessary for carrying out plan implementation. 	<p>Based on the <u>The Town will initiate the permitting, design, and construction of Marana Sewer Basin Study, it is projected that the proposed WRFs will be constructed following permit and design approvals first phase facilities upon the approval of this 208 Plan Amendment.</u> The Cottonwood WRF and the Sandario WRF <u>will be the first two facilities constructed. These two WRFs are expected to become operational within the next five years.</u></p>	<p>38, 53, <u>54</u></p>
<ul style="list-style-type: none"> Provide financial information indicating the method and measures necessary to achieve project financing. (Section 201 CWA or Section 604 may apply). 	<p>The Town is legally incorporated in the State of Arizona <u>and municipal corporation that</u> can meet the financial requirements and demonstration according to <u>of</u> Arizona Administrative Code (A.A.C.) R18-9-A203(B)(2).</p>	<p>49, 50</p>

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<p><u>IMPLEMENTABILITY</u></p> <ul style="list-style-type: none"> Describe impacts and implementability of Plan. Describe impacts on existing wastewater (WW) facilities, e.g., Sanitary district, infrastructure/facilities and certificated areas. 	<p>Upon implementation, the Town's plan will provide a positive impact by <u>certain beneficial impacts including</u> maximizing the use of <u>Class A+</u> reclaimed water as a renewable water supply. Higher water quality parameters will be achieved than what is currently produced by area wastewater and adopting new WRF technologies to achieve <u>better treatment systems</u>. Existing wastewater facility owners and operators will be <u>with reduced footprints</u>. The Town has provided the opportunity to connect <u>an offer to Pima County to purchase the new WRFs</u>. Conversion of Marana WRF. There are no anticipated impacts to existing or proposed wastewater treatment systems to facilities in the Town's <u>WRFs will enhance water quality treatment and reuse opportunities, thus protecting the quality and quantity groundwater resources</u>. The Town would obtain DMA authorities for its planning area that is presently served by Pima County.</p>	<p style="text-align: center;"><u>31, 45, 48-49</u></p>
<ul style="list-style-type: none"> Describe how and when existing package plants will be connected to a regional system. 	<p>When the new WRFs are operational, the <u>Town will coordinate with the owners</u> or <u>and operators of the existing packages</u> smaller private and public wastewater treatment plants will be provided an opportunity to connect to the new WRFs <u>evaluate treatment service alternatives and retirement of these facilities.</u></p>	<p style="text-align: center;"><u>31-33</u></p>
<ul style="list-style-type: none"> Describe the impact on communities and businesses affected by the plan. 	<p>The plan provides a positive impact on communities and business as a result of the utilization of effluent as a renewable water resource. Reduced impacts on groundwater resources benefit the Town and the region. A renewable water resource is also provided for the establishment of outdoor recreational facilities. Another benefit for local commerce is the ability to streamline the application process for new developments by placing the sewer service application and capacity assurances under the Town's jurisdiction. <u>Future development will provide housing and employment opportunities in the planning area.</u></p>	<p style="text-align: center;"><u>48-49</u></p>
<ul style="list-style-type: none"> If a municipal wastewater (WWT) system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances. (Interim services). 	<p>The Town proposes to enter into agreements with Pima County to continue to provide <u>municipal wastewater collection and treatment services</u> until for the new WRF(s) is operational. The Town will develop an ordinance similar to Pima County that regulates <u>Town's</u></p>	<p style="text-align: center;"><u>19, 21, 45, 49, 53</u></p>

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	<p><u>planning area. Following the useapproval of septic systems. This plan identifies this 208 Plan Amendment process and with DMA authority, the flexibility to allow existing septic systems to remain operational. Town will initiate the design, permitting, and the construction of new septic systems under Pima County requirements if sewer connections are not feasible. WRFs based on wastewater service demands. Wastewater flows will continue to be treated at the Marana WRF as well as other existing public and private treatment facilities.</u></p>	
<p><u>PUBLIC PARTICIPATION</u></p> <ul style="list-style-type: none"> • Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment. (40 CFR, Chapter 1, part 25.5) 	All public notices will be satisfied through PAG.	Appendix EF
<ul style="list-style-type: none"> • List location where documents are available for review at least 30 days before public hearing. 	All public notices will be satisfied through PAG.	Appendix EF
<ul style="list-style-type: none"> • Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing. 	All public notices will be satisfied through PAG.	Appendix EF
<ul style="list-style-type: none"> • Submit affidavit of publication for official newspaper publication. 	All public notices will be satisfied through PAG.	Appendix EF
<ul style="list-style-type: none"> • Submit responsiveness summary for public hearing. 	All public notices will be satisfied through PAG.	Appendix EF