

# Appendix A: Water Quality Management

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## ***Chapter 1: Strategic Action Plan***

The main objective of the 208 Plan is to provide a consistent regional approach to protecting, maintaining and improving water quality in the PAG planning area. The Strategic Action Plan helps to direct implementation of water quality management activities to address top water quality issues in the PAG region. These issues, along with other current water quality conditions, are covered in more detail in this appendix in Chapter 2: Water Quality and Management Efforts. Chapter 2 also includes summaries of progress toward addressing recommendations for remedial activities throughout the region.

If several major progress points occur on the action items, or if a water quality issue is elevated or resolved, an administrative update to the Strategic Action Plan is recommended.

### **Water Quality Issues**

Based on current conditions, PAG, Arizona Department of Environmental Quality (ADEQ) and other responsible partners have identified the following water quality issues:

- Impairment of the Santa Cruz River due to the presence of *E. coli* from stormwater sources and non-attaining status for ammonia in effluent
- Degradation of groundwater and surface water quality, including the historic contamination of perched aquifers
- Presence of emerging contaminants (ECs) such as pharmaceuticals, personal care products, per- and polyfluorinated alkyl substances (PFAS) and microplastics in water reclamation resources
- The recent discovery of PFAS in groundwater
- Degradation of riparian habitat
- Impacts of active wells on the region's urban periphery to the remaining perennial creek flows that are dependent on shallow groundwater
- Failure and compliance issues with septic and aged, small on-site wastewater treatment plants
- Impacts of climate variability

### **Goals and Recommended Actions**

The following goals and recommended actions aim to protect, maintain and improve water quality. Goals are supported by past policies and guidance adopted in previous PAG plans. Goals in the 2006 208 Plan were carried over unless completed. Many goals listed in other Designated Planning Agency (DPA) 208 Plans were developed through guidance and resources from ADEQ. These include the ADEQ template used for DPA plans and have been used to foster a consistent collaborative effort across the state. PAG utilized the template where applicable to the region's issues and adapted the actions to the region's level of progress on each issue. Relevant PAG Policies and Guiding Principles are cited after each goal to support the Strategic Action Plan. Goals were also updated as a result of public participation in the 208 Plan update process.



The actions are recommended for any entity to pursue as funds allow. Coordination with PAG is recommended and staff may provide support where feasible.

The recommended actions then may be carried out by PAG staff or regional partners. Funding is a key issue for all project areas, so an overarching goal is to share lists of potential funding sources and draw attention to 208-related (604b) funds.

PAG's Watershed Planning Subcommittee (WPS) and Environmental Planning Advisory Committee (EPAC) will track progress and facilitate information-sharing regarding water quality conditions and actions. This will be achieved in part through topic discussions and updates to the Top Environmental Issues List. This process will identify opportunities to integrate water quality improvement projects with other regional planning efforts and increase coordination among PAG members.

Adopted procedures for maintaining 208 Plan consistency will also ensure that water quality issues and priorities are considered in accordance with current state and federal regulations and local ordinances.

### **Goal 1<sup>1</sup>**

Provide regional water reclamation that meets all regulatory requirements, is economically sustainable, utilizes recognized best management practices (BMPs) and protects groundwater and groundwater aquifers.

#### **Recommended Actions:**

1. Provide guidelines for new development that encourage centralized water reclamation where most beneficial.
  - a. Work with ADEQ and the Pima County Department of Environmental Quality (PDEQ) to create a regional Geographic Information System (GIS) database of high-priority areas for centralized water reclamation facilities (WRFs).
2. Assess industrial waste treatment needs in the region and identify existing or proposed discharges and/or WRFs that meet these needs.
  - a. Collaborate on funding opportunities to address contaminants and emerging concerns.
3. Encourage continued careful management of contamination sites in the regional aquifer and perched aquifers.
  - a. Partners could include but would not be limited to PDEQ, the University of Arizona Cooperative Extension, the Rural Water Association, watershed groups and local realtors.
4. Investigate feasibility of drywells for stormwater infiltration and flood reduction, with pretreatment considerations.
5. Continue to monitor contaminants and emerging concerns in sewage, wastewater effluent, and biosolids and strive to follow health advisories and voluntary effluent guidelines when available, feasible and cost-effective to keep regional reclaimed water safe for reuse, including by wildlife, and for body contact and recharge purposes.

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<sup>1</sup>Goal 1 is supported by 208 Plan policies for Regionalization and Cost-Effectiveness and Financing. Protecting groundwater and balancing the water budget was identified as a goal in the 1980 PAG 208 Amendment.

6. Encourage optional, voluntary monitoring of contaminants in private wells, including contaminants of emerging concern, and sharing advice for home treatment to reduce exposure.

## **Goal 2<sup>2</sup>**

Protect and improve surface water quality through creation of data inventories, information-sharing, regionally coordinated pollution prevention programs and sharing of water quality improvement case studies.

### **Recommended Actions:**

1. Evaluate where programs to reduce pollutant loading to surface waters would have the greatest impact and pursue the following topics if pollution issues are identified:
  - a. Construction Impacts
    - i. Encourage review of development plans at the regional level for consideration of potential cumulative stormwater impacts to surface waters.
    - ii. Continue to regionally coordinate local ordinance guidance to aid industry compliance.
  - b. Agriculture Impacts
    - i. Encourage use of agricultural BMPs to reduce pollutant loadings.
    - ii. Collaborate with watershed groups for issue focus.
    - iii. Identify grant funds, loans, and other incentives for implementing BMPs.
    - iv. Collaborate with watershed groups on grant proposals.
  - c. Emerging Contaminant (EC) Impacts
    - i. Encourage preparation and coordination of efforts to address ECs in the region's water.
    - ii. Encourage the development and distribution of public service announcements for the Dispose-A-Med Partnership to prevent effluent contamination by residents.
    - iii. Evaluate policy and financial incentives needed to reduce disposal of pharmaceuticals in drains by medical facilities.
    - iv. Encourage awareness of the impact of the public's personal care products, including emerging contaminants and microplastics, on water reclamation resources.
  - d. Education programs about water quality and public opportunities to engage in pollution prevention with an emphasis on leading pollutants.
    - i. Research funding sources for regional water quality educational activities.
    - ii. Inform water quality curriculum for young students through watershed groups or projects such as Arizona Project WET and River of Words.
    - iii. Support partnerships to address *E. coli* contamination from pet waste through public outreach and the installation of pet waste stations and signage along waterways.
2. Share information about case studies and samples of effective programs.
  - a. Recognize the value of conservation lands to protect habitat for riparian wildlife.

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<sup>2</sup>Goal 2 is supported by PAG's mission statement and 208 Plan policies for Integrated Planning and Reuse of Effluent. The 2006 Plan identified the goal of working with local governments to identify pollution sources and land uses with potential impacts on groundwater quality.

- b. Continue to share information about return on investment analysis of green infrastructure (GI) case studies.
3. Gather local data about current uses of water bodies in Pima County to ensure a full inventory and to aid protection of water quality.
  - a. Continue to work with partners to enhance inventories of springs, stockponds and other aquatic habitats.
4. Promote research of key areas to improve management strategies.
  - a. Encourage studies that broaden understanding of areas where groundwater quality is under the influence of surface water quality and vice versa.
  - b. Encourage genetic studies that differentiate the species source of *E. coli* in stormwater to focus nonpoint source outreach efforts.
5. Continue working with local governments to inventory land uses and identify the potential impacts on groundwater quality of various land uses and potential pollution sources.
6. Where feasible, create hydrologic reports containing a GIS assessments and recommendations to inform regional water resiliency strategies for people and habitats dependent on shallow groundwater areas (SGWAs) on the urban periphery.
7. Continue quarterly riparian health assessments of representative priority waterbodies in the 208 Plan to assist the development of regional water security strategies on the urban periphery, where people are directly impacted by localized drought conditions.
8. Encourage surveys to assess how the community values surface water and riparian areas, the results of which can support efforts to enhance and protect these areas.
9. Inventory areas within the Tucson region in need of focused litter reduction and removal campaigns.

### **Goal 3**<sup>3</sup>

Address groundwater quality related to on-site/septic systems.

#### **Recommended Actions:**

1. Finalize and utilize criteria to identify areas sensitive to the impacts of on-site wastewater treatment systems. PAG, ADEQ and several other DPAs in the state have identified these factors to consider when evaluating on-site systems. These criteria help to determine where there may be impacts of low-quality effluent, where economies of scale would be more beneficial, or land conditions are not stable. These criteria include:
  - a. Wells with high nitrate concentrations (>10 mg/l)
  - b. Areas of known groundwater contamination
  - c. Impaired surface waters
  - d. Areas with very shallow groundwater (e.g., <10 feet seasonally)
  - e. Location of drinking water wells
  - f. Steep slopes (>15 percent or 6.5:1)
  - g. Areas within a regulatory floodway
  - h. High-priority areas (e.g., unsewered areas with an average lot size < 1 acre)
2. Identify substandard or failing septic systems in the PAG area and find acceptable alternative solutions.

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<sup>3</sup>Goal 3 is supported by 208 Plan policies on Groundwater Remediation Projects, Cost-Effectiveness and Financing, and Small On-Site Wastewater Treatment Facilities under APP Type 4 General Permit. In addition, public education programs on proper operation and maintenance of septic tanks have been encouraged since the 1978 208 Plan.

- a. Work with PDEQ and ADEQ to create a regional database to map septic systems and on-site facilities. Identify areas with substandard or failing septic systems in the PAG region. Database creation and mapping can aid development of high-priority areas for sewerage and treatment.
  - b. Support efforts to review, and address impacts from improperly designed and constructed septic systems on Mt. Lemmon.
3. Evaluate ongoing education and outreach in the region pertaining to septic system management to see how these can be enhanced for greater impact.
  - a. Work with partners to provide outreach and educational opportunities and materials in areas of greatest need.

#### **Goal 4**<sup>4</sup>

Encourage practices that enhance and protect natural resources dependent on surface water and water quality.

##### Recommended Actions:

1. Balance the water budget (equality of groundwater recharge and discharge) through efforts such as effluent reuse.
2. Enhance or maintain water quality which will enable fishing and swimming [or other designated uses].
3. Support local ordinances regarding sustainability of water for environmental uses.
4. Encourage partnerships with local, state, and federal agencies, academic institutions and watershed groups to develop coordinated local education programs regarding preserving heritage waters.
5. Encourage expansion of the regional reclaimed water system or the use of reclaimed water within all Designated Management Agency (DMA) areas.
6. Support local projects that promote riparian habitat restoration and the use of the Conservation Effluent Pool, which is managed by Pima County and the City of Tucson.
7. Encourage further study of stormwater management and the distribution of recharge facilities and wells relative to SGWAs, including monitoring trends and impacts.
8. Where it does not conflict with local agreements and water quality standards are met, encourage the use of water in natural areas, such as keeping or adding water in rivers and riparian areas, for net benefits such as economic, biological and/or social returns.
9. Formulate criteria to identify areas that would benefit from high quality effluent from wastewater facilities or outfalls, such as systems that would contribute to:
  - a. shallow groundwater dependent ecosystem restoration (e.g., <50 feet)
  - b. surface water restoration
  - c. subregional balance of recharge and groundwater withdrawal
10. Encourage GI implementation by interested partners, as funds allow, as a cost-effective option to improve water quality compliance and achieve multiple co-benefits.
11. Investigate and promote GI best management practices for infrastructure resiliency and maintenance, such as updates to design standard options, as funds allow, to aid compliance with local ordinances and enhance regional consistency for practitioners, where beneficial.

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<sup>4</sup>Goal 4 is supported by 208 Plan policies for Priority Waterbodies, Reuse of Effluent and Riparian Restoration Projects. In addition, Actions 1 and 2 were identified in the 1980 PAG 208 Amendment.

12. Coordinate regionally across jurisdictions to consider the LID/GI approach to land management and stormwater and transportation infrastructure.
13. Coordinate partner investments in remote sensing data acquisitions for GI uses.
14. Promote PAG's GI Prioritization Mapping Tool to support implementation programs and enhance the tool as funds allow.

### **Goal 5**<sup>5</sup>

Encourage practices that support sustainability within solid waste planning and that reduce the quantity and impacts of solid waste on water quality.

#### **Recommended Actions:**

1. To minimize expensive duplication of effort and to encourage approval of new landfill sites by the relevant federal and state agencies, the local jurisdictions of the PAG area should cooperate in locating acceptable landfill sites. They should also cooperate in determining which sites need to be developed when and by which jurisdiction. It should be demonstrated that all environmentally acceptable sites have been considered and that the need for additional landfills in certain areas has been jointly established.
2. Update landfill inventory to identify capacity needs or other emerging issues for benefits such as assessing distribution of wildcat dumping sites.
3. A leachate monitoring system should be established at any landfill which could present a water quality hazard because of its hydrology.
4. Recycling solid wastes as an alternative to dumping in landfills is encouraged in many communities.
5. Evaluate potential actions related to biosolids best practices.
6. Action to alleviate any problems found at old landfills relating to water quality, gas production or subsidence should be taken.
7. Information on illegal dumpers should be collected so that the situations which encourage illegal dumping can be understood.
8. A public education campaign concerning the hazards of illegal dumping should be instituted through newspapers, schools, neighborhood associations and public service groups.
9. Provision for cleaning up the existing wildcat dumps must be made.
10. Share model policies and incentives to address wildcat dumping issues.
11. Share BMPs to sustain recycling infrastructure and practices such those in as Maricopa Association of Governments' (MAG) [Solid Waste Best Practices](https://www.azmag.gov/Portals/0/Documents/MagContent/Solid-Waste-Best-Practices-Report-2017-update-FINAL.pdf)<sup>6</sup>.

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<sup>5</sup>The majority of the actions under Goal 5 were identified in PAG's 1981 Regional Solid Waste Management Plan: <https://pagregion.com/wp-content/docs/pag/2021/05/Water-PAG-Reg-Solid-Waste-Mgmt-Plan-1981.pdf>

<sup>6</sup><https://www.azmag.gov/Portals/0/Documents/MagContent/Solid-Waste-Best-Practices-Report-2017-update-FINAL.pdf>

## **Goal 6**<sup>7</sup>

Known as a One Water approach, utilize integrated, watershed-based planning to address water quality problems while benefitting multiple disciplines, acknowledging that planning issues cross jurisdictions and sectors.

### **Recommended Actions:**

1. As issues arise, consider the specific challenges and needs associated with the individual waterbodies at the tributary scale. {2006 208 Plan, Section 8.2}
2. Conduct watershed planning to address impaired, important, vulnerable or protected waters identified in the 208 Plan, where opportunities arise.
3. Since stormwater and nonpoint source pollutants cross jurisdictional lines, conduct regional stormwater quality planning to target non-point source pollutant sources of impaired waters, as funding allows.
  - a. Continue to coordinate public education with Municipal Separate Storm Sewer System (MS4) managers for regionally cohesive messaging and enhanced recognition.
  - b. Continue to develop and share stormwater planning templates, including regionally coordinated residential and industrial pollution abatement messages, graphics toolkits, a policy navigation resource to foster public actions and an annual non-point source impact report.
4. Encourage multi-benefit water quality planning options that integrate infiltration of stormwater runoff, transportation planning, water resources management, cultural heritage, habitat, flood control, and/or streambank stabilization, where feasible.
5. Encourage uplands and headwater restoration in order to reduce sediment loading in main stem rivers to improve regional water quality and improve uplands riparian habitat.
6. Support use of Lower Santa Cruz Basin Study findings to address balance of supply and demand of physical water within subbasins for aquifer health, environmental benefit, system reliability and resiliency.
  - a. Support use of distributed, reliable wastewater reclamation systems to aid the water portfolio when feasible.
7. Work with diverse stakeholders to identify issues and develop a portfolio of “adaptation” strategies for water reliability, health and safety.
8. Partner on efforts to promote climate resiliency, livability, sustainability and water quality as a factor in water security issues.
9. Conduct planning in coordination with transportation, air, economic and sustainability planning, where PAG policies and funding sources align.

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<sup>7</sup>Goal 6 is supported by 208 Plan policies for Integrated Planning and Section 402 of the Federal Water Pollution Control Act (33 U.S.C. 1342) regarding integrated plans. The DPA designation and PAG’s mission support cross-jurisdictional planning. The original 1978 208 Plan recommended integration of stormwater into water resource management. Using effluent recharge to balance the water budget has been a goal since the 1980 PAG 208 Amendment. A watershed-based approach including the tributary scale was recommended in the 2006 208 Plan. The recommended actions build upon these records.

## ***Chapter 2: Water Quality and Management Efforts***

This chapter provides descriptions of current water quality conditions and management efforts, as well as toxics releases and solid waste management, which can impact water quality within Pima County. A summary of goals and progress prior to the 2006 Plan is included under Past Management Actions. Progress made since 2006, including implemented strategies, current conditions, and recommended steps, are listed throughout this chapter, organized by topic.

Because the majority of PAG's DPA planning area falls within eastern Pima County (as do the majority of the population, water resources, and wastewater treatment plants), this area receives greater geographic focus in this chapter than western Pima County.

### **Water Quality**

The following section reviews water quality monitoring data sources, findings of concern, current and future management efforts, and the impact of actions. Where issues remain that would benefit from regional coordination, key recommendations were added to the Strategic Action Plan.

The U.S. Geological Survey (USGS), U.S. Environmental Protection Agency (EPA), and National Water Quality Monitoring Council (NWQMC) have sponsored an online Water Quality Portal that contains information for the state of Arizona. The portal can be accessed at [Water Quality Data](https://www.waterqualitydata.us/)<sup>8</sup>. Instructions on how to access the ADEQ information from the portal is available at [Instructions](http://legacy.azdeq.gov/envIRON/water/assessment/download/how_to_download_data.pdf)<sup>9</sup>. This database is useful to multiple water categories below.

### **Permitted Discharges**

The Aquifer Protection Permit (APP) program is a state program designed to protect the water quality of Arizona's aquifers. An APP is needed for any facility that discharges a pollutant to an aquifer or to the land surface or vadose zone in such a way that the pollutant may reach the aquifer. APPs are categorized under the Groundwater Protection Section of ADEQ's Water Quality Department.

All facilities that discharge pollutants from any point source into waters of the United States are required to obtain or seek coverage under an Arizona Pollutant Discharge Elimination System (AZPDES) permit (ADEQ 2017). AZPDES permits are categorized under the Surface Water Monitoring and Assessment Section of ADEQ's Water Quality Department.

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<sup>8</sup><https://www.waterqualitydata.us/>

<sup>9</sup>[http://legacy.azdeq.gov/envIRON/water/assessment/download/how\\_to\\_download\\_data.pdf](http://legacy.azdeq.gov/envIRON/water/assessment/download/how_to_download_data.pdf)

## Conditions and Data Sources

The best way to inquire about APPs is to contact the Water Quality Permit liaison listed under the [ADEQ Registrations and Permits<sup>10</sup>](#) page.

The ADEQ website includes an [interactive online map<sup>11</sup>](#) showing the locations of dischargers permitted through the AZDPES program.

The public is able to request information on permits from facilities through ADEQ's website, under the [ADEQ Records Center<sup>12</sup>](#). The recommended approach is to use the [MegaSearch database<sup>13</sup>](#) to browse information on local facilities, and if more information is needed, complete an online records request form. This can be used in combination with ADEQ's eMaps database to search for permit information geographically. Additionally, the [ADEQ Search Databases<sup>14</sup>](#) provides a list of multiple databases to search for specific permits.

The following is a summary of the number of AZDPES and APP permits in Pima County, based on information available from the above data sources:

- 905 total AZDPES Stormwater Construction General Permits (CGP)
- 212 total AZDPES Industrial Stormwater Multi-Sector General Permits (MSGP)
- 60 total AZDPES De Minimis permits
- 161 historical drywells, with 6 active drywells
- Approximately 200 open Underground Storage Tanks (USTs), with many more USTs that have been removed or permanently closed
- Approximately 35 confirmed UST releases
- 11 recharge facilities with effluent water releases (requiring APP permits):
  - Marana
  - Marana High Plains
  - Sweetwater
  - Black Wash
  - Sahuarita
  - Corona de Tucson
  - Robson Ranch Quail Creek
  - Lower Santa Cruz Managed
  - Santa Cruz Managed
  - City of Tucson Southeast Houghton Area Recharge Project
  - Santa Cruz River Heritage Project
- 12 Mine APPs:

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<sup>10</sup><https://azdeq.gov/Permits/Listing>

<sup>11</sup><http://gisweb.azdeq.gov/arcgis/emaps/?topic=permits>

<sup>12</sup><https://azdeq.gov/records-center>

<sup>13</sup><https://megasearch.azdeq.gov/megasearch/>

<sup>14</sup><https://azdeq.gov/databases>



- ASARCO Mission Mine (2 APPs)
- ASARCO Mission Complex (3 APPs)
- La Colorada Minerals
- Freeport McMoran Sierrita Mine
- Silver Bell Mine
- Freeport-McMoran Sierrita Inc. Twin Buttes Mine
- Rosemont Copper Project (2 APPs)
- Oracle Ridge Mine
- 1 Commercial Property APP:
  - Pace Companies
- 1 Electronics Manufacturing Plant APP:
  - Raytheon System Company Bike Shop
- 1 Fuel Storage – Bulk Fuel Storage APP:
  - Santa Fe Pacific Pipelines
- 1 Gasoline Filling Station – Fleet APP:
  - ADOT Tucson MVD
- 1 Industrial Park APP:
  - University of Arizona Science & Technology Park
- 1 Military Base APP:
  - U.S. Air Force Davis-Monthan Air Force Base (DMAFB) Fire Training Facility

## Management Strategies

Management strategies specific to groundwater and surface water quality are detailed in the following respective sections.

## Groundwater Quality

### Conditions and Data Sources

Most existing groundwater quality data for Pima County are available for eastern Pima County, where most groundwater pumping has occurred. Groundwater supply and demand data for the Tucson Active Management Area (AMA) are available on the Arizona Department of Water Resources (ADWR) website [AMA Annual Supply and Demand Dashboard](https://www.azwater.gov/ama/ama-data)<sup>15</sup> and [Groundwater Authorities in AMAs](http://infoshare.azwater.gov/docushare/dsweb/View/Collection-90)<sup>16</sup>.

In general, groundwater in the Tucson AMA is of acceptable quality for most uses. Commonly detected constituents in groundwater include arsenic, fluoride and metals from natural sources; and nitrate, sulfate and total dissolved solids (TDS) from mining and agriculture sources (ADWR 2014a). Other contaminants in Tucson area groundwater include organic compounds such as

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<sup>15</sup><https://www.azwater.gov/ama/ama-data>

<sup>16</sup><http://infoshare.azwater.gov/docushare/dsweb/View/Collection-90>

trichloroethylene (TCE), perchloroethylene, 1,4-dioxane, etc.; petroleum hydrocarbons; and heavy metals from industrial, commercial and agriculture sources.

Land uses that have reportedly led to historical groundwater contamination in eastern Pima County include landfills and disturbed areas, irrigated agriculture, animal impoundments, underground storage tanks, surface impoundments, wastewater treatment facilities (WWTFs), mines, and industry and commerce (PAG 1994a).

### **Management Strategies**

Areas of known contamination not currently under remediation are monitored to ensure that contaminants do not spread (ADWR 1999). Continued monitoring and assessment of the extent of EC plumes are recommended. Monitoring, treatment and prevention efforts for EC are further discussed in the Emerging Contaminants section.

Under 40 Code of Federal Regulations (CFR) § 258(d), enacted in 1991, new landfills are required to have composite liner or, in some states, an approved alternative design that prevents unacceptable releases from the landfill. This may reduce the risk of contamination from newer landfills.

Federal and state programs have been established to remediate contaminated groundwater and soil. Conditions and management strategies are covered in more detail in the following sections.

## ***Shallow Groundwater Quality***

### **Conditions and Data Sources**

Water levels in the regional aquifer have fallen, in the first instance as a result of stream-bed entrenchment and then as a result of groundwater pumping, leading to the loss of stream-bed springs and leaving a perched aquifer isolated from the deeper aquifer. Shallow perched aquifers occur where clayey sediment is common near the surface, and these aquifers are largely limited to the area immediately east of the Santa Cruz River. A perched aquifer (or possibly multiple aquifers) 10 to 30 meters below the surface is present beneath downtown Tucson (Eastoe 2016).

This fully perched aquifer is locally contaminated with non-aqueous liquid phases (e.g. hydrocarbons and chlorinated solvents) discharged in the past from several commercial sites. Potential sources of nitrates in the soil samples include historic out-houses, septic tanks, leach fields and advanced age of the sanitary sewer system in the area. Pima County has gone through numerous upgrades and repairs in the area. An impermeable layer beneath the perched aquifer under downtown Tucson has prevented a variety of contaminants from infiltrating to greater depths. The decline of the regional aquifer to levels below those of the present perched aquifer has also isolated a variety of contaminants above the aquitard (Eastoe 2016).

### **Management Strategies**

Proper construction of new wells and carefully decommissioning old wells can help prevent additional downward leakage from the perched aquifer. Groundwater in the contaminated perched aquifer moves slowly (City of Tucson Environmental Services 2008). Eastoe 2016 identified a recharge zone of the perched aquifer along Arroyo Chico and showed that recharge

since the separation of the perched and regional aquifers has been insufficient to date to flush old regional aquifer water from the perched aquifer. No recharge from the Santa Cruz River has been detected. Such information may be of use in future management of the perched aquifer contaminants (Eastoe 2016).

### ***Federal Superfund/CERCLA Sites***

#### **Conditions and Data Sources**

Superfund sites can be viewed on ADEQ [eMaps<sup>17</sup>](#) and Figure 1. All Superfund sites in Pima County are in the Tucson area and none in southern or western Pima County.

From 1950 to 1970, historic industrial and defense-related activities resulted in the release of hazardous wastes into the groundwater leading to extensive contamination of the regional aquifer. The Tucson International Airport Area (TIAA) is the only federal [Superfund site<sup>18</sup>](#) in Pima County (Figure 1). It was listed in 1983. The TIAA project is made up of several smaller projects, including the Air Force Plant #44 Raytheon Missile Systems Company (AFP44), Tucson Airport Remediation Project (TARP), Airport Property, Arizona Air National Guard, Texas Instruments (formerly Burr-Brown), the former West Cap Property, and the West Plume B. Groundwater in the area is primarily contaminated with TCE. Other contaminants include tetrachloroethylene (PCE), 1,1-dichloroethylene (1,1-DCE), chloroform, chromium, and 1,4-dioxane.

#### **Management Strategies**

Several pump-and-treat remediation systems are in operation and have cumulatively removed approximately 65 tons of volatile organic compounds (VOCs), 100,000 tons of metals, and 10,000 tons of polychlorinated biphenyl (PCB)-contaminated soil from the TIAA project sites (EPA 2019b). Additional information for the individual project sites is detailed below.

The metal soils cleanup for AFP44 was completed in 2001 and removed 100,000 tons of metal contaminated soils and sludges. Additional soils remediation at the site is focused on improving efficiency of older extraction wells and treating subsurface soils that are potentially contaminating groundwater. In-place treatment is the method being pursued for the soil remediation (EPA 2019b).

Since 1994, the treatment at the TARP site has removed over 1.6 tons of VOCs (EPA 2019b). Treatment is anticipated to continue until sufficient remediation has been accomplished per EPA (correspondence with Tucson Water contact, December 2019). In 2014, an Advanced Oxidation Process Water Treatment Facility was added for the TARP site to treat 1,4-dioxane (EPA 2018d).

A groundwater treatment plant for the Airport Property site was implemented in 2007. Short-term cleanups, which were completed in 2012, removed over 10,000 tons of VOC and PCB-contaminated soil. In 2013, the landfill remedy activities were complete (EPA 2019b).

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<sup>17</sup><http://gisweb.azdeq.gov/arcgis/emaps/?topic=superfund>

<sup>18</sup><https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0900684>

The pumping and treatment system for the Arizona Air National Guard site operated from 1997 to 2012. In 1998 the soils cleanup was complete. The soil vapor extraction system removed 0.032 tons of VOCs. Design of the in-place chemical oxidation system is ongoing (EPA 2019b).

In-situ chemical oxidation injection was performed in 2016 at Texas Instruments, in 2014 at the West Cap, and is being planned at the Arizona Air National Guard site. Monitoring of the chemical injection performance is ongoing (EPA 2018d).

Monitored natural attenuation is the remedy for the West Plume B site and TCE concentrations are either stable or decreasing (EPA 2018d).

### ***State WQARF Sites***

The Arizona Water Quality Assurance Revolving Fund (WQARF) was created under the Environmental Quality Act of 1986 to support hazardous substance cleanup efforts in the state. ADEQ identifies sites that are most in need of cleanup and adds them to the WQARF Registry. Sites on the Registry receive first consideration in the distribution of funds for water quality monitoring, health and risk assessment studies, and remediating hazardous substances that may impact state waters.

### **Conditions and Data Sources**

Table 1 lists WQARF sites in Pima County and Figure 1 shows the locations of WQARF sites in the Tucson area. All WQARF sites in Pima County are in the Tucson area and none in southern or western Pima County. The links below provide current and historical WQARF site information with site maps.

[Current ADEQ WQARF Registry<sup>19</sup>](http://www.azdeq.gov/WQARF-Registry?page=0%2C1)

[Historical ADEQ WQARF Information<sup>20</sup>](http://legacy.azdeq.gov/environ/waste/sps/siteinfo.html)

### **Management Strategies**

Several groundwater and subsurface contamination sites in Pima County are currently monitored or remediated under the state WQARF program. Soil and groundwater monitoring is ongoing at all of these WQARF sites.

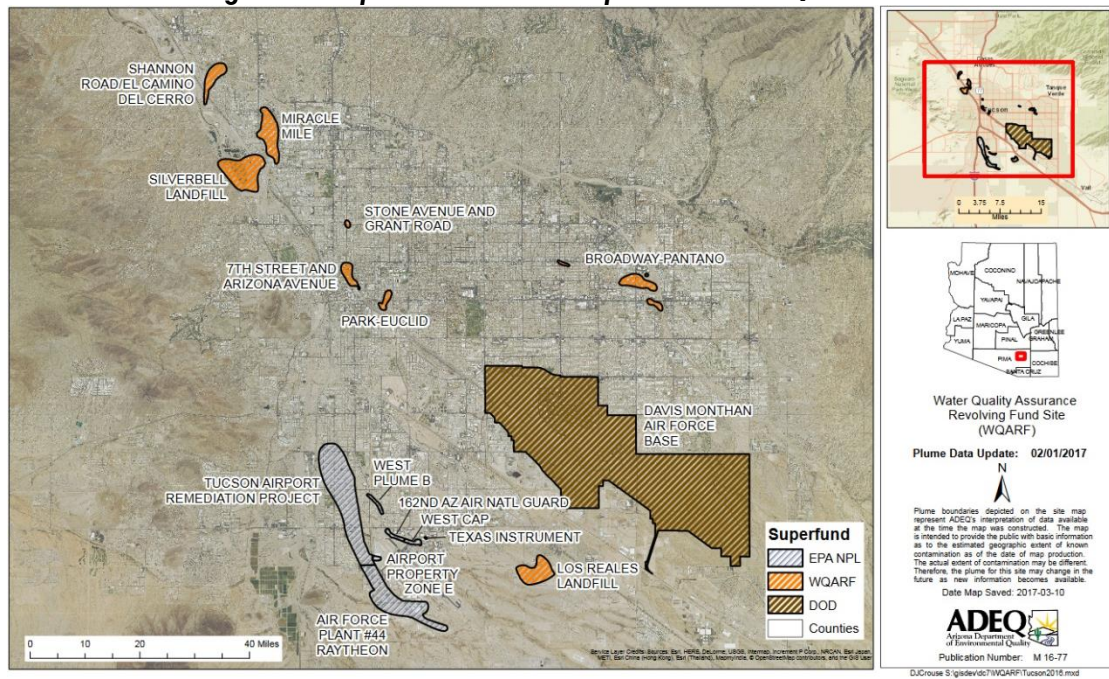
There are five non-registry sites in Pima County that are in the Preliminary Investigation phase (correspondence with ADEQ contact, May 2019).

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<sup>19</sup><http://www.azdeq.gov/WQARF-Registry?page=0%2C1>

<sup>20</sup><http://legacy.azdeq.gov/environ/waste/sps/siteinfo.html>

**Figure 1. Map of Tucson Area Superfund and WQARF Sites**



This image is a preview. For a full resolution map, visit: <http://static.azdeq.gov/wqarf/tucson2016.pdf>

**Table 1. WQARF Sites in Pima County (ADEQ 2017)**

<b>Site</b>	<b>Location</b>	<b>Registry Date</b>	<b>Primary Contaminants</b>	<b>Contaminant Sources/Land Use</b>	<b>Website Link for Current Remedial Action Taken and Status</b>
7 <sup>th</sup> Street and Arizona Avenue	Downtown Tucson	2000	PCE, TCE and cis-1,2-DCE	Former solvent, heating oil, waste oil USTs; former dry-cleaning business (1957–1989)	<a href="http://www.azdeq.gov/node/987">http://www.azdeq.gov/node/987</a>
Broadway-Pantano	East-Central Tucson	1998	PCE, TCE, and dross (arsenic, cadmium, and lead)	Former municipal landfill (1960–1971), buried metal waste	<a href="http://www.azdeq.gov/node/993">http://www.azdeq.gov/node/993</a>
Harrison Road and Millmar Road Dross	Tucson	2017	Aluminum dross (aluminum, antimony, arsenic, cadmium, copper, lead, and nickel)	Facilities that melted down legally purchased obsolete aircraft parts for scrap metal. Facilities operated from the 1950s to the 1970s	<a href="http://azdeq.gov/harrison-road-and-millmar-road-dross">http://azdeq.gov/harrison-road-and-millmar-road-dross</a>
Los Reales Landfill	Southeast Tucson	1999	PCE, TCE	Active municipal landfill	<a href="http://www.azdeq.gov/node/999">http://www.azdeq.gov/node/999</a>
Miracle Mile	West Tucson	1998	TCE, chromium	Unknown	<a href="http://www.azdeq.gov/node/1006">http://www.azdeq.gov/node/1006</a>
Park-Euclid	Downtown Tucson	1999	PCE, TCE, cis-1,2-DCE, and vinyl chloride	Dry cleaning facilities	<a href="http://www.azdeq.gov/node/1013">http://www.azdeq.gov/node/1013</a>
Shannon Road/El Camino del Cerro	Northwest Tucson	Shannon Road-Rillito Creek (1999), El Camino del Cerro (1998)	PCE, TCE, 1,1-dichloroethene (1,1-DCE), 1,1-dichloroethane (1,1-DCA), cis-1,2-DCE, vinyl chloride, and benzene	Former municipal landfill, former oil recycling plant	<a href="http://www.azdeq.gov/node/1020">http://www.azdeq.gov/node/1020</a>
Silverbell Landfill	Northwest Tucson	1999	PCE, TCE, cis-1,2-DCE, vinyl chloride	Former landfill (1966–1977)	<a href="http://www.azdeq.gov/node/1027">http://www.azdeq.gov/node/1027</a>
Stone and Grant	Tucson	2017	PCE	Leaky underground storage tank, soil gas contamination under building	<a href="http://www.azdeq.gov/node/2332">http://www.azdeq.gov/node/2332</a>



## ***Other Contamination Areas***

### **Conditions and Data Sources**

In addition to the above sites, land uses have impacted the local groundwater of a number of sites. For example, groundwater under downtown Tucson is contaminated with diesel fuel, PCE, TCE, and 1,2-DCE. The Park-Euclid site is currently undergoing treatment to remove the contaminants (ADEQ 2015). Also, an area encompassing 42 square miles in the upper Santa Cruz River area, which extends from 2 miles south of the Tucson city limits to just north of Green Valley, contains seven public supply wells that have exceeded the Maximum Contaminant Level (MCL) for nitrate. Historical data indicate that the high nitrate concentrations in this area occurred between the late 1940s and the mid-1960s, apparently as a result of irrigated agriculture, sewage effluent, septic tanks, and animal feed lots (PAG 1992). Sampling conducted between 1997 and 2002 indicated high TDS, sulfate, and hardness concentrations near tailings ponds associated with mining activities southwest of the Tucson metropolitan area (PAG 2002).

Groundwater and soil contamination have occurred at the DMAFB from a 1985 jet fuel spill.

### **Management Strategies**

A soil vapor extraction system was installed at the DMAFB in 1994 to remove VOCs. Soil and groundwater monitoring is ongoing at the DMAFB former onsite landfill and at the former offsite Titan missile silo. In 2015, a preliminary assessment was conducted at DMAFB for PFAS. Additional [investigations<sup>21</sup>](#) were being conducted as of 2018.

Accomplishments in WWTF compliance and septic management efforts are detailed in the Wastewater Facilities Planning chapter.

PAG recommends collaboration to create a comprehensive septic system map in order to assess distribution of potential groundwater contamination.

## **Drinking Water Quality**

### **Conditions and Data Sources**

In 2018, potable water delivered by Tucson Water met the primary drinking water standards, with contaminant levels below EPA's regulatory limits (Tucson Water 2018a).

Table 2 provides links to water quality reports maintained by the larger public municipal water service providers and selected private water companies in eastern Pima County. Water quality data for all public water systems in Pima County can be accessed using the [ADEQ Safe Drinking Water Information System<sup>22</sup>](#).

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<https://azdeq.gov/node/4209>

<sup>22</sup>[http://azsdwis.azdeq.gov/DWWW\\_EXT/JSP/WaterSystems.jsp?PointOfContactType=none&number=&name=&county=Pima](http://azsdwis.azdeq.gov/DWWW_EXT/JSP/WaterSystems.jsp?PointOfContactType=none&number=&name=&county=Pima)

**Table 2. Water Quality Data Links by Water Provider**

<b>Water Service Provider</b>	<b>Web Link</b>
Tucson Water Annual Water Quality Reports	<a href="https://www.tucsonaz.gov/water/annual-water-quality-reports">https://www.tucsonaz.gov/water/annual-water-quality-reports</a>
Tucson Water Monthly Water Quality Reports	<a href="https://www.tucsonaz.gov/water/monthly-water-quality-reports">https://www.tucsonaz.gov/water/monthly-water-quality-reports</a>
Tucson Water Reclaimed Water	<a href="https://www.tucsonaz.gov/water/reclaimed-water-quality">https://www.tucsonaz.gov/water/reclaimed-water-quality</a>
Metro Water District	<a href="http://www.metrowater.com/index.php?pg=22">http://www.metrowater.com/index.php?pg=22</a>
Marana Water	<a href="http://www.maranaaz.gov/water-quality/">http://www.maranaaz.gov/water-quality/</a>
Oro Valley Water Utility	<a href="https://www.orovalleyaz.gov/town/departments/water-utility/water-quality">https://www.orovalleyaz.gov/town/departments/water-utility/water-quality</a>
Flowing Wells Irrigation District	<a href="https://www.fwid.org/services/documents-forms/">https://www.fwid.org/services/documents-forms/</a>
Avra Water Picture Rocks	<a href="http://www.avrawater.com/water-quality/">http://www.avrawater.com/water-quality/</a>
Community Water Company Green Valley	<a href="http://communitywater.com/wqr-pdf/">http://communitywater.com/wqr-pdf/</a>
Sahuarita Water Company	<a href="https://sahuaritawater.com/your-water/water-quality/">https://sahuaritawater.com/your-water/water-quality/</a>
Vail Water Company	<a href="http://vailwater.com/reports.php">http://vailwater.com/reports.php</a>

### Management Strategies

In the event that contamination is detected, appropriate action by the applicable parties will be taken to ensure that contaminants do not enter the drinking water supply.

## CAP Water Quality

The Central Arizona Project (CAP) water delivered to the Tucson area is a mixture of mostly water from the Colorado River with some water from the Bill Williams River and the Agua Fria River.

### Conditions and Data Sources

Analytical results for common constituents for all CAP water samples collected by CAP are recorded and reported on the [CAP website<sup>23</sup>](#).

In Pima County, CAP water is recharged prior to being pumped out, treated, and discharged to drinking water systems. Through recharge, the CAP water is treated naturally as it infiltrates through the soil (known as soil aquifer treatment) and it blends with the native groundwater in the aquifer. Tucson Water began recharging CAP water in the late 1990s and began recovering and delivering the CAP water blend in 2001. The recovered water blend meets the Safe Drinking Water Act (SDWA) primary standards and is only treated with chlorine to prevent microbial contamination in the delivery system (Tucson Water 2018b).

Although the recovered CAP water meets SDWA primary standards, research is ongoing as to how effective soil aquifer treatment is at removing or reducing the concentration of ECs such as pharmaceuticals, personal care products, industrial chemicals, pesticides, etc. Some of these ECs have been detected in Colorado River water (ADEQ 2018b) and in Tucson Water's drinking

<sup>23</sup><http://www.cap-az.com/departments/water-operations/water-quality>



water system (Tucson Water 2018a). ECs are unregulated contaminants that do not yet have an established drinking water standard by the EPA. More information can be found in the Emerging Contaminants section.

## Reclaimed Water Quality

### Conditions and Data Sources

Tucson Water uses treated wastewater to produce reclaimed water at the Reclaimed Water Treatment Plant. The reclaimed water is used for irrigation, dust control, firefighting and industrial purposes. Reclaimed water is regulated by ADEQ and is rated based on the quality of the reclaimed water. Reclaimed water provided by Tucson Water is rated as Class A by ADEQ.

Reclaimed water quality data is available on the [City of Tucson Reclaimed Water Quality](#)<sup>24</sup> webpage.

### Management Strategies

The Pima County Metropolitan WRFs are the largest producers of reclaimed water in the PAG region. They provide treatment to reclaimed water reuse standards. ADEQ regulates the reclaimed water program and water quality standards based on the water's end use. The City of Tucson controls the majority of the reclaimed water in Pima County and provides this water resource to other water service providers in the Tucson area.

## Effluent Water Quality

### Conditions and Data Sources

The Agua Nueva WRF and the Tres Rios WRF are required to monitor wastewater discharge (i.e., secondary effluent) along the Santa Cruz River for a number of water quality parameters to comply with AZPDES permits and APPs (PCRWRD 2016). Effluent produced at the Agua Nueva WRF is classified as Class B+ reclaimed water but can meet Class A+ reclaimed water standards if reclassification is pursued. Effluent that is discharged into the Santa Cruz River meets AZPDES permit standards and numeric Aquifer Water Quality Standards (PCRWRD 2018).

A study by the Sonoran Institute found that between 2013 and 2017, ammonia concentrations in the effluent-dependent stretch of the Santa Cruz River (downstream of the Agua Nueva WRF and Tres Rios WRF) decreased from 13 mg/L to 1 mg/L. The decrease coincides with WRF upgrades (Sonoran Institute 2018b).

The Sahuarita WRF treats effluent to A+ reclaimed water standards on site and discharges a permitted amount into rapid infiltration basins that return the effluent back into the aquifer.

Treated effluent from the Marana WRF is permitted for Class A+ reclaimed water standards and was historically discharged to a tributary of the Santa Cruz River. The Town of Marana has constructed recharge basins adjacent to the WRF site for the accrual of reclaimed water storage credits under an Underground Storage Facility permit issued by ADWR. Other options include

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<sup>24</sup><https://www.tucsonaz.gov/water/reclaimed-water-quality>

discharge of effluent to an unnamed wash to the Santa Cruz River, reuse on site or reuse as reclaimed water.

The data collected from the County's monitoring have been summarized in several previous studies, including those by PAG (1994a, 1996) and Malcolm Pirnie (1994).

Additional effluent monitoring reports are available at the following links.

[Pima County Regional Wastewater Reclamation Department \(PCRWRD\) Effluent Generation and Utilization Report, 2017<sup>25</sup>](#)

[Marana High Plains Effluent Recharge Project<sup>26</sup>](#)

[Marana High Plains Effluent Recharge Project Annual Monitoring Report, 2016<sup>27</sup>](#)

## Surface Water Quality

ADEQ conducts long-term statewide water quality monitoring, while other agencies and organizations conduct water quality monitoring at smaller spatial and temporal scales. Surface water quality monitoring in Pima County may be more limited than in states with wetter climates because there are fewer perennial surface water bodies. Because of their rarity, the importance of these systems is recognized and so many local organizations support the monitoring.

### Conditions and Data Sources

ADEQ compiles periodic reports detailing surface water quality in Arizona, as required by Clean Water Act Section 305(b). Surface water bodies, including stream reaches and lakes, are sampled for different parameters and assessed as to whether or not they attain the water quality standards associated with the designated use of the water body.

ADEQ-defined designated uses are as follows:

- Aquatic and Wildlife
  - Coldwater Fishery
  - Warmwater Fishery
  - Ephemeral Stream
  - Effluent-Dependent Water
- Full Body Contact (i.e., swimming)
- Partial Body Contact (i.e., non-swimming recreation)
- Fish Consumption
- Domestic Water Source

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<sup>25</sup>[http://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Wastewater%20Reclamation/Publications/Effluent\\_gen\\_2017.pdf](http://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Wastewater%20Reclamation/Publications/Effluent_gen_2017.pdf)

<sup>26</sup><http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=68789>

<sup>27</sup>[http://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Flood%20Control/Projects/Marana%20High%20Plains%20Effluent%20Recharge/usfp-annual-report2016.pdf](http://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Flood%20Control/Projects/Marana%20High%20Plains%20Effluent%20Recharge/usfp-annual-report2016.pdf)

- Agricultural Irrigation
- Agricultural Livestock Watering

Assessment categories include Attaining All Uses (Category 1), Attaining Some Uses (Category 2), Inconclusive (Category 3), Not Attaining (Category 4), and Impaired (Category 5). Category 1 waters meet the water quality standards for all designated uses. Category 2 waters attain the water quality standards for at least one designated use, while the other uses are deemed inconclusive. The inconclusive category indicates that the sampling data do not show a clear result or that no credible data are available. Category 4 waters are not attaining at least one designated use, and a Total Maximum Daily Load (TMDL) has been completed for the reach, or the reach is expected to attain all designated uses by the next listing cycle. Impaired waters do not attain water quality standards for any designated use and require development of a TMDL plan in an effort to restore surface water quality.

ADEQ assesses subwatersheds (drainage areas) in the Santa Cruz-Magdalena-Rio Sonoyta Watershed and the San Pedro-Wilcox Playa-Rio Yaqui Watershed located in eastern Pima County and the Colorado-Lower Gila in western Pima County (excluding Native American nation land) for attainment and non-attainment.

Where surface water is impaired, it is often due to natural processes like fires and the chemical weathering of bedrock, or human activities (urbanization or chemical use associated with mining and agriculture). Common constituents of concern in Pima County are suspended sediments/turbidity, dissolved oxygen, nutrients, metals and pathogens.

A 2004 study by The Nature Conservancy (TNC) compared current and historical data and found that 35 percent of Arizona's natural perennial flowing rivers had been altered or lost altogether as a result of dams, diversions and groundwater pumping. Future water demand, effluent flows and water quality can affect rivers as well as the benefits these rivers provide to people (TNC 2018).

As of 2019, the Cañada del Oro stretch of the Santa Cruz River near Marana is considered impaired due to past exceedance of *E. coli* in stormwater sources and non-attaining status for ammonia. Arivaca Lake and Lakeside Lake were listed as not attaining as of 2016. Arivaca Lake is within the Brawley Wash watershed in southern Pima County and Lakeside Lake is a Tucson urban lake within the Rillito watershed. In western Pima County, there are no known perennial streams and therefore no OAWs nor impaired waters. There are 4 watercourses with designated uses in western Pima County, primarily on National Park and BLM lands.

Geographic data for impaired waters are available on [ADEQ eMaps<sup>28</sup>](#). The map also includes fish consumption advisory locations.

The following websites provide a link to related databases for surface water quality.

[ADEQ Surface Water Monitoring and Assessment<sup>29</sup>](#)

[ADEQ Santa Cruz Watershed Assessments 2016<sup>30</sup>](#)

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<sup>28</sup><http://gisweb.azdeq.gov/arcgis/emaps/?topic=impaired>

<sup>29</sup><https://azdeq.gov/programs/water-quality-programs/surface-water-monitoring-and-assessment>

<sup>30</sup><http://static.azdeq.gov/wqd/wqa/sc2016.pdf>

[The Water Quality of Priority Streams in Pima County report prepared by PAG, April 2002<sup>31</sup>](#)

In addition to ADEQ's monitoring, several perennial and intermittent water bodies that are potentially very important aquatic habitats in Pima County have been sampled through studies conducted as part of the Sonoran Desert Conservation Plan (SDCP). These include Cienega Creek, Davidson Canyon, Bingham Cienega, and the San Pedro River. [Water Quality in Pima County report prepared by PAG, March 2002<sup>32</sup>](#)

## **Management Strategies**

For waters that are designated impaired, ADEQ is required to calculate a TMDL of a water quality parameter that will not cause an exceedance of surface water quality standards. They are also required to implement the TMDL by tracking pollutant sources and managing them in such a way that water quality standards are met.

A TMDL for mercury exceedances at Arivaca Lake was completed in PAG's DPA in 1999, where there was a Fish Consumption Advisory. A TMDL for Lakeside Lake, an artificial urban lake fed by reclaimed water and stormwater runoff in Tucson, was completed in 2005 to address dissolved oxygen, pH, and nutrients. Arivaca Lake and Lakeside Lake were listed as "not attaining" and delisted as "impaired" in the [ADEQ Santa Cruz Watershed Assessments 2016<sup>33</sup>](#). Waters can be delisted if the requirements in Arizona Administrative Code (A.A.C.) § R18-11-605(E)(2) are met.

The following website links provide additional information about the status of impaired waters in Pima County.

[Arivaca Lake TMDL \(completed in 1999\)<sup>34</sup>](#)

[Lakeside Lake TMDL \(completed in 2005\)<sup>35</sup>](#)

[EPA - Pima County Watershed Website Link<sup>36</sup>](#)

[Impaired Water Status and TMDL Status - Santa Cruz River Watershed<sup>37</sup>](#)

## ***Cienega Creek***

Cienega Creek is within the Rillito watershed. The perennial reaches of Cienega Creek are designated by the state as an Outstanding Arizona Water (OAW), which means it qualifies for site-specific water quality standards established to maintain and protect existing water quality. The lowermost reaches of Cienega Creek were first sampled in the late 1990s as part of a two-year study by PAG and the Pima County Regional Flood Control District (RFCD) to determine the source of the water. Fonseca et al. (1990) concluded that the water quality of base flows in the

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<sup>31</sup>[http://webcms.pima.gov/UserFiles/Servers/server\\_6/File/Government/Flood%20Control/Reports/wqpriority-streams.pdf](http://webcms.pima.gov/UserFiles/Servers/server_6/File/Government/Flood%20Control/Reports/wqpriority-streams.pdf)

<sup>32</sup>[http://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Flood%20Control/Intranet/USACOE%20Reports/Tres%20Rios%20del%20Norte%20Draft%20F3%20Report/tres-rios-del-norte-f3-app-d-app-k.pdf](http://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Flood%20Control/Intranet/USACOE%20Reports/Tres%20Rios%20del%20Norte%20Draft%20F3%20Report/tres-rios-del-norte-f3-app-d-app-k.pdf)

<sup>33</sup><http://static.azdeq.gov/wqd/wqa/sc2016.pdf>

<sup>34</sup>[https://azdeq.gov/sites/default/files/santacruz\\_arivaca\\_tmdl.pdf](https://azdeq.gov/sites/default/files/santacruz_arivaca_tmdl.pdf)

<sup>35</sup>[https://legacy.azdeq.gov/enviro/water/watershed/download/nemo-san\\_pedro-wp.pdf](https://legacy.azdeq.gov/enviro/water/watershed/download/nemo-san_pedro-wp.pdf)

<sup>36</sup>[https://cfpub.epa.gov/surf/county.cfm?fips\\_code=04019](https://cfpub.epa.gov/surf/county.cfm?fips_code=04019)

<sup>37</sup><https://azdeq.gov/node/677>

nominated reach met standards for designated uses, including aquatic and wildlife (warm-water) leading to the nomination of the OAW.

### Conditions and Data Sources

Cienega Creek maintains outstanding water quality. Current and historical studies of Cienega Creek can be found at the following links.

[Historic Unique Waters Final Nomination Report<sup>38</sup>](#)

[PAG Water Reliability webpage<sup>39</sup>](#)

[Pima County Cienega Creek Natural Preserve webpage<sup>40</sup>](#)

[Cienega Creek Natural Preserve Hydrologic Monitoring & Analysis, July 2016 to June 2017<sup>41</sup>](#)

[Citizen scientists document long-term streamflow declines in intermittent rivers of the desert southwest, USA<sup>42</sup>](#)

### Management Strategies

Pima County and PAG regularly monitor the Cienega Creek Natural Preserve to detect changes from baseline data. The three management objectives of the Preserve are:

1. to preserve and protect the perennial stream flow,
2. to preserve and protect the existing riparian vegetation and cultural resources, and
3. to provide opportunities for public recreation, education and other appropriate activities (Pima County RFCD 2018).

To limit disturbance of the ecosystem and ensure that visitors are aware of prohibited activities, all visitors to the Preserve are required to obtain a [permit<sup>43</sup>](#) from the Pima County Natural Resources, Parks and Recreation Department.

The lands within the Preserve are designated as mitigation lands under the Multi-Species Conservation Plan (MSCP) (Pima County RFCD 2018). The Pima County Office of Sustainability and Conservation reports any toxic or hazardous waste spills in Cienega Creek or the Santa Cruz River to the U.S. Fish and Wildlife Service under the MSCP.

If the Pima County RFCD becomes aware of a toxic spill or other contamination within the Cienega Creek Natural Preserve, staff coordinate the response on a case-by-case basis. PDEQ and/or ADEQ are/is involved in enforcement and cleanup actions.

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<sup>38</sup><https://pagregion.com/wp-content/docs/pag/2021/05/Water-PC-ADEQ-Unique-Waters-Final-Nomination-Rpt-for-CienegaCreek-NaturalPreserve-1990.pdf>

<sup>39</sup><https://pagregion.com/sustainability/water-quality/water-reliability/>

<sup>40</sup><http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=65706>

<sup>41</sup><https://pagregion.com/wp-content/docs/pag/2021/05/Water-Cienega-Creek-Hydro-Monitoring-2016-17-PCRCD-2017.pdf>

<sup>42</sup><https://pagregion.com/wp-content/docs/pag/2021/05/Water-Citizen-Scientists-Documents-Streamflow-Declines-Allen-et-al-2019.pdf>

<sup>43</sup><https://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=26988>

Based in part on PAG's riparian health assessments of Cienega Creek and Davidson Canyon, PAG's Regional Council passed a [Resolution Supporting our Heritage of Desert Waters](#)<sup>44</sup> in January 2017. PAG's Regional Council recognizes the value of preserving and reviving the unique benefits of our desert riparian areas and establishing goals to further build resilience in vulnerable areas. Further, PAG's Regional Council recognizes that desert waters, including aquatic, ephemeral, intermittent and perennial water resources supported by surface water and shallow groundwater, critically sustain societal, economic and ecological well-being.

In keeping with the goals of the resolution, PAG makes the following recommendations as they apply to Cienega Creek and other riparian areas:

- Continue efforts to provide shallow groundwater outreach in rural areas to sustain our region's heritage of streamflow in the desert.
- Employ GI techniques that help stormwater to infiltrate into shallow aquifers, to sustain vegetation and to reduce groundwater pumping for irrigation.
- Increase the use of stormwater and reclaimed water to benefit important riparian areas.
- Promote and facilitate efforts to account for the environment in water budgets and river flow in watershed plans.

PAG takes the following actions to support riparian resiliency for management goals:

- Conducts quarterly monitoring to track long-term and seasonal groundwater trends and to assess impacts to the health of the riparian community.
- Develops techniques and shared monitoring protocols with interested organizations.
- Continues to lead public engagement activities that encourage water conservation, pollution prevention and riparian restoration.
- Coordinates with stakeholders in the vicinity of Cienega Creek, including the Las Cienegas National Conservation Area.

### ***Davidson Canyon***

Davidson Canyon, a tributary of Cienega Creek, is within the Rillito watershed. Davidson Canyon was designated as an OAW in 2008.

### **Conditions and Data Sources**

Davidson Canyon maintains outstanding water quality.

Ongoing water quality monitoring by PAG and the Pima County RFCD has tracked seasonal trends and is conducted regularly in order to detect changes in baseline conditions.

The [PAG Water Reliability webpage](#)<sup>45</sup> includes the most recent annual status report from the PAG monitoring program for Cienega Creek and Davidson Canyon. Past reports are available by request.

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<sup>44</sup><https://pagregion.com/wp-content/docs/pag/2021/05/2017-Supporting-our-Heritage-of-Desert-Waters-Resolution.pdf>

<sup>45</sup><https://pagregion.com/sustainability/water-quality/water-reliability/>

## Management Strategies

See Cienega Creek above.

### *Bingham Cienega*

Bingham Cienega Natural Preserve is perennial wetland located approximately 2,000 feet west of the Lower San Pedro River and one quarter mile north of the settlement of Redington. Pima County RFCD purchased the area from Jack Kelly and Lois Bingham Kelly in 1989 to protect the property, which once was the cornerstone of the M Diamond Ranch. The wetland and agricultural fields were supported by a perennial spring and San Pedro sub-flow.

## Conditions and Data Sources

Groundwater levels have been declining due to drought, evapotranspiration, and pumping outside of the preserve. Per ADWR records, the spring once flowed 494 gallons/minute, but spring flow has been absent during 1952-1953, 1974-1978, and 2008-present.

PAG and the Pima County RFCD sampled Bingham Cienega, the San Pedro River, and Edgar Canyon (a tributary of the San Pedro) in the late 1990s in order to identify the water source of the Cienega. [Bingham Cienega Source Water Study](#)<sup>46</sup>

Oxygen and hydrogen isotopic results from alluvial wells and the former spring water indicate groundwater recharge here is dominated by summer monsoon precipitation. Tritium analysis indicate the former spring water was recharged within the previous 50 years.

## Management Strategies

Riparian trees, buttonbush and sacaton grasses were planted in 2001 to restore the retired agricultural fields. The description of the 1998-2001 restoration project can be found in the [2006 Projects to Enhance Arizona's Environment](#)<sup>47</sup> report.

A management plan approved by the U.S. Fish and Wildlife Service is currently being implemented at the preserve. The management plan is focused on the following conservation targets:

- Shallow groundwater and discharge
- Tributary streamflow and recharge
- Mesquite bosque and other distinct plant communities
- Wildlife connectivity
- Native aquatic species
- Cultural resources

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<sup>46</sup>[http://webcms.pima.gov/UserFiles/Servers/server\\_6/File/Government/Flood%20Control/Reports/bingham-cienega-source-water.pdf](http://webcms.pima.gov/UserFiles/Servers/server_6/File/Government/Flood%20Control/Reports/bingham-cienega-source-water.pdf)

<sup>47</sup><https://wrrc.arizona.edu/sites/wrrc.arizona.edu/files/ProjectsToEnhanceAZ'sEnvironment2.pdf>

Management activities that occurred in 2018 include groundwater level monitoring, precipitation recording, fire management activities, installation of a water station, fence maintenance and remote camera installation (Pima County 2019).

Additional information on the current management plan for the Bingham Cienega Natural Preserve can be found in the [Multi-Species Conservation Plan 2018 Annual Report](#)<sup>48</sup>.

### ***Buehman Canyon***

Buehman Canyon Creek is a tributary to the San Pedro River located in the northeast corner of Pima County, within the San Pedro watershed. A portion of Buehman Canyon Creek, from its headwaters to a confluence with an unnamed tributary is designated as an OAW. The OAW portion of Buehman Canyon Creek was included as part of the 2016 ADEQ Assessment performed.

#### **Conditions and Data Sources**

In 2016, the ADEQ San Pedro Watershed Assessment water sampling results for Buehman Canyon Creek showed exceedances for dissolved oxygen and *E. coli*. The low dissolved oxygen is due to the natural occurrence of groundwater upwelling in the stream and therefore is not considered in determining if the water is attaining for aquatic and wildlife use. The *E. coli* exceedance only occurred in one of four of the samples and therefore the designated use category Full Body Contact was inconclusive. The surface water was attaining for all other uses (ADEQ 2016b).

The water has been assessed as a Category 2 (ADEQ 2016b), Attaining Some Uses. The designated uses for the surface water are fish consumption, full body contact, agricultural livestock watering, and aquatic and wildlife – warmwater. In the 2007 ADEQ Clean Water Act 305(b) Assessment, Buehman Canyon Creek was designated as Category 1 (ADEQ 2007).

#### **Management Strategies**

The monitoring recommendation for Buehman Canyon Creek is to collect additional samples to test for *E. coli*. The stream will continue to be assessed by ADEQ for the Clean Water Act requirements and because of its status as an OAW.

### ***San Pedro River***

Approximately 11 miles of the San Pedro River crosses through Pima County. The San Pedro River enters the northeastern corner of Pima County in what is considered the Lower San Pedro Basin. The San Pedro River is perennial in this area.

#### **Conditions and Data Sources**

Two sections of the San Pedro that cross Pima County, from Hot Springs Creek to Redfield Canyon and from Buehman Wash to Peppersauce Wash, were evaluated in the 2007 ADEQ Clean Water Act Section 305(b) Assessment and designated as a Category 2, Attaining Some Uses. The reach from Buehman Wash to Peppersauce Wash exceeded standards for copper, chromium, *E.*

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<sup>48</sup>[http://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Office%20of%20Sustainability%20and%20Conservation/Conservation%20Science/Multi-species%20Conservation%20Plan/2018%20MSCP%20Annual%20Report%20-%20with%20Cover.pdf](http://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Office%20of%20Sustainability%20and%20Conservation/Conservation%20Science/Multi-species%20Conservation%20Plan/2018%20MSCP%20Annual%20Report%20-%20with%20Cover.pdf)



*coli*, lead and suspended sediment concentration. The reach from Hot Springs Creek to Redfield Canyon had exceedances in the same as above plus manganese and dissolved oxygen (ADEQ 2007). The portion from Hot Springs Creek to Redfield Canyon was evaluated again in the 2012 ADEQ Assessment and was designated as Category 3, inconclusive. It had no exceedances for any parameters; however, the data was insufficient to truly assess the surface water (ADEQ 2014b).

The San Pedro River in Pima County was not assessed in the 2016 ADEQ Clean Water Act Section 305(b) Assessment. However, a portion of the river approximately 7 miles downstream, known as the Lower San Pedro River Wildlife Area, was assessed in the 2016 report and is included in an ongoing monitoring program. The 2016 ADEQ assessment identified this reach of the river, from Peppersauce Wash to Aravaipa Creek, as a Category 2, Attaining Some Uses. The water quality sampling resulted in exceedances for dissolved oxygen, *E. coli*, suspended sediment concentration, selenium, and bottom deposits. Some of the exceedances were due to storms or groundwater upwelling which do not impact the attaining status of some designated uses. The full body contact and aquatic wildlife – warmwater designated uses were inconclusive due to the exceedances in bottom deposits, dissolved oxygen, selenium, and *E. coli* (ADEQ 2016b).

ADEQ performed water quality sampling from 2012 to 2016 as part of the restoration plan for the Lower San Pedro River Wildlife Area. The restoration plan requires 30 years of monitoring for this reach of the river (NEMO 2010). The sampling performed for this report was incorporated into the 2016 ADEQ Assessment. The results of this sampling showed that the *E. coli* exceedance occurred during stormflow which is due to animal waste flushing into the system (ADEQ 2016b).

Additional water quality information for the San Pedro River can be found on the ADEQ webpage and at the following links.

[ADEQ Ambient Groundwater Quality of the Lower San Pedro Basin<sup>49</sup>](#)

[Nonpoint Education for Municipal Officials \(NEMO\) Watershed-Based Plan San Pedro Watershed<sup>50</sup>](#)

## **Management Strategies**

There are no wastewater treatment plants in the Lower San Pedro Watershed within Pima County, and wastewater is treated with individual on-site systems instead. However, the outfall for the Mount Lemmon WRF is within the Lower San Pedro Watershed. Potential non-point source sources of pollutants include cattle grazing, mining and irrigated cropland along the river.

The Lower San Pedro River Wildlife Area was established as part of the Natural Resource Damage Assessment (NRDA) program. Through this program ASARCO provided funds to restore and mitigate land affected by the hazardous substance release into Mineral Creek. The funds are being utilized to restore this portion of the lower San Pedro river. ADEQ provides the water quality surveys and ongoing monitoring of the water quality trends for the area. The current recommendations for the Lower San Pedro River Wildlife Area include additional samples to determine if selenium is still exceeding the chronic selenium standard and to determine if *E. coli* for full body contact is attaining or impaired. Plans also include tracking trends for suspended-

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<sup>49</sup><https://legacy.azdeq.gov/environ/water/assessment/download/02-lsp.pdf>

<sup>50</sup>[https://legacy.azdeq.gov/environ/water/watershed/download/nemo-san\\_pedro-wp.pdf](https://legacy.azdeq.gov/environ/water/watershed/download/nemo-san_pedro-wp.pdf)

sediment concentration and dissolved oxygen. There currently are no portions of the mainstem San Pedro River being monitored by ADEQ within Pima County.

## Stormwater Runoff Quality

Management of stormwater runoff from urbanized areas is very important for protecting surface waters and our natural resources from pollutants. Concentrated development in urbanized areas substantially increases impervious surfaces such as city streets, driveways, parking lots, and sidewalks, where pollutants from human activities settle and remain until a storm event washes them into nearby storm drains. Stormwater runoff is often transported through MS4s and ultimately discharged into local rivers and streams without treatment. Common pollutants in stormwater runoff include litter, oil, chemicals, toxic metals, bacteria, sediment and excess nutrients like nitrogen and phosphorous. Poorly managed urban stormwater can also drastically alter the natural flow and infiltration of water, scour stream banks, and harm or eliminate aquatic organisms and ecosystems.

### Conditions and Data Sources

Stormwater runoff quality data collection is often limited to urbanized areas in Pima County, primarily the Tucson metropolitan area. Several agencies including ADEQ, USGS, the City of Tucson and Pima County monitor stormwater quality data in the metro area. The latter two are required to as part of their Phase 1 MS4 permits. All small MS4s are required to conduct visual monitoring of five chosen outfalls per Section 6.4.3.8 of the 2016 ADEQ Small MS4 General Permit. See Figure 3 for a map of MS4s in eastern Pima County. In 2016, Marana was issued a Small MS4 General Permit requiring additional analytical monitoring since the MS4 discharges to impaired waters [also known as 303(d) waters]. Marana will have data available in the future as a result.

Recent stormwater quality data is available at the following links.

[Pima County Stormwater Quality<sup>51</sup>](#)

[City of Tucson Stormwater Management Documents<sup>52</sup>](#)

As mentioned in the Surface Water Quality section above, ADEQ's [2016 Status of Water Quality in Arizona 305\(b\) Assessment Report<sup>53</sup>](#) listed the Cañada del Oro stretch of the Santa Cruz River as impaired due to the presence of *E. coli* in stormwater sources. According to the City of Tucson's [2017 Annual MS4 Report<sup>54</sup>](#), *E. coli* was detected above Arizona's surface water quality standards (SWQS) in stormwater sampling during every monitoring season between Fiscal Year (FY) 2011-12 and FY 2016-17. Pima County's [2018 Annual MS4 Report<sup>55</sup>](#) indicates that *E. coli* and copper were the only pollutants that were detected above SWQS during the 2018 monitoring year.

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<sup>51</sup><http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=62831>

<sup>52</sup><https://www.tucsonaz.gov/tdot/documents>

<sup>53</sup><https://azdeq.gov/2016-water-quality-arizona-305b-assessment-report>

<sup>54</sup>[https://www.tucsonaz.gov/files/transportation/2017 Annual Report Signed.pdf](https://www.tucsonaz.gov/files/transportation/2017%20Annual%20Report%20Signed.pdf)

<sup>55</sup>[http://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Environmental%20Quality/Water/Stormwater/2018\\_MS4AnnualRpt.pdf](http://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Environmental%20Quality/Water/Stormwater/2018_MS4AnnualRpt.pdf)

## Management Strategies

PAG helps the local regulated jurisdictions coordinate regional messaging templates related to stormwater management. PAG supports outreach and education activities that are required by the member jurisdictions' MS4 permits. The MS4s are required by 40 CFR § 122.34(b)(2) to implement a public education program for the community. The program includes a focus on pollutants of concern for impaired and TMDL waters, and priority waters that receive a discharge from the MS4.

PAG creates regional outreach templates, such as the Watershed Map Pocket Guide (Figure 4). These materials and outreach strategies are developed with input from local MS4s. Regionally cohesive messaging is recommended to increase recognition, with care to distinguish stormwater pollution sources from clean effluent resources. The ultimate objective of a public education program is to increase knowledge and change the behavior of the public so that non-point source pollutants in stormwater are reduced, thereby reducing the cumulative impact of these distributed sources that come from public behaviors. Knowledge and behavioral change are monitored through [PDEQ annual air quality and stormwater surveys](#)<sup>56</sup>.

In addition to public education, the local jurisdictions and stakeholders have implemented numerous stormwater management projects and policies across the region. The City of Tucson and Pima County maintain several detention basins, as indicated in Figure 5. Several projects have expanded to have multi-benefit solutions. For example, the Ed Pastor Kino Environmental Restoration Project (KERP) was completed in 2001 and has resulted in the reconfiguration of a detention basin to utilize stormwater for onsite turf irrigation and wetland habitat, maintained by the Pima County RFCD. Pima County RFCD's Design Standards for Stormwater Detention and Retention Manual was updated in [2015](#)<sup>57</sup> to incorporate the use of integrated site planning and first flush practices. In addition, stormwater has been considered a potential source water for artificial groundwater recharge projects in Pima County.

Efforts continue to target key pollutants in stormwater. *E. coli* source-tracking studies are recommended to define the target of pollution prevention and treatments efforts. Genetic fingerprinting of *E. coli* would help identify if pet waste is the source and therefore education/outreach should be the primary initiative or if homeless populations may be the cause then whether more services and facilities are needed. The need for genetic fingerprinting of *E. coli* has been added to the Sonoran Institute's [Santa Cruz River Research Priorities](#)<sup>58</sup>.

### ***Low Impact Development/Green Infrastructure Strategies***

The PAG region has separated storm sewer systems, in which stormwater is not combined into sanitary sewers. Therefore, pollutants in surface water runoff must be treated through best management practices (BMPs) that filter, infiltrate and/or biodegrade pollutants. Low Impact Development (LID) and GI have been found to be a cost-effective, multi-benefit control measure. To assess progress and gaps in this field within arid environments, PAG conducted a [2012 report](#) that documents over 70 policies, plans, educational programs and other efforts, demonstrating that municipal support of GI/LID has increased steadily since 1985.

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<sup>56</sup><http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=59739>

<sup>57</sup><http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=65527>

<sup>58</sup><https://sonoraninstitute.org/resource/scrrd-research-priorities/>

Overall, the region is making strides in LID/GI and is a leader in LID/GI for arid regions. An example of a local desert-adapted GI project is shown in Figure 2. Each of the local jurisdictions employs and encourages varying aspects of GI, based on the needs of their communities. For example, the City of Tucson and Oro Valley have policies requiring rainwater harvesting on streets and/or in commercial or residential areas (City of Tucson [Rainwater Ordinance](#)<sup>59</sup> and Oro Valley [Article 15-18. T](#)<sup>60</sup>). PAG has assessed widespread implementation of LID/GI by inventorying sites since 2007 (Figure 5).

Regional coordination has been key to encouraging the most reliable and cost-effective LID and GI practices in stormwater management. PAG, Pima County, the City of Tucson, local private and non-profit stakeholders and others have worked together through the LID Working Group. The group has coordinated on [Regional Council resolutions](#), guidance manuals, workshops and case studies ([Pima County website](#)<sup>61</sup>). PAG has developed return on investment studies and interactive planning maps which may be found on [PAG's website](#)<sup>62</sup>.

**Figure 2. Photo of Green Infrastructure in an Arid Environment**



*Curb inlets attenuate stormflows on streets while bioretention systems mitigate pollutants.*

<sup>59</sup><https://pagregion.com/wp-content/docs/pag/2021/05/RainwaterOrdinance.pdf>

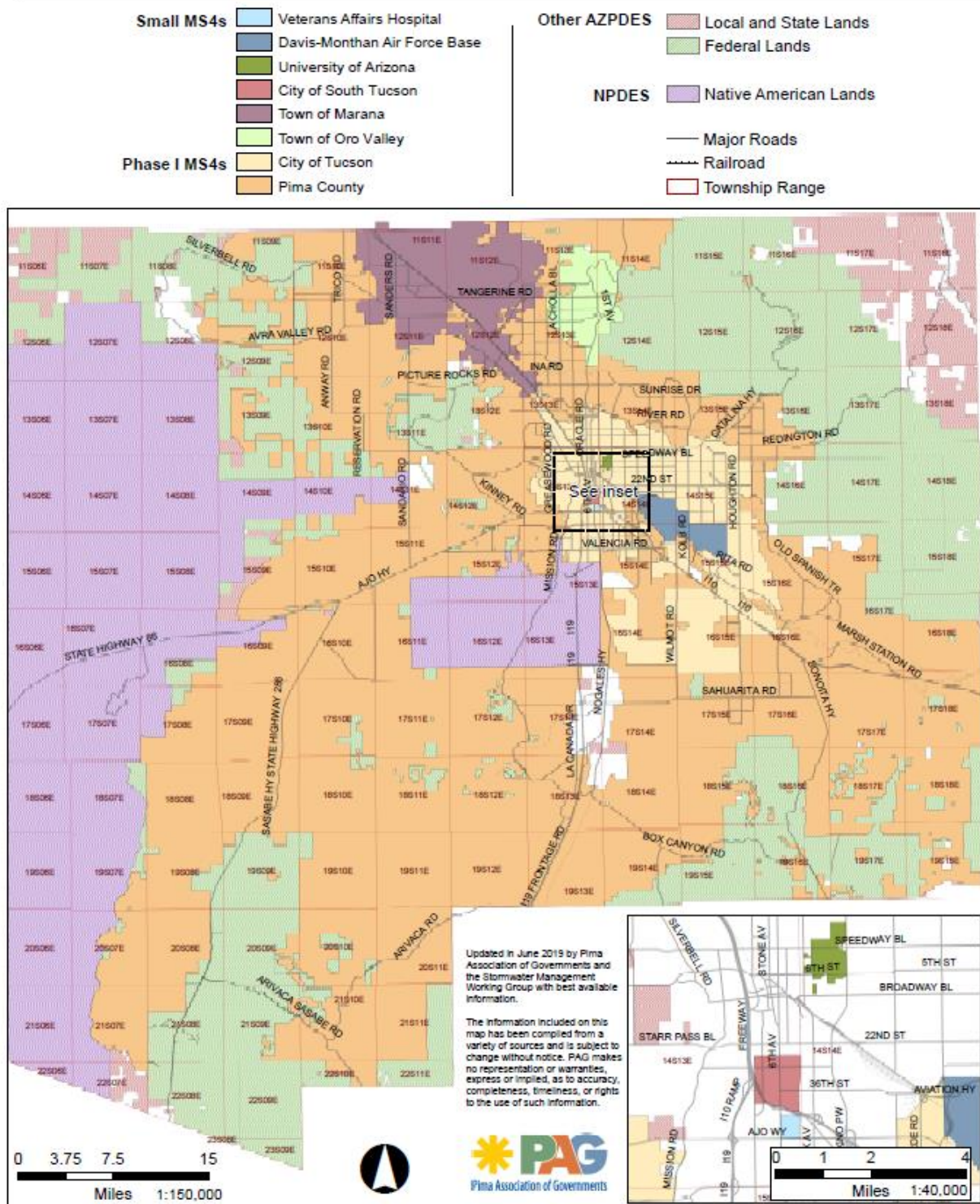
<sup>60</sup><https://www.codepublishing.com/AZ/OroValley/?orovalley15/orovalley1518.html&?f>

<sup>61</sup><https://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=65263>

<sup>62</sup><http://PAGstorm.com/LID>



**Figure 3. Map of MS4s and Other AZPDES Permit Areas in Eastern Pima County**



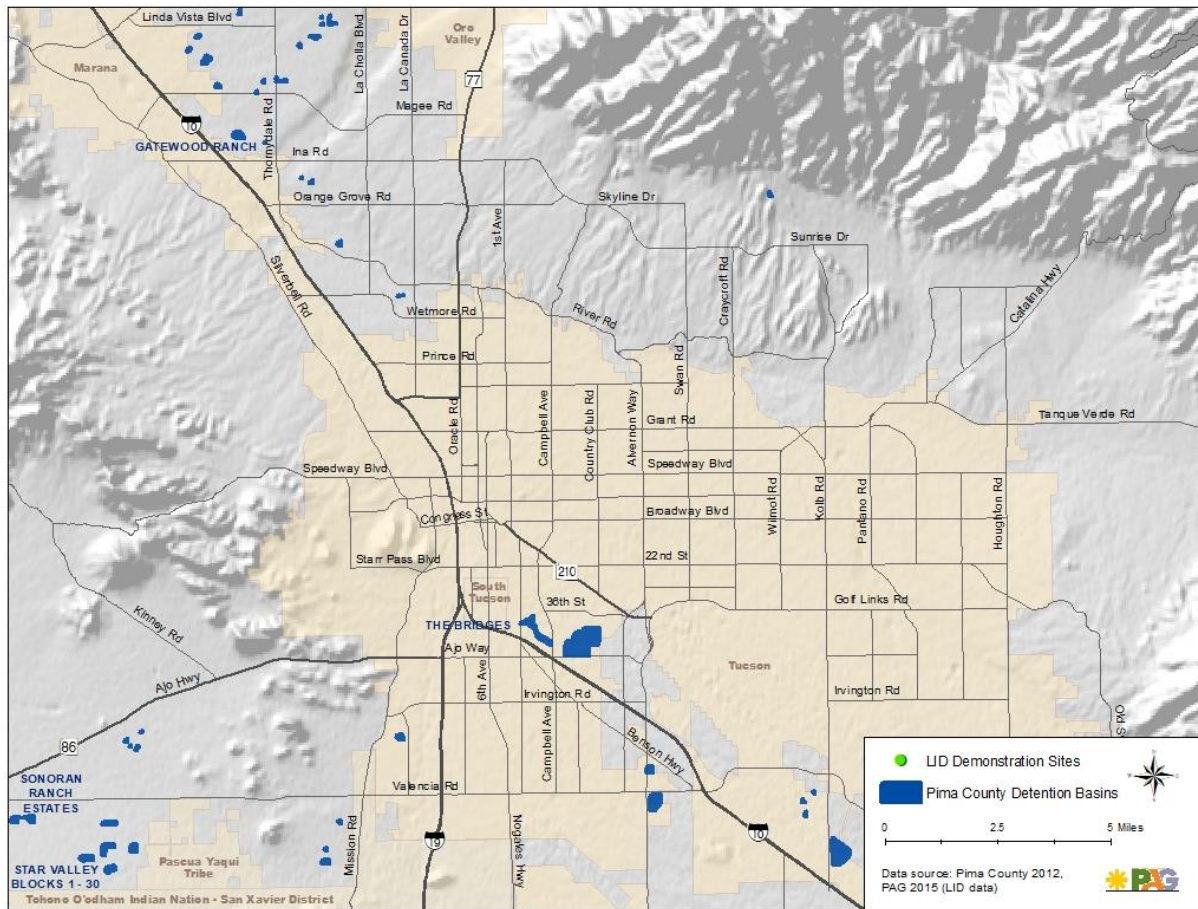
This image is a preview. For a full resolution map, visit: <https://pagregion.com/wp-content/docs/pag/2021/05/Water-PAG-MS4s-EasternPimaCty-Map-2019.pdf>



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**Figure 5. Map of Stormwater Detention and LID Sites in Eastern Pima County**





## Emerging Contaminants

ECs are any chemical or biological contaminants introduced into water that can degrade water quality and may adversely affect human health and/or the environment. This section includes ECs in all water including surface water, groundwater, wastewater, stormwater, etc. The term “emerging contaminants” generally refers to contaminants and naturally occurring elements that may pose a potential or real threat to human health and/or the environment but may not be presently regulated by the EPA or ADEQ. The majority of the currently recognized chemical ECs are derived from commercial and industrial products, and their presence in source waters is due to human activities. For example, human contact with surface water during recreational activities such as tubing and swimming allows personal care products like sunscreen and insect repellent to enter source waters. ECs include pharmaceuticals, personal care products, industrial products, commercial products, steroids and hormones, illicit drugs, natural occurring elements and microorganisms.

- Pharmaceuticals are drugs that are sold to treat illnesses and include antibiotics, anticonvulsants, anti-inflammatories, anti-depressants, decongestants, tranquilizers and many more. Pharmaceuticals are commonly found in treated drinking water and treated wastewater.
- Personal care products consist of chemical compounds used daily for personal hygiene, protection or beautification such as fragrances, lotions, shampoos, sunscreens, soaps and others. These are commonly detected in treated wastewater supplies unless advanced treatment methods are used to remove them.
- Industrial and commercial products are chemical compounds used in manufacturing chemicals and final products with commercial and residential applications. A few examples of such chemicals include benzotriazole, explosives, flame retardants, corrosion inhibitors, artificial sweeteners, perfluorinated compounds, solvents and surfactants. These ECs are commonly found in surface water and treated wastewater supplies.
- Steroids and hormones include naturally occurring and manufactured/synthetic hormones found in cancer treatments, contraceptive pills and other hormone-based treatments. Many of these compounds are found in treated wastewater streams and in surface waters used for recreation.
- Two illicit drugs, methamphetamine and MDMA, have been detected in treated urban wastewater and the Colorado River.
- Naturally occurring elements such as cobalt, chromium, molybdenum, strontium and vanadium may be introduced into source waters either naturally by leaching from geological sources or artificially from mining or degradation of manufactured products.
- Microorganisms sometimes enter distribution systems through treatment failures or breaks in the water system. Some microorganisms can survive in water distribution systems, often living in biofilms.

As awareness of ECs increases, scientific and medical studies concerning human health and ecological impacts in the field and laboratory have been conducted in recent decades. These studies are highly varied with respect to the study focuses, concentrations of compounds, types of water, and experimental design. While chemicals categorized as pharmaceuticals are tested for direct toxicity effects, hormonal effects such as endocrine disruption are not typically studied. The potential for endocrine disruption from pharmaceuticals, even at low concentrations, is an important consideration according to The National Institute of Environmental Health Sciences



(NIEHS). Biological disruption in amphibians, fish, crustaceans and other various microorganisms has been linked to low concentrations of chemical that are not considered endocrine disrupters and have not shown to be harmful to human health. These low concentrations are measured in parts per billion or parts per trillion (NIEHS 2010). Another aspect of the indirect, potentially harmful effects of ECs in the environment is the presence of antibiotics increasing antibiotic resistance in naturally occurring bacteria (ADEQ 2016c).

### Conditions and Data Sources

ADEQ formed the Advisory Panel on Emerging Contaminants (APEC) to advise the agency and water utilities on ECs throughout Arizona. The [APEC website](#)<sup>63</sup> contains multiple reports, which informed this section, and updates to the presence and concern of ECs in the state.

The University of Arizona is also involved in research on ECs and runs the [Arizona Laboratory for Emerging Contaminants](#)<sup>64</sup>.

ECs have been detected in the surface waters and groundwater of the Upper Santa Cruz Basin as early as 1998 per a USGS study. This study identified ECs in Tucson, Oro Valley and Green Valley. Subsequent studies in 1999 and 2004-2005 found ECs in the Santa Cruz River at Cortaro Road and downstream of the then, Roger Road WWTF, respectively (APEC 2013).

In a more recent study, completed by the University of Arizona and Pennsylvania State University, samples were collected from the Lower Santa Cruz River between 2011 to 2013 to determine how the concentration of trace organic compounds and endocrine disrupting compounds attenuated downstream of the effluent discharge location. The Lower Santa Cruz River is an effluent dependent stream. The samples were collected from locations along an approximate 22-mile stretch and were taken from the Roger Road and Ina Road wastewater treatment plant outfalls, directly from the river, and from twelve monitoring wells. The study measured twelve dissolved trace organic compounds including:

1. Carbamazepine - anticonvulsant
2. DEET – insect repellent
3. Fluoxetine – anti-depressant
4. PFOA - surfactant
5. PFOS – surfactant
6. Primidone – anticonvulsant
7. Sucralose – artificial sweetener
8. Sulfamethoxazole – antibiotic
9. Trimethoprim – antibiotic
10. Tris(2-carboxyethyl)phosphine (TCEP) – flame retardant
11. Tonalide – fragrance
12. Iopromide – contrast medium for x-rays

All twelve compounds were detected in the samples from the wastewater treatment plant effluent and river samples. Eight of the compounds were detected in the twelve monitoring well samples; DEET, TCEP, fluoxetine, and trimethoprim were not detected.

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<sup>63</sup><https://azdeq.gov/advisory-panel-emerging-contaminants-apec>

<sup>64</sup><http://www.alec.arizona.edu/index.html>

Estrogenic activity was also measured in the samples. In the surface water samples, the levels of estrogenic activity were highest at the Roger Road wastewater treatment plant outfall. The levels quickly attenuated downstream reaching approximately 20% to 25% of the original estrogenic activity level one mile downstream of the outfall. However, even 6.2 miles downstream of the outfall the concentration of estrogenic compounds still exceeded the levels capable of disrupting sexual reproduction and differentiation in organisms continuously exposed to the compounds. (Dong, et al., 2015).

Tucson Water monitors unregulated contaminants in their drinking water system and performed two sampling rounds in 2013. The unregulated contaminants that were detected by Tucson Water during this sampling effort are shown on Table 3. Tucson Water's sources for drinking water consist of recovered CAP water and groundwater.

**Table 3. Unregulated Contaminants Detected by Tucson Water, 2013 (Tucson Water 2018a)**

<b>Unregulated Contaminant</b>	<b>Description</b>
1,1-Dichloroethane	Used to manufacture rubber, oils and plastic
1,4-Dioxane	Stabilizer in chlorinated solvents
Chlorate	Used to make paper, cosmetics, explosives, herbicides and dyes
Chlorodifluoromethane	A gas used as a propellant and refrigerant
Chromium hexavalent	A product of pulp and steel mills, corrosion of natural deposits
Molybdenum	By-product of copper processing or mined directly from low grade ore
Strontium	By-product of the fission of uranium and plutonium in nuclear reactors
Vanadium	Naturally occurring metal
PFOS	Surfactant commonly used in Scotchgard and stain repellents
Perfluorohexanesulfonic Acid (PFHxS)	Used in manufacturing stain, oil and water-resistant products

The Town of Marana has also detected 1,4-dioxane, PFOS, and PFOA in groundwater wells serving their system (Town of Marana 2019). More info on PFOS and PFOA is in the section below. Groundwater is currently Marana's only source of drinking water. Sampling results for Marana Water systems are available at the following link.

[Marana Water – Unregulated Compounds<sup>65</sup>](#)

Within Pima County, plastic microbeads or microplastics have been found in treated wastewater effluent discharge from the Agua Nueva and Tres Rios WRFs. Both Agua Nueva and Tres Rios discharge treated effluent into the lower Santa Cruz River near Tucson, Arizona. A [study<sup>66</sup>](#) is currently underway (as of 2018) at the University of Arizona to determine the abundance and impact of microplastic contamination in the lower Santa Cruz River due to the treated wastewater effluent from the Agua Nueva and Tres Rios facilities.

The 2006 208 Plan identified *Vibrio cholerae* and *Cryptosporidium* as ECs. These microbes, which are sometimes associated with surface waters, have not caused problems locally and are no longer considered emerging contaminants.

<sup>65</sup><http://www.maranaaz.gov/water/unregulatedcompounds>

<sup>66</sup><https://wrrc.arizona.edu/programs/wrra-104-grants-b/funded-projects#2018>

## PFOA and PFOS

In 2009, the EPA issued a health advisory for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). The EPA issues health advisories for contaminants that it does not regulate, but which may pose a risk to public health. In 2016, the health advisory was updated and is now set at 70 parts per trillion. The federal Agency for Toxic Substances Disease Registry has recommended a limit of 18 parts per trillion.

PFOA and PFOS are typically used in manufacturing stain, water and oil-resistant materials including cookware, packaging and clothing. They are also used in fire suppressants. PFAS have been found underneath the Air National Guard base adjoining Tucson International Airport. The source is believed to be firefighting foam formerly used on the base for firefighting and fire-training activities. PFOS is no longer manufactured in the US, and PFOA production has been reduced and may soon be eliminated.

Tucson Water released a [map<sup>67</sup>](#) in July 2019 showing potable production wells that have been tested, and the status of wells where PFAS were detected. High levels of PFAS have been found in groundwater north of Tucson International Airport. Tucson Water does not have any active potable wells in this area, but there are a number of active or inactive private wells (Thomure 2019). PFOA and PFOS have been identified in parts of the Town of Marana's water system (Town of Marana 2019). However, the specific source of the PFOA and PFOS in the water system has not yet been identified.

## **Management Strategies**

Research has demonstrated that conventional water treatment methods such as aeration, solids settling and sand filtration alone have limited capability to remove many ECs (ADEQ 2016c). Additional treatment steps such as coagulation, lime softening, biofiltration and ultraviolet (UV) photolysis similarly have limited capability to remove ECs. However, advanced treatment techniques such as powder activated carbon, membrane filtration, chlorination, ozonation and other oxidizing processes have been shown to remove more than 99 percent of many ECs. When combined, these advanced treatment techniques are even more effective at removing ECs from treated water.

## Pharmaceuticals

Besides monitoring, treatment, and regulatory solutions, further reduction in the introduction of ECs to source waters requires public education and diligent disposal of ECs. One example is Pima County's Dispose-A-Med Partnership (DAMP). In 2008, the Oro Valley Optimist Club and the Oro Valley Police Department pioneered DAMP to mitigate potential drug abuse and misuse.

Based on Oro Valley's success, in 2009 the PCRWRD, in concert with the Oro Valley Optimist Club and the Oro Valley Police Department, began to build a coalition of representatives from law enforcement, government agencies, utilities, civic and community groups, healthcare, and private industry to address the public health, safety and potential impacts to the environment and drinking water supply. This coalition also began to document the amount of unused medications

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<sup>67</sup>[https://www.tucsonaz.gov/files/water/docs/Map\\_Detects\\_July\\_2019\\_web.pdf](https://www.tucsonaz.gov/files/water/docs/Map_Detects_July_2019_web.pdf)

collected from community take-back events and disposed of by the U.S. Drug Enforcement Administration (DEA) (Table 4).

In 2017, DAMP implemented a web-based map (<http://bit.ly/dropboxpima>) that displays the locations of 25 Tucson-area drop boxes for the disposal of unused medications plus a list of items that are accepted at each location. This map is updated as new drop box locations come online.

**Table 4. Unused Medications Collected at Take-Back Events and at Drop Box Locations  
2013–2018 (YTD)**

Year	2013	2014	2015	2016	2017	2018 YTD	Totals, 2013-2018
Pounds	6,663.8	5,455.1	6,926.5	8,237.7	6,897.1	2,758.4	36,938.6
Pills (850/lb.)	5,664,255.5	4,636,843.5	5,887,516.5	7,002,070.5	5,862,535.0	2,344,678.3	31,397,899.3

DAMP outreach advises people not to flush medications down the toilet or down the drain. This aids sewage treatment plants that cannot remove all pharmaceutical contaminants, resulting in the pollution of our streams and the aquifers from which our drinking water is derived. Outreach advises not to dispose of medications in the trash. An added benefit of this approach is that there is then no additional concern or need to reduce contamination impacts at older unlined landfills. After each DAMP collection event or at drop-off locations, all collected medications are incinerated in coordination with the DEA. The high temperature incinerator effectively decomposes the pharmaceutical compounds, thereby preventing pollution of the air, water and environment. DAMP participated in 15 National Take-Backs from 2010–2018. In 2017, across the region the jurisdictions proclaimed a Safe Use and Disposal of Medications Awareness week, recognizing that flushing medications contributes to contamination of our water system. PAG has participated in the DAMP partnership with program support.

In a 2006 report, Hospitals for a Healthy Environment stated that at hospitals, pharmaceutical waste is generally discarded down the drain or landfilled, except chemotherapy agents. To assess opportunities to address this locally, PAG conducted a 2008 survey of long-term medical facilities and hospitals and found that 83 percent were interested in a take-back program, primarily in site pickup. Additionally, 55 percent were interested in providing feedback on developing a program and 90 percent were interested in sharing information about proper disposal with employees and residents. PAG recommends collaboration with medical facilities and wastewater providers to develop incentives that encourage best practices for disposal.

Aside from pharmaceuticals, other chemical wastes and household hazardous wastes (HHW) can be properly disposed and recycled through the City of Tucson's HHW Program. Additionally, websites such as Earth911 can be helpful tools in determining how to dispose of household items.

Other ECs in Arizona water have been a recent concern for water supplies. In 2010, the Governor of Arizona convened a Blue-Ribbon Panel on Water Sustainability that made recommendations for improving the safe use of groundwater, surface water, wastewater, reclaimed water, recycled water and drinking water statewide (ADWR 2014b).

In an effort to reduce continued contamination from plastic microbeads, a nationwide ban was enacted through the Microbead-Free Waters Act of 2015 (Public Law 114-114) that banned the manufacture of products containing plastic microbeads beginning January 1, 2017, and the

distribution of products containing plastic microbeads beginning January 1, 2018. Although the manufacture and distribution of products containing plastic microbeads is now banned, existing consumer products that contain microbeads are still in use and are a source of contamination in treated wastewater effluent discharge.

Information about disposal of hazardous wastes is available at the following links.

[Earth911](https://earth911.com/)<sup>68</sup>

[Pima County Dispose A Med](http://webcms.pima.gov/government/disposeamed/)<sup>69</sup>

### PFOA and PFOS

A soil vapor extraction system was installed at the DMAFB in 1994 to remove VOCs. Soil and groundwater monitoring is ongoing at the DMAFB former onsite landfill and at the former offsite Titan missile silo. In 2015, a preliminary assessment was conducted at DMAFB for PFAS. Additional [investigations](#)<sup>70</sup> were being conducted as of 2018.

Tucson Water voluntarily monitors select wells and recovered CAP water for contaminants that are not regulated. If a well exceeds the health advisory level for PFAS, Tucson Water will take the well offline. If PFAS are detected at levels below the health advisory, Tucson Water reserves these wells for emergency situations. Additional strategies are being investigated to treat the water. More information is available on the [Tucson Water website](#)<sup>71</sup> and in [Tucson Water's Annual Water Quality Report](#)<sup>72</sup>.

As of 2019, the Town of Marana is working on a permanent treatment solution for PFOA and PFOS or other unregulated compounds. Marana will be designing and constructing an advanced treatment facility at the Continental Reserve reservoir site to treat water from the two system wells that have been impacted. This treatment solution is scheduled for completion in the 3rd quarter of 2020.

## **Climate Variability Planning**

### **Conditions**

Future projections for precipitation and temperature variability are considered important factors within long-term watershed planning. The Colorado River, which provides the region's renewable water supply, is anticipated to have shortages that will affect some of the region's water users in the near term (Bureau of Reclamation 2019). Average atmospheric temperatures in the Southwest have increased in recent decades, and the period since 1950 has been hotter than any comparably long period in at least 600 years (Garfin et al. 2013). The 2013 National Climate Assessment found that due to escalated heat, droughts and flooding, the Southwest is experiencing impacts including increased drought, erosion, wildfires, insect outbreaks, health impacts in cities and stress on water supplies, agricultural yields, species diversity and

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<sup>68</sup><https://earth911.com/>

<sup>69</sup><http://webcms.pima.gov/government/disposeamed/>  
<https://azdeq.gov/node/4209>

<sup>71</sup><https://www.tucsonaz.gov/water/pfas>

<sup>72</sup><https://www.tucsonaz.gov/water/annual-water-quality-reports>

environmental recreation economies (Garfin et al. 2013). Each of these factors have a correlation to water quality and impacts on designated water uses.

### Management Strategies

Several management responses have resulted from these climate trends and population growth. The state Groundwater Management Act has required 100-year assured water supply planning since 1980 and since severe local drought declarations began in the late 1990s, municipal planners have enhanced drought planning. In addition, with increased water needs and water losses due to drought, recycled water has become an increasingly important part of the water portfolio. Several local climate resilience, mitigation and water reliability initiatives have occurred in the last decade and PAG has assisted with technical studies, stakeholder engagement and resolutions. Examples of these initiatives are available at the links below.

[Lower Santa Cruz River Basin Study](#)<sup>73</sup>

[PAG Climate Resolution](#)<sup>74</sup>

[PAG Heritage Waters Resolution](#)<sup>75</sup>

## Integrated Planning Efforts

PAG promotes collaboration across jurisdictions and projects that provide benefit to diverse disciplines and departments. Water quality efforts can be integrated into projects with water resource and flood management goals, utilizing a One Water approach. This allows the development of regional watershed-based, cost-effective solutions through pooled, coordinated resources. In addition, watershed planning overlaps with land use, transportation, solid waste, cultural, economic, population and environmental planning.

### Conditions

In developing the 2020 update to the 208 Plan, PAG used the same population projections that have been used to develop PAG's Regional Mobility and Accessibility Plan (i.e. long-range transportation plan), reflecting the multiple planning uses of this dataset. These population projections reflect each of the member jurisdictions' general and comprehensive land use plans, which were developed in accordance with Arizona's "Growing Smarter" legislation. Opportunities may be provided to have the population models reflect locally adopted policies regarding boundaries of wastewater and water providers that influence growth factors. The local governments' Growing Smarter plans include the identification of growth areas and areas to be set aside as open space. In addition, Pima County's [SDCP](#)<sup>76</sup> identifies "biological core" areas, or areas subject to policies and plans aimed at protecting sensitive and endangered species. The population projections for these open space areas and biological core areas indicate overall

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<sup>73</sup><https://www.usbr.gov/lc/phoenix/programs/lscrbasin/LSCRBStudy.html>

<sup>74</sup><https://pagregion.com/wp-content/docs/pag/2021/05/2016-Regional-Resilience-to-Climate-and-Weather-Variability-Resolution.pdf>

<sup>75</sup><https://pagregion.com/wp-content/docs/pag/2021/05/2017-Supporting-our-Heritage-of-Desert-Waters-Resolution.pdf>

<sup>76</sup>[http://webcms.pima.gov/government/sustainability\\_and\\_conservation/conservation\\_science/the\\_sonoran\\_desert\\_conservation\\_plan/](http://webcms.pima.gov/government/sustainability_and_conservation/conservation_science/the_sonoran_desert_conservation_plan/)

lower population densities, and these in turn are reflected in lower future WRF capacities for the facilities serving the areas.

The integration of stormwater runoff into water resource management planning has been recommended since the 1978 208 Plan. The 2006 208 Plan expanded recommendations to include the value of stormwater harvesting for detention/retention, riparian habitat and irrigation for developments. Since that time, regional leaders have recognized GI/LID's multiple environmental, social and economic benefits, and encouraged incorporating these principles, methods and incentives into projects in coordination with land planning efforts, when feasible and affordable ([PAG 2012 Resolution Supporting Low Impact Development and Green Infrastructure<sup>77</sup>](#)).

### **Management Strategies**

The region is facing significant water resource challenges, and treated wastewater will become an increasingly important source of water to meet various water-supply needs. It is therefore essential that wastewater planning be integrated with water resource planning so that treated wastewater will be a convenient and readily available renewable water resource.

An example of this type of integrated planning would be a cooperative effort to place effluent recharge facilities within the same sub-basin where water is withdrawn to enhance sub-basin balance of the aquifer. Tucson Water's Santa Cruz River Heritage Project, which began operation in June 2019 and releases treated effluent into the Santa Cruz River near downtown (Figure 6), is a model example of multi-benefit planning that will yield environmental benefits associated with restoring surface water flows and recharge effluent in a location further upstream in the Santa Cruz sub-basin than where the effluent is currently treated and released to the river channel. The Santa Cruz River Heritage Project may also promote economic development. As it is near a location where groundwater historically supported perennial flows, many consider it to be a restoration of a natural heritage site.

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<sup>77</sup><https://mk0pagrtahost21swg12.kinstacdn.com/docs/2021/5/2012ResolutionSupportingLIDandGI.pdf>



**Figure 6. Photo of Tucson Water Heritage Water Project**



*Tucsonans gather to celebrate the release of reclaimed water into the Santa Cruz River on June 24, 2019.*

Regional leaders encourage protection and restoration of our desert riparian areas with a continued emphasis on regional coordination for cross-jurisdictional and multi-disciplinary benefit. The goal creates win-win scenarios for diverse stakeholders and provides environmental and social returns on investment. Recommended strategies include collaborative hydrologic studies, feasibility studies, prioritization assessments and river management plans that include actions such as incorporating riparian management goals within water budgets. Concurrently, PAG recognizes the necessity of allowing local water stakeholders to shape their individual control over their water supply rights ([PAG 2017 Resolution Supporting our Heritage of Desert Waters<sup>78</sup>](https://pagregion.com/wp-content/docs/pag/2021/05/2017-Supporting-our-Heritage-of-Desert-Waters78)).

The region would benefit from measuring how these projects benefit our economic vitality, energy demand, long-term water reliability, heat and drought resilience, urban biodiversity and ecosystem connectivity ([PAG 2015 Resolution Supporting Green Infrastructure for Regional Vibrancy<sup>79</sup>](https://pagregion.com/wp-content/docs/pag/2021/05/2015-Green-Infrastructure-for-Regional-Vibrancy79)).

## Solid Waste Management

### Regulations and Definitions

The Federal Resource Conservation and Recovery Act (RCRA), an amendment of the Solid Waste Disposal Act of 1965, was enacted to address municipal and industrial waste generated

<sup>78</sup><https://pagregion.com/wp-content/docs/pag/2021/05/2017-Supporting-our-Heritage-of-Desert-Waters-Resolution.pdf>

<sup>79</sup><https://pagregion.com/wp-content/docs/pag/2021/05/2015-Green-Infrastructure-for-Regional-Vibrancy-Resolution.pdf>



nationwide. Nonhazardous solid wastes, HHW, and hazardous wastes generated by conditionally exempt small-quantity generators are regulated under RCRA Subtitle D. 42 U.S.C. § 6921. RCRA's Subtitle D provisions are designed to protect human health and the environment by ensuring that endangered species, surface water, groundwater and floodplains are not threatened by solid wastes. The provisions specify design, operating and closure procedures for municipal landfills, including groundwater monitoring, corrective action and financial responsibility.

Additionally, disease vectors, open burning, explosive gas, bird attraction, public access and wastes containing certain types of pollutants are restricted at disposal facilities under RCRA. ADEQ enforces federal and state solid waste regulations through facility plan approvals, self-certification, APPs, notice of intent forms, and/or best management practices. In addition, local solid waste codes are in effect. ADEQ maintains an online GIS database ([eMAPS<sup>80</sup>](#)) of the AZPDES permit locations and hazardous waste disposal locations that they monitor through RCRA.

According to the EPA, "solid waste" includes:

- garbage and refuse
- sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility
- nonhazardous industrial wastes
- other discarded materials, including solid, liquid, semi-solid or contained-gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. 42 U.S.C. § 6903(27)

In general, RCRA Subtitle D, 40 CFR §§ 239 to 259, covers all wastes not classified as hazardous. Municipal solid wastes are a subset of nonhazardous solid wastes and include "durable goods, nondurable goods, containers and packaging, food wastes, yard trimmings, and miscellaneous organic wastes from residential, commercial, and industrial nonprocess sources" ([RCRA Orientation Manual<sup>81</sup>](#)).

In Arizona, six Councils of Government (COGs) were designated by the Governor as regional solid waste planning agencies. This action was taken in 1979, pursuant to Section 4006 (b) of the Resource Conservation and Recovery Act (RCRA) of 1976 (Section 4006(b) of the Resource Conservation and Recovery Act of 1976 (Public Law 94-580); 40 CFR 255.11 as revised July 1, 2002). The designation was given to 208 planning agencies because of their roles in regional coordination, due to the connection of groundwater quality with solid wastes issues and to coordinate with air quality planning efforts managed by COGs.

## Conditions and Data Sources

Permits, compliance, inspections and site information for solid waste sites in Pima County are located on the [ADEQ Solid Waste Programs website<sup>82</sup>](#).

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<sup>80</sup><https://gisweb.azdeq.gov/arcgis/emaps/?topic=ust>

<sup>81</sup> <https://www.epa.gov/hwgenerators/resource-conservation-and-recovery-act-rcra-orientation-manual>

<sup>82</sup> <http://www.azdeq.gov/programs/waste-programs/solid-waste-program>

The EPA's Toxics Release Inventory (TRI) 2017 factsheet for Pima County shows a total release of 6.6 million pounds of TRI tracked chemicals to land (EPA 2019a). More information about the TRI and links to data sources are available in the TRI section of this chapter.

Landfills are among the land uses that have reportedly led to historical groundwater contamination in eastern Pima County (PAG 1994a). Of the nine Arizona Water Quality Assurance Revolving Fund (WQARF) sites in Pima County (Table 1), four are active or former landfills. Water contamination from landfills is further discussed in the Water Quality Conditions and Management Efforts section.

## Management Strategies

Solid wastes in Pima County are currently managed via landfills and transfer stations, recycling, the land application of biosolids, and HHW disposal programs. In addition, some solid wastes are illegally disposed of in wildcat dumps.

PAG's work in solid waste has mostly focused on pollution source assessments, identification of historic solid waste disposal locations, and well inventories near solid waste disposal areas. PAG's [Regional Solid Waste Management Plan](#)<sup>83</sup> was written in 1981 and includes several policies and recommendations for management that remain important including issues of recycling, illegal dumping, and HHW management. Thereafter, PAG conducted landfill assessments semi-annually from 1989 to 2006 (available from PAG by request). PAG's most recent [landfill inventory update](#)<sup>84</sup> was completed in April 2006. Within the last five years PAG's efforts consisted of committee coordination and outreach. Solid waste representatives are included in EPAC membership. PAG has provided a tour of landfills and recycling center to EPAC members, coordinated committee discussions on biogas utilization and promoted HHW program participation through the Clean Water Starts with Me outreach campaign. PAG staff annually asks representative stakeholders to identify any emerging issues. Future issues and best practices will be shared at committee meetings as needed.

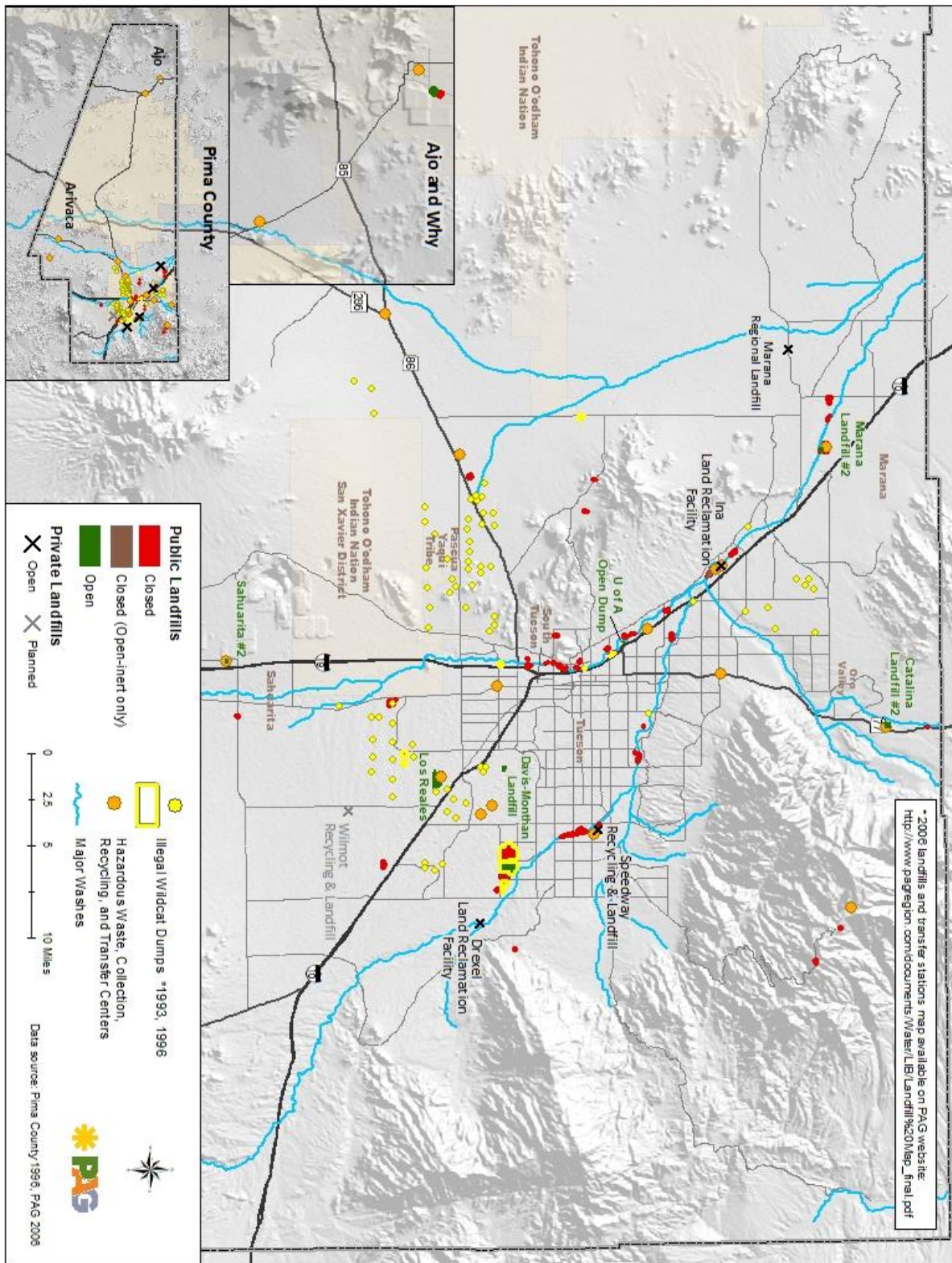
Figure 7 shows the location of open and closed landfills, transfer stations, recycling centers, HHW collection sites and wildcat dump locations in Pima County. The status of each site was not comprehensively reviewed and updated for the 2020 208 Plan update. See the Strategic Action Plan for recommendations regarding further mapping needs and local plans to address these issues.

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<sup>83</sup><https://pagregion.com/wp-content/docs/pag/2021/05/Water-PAG-Reg-Solid-Waste-Mgmt-Plan-1981.pdf>

<sup>84</sup>[https://pagregion.com/wp-content/docs/pag/2021/05/Landfill-Map\\_final.pdf](https://pagregion.com/wp-content/docs/pag/2021/05/Landfill-Map_final.pdf)

**Figure 7. Map of Landfills, Transfer Stations and Other Solid Waste Sites, 2006**



### ***Landfills and Transfer Stations***

State statute Arizona Revised Statutes (A.R.S.) § 49-701(20) defines a Municipal Solid Waste Landfill (MSWLF) as any solid waste landfill that accepts household waste, HHW and conditionally exempt small-quantity generator waste. See Figure 7 for locations of landfills and transfer stations in Pima County.

Tucson Recycling & Waste Services has contracted with PDEQ since 2013 to manage and operate the County's landfill and transfer station facilities ([Tucson landfills<sup>85</sup>](#)).

The current Pima County facilities include:

- Ajo Landfill (*Tenmile Wash watershed*)
- Sahuarita Transfer Station – previously the Sahuarita Landfill until it was converted to a transfer station in 2016 (*Upper Santa Cruz watershed*)
- Catalina Transfer Station (*Upper Santa Cruz watershed*)
- Ryan Field Transfer Station (*Brawley Wash watershed*)

The Tangerine Landfill closed in December 2013.

The City of Tucson owns one active solid waste landfill, [Los Reales<sup>86</sup>](#), located in the Upper Santa Cruz watershed. Operated by its Environmental Services Department, the Los Reales Landfill is the largest landfill in Pima County serving the residents and businesses of Tucson and Pima County. The facility is permitted through 2067 through ADEQ and the disposal area will expand to approximately 400 acres at buildout; see [Los Reales Expansion<sup>87</sup>](#). The landfill is located within a City-owned property of approximately 1,087 acres, over half of which is set aside as open space and protected habitat. Los Reales accepts waste from City of Tucson residential and commercial refuse trucks, private refuse hauling companies and residential self-haulers.

There are three private industrial landfills in Pima County owned by the Fairfax Companies. The three facilities are Speedway Recycling and Landfill (*Rillito watershed*), Ina Road Land Reclamation Facility (*Upper Santa Cruz watershed*) and Drexel Land Reclamation Facility (*Rillito watershed*). A fourth location, the Wilmot Recycling and Landfill Facility (*Upper Santa Cruz watershed*), is planned (see [Fairfax recycle and landfill services<sup>88</sup>](#)).

In 2013, Waste Management of Arizona, Inc. opened the Marana Regional Landfill to serve the communities, businesses and industries of the Town of Marana, the Tucson metro area and surrounding cities. The landfill has a facility acreage of 590 acres ([Marana Fact Sheet<sup>89</sup>](#)) and is in the Lower Santa Cruz watershed. The same company also owns and operates two private transfer stations, Ina Transfer Station (*Upper Santa Cruz watershed*) and Rincon Recycling & Transfer Station (*Upper Santa Cruz watershed*) ([Pima County<sup>90</sup>](#)).

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<sup>85</sup><http://www.tucsonrecyclingandwasteservices.com/landfills/>

<sup>86</sup><https://www.tucsonaz.gov/es/los-reales-landfill>

<sup>87</sup><https://www.tucsonaz.gov/es/plans-for-the-future>

<sup>88</sup><http://www.thefairfaxcompanies.com/recycle-and-landfill-services/>

<sup>89</sup>[https://www.wmsolutions.com/pdf/factsheet/Marana\\_Regional\\_Landfill\\_Fact\\_Sheet.pdf](https://www.wmsolutions.com/pdf/factsheet/Marana_Regional_Landfill_Fact_Sheet.pdf)

<sup>90</sup><https://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=196357>



To follow up on recommendations in the 2006 208 Plan update, PAG created a detailed [landfill and transfer station inventory](#)<sup>91</sup> published in 2006 to enhance this aspect of solid waste planning. See the Strategic Action Plan for recommendations regarding future landfill inventory updates.

### ***Biosolids***

Biosolids are the solid components of treated raw sewage. In 1983, Pima County established a biosolids recycling program to apply biosolids as a fertilizer and soil amendment for privately-owned local farms. Pima County's Regional Biosolids Facility at the Ina Road Water Pollution Control Facility began operation in 1987. The treated biosolids produced by the facility were applied to agricultural fields. Today, all sewage from PCRWRD customers in metropolitan Tucson and private septage haulers are processed at the Regional Biosolids Facility at the Tres Rios WRF. The biosolids from subregional facilities are hauled as liquid slurry, discharged into the collection system, and conveyed to the Tres Rios WRF. The sewage is then treated for volatile solids and pathogens. After the biosolids-stabilization process, the Class B biosolids are transported and distributed to area farms for land application.

As part of the treatment process, the Tres Rios WRF utilizes new advanced sewage sludge digestion technology to maximize biogas generation. The facility's anaerobic digesters currently produce an average of 800,000 cubic feet per day of biogas (PCRWRD 2016).

In order to add to the resiliency of the biosolids recycling program, Pima County started a process in 2019 for purchasing the Biosolids Land Application Property. Pima County's plan is to secure County-owned land for the recycling and possible further preparation of its biosolids. The candidate parcels can be one or multiple sections of land bordered with adequate buffer to eliminate nuisance from the biosolids handling and land application activities. State Trust Land properties are also an option for purchase. In addition to Biosolids Land Application Property purchasing, Pima County is evaluating partnering with local green waste facilities to produce compost utilizing biosolids and green waste. A composting alternative would use about 1,500 dry tons, approximately 10 percent of the total annual production of biosolids by Pima County WRFs. The composting operation turns the currently Class B produced biosolids into Class A biosolids with unrestricted use (correspondence with DMA contact, January 2019).

State and federal regulations cover the land application of biosolids to protect human health and the environment. State regulations, A.A.C. § R18-9-1001 et seq., restrict public access to fields where biosolids are applied. Lag times between application and harvest are called for, and biosolids must be prevented from entering waterways. Land-applied biosolids must meet vector attraction, pathogen, metals, and nitrate standards. State regulations A.A.C. § R18-9-1005, also limit cumulative pollutant loading rates for metals and the types of crops that can be harvested where biosolids are applied.

Pima County has been developing a method to produce higher quality biosolids from lower quality biosolids and is evaluating the potential health and environmental effects from revegetating mine tailings with biosolids. [ASARCO](#)<sup>92</sup>'s Mission Mine tailings have been utilizing biosolids from the Green Valley WRF since 2011 as part of a revegetation effort.

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<sup>91</sup>[https://pagregion.com/wp-content/docs/pag/2021/05/Landfill-Map\\_final.pdf](https://pagregion.com/wp-content/docs/pag/2021/05/Landfill-Map_final.pdf)

<sup>92</sup><http://www.asarco.com/about-us/our-locations/mission-mine/>

The Town of Sahuarita WRF's biosolids are taken to the City of Tucson Los Reales Landfill and prior to its closure, were taken to the Tangerine Road Regional Landfill. The Town of Sahuarita is evaluating alternative dewatering and disposal methods to best meet operational needs (correspondence with DMA contact, January 2019).

In Marana, biosolids from the Marana WRF are dewatered and taken to the local landfill for disposal (correspondence with DMA contact, May 2019).

Small public and private wastewater treatment plants employ many biosolids disposal options. Transport to the Tres Rios WRF, land applied at the treatment facility, dried in drying beds and landfilled constitute the most common disposal options (Pima County WWM, 2003).

### ***Septage Waste Hauling***

When septic tanks are pumped, the septage is disposed of in the wastewater system, [2016 Facility Plan<sup>93</sup>](#). Pima County Code 13.24.300 requires that septage haulers who desire to discharge into publicly owned treatment facilities acquire a discharge permit and pay a disposal fee.

### ***Recycling***

Recycling solid wastes is one alternative to landfilling. Pima County and the City of Tucson provide extensive recycling programs for common recyclable materials like aluminum cans, newspapers, plastics, glass, paper, and cardboard. Services include weekly curbside pickups of commingled unsorted materials for residential and commercial customers. In addition, neighborhood recycling center drop-off bins are located throughout metropolitan Tucson.

Metal appliances, scrap metal, passenger car and truck tires, and computers and peripherals can be dropped off at the Los Reales Landfill, Ajo Landfill, Catalina Transfer Station, Sahuarita Transfer Station, and Ryan Field Transfer Station for recycling. See Figure 7 for locations. Pima County and the City of Tucson, through contracted intermediaries, sell the disposed of materials as raw materials to manufacturers making new products.

To sustain the recycling programs and their impact on waste diversion, regional coordination took place in 2019 to share coordinated public messaging about contamination issues to customers.

Additional strategies for effective municipal recycling programs may be found in MAG's [Solid Waste Best Practices<sup>94</sup>](#) report.

In addition to other wastes, grease recycling is an important approach for maintaining our region's water quality and sewer infrastructure. Fats, oil and grease, when poured down a drain, can result in damage to sewer pipes, causing backups into buildings and public spaces. Pima County RWRD collaborates with the Town of Sahuarita, PAG, CH2M, and Greecycle to host the annual grease collection and recycling event at approximately 5 locations each year. The local, winter holiday season Grease Recycling effort resulted in an increase in public awareness of the event, record breaking volume collected in 2018, a positive fiscal impact on the operations of the

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<sup>93</sup>[https://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan\\_2016.pdf](https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan_2016.pdf)

<sup>94</sup><https://www.azmag.gov/Portals/0/Documents/MagContent/Solid-Waste-Best-Practices-Report-2017-update-FINAL.pdf>

wastewater system, and education of citizens that we should not put grease and oil in our water waste streams. Sanitary sewer overflows (SSOs) can cost County taxpayers an average of \$200 to \$50,000 per incident. The PAG Clean Cities program helped to initiate the Greecycle program in 2005, in part to promote clean, alternative fuels and it was one of the first in the nation. Since the grease recycling program's inception in the county, the PCRWRD conveyance division has seen a significant reduction in the number of SSOs from 120 in 2004 to 21 in 2018. From 2005 to 2018, grease collection programs in the county have collected over 37,700 pounds of grease.

### ***Household Hazardous Wastes***

[HHW<sup>95</sup>](#) includes products labeled toxic, danger, poison, flammable, etc. The primary achievement of the City of Tucson's highly successful HHW program is reducing the hazardous waste stream entering local landfills. This free service is available to all residents of the City of Tucson. A \$10 fee is collected for those living outside of Tucson city limits. Ninety-eight percent of the materials collected through the [HHW program<sup>96</sup>](#) are either recycled or reused. Several drop-off locations are available, including the main site located on 2440 W. Sweetwater Dr., the Los Reales Landfill, and an additional outreach site available every first Saturday of each month at the Eastside Service Center, 7575 E. Speedway Blvd. (Figure 7). Home pickups are available upon request for a fee of \$25.

Public HHW collection is not available in western Pima County, including the Ajo and Lukeville areas, or in southeastern Pima County, including the Arivaca area.

Commercial customers who generate small quantities of hazardous waste and operate as a Conditionally Exempt Small Quantity Generator (CESQG) can use the [Small Business Waste Assistance Program \(SBWAP\)<sup>97</sup>](#). The program is a community resource helping prevent the illegal disposal of hazardous waste into landfills, sewers, storm drains, and the environment.

### ***Wildcat Dumps***

Wildcat dumps are areas where solid waste is illegally disposed of and can contribute to stormwater runoff pollution, wildlife habitat degradation and disease vector breeding grounds (Figure 8).

### **Conditions and Data Sources**

There are several documented and undocumented wildcat dumps in Pima County (PAG 1995a, 1995b, 1996a).

### **Management Strategies**

Pima County Solid Waste Division staff regularly investigate known wildcat dumps, issue citations as appropriate, and respond to tips reported to the illegal dumping hotline. Future collaboration to enhance the regional maps with wildcat dump distribution trends would aid water quality planning recommendations.

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<sup>95</sup><https://www.tucsonaz.gov/es/household-hazardous-waste>

<sup>96</sup><https://www.tucsonaz.gov/es/paint-sales-drop-swap>

<sup>97</sup><https://www.tucsonaz.gov/es/sbwap>

**Figure 8. Photo of Wildcat Dumping in the Santa Cruz River, Circa 1970**



*Prior to the Clean Water Act, Washes and Rivers were common unofficial dumping grounds.*

## Toxics Releases

The [Toxics Release Inventory](https://www.epa.gov/toxics-release-inventory-tri-program)<sup>98</sup> (TRI) is a public resource for annual information about pollution and toxic chemical releases from industrial and federal facilities. Congress established TRI under the Emergency Planning and Community Right-to-know Act of 1986, and later expanded it under the Pollution Prevention Act of 1990. Under these laws, certain facilities must report information about annual toxic chemical releases to the EPA and the EPA must provide this information for public use. The EPA provides this information online in the [TRI Explorer](https://iaspub.epa.gov/triexplorer/tri_release.chemical)<sup>99</sup>.

Facilities report data to the EPA on quantities of toxic chemicals, how and where it was released, and if waste was disposed, recycled, or used in energy recovery. This information provides public users with information on local and national toxic chemicals in the environment, and an ability to track chemical production and management of pollution.

### Conditions and Data Sources

In Pima County, 30 facilities met requirements to report chemical and pollutant information to TRI in 2017. The total amount of releases in 2017 was 6.7 million pounds, which was divided into 79.2 thousand pounds of releases to air (on-site), 0 lbs. of releases to water (on-site), 6.6 million lbs. of releases to land (on-site), and 18.3 thousand pounds of releases off-site (EPA 2019a).

<sup>98</sup><https://www.epa.gov/toxics-release-inventory-tri-program>

<sup>99</sup>[https://iaspub.epa.gov/triexplorer/tri\\_release.chemical](https://iaspub.epa.gov/triexplorer/tri_release.chemical)



Generally, the releases on-site for Pima County have been between 3.4 – 6.7 million lbs. from 2003 to 2017. There have been more releases total from 2012-2017 than 2003-2011, but it is not a steadily increasing trend. Of these total releases, the large majority has been releases to land and a much smaller amount of releases to air. Pima County generally has had a negligible amount of releases to water from 2003-2017 (EPA 2019a).

There are multiple industries that contributed to the total releases for Pima County in 2017, but the largest share was by far the mining industry. Facilities in the mining industry reported 99% of the total releases for Pima County in 2017 (6.721 million pounds out of 6.793 million pounds). Other significantly contributing industries to this total release number include the plastics and rubber industry and the transportation equipment industry. The other industries that reported in Pima County for 2017 had a smaller number in comparison of total releases, but still enough chemical releases to report to TRI. These industries include chemical, petroleum, fabricated materials, nonmetallic mineral product, petroleum bulk terminals, hazardous waste, miscellaneous manufacturing, and other (as categorized by TRI) (EPA 2019a).

Additional resources are available at the following links.

[Description of TRI Data Terms<sup>100</sup>](#)

[EPA Enforcement and Compliance History Online \(ECHO\)<sup>101</sup>](#)

## **Management Strategies**

TRI also tracks the management of production-related waste. This is to encourage companies to practice more sustainable waste management. The preferred waste management method is to generate less waste by changing process (source reduction), followed by recycling, energy recovery, treatment, and disposal or other release of waste as a last resort. Pima County has generally practiced waste disposal as a management strategy for 85-95% of the waste management from 2003-2017. The total amount of recycled waste has been the remaining 5-15% of waste management from 2003-2017, with an insignificant portion of energy recovery or treatment being used. In 2017, the total amount of waste recorded for waste production management was 7.2 million pounds, with 6.79 million pounds of the total disposed of and 441 thousand pounds of the total recycled. The lowest total amount of waste recorded was in 2003 with 4.29 million pounds of waste produced. The total amount of waste produced generally has been higher for the years 2012-2017 than 2003-2011, but it is not a linear trend. However, the total number of production-related waste is directly proportional to the total number of on-site releases, for every year (EPA 2019a).

Issues and efforts to address surface and groundwater contamination, as well as releases to water are discussed in Water Quality Conditions and Management Efforts section. Releases to land are discussed in the Solid Waste section.

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<sup>100</sup><https://www.epa.gov/toxics-release-inventory-tri-program/descriptions-tri-data-terms-text-version>

<sup>101</sup><https://echo.epa.gov/>

## Past 208 Management Actions

### Accomplishments Prior to the 2006 208 Plan Update

The 1978 208 Plan included the following recommendations regarding point sources:

- Consolidation of the sewage treatment programs in metropolitan Pima County
- Integrated regional strategies to reuse treated domestic wastewater
- Joint City/County planning for future sewage treatment facilities construction
- Integration of phased improvements to the wastewater system with other public investment programs
- Integration of facilities planning with land use planning
- Regional water conservation and wastewater flow reduction program

The 2006 208 Plan noted that the PAG region had successfully implemented most of these recommendations. Sewage treatment in the metropolitan area has been consolidated under the DMAs, and effluent reuse and water conservation are accomplished through Tucson Water's reclaimed water system, local effluent recharge projects and regional water conservation programs. Joint planning for future sewage treatment facilities is accomplished through PAG's 208 program. DMA facilities continue to expand to provide high quality reusable water.

Recommendations regarding nonpoint sources included:

- Control of solid waste dumping in arroyos
- Public education on control of urban pollutants like pesticides and trash
- Coordination by the PAG 208 program of the above activities, which should be carried out by the City and County
- Monitoring of stormwater runoff
- Integration of stormwater planning into water resource management planning
- Landfill monitoring
- Regional solid and liquid waste management program coordinated by PAG
- Public education program on proper operation and maintenance of septic tanks
- Other recommendations for addressing agricultural, rangeland, and mining activities

PAG's 2006 208 Plan indicated that most of the nonpoint source recommendations have also been followed. Local jurisdictions, particularly PDEQ's wildcat dump program, control solid waste dumping in arroyos. Local stormwater management agencies educate the public about urban pollutants and monitor stormwater quality. The City and County monitor groundwater quality near landfills pursuant to the Resource Conservation and Recovery Act (RCRA) and APP regulations. A landfills map is provided in the Solid Waste Management section of this chapter.

PDEQ conducts education programs regarding onsite wastewater treatment systems. In addition to these local activities, ADEQ has a nonpoint source program addressing agricultural, rangeland, mining and other nonpoint sources of pollution.

At the time the 2006 208 Plan was adopted, implementation of some of the nonpoint source recommendations in the original PAG 208 Plan was limited. One example of limited implementation was the recommendation regarding integration of stormwater runoff into water resources management planning. Although stormwater runoff was managed and monitored, as of 2006 there were few detailed plans for using stormwater as a water resource on a regional scale. A large number of resources have been produced since that time and are described in the Stormwater Runoff Quality section of this chapter.

PAG's designation in solid waste planning was recognized in the 1978 208 Plan and described as PAG's regional solid and liquid waste management program. Amendments and updates to the original 208 Plan, particularly the 1980 amendment and the 1985 Areawide Wastewater Management Plan Point Source Update Metropolitan Basin (Greeley and Hansen 1985), clearly articulated a number of solid waste policies related to water quality planning. After the development of the solid waste plan, PAG's work in solid waste continued with a focus on pollution source assessments, identification of historic solid waste disposal locations and well inventories near solid waste disposal areas, as described in the 2006 208 Plan.

Since the 2006 208 Plan was adopted, PAG and regional partners have continued to address the above recommendations. Most of these management strategies are described in the sections above.

## ***Chapter 3: Wastewater Facilities Planning***

The State of Arizona is divided into eight planning districts, each referred to as a DPA, to conduct regional or area-wide water quality planning. PAG is the sole DPA for Pima County, and its planning area boundaries are shown in the Adopted Policies and Procedures.

This chapter contains information specific to the three DMAs located within the PAG DPA area (Figure 9). The three DMAs are Pima County, the Town of Sahuarita, and the Town of Marana. These DMAs include all land areas within Pima County, excluding Tohono O'odham Nation and Pascua Yaqui lands.

The following sections list all facilities, both public and non-municipal; consistent and inconsistent with the 208 Plan, proposed, existing, closed, and no longer planned. Because the majority of PAG's DPA planning area falls within eastern Pima County (as do the majority of the population, water resources, and wastewater treatment plants), this area receives greater geographic focus in this chapter than western Pima County.

### **Purpose and Scope**

Facilities obtaining APP and AZPDES permits are required to be consistent with the applicable 208 Plan. This inventory is used for ADEQ consistency reviews that are conducted as part of those permitting processes, as facilities grow or new facilities are planned. Facilities are described in detail in the [Facility Inventory Portal<sup>102</sup>](#), where they can be sorted by DMA and watershed.

The Facility Inventory Portal may be updated after approval of changes through Amendments and Consistency Reviews. Informational updates that do not require a public process or committee approval, as described in the Policy and Procedures portion of the 208 Plan, will be made when information becomes available. Data are to be provided by the DMAs or private facilities and reviewed by PAG's 208 staff contact.

Prior to the creation of a database, updates to the inventory required approval by the chain of appropriate PAG committees, including EPAC and Management Committee under Regional Council. This new policy expedites updates to the facility inventory content of the 208 Plan.

Figure 10 provides locations of all existing WWTFs. The Facility Inventory Portal can be referenced for information on proposed facilities and historical point sources no longer in existence.

*The sewer service area boundaries provided herein are intended for general planning purposes only. Presence of a property or proposed development within these areas does not guarantee connection to a centralized sewer system. The maps may be used to determine the appropriate DMA, Wastewater Management Utility (WMU) and/or jurisdiction with which to discuss whether sewer connection is technically and economically feasible.*

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<sup>102</sup><http://gismaps.pagnet.org/pag208plan/>

## Designated Management Areas and Facilities

DMA's are responsible for providing wastewater planning, sewer collection, and wastewater treatment services for their service areas. The three DMA's under PAG's jurisdiction are described in more detail below along with the public facilities located in each DMA area (Figure 11). Non-municipal facilities located in each DMA area are shown in Figure 15.

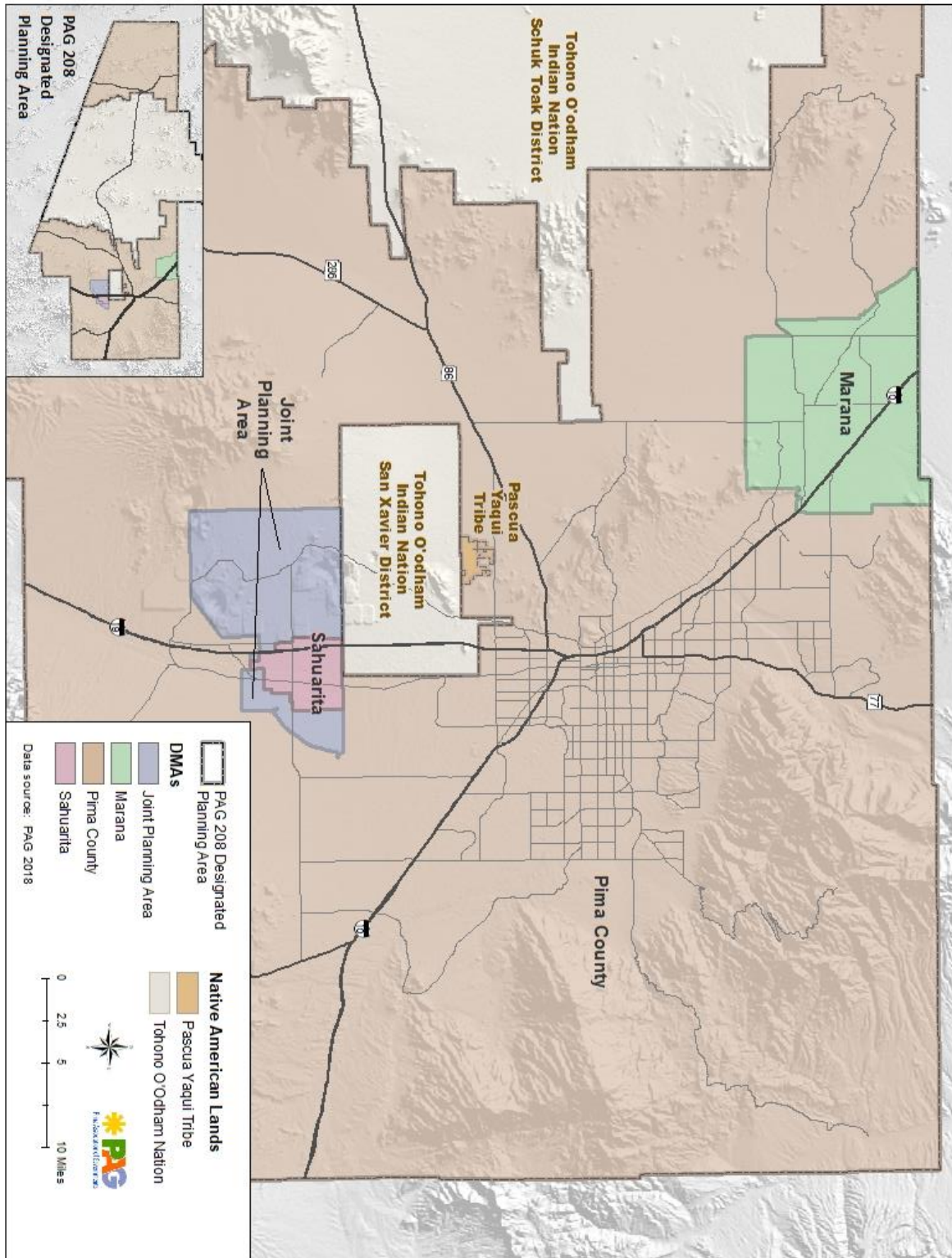
### DMA Financing

The PCRWRD is an enterprise fund of Pima County and does not depend on property or sales taxes. The department's expenses are financed or recovered primarily through user charges. The principal sources of revenue are sewer user fees and development-related sources such as connection fees and capital contributions. Pima County also issues sewer revenue bonds for the rehabilitation, construction, acquisition, and improvement of the sanitary sewerage system and obtains low-interest loans from the Arizona Water Infrastructure Finance Authority. Regular operations and maintenance are funded by ratepayers, while sewer connection fees fund conveyance system expansions and increased treatment capacity. Sewer user fees fund administration, system operation and system maintenance (PCRWRD 2016).

The Town of Sahuarita has the authority to issue bonds, levy taxes, and receive grants to finance construction, improvements, and the operation of its system. Sewer connection fees are used to cover capital costs to expand, improve and maintain the Sahuarita WRF (Town of Sahuarita 2017).

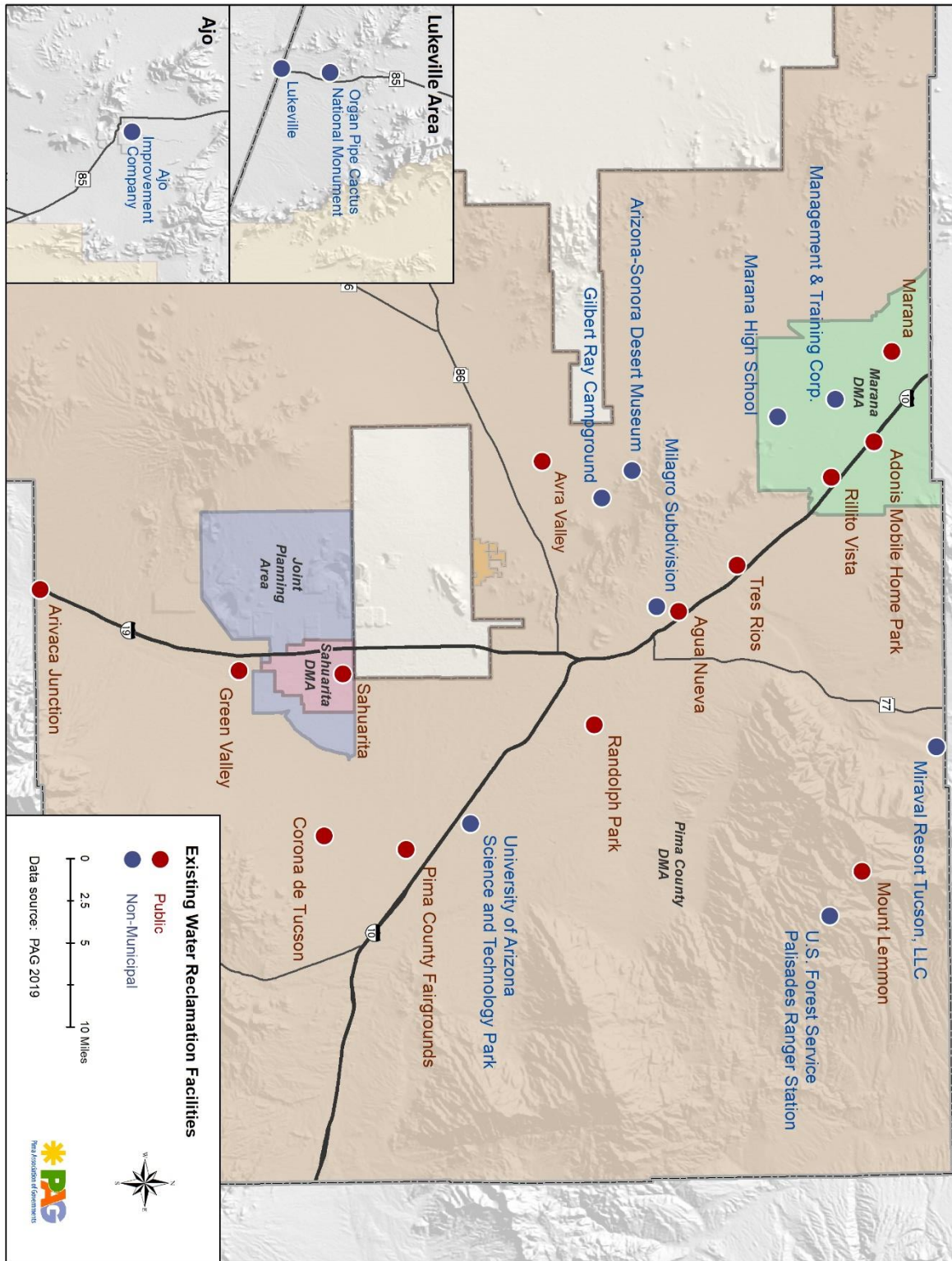
The Town of Marana Wastewater Utility is an enterprise fund of the Town of Marana (Town of Marana 2018).

**Figure 9. Map of PAG's DPA Area, DMAs and Native American Lands**  
 Map of All PAG DMAs in Eastern Pima County, Plus Full-DPA Area Inset

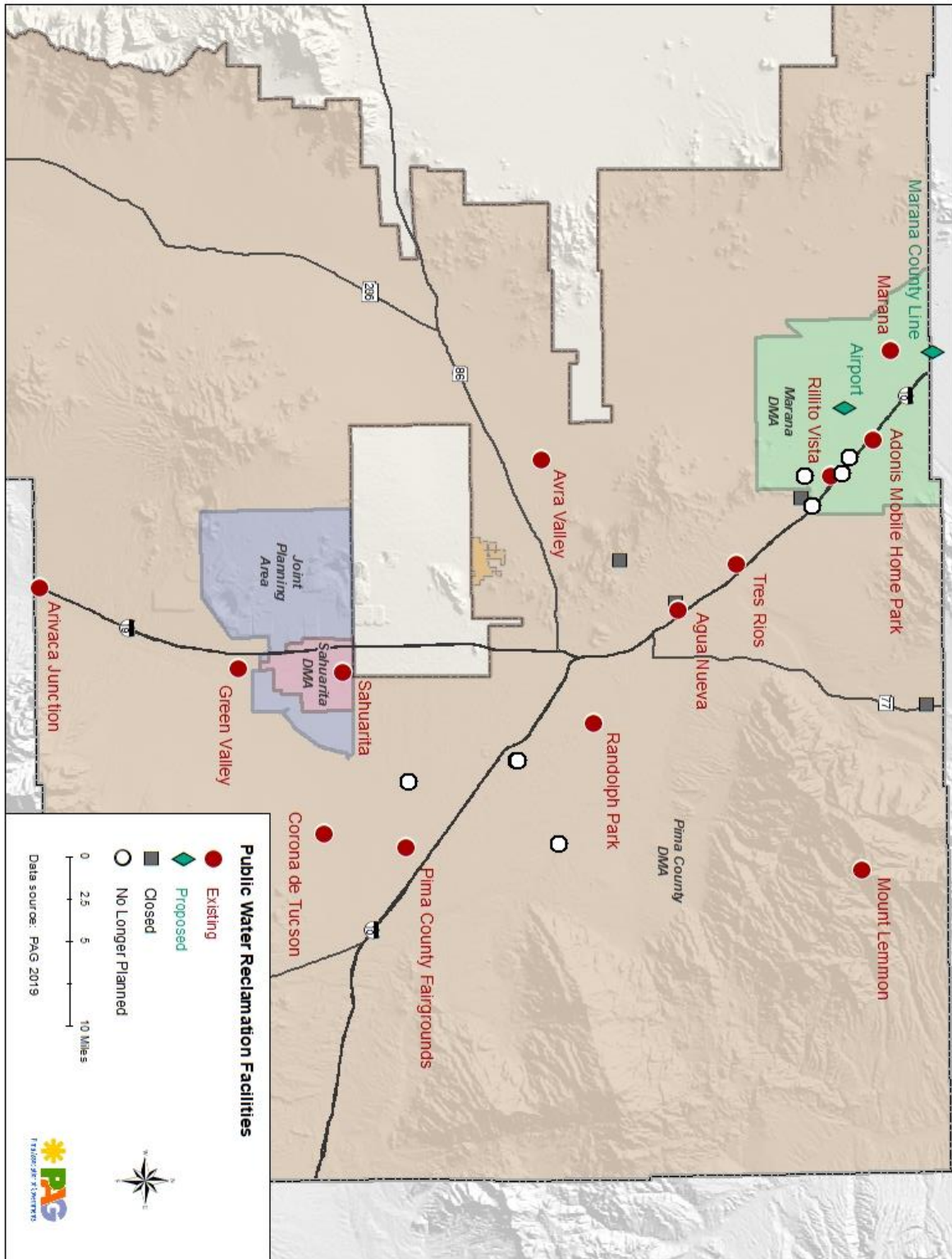




**Figure 10. Map of Wastewater Treatment Facility Inventory in PAG DPA Region**  
 Map of All Existing Facilities in Eastern Pima County, Plus Western Pima County Insets



**Figure 11. Map of Public Wastewater Reclamation Facilities**  
 Map of All Public WRFs within the PAG DPA Region





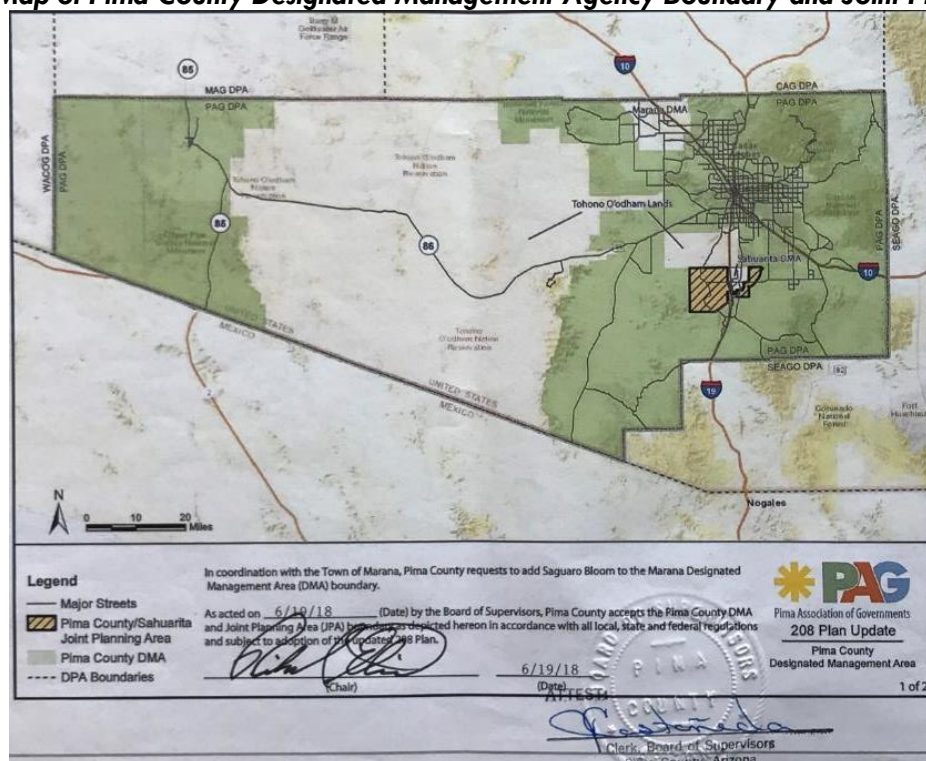
## Pima County Designated Management Agency

The PCRWRD is responsible for the design, management, operation, and maintenance of the sanitary sewer collection system and treatment facilities in its service area. The Pima County DMA boundary includes areas of Pima County outside the Tohono O'odham Nation, Pascua Yaqui Tribe, and the DMA areas of Sahuarita and Marana. The Pascua Yaqui Tribe's lands are displayed within the Pima County DMA boundary since Pima County provides wastewater service to that area. However, water quality management plans for Native American lands are enforced directly through the EPA, so PAG does not have DPA authority over those lands.

At the request of adjacent counties and with the concurrence of any impacted local jurisdictions, Pima County may consider providing service to customers outside the Pima County limits to benefit the general health, environment, and economy of these areas. For example, PCRWRD, at the request of Pinal County, currently provides service to an area north of the Pima/Pinal County line along Route 77. This consideration also applies to the Marana and Sahuarita DMAs, if the situation arises.

With the signing of the DMA confirmation map in 2018, the Pima County DMA boundary was adjusted to exclude Saguaro Bloom Subdivision, by joint request of Marana and Pima County, following procedures laid out in the previous Marana DMA Amendment (Figure 12). PAG is not responsible for the accuracy of the facility boundaries and descriptions as reflected on any maps and text within the 208 Plan Wastewater Facilities Planning chapter; all wastewater service related boundaries and datasets are shown as reported by the DMAs. The required public notice and approval by PAG Management Committee and Regional Council has been integrated into this 2020 208 Plan Update process.

**Figure 12. Map of Pima County Designated Management Agency Boundary and Joint Planning Area**



## ***Public Water Reclamation Facilities in the Pima County DMA***

### **Metropolitan Area Water Reclamation Facilities**

- Agua Nueva (*replaced Roger Road*)
- Harrison-Pantano (*no longer planned*)
- Kolb-Bilby (*no longer planned*)
- Randolph Park (*existing, non-operational*)
- Roger Road (*closed*)
- Tres Ríos (*formerly Ina Road*)

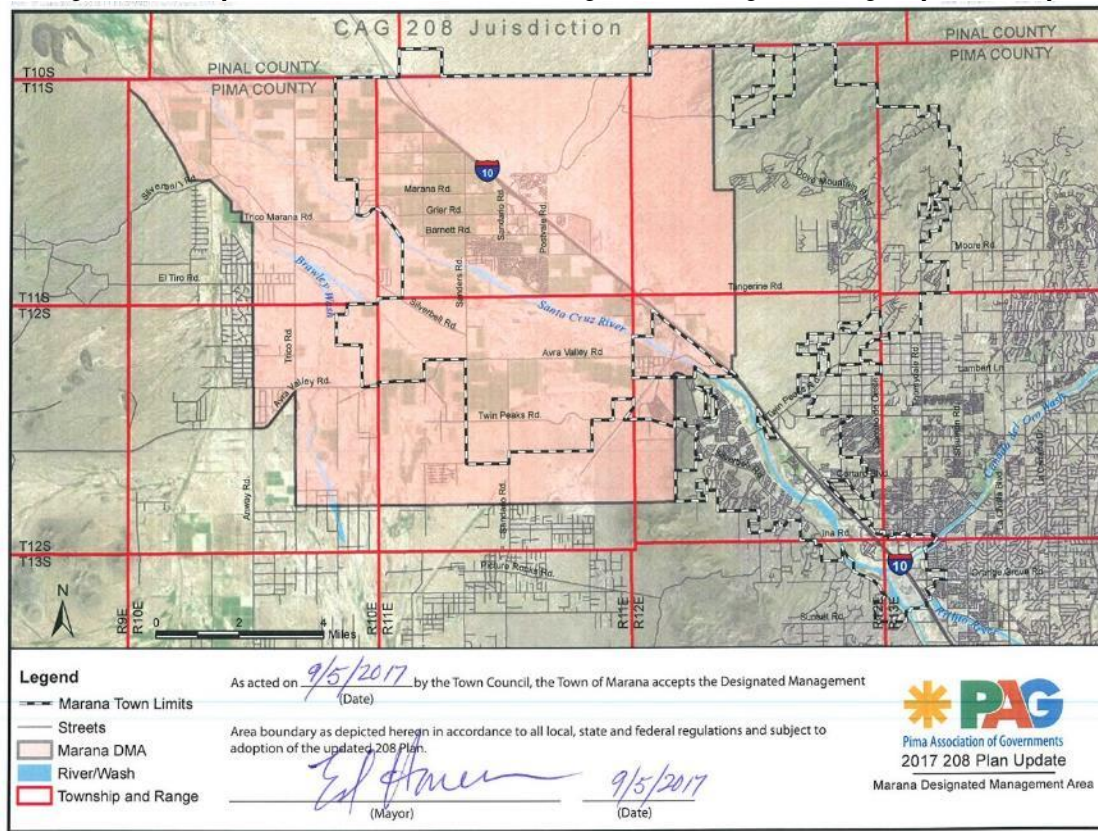
### **Public Pima County Water Reclamation Facilities Outside the Metropolitan Area**

- Arivaca Junction (*existing, operational*)
- Animal Control Center (*closed*)
- Avra Valley (*existing, operational*)
- Corona de Tucson (*existing, operational*)
- Green Valley (*existing, operational*)
- Mountain Gardens (*closed*)
- Mount Lemmon (*existing, operational*)
- Pima County Fairgrounds (*existing, operational*)
- Puerto del Norte (*closed*)
- Southlands (*no longer planned*)

## **Marana Designated Management Agency**

The PAG Regional Council approved the Town of Marana's 208 Plan Amendment to PAG's 208 Plan on September 25, 2013, and the Statewide Water Quality Management Working Group (WQMWG) forwarded a positive recommendation to ADEQ on October 8, 2013. The Town of Marana's 208 Plan was subsequently approved by ADEQ and the EPA. In 2014, the Town of Marana became a DMA and provides wastewater collection and treatment services in the DMA boundary area agreed upon by Pima County and the Town of Marana. The Town of Marana purchased the Marana facility from Pima County and provides wastewater service in the areas tributary to both the Marana WRF and the no-longer-operating Rillito Vista WWTF.

As reflected in the DMA confirmation map signed in 2017 (Figure 13), the Marana DMA boundary was extended to include Saguaro Bloom in May 2017. The signing of this map by each DMA serves as the joint request of Marana and Pima County to change DMA boundaries, as required in the procedures laid out in the previous Marana DMA Amendment. PAG is not responsible for the accuracy of the facility boundaries and descriptions as reflected on any maps and text within the 208 Plan Wastewater Facilities Planning chapter; all wastewater service-related boundaries and datasets are shown as reported by the DMAs. The required public notice and approval by PAG Management Committee and Regional Council has been integrated into this 2020 208 Plan Update process.

**Figure 13. Map of the Town of Marana Designated Management Agency Boundary**

In addition, the Adonis Mobile Home Park Conveyance System, Lift Station and Sewer Lagoons were acquired in 2018 by the Town of Marana. The Town of Marana has secured Water Infrastructure Finance Authority (WIFA) funding for the rehabilitation of the existing Adonis sewer conveyance system, and for the design and construction of a new lift station and force main to connect to the Town's regional sewage collection and treatment system. It is anticipated that the Adonis system will be connected to the Marana's regional system in 2020.

The Marana Water Reclamation division provides design, management, and operations and maintenance for the North Marana sanitary sewer system. This includes the conveyance and treatment systems for 58.50 miles (as of 06/30/18) of sewer mains and two WRFs.

### **Public Wastewater Treatment Facilities in the Marana DMA**

- Adonis Mobile Home Park [existing as non-municipal, operational, to connect to Marana WRF (WRF) in 2019]
- Airport (proposed)
- Marana County Line Regional (proposed)
- Marana I-10/Tangerine (no longer planned)
- Marana (existing, operational)
- Narrows (no longer planned; Saguaro Bloom area connected to Marana WRF)
- Peppertree (no longer planned)

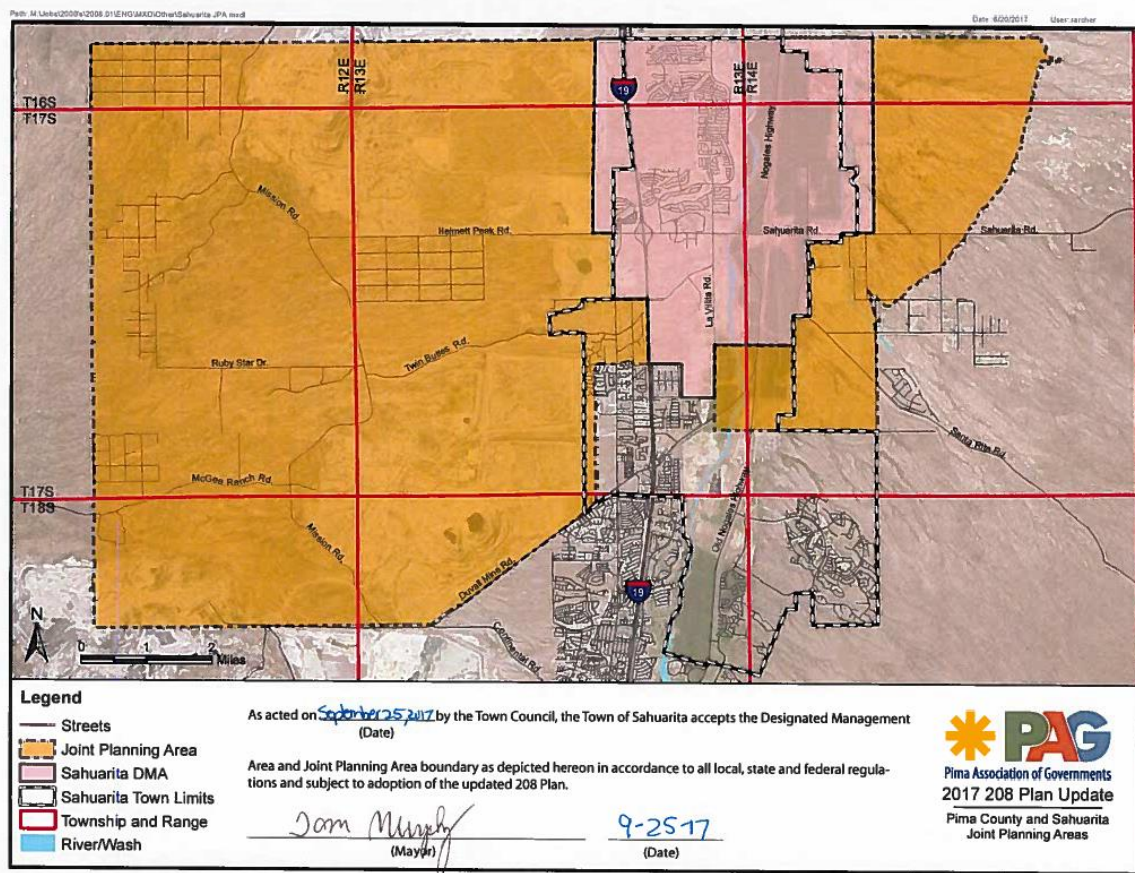


- Rillito Vista (closed; connected to Marana WRF; now serves as a lift station)
- South Marana (aka MSP; no longer planned)

## Sahuarita Designated Management Agency

The Town of Sahuarita became a DMA in 1999 based on a 208 Plan Amendment to the original 208 Plan. Since the Sahuarita 208 Plan Amendment was approved, the Town has annexed a number of areas. In recognition of the Town's annexations, and in order to ensure that the residents of the Town and Pima County would receive the best and most affordable wastewater service, the Town's DMA boundary was expanded through the 2006 208 Plan Update. The Sahuarita DMA includes the Town of Sahuarita's incorporated limits, excluding areas already served by Pima County. The DMA map was adopted by Regional Council in 2006 in the 208 Plan with DMA and Joint Planning Area (JPA) boundaries as depicted (Figure 14). PAG is not responsible for the accuracy of the facility boundaries and descriptions as reflected on any maps and text within the 208 Plan Wastewater Facilities Planning chapter; all wastewater service-related boundaries and datasets are shown as reported by the DMAs.

**Figure 14. Map of Town of Sahuarita Designated Management Agency Boundary and Joint Planning Area**



## Public Wastewater Treatment Facilities in the Sahuarita DMA

- Sahuarita (existing, operational)

## Joint Planning Area

The JPA is a management area where Pima County and the Town of Sahuarita will collaborate to decide which DMA will serve these areas when the need for wastewater collection and treatment service arises. The JPA was created in the 2006 208 Plan as illustrated in Figure 14. Areas east and west of the Town's current incorporated limits are included in the JPA. The Town may annex these areas in the future, and they could be served by either the Town of Sahuarita or Pima County. PAG 208 process criteria specific to service extensions in this area are contained in the 208 Plan's Adopted Procedures.

## Non-Municipal Wastewater Treatment Facilities

Private and non-municipal WWTFs that are not currently operated by the three DMAs or are proposed by entities other than the DMAs are shown in Figure 15. For the purposes of the 208 Plan, these facilities are referred to as non-municipal WWTFs. Expanded, modified, or new WWTFs and changes to service area boundaries must be consistent with the 208 Plan. These facilities must also meet the requirements or obtain appropriate APP or AZPDES permits from ADEQ.

Several non-municipal WWTFs are located within one of the three DMAs but were constructed prior to the implementation of the original 208 Plan, were declined service by a DMA, or were supported by a DMA to be constructed and operated under private ownership. Where economically feasible and environmentally beneficial, small non-municipal facilities are encouraged to connect to a DMA facility in the future.

Since some facilities have been constructed after the 208 Plan was implemented without 208 approval and are therefore considered inconsistent with the 208 Plan, efforts are made to coordinate with partners to build awareness of the consistency process and opportunities to connect to a DMA facility. For example, the Arizona State Prison was constructed without a PAG consistency process and since that time, efforts were successfully made to connect it to the Pima County DMA facility. Another recent success of regionalization is the connection of the Adonis facility, which had aging infrastructure and compliance issues, to the Marana DMA to provide public service. The Sahuarita DMA successfully connected the Sahuarita High School Wetlands when new water quality standards became cost prohibitive for the owners.

For current facility information [click here](#).

## Non-Municipal Wastewater Treatment Facilities in the Pima County DMA

### Existing

- Ajo Improvement Company
- Arizona-Sonora Desert Museum
- Gilbert Ray Campground (*built prior to the original 1978 208 Plan*)
- Lukeville

- Milagro Subdivision
- Miraval Resort Tucson, LLC
- Organ Pipe Cactus National Monument
- U.S. Forest Service – Palisades Ranger Station
- University of Arizona Science and Technology Park

#### **Closed**

- Arizona Department of Corrections
- Arizona Feeds Poultry Farm (*built prior to the original 1978 208 Plan*)
- Arizona Hog Farm Co. (*built prior to the original 1978 208 Plan*)
- Arizona State Prison (connected to Pima County DMA facility)
- Arizona Youth Center (*built prior to the original 1978 208 Plan*)
- Asthmatic School (*built prior to the original 1978 208 Plan*)
- Branding Iron (*built prior to the original 1978 208 Plan*)
- Catalina (*built prior to the original 1978 208 Plan*)
- El Conquistador
- Highlands
- Hughes Aircraft (*built prior to the original 1978 208 Plan*)
- Pacific Fruit Express (*built prior to the original 1978 208 Plan*)
- R&M Farms (*built prior to the original 1978 208 Plan*)
- Santo Thomas (*built prior to the original 1978 208 Plan*)
- Shamrock Farms (*built prior to the original 1978 208 Plan*)

#### **Proposed**

- ASARCO (in JPA)
- Oracle Ridge Mine
- Wildcat Canyon at Saguaro Ranch

#### **No Longer Planned**

- Broadmoor a.k.a. Cañada Hills
- Cielo Madera
- Mission Peaks

## **Non-Municipal Wastewater Treatment Facilities in the Marana DMA**

#### **Existing**

- Management & Training Corporation (MTC)



- Marana High School

**Closed**

- Marana Jr. High (*built prior to the original 1978 208 Plan; connected to Marana WRF; now serves as a lift station*)
- Adonis Mobile Home Park Sewer Lagoons (*ownership changed to Marana*)

**No Longer Planned**

- La Mirage Estates

## **Non-Municipal Wastewater Treatment Facilities in the Sahuarita DMA**

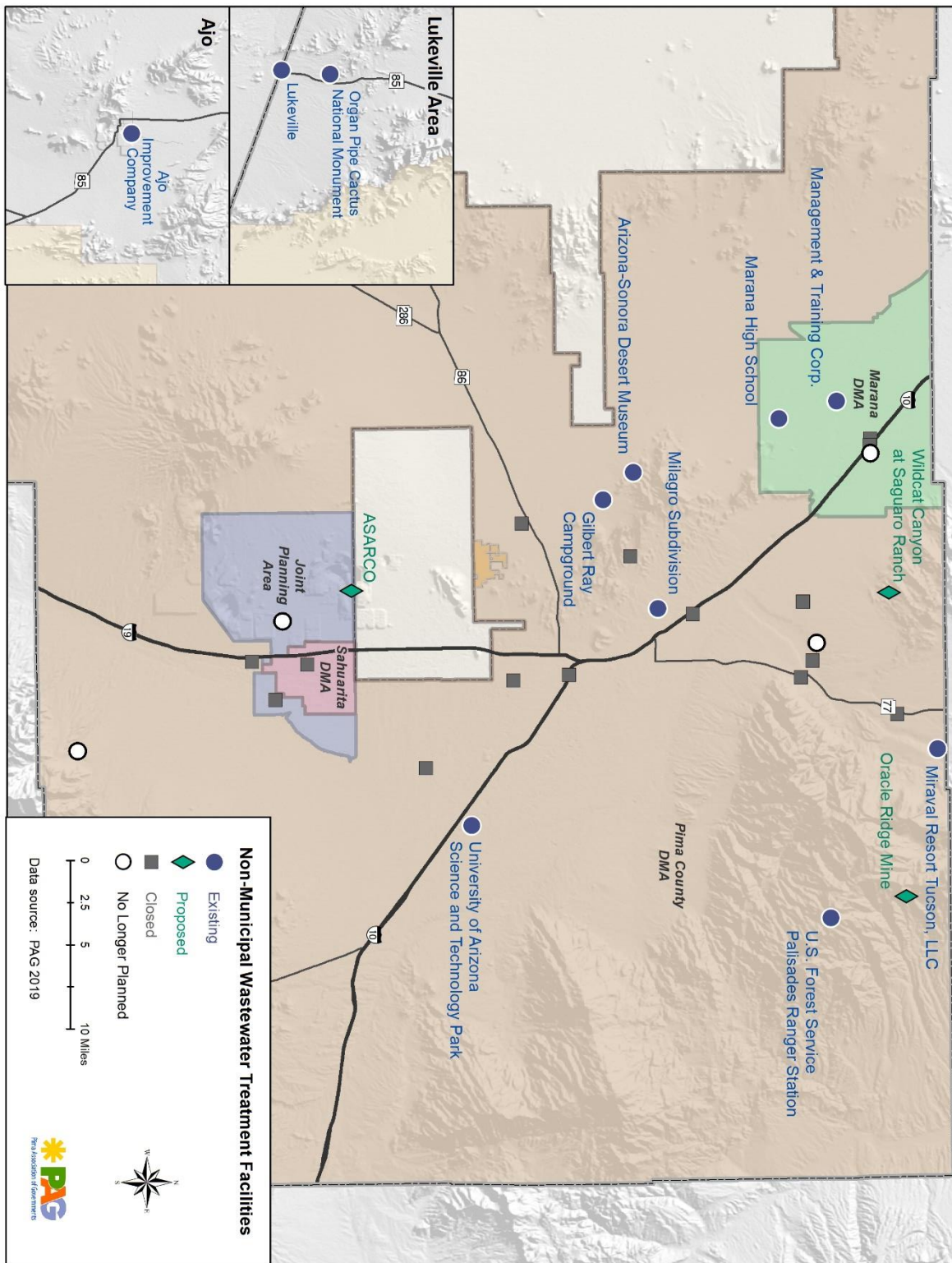
**Proposed**

- ASARCO (in JPA)

**Closed**

- Sahuarita High School Wetlands (connected to Sahuarita DMA facility)

**Figure 15. Map of Non-Municipal Wastewater Treatment Facility Locations**  
 Map of All Non-Municipal WWTFs in Eastern Pima County, Plus Western Pima County Insets



## Other Discharges

### Septic and Onsite Facilities under APP 4.23 General Permit

Regulations require that a septic system design conforms to the Arizona Administrative Code's APP Rules, A.A.C. § R18-9-A309(A)(5)(a)(iii), and Pima County is delegated authority for APP 4.23 General Permits, A.A.C. § R18-9-E323. The Pima County Code Title 7 requires that homeowners receive permits to build and use their septic systems. Onsite WWTF proposals located within an area identified for connection to a sewage collection system by a Certified Areawide Water Quality Management Plan adopted under A.A.C. § R18-5 or a master plan adopted by a majority of the elected officials of a board or council, municipality, or sanitary district; or that have a sewer line extension available at the property boundary will not be eligible for an APP 4.23 General Permit. Aligned with the 208 Plan guiding principal of encouraging regionalization, during permit application reviews sites are assessed for economic feasibility of connection to a public treatment system. Pima County Code 7.21.027 encourages residential lots to connect to sewer systems through provisions of minimum lot size and proximity to sewer.

No recent geographic distribution assessment of septic systems has been conducted in Pima County as of 2020. Pima County tracks septic systems in their [Septic Records Portal](#)<sup>103</sup>. Composting toilets are increasing in use with new affordable and certified proprietary treatment products available since 2016, developed by local practitioners in Tucson. As of 2005, composting toilets are now permissible under A.A.C. § R18-9-E303. 4.03 not only to prevent discharge of nutrients but for water conservation. Thirty percent of the basin area covered by the Agua Nueva/Tres Rios facilities consists of rural land use. Rural users are not anticipated to connect to the sanitary sewer system and are usually large enough to accommodate private onsite septic systems. Issues and efforts to address contamination are included in the Water Quality and Management Efforts chapter.

### Additional Effluent Discharge Sites

The Water Quality and Management Efforts chapter includes maps of reclaimed water facilities and treated wastewater resources, including park turf, recharge sites and effluent-dependent flows.

### Discharges and Wastewater Treatment Facilities That Are Not Consistent with the 208 Plan

The 2006 208 Plan identified two facilities that were not consistent with the 208 Plan – Arizona State Prison and Adonis Mobile Home Park. Both facilities were built without undergoing a PAG Consistency process. The Arizona State Prison facility is now closed, and Adonis Mobile Home Park will be connected to Marana's regional system in 2020.

<sup>103</sup><https://onbase.pima.gov/publicaccess/DS/datasourcetemplate.aspx?MyQueryID=239>

## Future Conditions

### Potential Facilities

The 208 Plan considers the potential for new WRFs in order to ease the approval of future amendments or consistency reviews. As opposed to the “proposed” facilities listed in each DMA section of this chapter, the “potential” new facilities are in the initial, conceptual stages of assessing wastewater needs. The 208 Plan will be updated prior to the construction of any of the following potential facilities, when more detailed information is available:

- Regional facilities in the JPA may be needed within five to ten years and may be discussed in more detail in a future 208 Plan update.

See Figure 11 and Figure 15 for maps of proposed facilities and see the Facility Inventory Report chapter for detailed information on the proposed facilities.

### No Longer Planned Facilities

The Southeast side (Harrison-Pantano and Kolb-Bilby), Tangerine Road/I-10 (Marana I-10/Tangerine), Southlands and Canoa Restoration Project were listed in the 2006 208 Plan as proposed or potential facilities but with this update we confirm for the record that they are no longer planned.

The Narrows WRF was listed as a proposed facility in the 2013 Areawide Water Quality Management Plan Amendment for the Town of Marana but with this update we confirm for the record that it is no longer planned.

See the Facility Inventory Report chapter for detailed information about these and other facilities that are no longer planned. See the Water Quality and Management Efforts chapter for future conditions regarding ECs issues.

### Estimating Service Area Population and Projecting Population and Wastewater Flows

To inform the development of wastewater flow volume forecasts, the 208 Plan includes population estimates for 2015 for wastewater service footprints, as well as population estimates for 2015 and projections for 2045, for geographies of watersheds and SGWAs (Table 5, Table 6 and Table 7). The 2015 service footprints and facility planning areas used for these calculations are shown in Figure 16. See the Methodology section for a description of facility planning area and 2015 service footprint delineation and for the methods of the modeling and calculations.

**Table 5. Population Estimates for 2015 Service Footprint**

Service Footprint	2015 Estimate
Agua Nueva WRF <sup>i</sup>	621,776
Avra Valley WRF	31,488
Corona de Tucson WRF	6,087
Green Valley WRF	31,846
Marana WRF	6,917
Mt. Lemmon WRF	46
Sahuarita WRF	14,494
Tres Rios WRF <sup>i</sup>	198,259

<sup>i</sup> Service areas for the Agua Nueva and Tres Rios WRF are managed together. PCRWRD and ADEQ recognize Agua Nueva and Tres Rios as one basin and service area.

**Table 6. 2015 Population Estimates and 2045 Population Projections by Watershed<sup>i</sup>**

Watershed	2015 Estimate	2045 Projection
Aguirre Valley	0	531
Brawley Wash	58,231	91,699
Lower San Pedro	23	197
Lower Santa Cruz	8,599	37,538
Rillito	353,119	517,665
Rio De La Concepcion	19	52
San Simon Wash	0	3
Upper San Pedro	121	149
Upper Santa Cruz	552,865	815,509

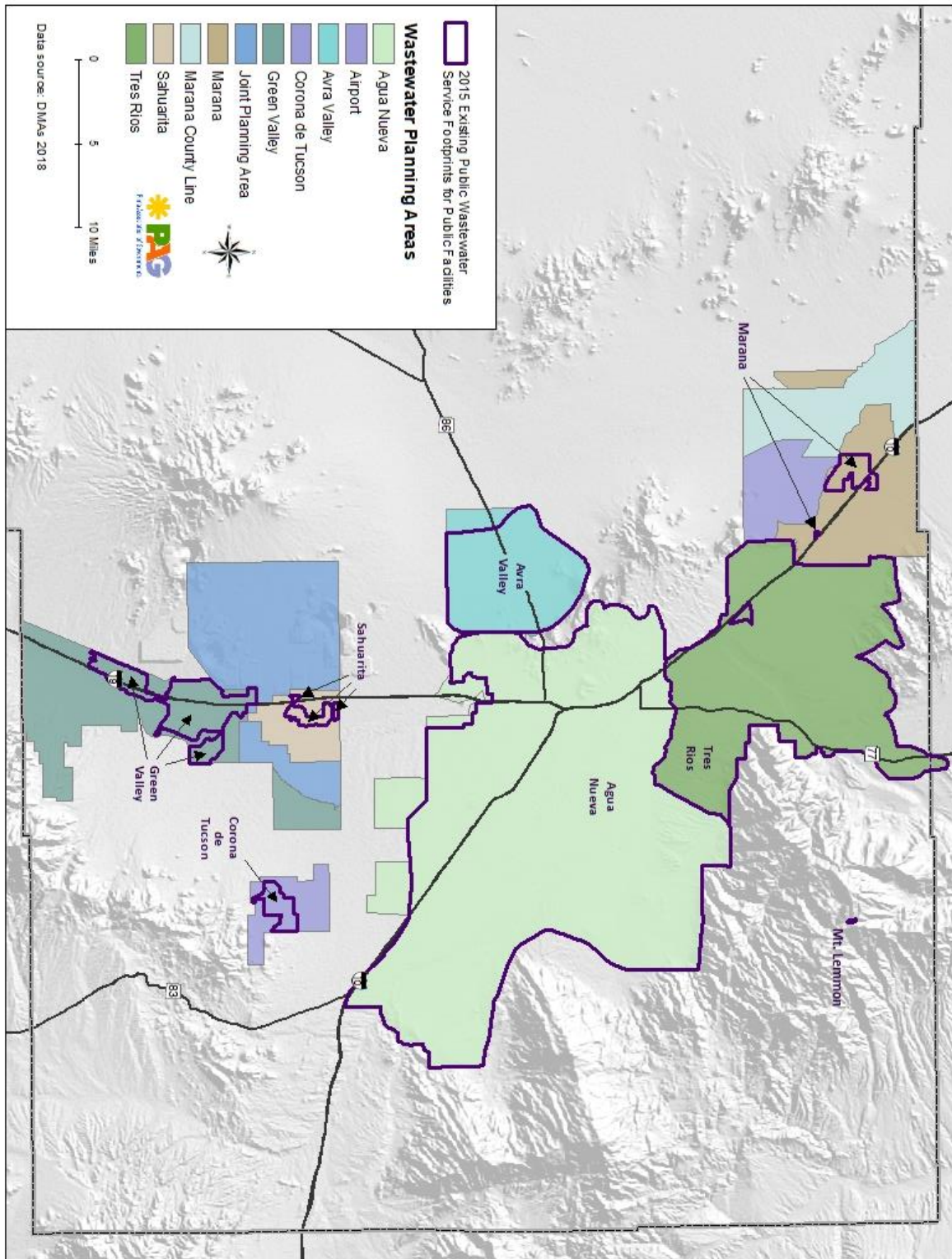
<sup>i</sup> Population numbers were only calculated for watersheds in eastern Pima County, where Traffic Analysis Zone based projection data is available. Projections are also not available where a watershed includes Native American lands, and these are not covered by the 208 Plan.

**Table 7. 2015 Population Estimates and 2045 Population Projections by Shallow Groundwater Area**

SGWA	2015 Estimate	2045 Projection
Altar Valley	563	606
Central Santa Cruz River	17,413	26,105
Cienega-Davidson System	1,529	8,203
Cocio Wash	0	12
Pantano-Rincon System	4,712	16,928
Rillito-Tanque Verde System	64,196	78,433
San Pedro River	11	25
Santa Cruz-Sopori System	1,472	5,288
Sutherland Wash	467	2,765
Tortolita Mountains	501	1,423



**Figure 16. Map of 2015 Service Footprints and Facility Planning Areas for Public Facilities in Eastern Pima County**



*Note: PCRWRD and ADEQ recognize Agua Nueva and Tres Rios as one basin and service area.*



For DMAs and public WRF planning areas (Figure 17), population and flow projections were calculated for 5-year increments between 2020 and 2045 (Table 8, Table 9 and Table 10). These projections were created to aid local wastewater planning efforts. Flow projections were calculated based on sewage design flows of 80 gallons per capita per day (GPCD). Note that the numbers in Table 10 are merely projections; facility capacity expansions are typically constructed significantly in advance of the flows reaching these levels. To meet needs of anticipated population growth wastewater treatment needs, additional plants may be needed.

**Table 8. 5-Year Population Projections by DMA, 2020 through 2045<sup>i</sup>**

<b>DMA</b>	<b>2020 Projection</b>	<b>2025 Projection</b>	<b>2030 Projection</b>	<b>2035 Projection</b>	<b>2040 Projection</b>	<b>2045 Projection</b>
Joint Planning Area	3,714	5,071	5,882	7,415	10,607	14,379
Marana DMA	14,576	19,481	24,385	28,734	32,352	40,121
Sahuarita DMA	20,552	26,006	30,426	33,186	34,261	34,873

<sup>i</sup> Population projections were not calculated for the Pima County DMA, as Traffic Analysis Zone based projections are only available in urban eastern Pima County and are not available for the entire Pima County DMA.

**Table 9. 5-Year Population Projections by Facility Planning Area, 2020 through 2045**

<b>Facility Planning Area</b>	<b>2020 Projection</b>	<b>2025 Projection</b>	<b>2030 Projection</b>	<b>2035 Projection</b>	<b>2040 Projection</b>	<b>2045 Projection</b>
Agua Nueva <sup>i</sup>	672,814	726,649	777,259	826,824	872,792	914,100
Airport <sup>i</sup>	341	362	380	414	455	1,555
Avra Valley	38,807	42,471	49,440	55,178	58,370	59,519
Corona de Tucson	7,004	7,007	7,018	7,084	7,247	7,390
Green Valley	37,638	39,287	40,271	41,968	45,643	48,997
Marana WRF	13,595	18,599	23,586	27,972	31,414	36,488
Marana County Line <sup>ii</sup>	746	753	773	810	988	2,735
Sahuarita Town Code Limits	17,230	18,907	20,042	21,761	22,097	22,116
Tres Rios <sup>i</sup>	210,222	218,321	224,713	231,434	238,807	244,381

<sup>i</sup> Service areas for the Agua Nueva and Tres Rios WRF are managed together. PCRWRD and ADEQ recognize Agua Nueva and Tres Rios as one basin and service area.

<sup>ii</sup> Planned facilities; facility planning areas may change.

**Table 10. 5-Year Flow Projections by Facility Planning Area, 2020 through 2045***Units are Million Gallons Per Day (MGD)*

Facility Planning Area	2020	2025	2030	2035	2040	2045
Agua Nueva/Tres Rios Combined <sup>i</sup>	70.64	75.60	80.16	84.66 <sup>iii</sup>	88.93 <sup>iii</sup>	92.68 <sup>iii</sup>
Airport <sup>ii</sup>	0.03	0.03	0.03	0.03	0.04	0.12
Avra Valley	3.10	3.40	3.96	4.41 <sup>iii</sup>	4.67 <sup>iii</sup>	4.76 <sup>iii</sup>
Corona de Tucson	0.56	0.56	0.56	0.57	0.58	0.59
Green Valley	3.01	3.14	3.22	3.36	3.65	3.92
Joint Planning Area	0.30	0.41	0.47	0.59	0.85	1.15
Marana WRF	1.09	1.49	1.89 <sup>iii</sup>	2.24 <sup>iii</sup>	2.51 <sup>iii</sup>	2.92 <sup>iii</sup>
Marana County Line <sup>ii</sup>	0.06	0.06	0.06	0.06	0.08	0.22
Sahuarita Town Code Limits <sup>iv</sup>	1.38	1.51 <sup>iii</sup>	1.60 <sup>iii</sup>	1.74 <sup>iii</sup>	1.77 <sup>iii</sup>	1.77 <sup>iii</sup>
Sahuarita DMA	1.64 <sup>iii</sup>	2.08 <sup>iii</sup>	2.43 <sup>iii</sup>	2.65 <sup>iii</sup>	2.74 <sup>iii</sup>	2.79 <sup>iii</sup>

<sup>i</sup> Service areas for the Agua Nueva and Tres Rios WRF are managed together. PCRWRD and ADEQ recognize Agua Nueva and Tres Rios as one basin and service area.

<sup>ii</sup> Planned facilities; no current capacity.

<sup>iii</sup> Projected flow may reach design capacity.

<sup>iv</sup> Numbers are available for planning assistance only; this will not be used as a limit within the PAG 208 process.

Table 11 shows the maximum flows that can be determined consistent with the 208 Plan. See the Plan Implementation chapter for policies and procedures associated with Maximum Flows for 208 Consistency for public facilities.

**Table 11. Maximum Flows for 208 Consistency, 2016 through 2045<sup>i</sup>***Units are Million Gallons Per Day (MGD)*

Facility Planning Area	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045
Agua Nueva/Tres Rios Combined <sup>ii</sup>	88.30 <sup>iii</sup>	94.50 <sup>iii</sup>	100.20 <sup>iii</sup>	105.83 <sup>iii</sup>	111.16 <sup>iii</sup>	115.85 <sup>iii</sup>
Airport <sup>iv</sup>	0.03	0.04	0.04	0.04	0.05	0.16
Avra Valley	3.88	4.25 <sup>iii</sup>	4.94 <sup>iii</sup>	5.52 <sup>iii</sup>	5.84 <sup>iii</sup>	5.95 <sup>iii</sup>
Corona de Tucson	0.70	0.70	0.70	0.71	0.72	0.74
Green Valley	3.76	3.93	4.03	4.20 <sup>iii</sup>	4.56 <sup>iii</sup>	4.90 <sup>iii</sup>
Green Valley + JPA <sup>v</sup>	4.14 <sup>iii</sup>	4.44 <sup>iii</sup>	4.62 <sup>iii</sup>	4.94 <sup>iii</sup>	5.63 <sup>iii</sup>	6.34 <sup>iii</sup>
Marana WRF	1.36	1.86 <sup>iii</sup>	2.36 <sup>iii</sup>	2.80 <sup>iii</sup>	3.14 <sup>iii</sup>	3.65 <sup>iii</sup>
Marana County Line <sup>iv</sup>	0.07	0.08	0.08	0.08	0.10	0.27
Sahuarita DMA	2.06 <sup>iii</sup>	2.60 <sup>iii</sup>	3.04 <sup>iii</sup>	3.32 <sup>iii</sup>	3.43 <sup>iii</sup>	3.49 <sup>iii</sup>
Sahuarita DMA + JPA <sup>v</sup>	2.43 <sup>iii</sup>	3.11 <sup>iii</sup>	3.63 <sup>iii</sup>	4.06 <sup>iii</sup>	4.49 <sup>iii</sup>	4.93 <sup>iii</sup>

<sup>i</sup> Calculated as 25 percent above the flow projection for the later date in the listed range.

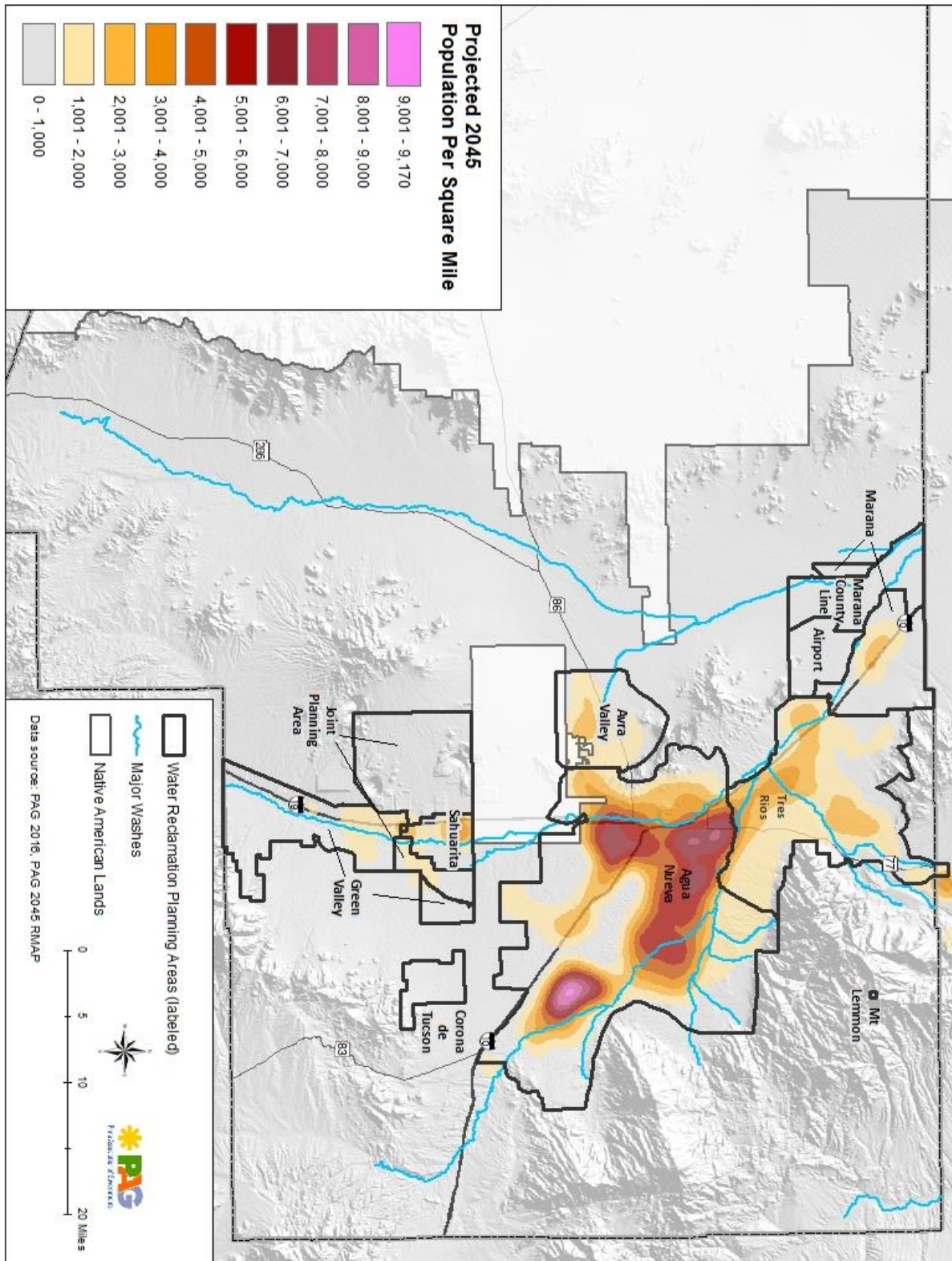
<sup>ii</sup> For purposes of future 208 consistency determinations, Agua Nueva and Tres Rios WRF capacities are combined.

<sup>iii</sup> Maximum flow may reach design capacity.

<sup>iv</sup> Potential facilities; no current capacity.

<sup>v</sup> For service area expansion into the JPA, the JPA's maximum flow is added to that of the relevant facility.

**Figure 17. Map of 2045 Population Projections in Water Reclamation Facility Planning Areas**



*Note: PCRWRD and ADEQ recognize Agua Nueva and Tres Rios as one basin and service area.*

## Methodology

### Methods for Delineating DMA Boundaries, Water Reclamation Facility Planning Areas, Service Areas and 2015 Service Footprints

This section describes the methods for delineating service areas and planning areas for all of the public WRFs in Pima County. PAG is not responsible for the accuracy of the facility boundaries and descriptions as reflected on any maps and text within the 208 Plan Wastewater Facilities Planning chapter; all wastewater service related boundaries and datasets are shown as reported by the DMAs.

While each facility had a point location reference, service areas were not available for all non-municipal facilities.

#### *Designated Management Agency Boundary Delineation*

DMA boundaries will only be changed after a 208 Plan Amendment. This process and resulting maps require approval by the DMA's Town Council or Board of Supervisors and the PAG Regional Council. DMA boundary maps signed by local authorities in 2017 or 2018 can be seen in Figure 12, Figure 13 and Figure 14. See the Plan Implementation chapter for policies and procedures to establish a new DMA or update DMA boundaries.

#### *Facility Planning Area Delineation*

The locations and boundaries of 22 wastewater drainage areas, or "sewer basins," were delineated in the original 1978 208 Plan, based largely on natural topographic constraints, a key factor when siting WWTFs down-gradient of service areas, so that sewage can flow by gravity to the treatment facility. This exercise was not replicated for this plan update since the geographic distribution of population, availability of funds for lift stations, and management agency are additional factors that determine future wastewater service boundaries. Instead, planning areas were provided by each DMA for each public wastewater facility. Planning areas only need to be updated every five years or as needed to be used for population projections. Planning areas are displayed in Figure 16.

Georeferenced maps and text descriptions were used to determine planning areas in situations where service areas have defined legal boundaries, or if the above datasets were not available for a facility. For the Sahuarita facility, PAG provided data for two planning areas: the DMA and the legal Town Code Boundary. PAG used a georeferenced map of the 1999 Sahuarita DMA/service area boundary from the Sahuarita Town Code for the latter. The boundaries were checked against text descriptions in the Town Code, such as street references and compared to aerial photography.

#### *Service Area Delineation*

Service Areas are displayed in the Facility Inventory. These steps were followed by PAG staff in the process of updating the wastewater service areas for current, active infrastructure as of the 2020 208 Plan update for use in the Facility Inventory Portal. This process will be followed for updates moving forward.

1. Check with DMAs with each Consistency Review or every five years for updates to service areas.
  - a. PAG provides links to current maps for comparison.
  - b. DMA preferably provides GIS shapefiles and text description of changes, but maps from facility plans or hand-drawn markups on a printed map will work if shapefiles are not available.
2. Check shapefiles for changes and accuracy. Revise if needed to update the boundary to correspond to the base year of the projections.
  - a. DMA preferably uses steps below to update and refine dataset in advance of providing dataset to PAG, but PAG helps update dataset if needed.
    - PAG used the definition of “service area” as an area currently served and/or containing infrastructure. PAG allows exceptions to this definition to fit the needs of DMAs and local ordinances.
    - For wastewater facilities within or previously a part of the Pima County DMA, use Pima County GIS sewer infrastructure layers as a reference when verifying which areas are currently served. Subdivision lines, parcel boundaries, roads, and aerial photos are helpful for refining service area boundaries.
    - For wastewater facilities elsewhere, refine service areas by referencing subdivision lines, parcel boundaries, roads, and aerial photos.
    - In the cases where service areas follow legally established boundaries, check the shapefiles for accuracy against a georeferenced map of these legal boundaries.
    - Make sure that facilities don’t cross DMA lines or overlap with other service areas.
    - Fix technical errors, such as gaps and slivers.
3. PAG verifies results with DMAs.
4. PAG updates final geodatabase with new feature class and uploads to Facility Inventory Portal.
5. PAG saves archive of replaced files.
6. PAG works with DMAs to update text descriptions in portal to describe changes to map.

The following data sources, used to delineate facility service areas in the 2020 update, are described in more detail below.

1. Sewer Sub-basins: Tributary sewer sub-basin GIS shapefiles were used to delineate service areas for Agua Nueva, Tres Rios and Avra Valley. These shapefiles were associated with Pima County’s 2016 Facility Plan Update. The sewer sub-basins were trimmed to only include areas that had existing sewer lines within them to create the current service area for each facility.
2. Sewer Infrastructure: A 2006 sewer line shapefile and a 2018 sanitary sewer infrastructure shapefile from the Pima County Land Information System (PCLIS) dataset were used to determine areas with current wastewater service. These data are only available for facilities within or previously a part of the Pima County DMA. Sewer



infrastructure shapefiles are helpful for determining which neighborhoods or individual properties have service, and additional data such as subdivision lines, parcel boundaries, roads and orthophotography are helpful for refining the service area boundaries.

3. Subdivision Boundaries and Roadways: Subdivision boundaries were used to delineate service areas for small facilities serving a clearly defined subdivision or subdivisions, such as Arivaca Junction. This information was supplemented by aerial photography, roadways and the locations of sewer lines, if available. Subdivision boundary shapefiles were obtained from the PCLIS GIS dataset.
4. Orthophotography: Both 2011 and 2015 orthophotography was used as a visual reference for property boundaries and land use. For small facilities serving a specific property, such as the Pima County Fairgrounds and Desert Museum facilities, PAG delineated the service areas primarily through the use of aerial orthophotography. The service areas encompass the buildings that are currently served by each treatment plant. The Marana WRF service area was delineated based upon a combination of Pima County sewer line shapefiles, 2015 orthophotography and a written description of the service area boundary.
5. Parcels: The PCLIS parcels shapefile was used in combination with the above datasets to further refine service area boundaries. When delineating service areas, if a property is connected to the sewer system the entire parcel is considered part of the service area. When delineating service areas for the Corona de Tucson and Green Valley facilities, PAG determined currently served areas using the sewer infrastructure and parcel shapefiles overlaid on orthophotography.
6. Georeferenced Maps: PAG delineated the service area for Mt. Lemmon by georeferencing a map of the current service area from Pima County's 2016 Facility Plan Update. As orthophotography is not available in the Mt. Lemmon area, the sewer line feature, also visible in the Facility Plan Update maps, was used in the georeferencing process.

### ***2015 Service Footprint Delineation***

PAG delineated wastewater service footprints for active infrastructure as of 2015 (Figure 16). PAG employed the same process as was used for service area delineation except local ordinances boundaries were not used and PAG used 2015 data for infrastructure, georeferenced maps and orthophotography, where available, to match population and service data for 2015. The shapefiles generated through this process were only used for 2015 population estimates (Table 5). Footprint boundaries could be improved in the future with more refined use of infrastructure data where available.

## Methods for Population and Flow Projections

### *Population Projections*

The 208 Plan uses the PAG 2045 Long-Range Plan, known as the Regional Mobility and Accessibility Plan (RMAP) population forecast dataset, adopted May 2016. The dataset is published at the Traffic Analysis Zones (TAZ) geography and consists of a 2015 base year and 2045 forecast year (see [2045 RMAP Technical Addendum<sup>104</sup>](#)) (Figure 18). Area population forecasts for the 208 Plan take the 2015-2045 TAZ forecasts and apportion them to geographies. Since not all TAZs nest within the boundaries of these areas, they must be split.

Allocation of the adopted TAZ forecast to the plan geographies uses an area-ratio method that assumes even spatial distribution of population within its source geography when split across multiple target boundaries. For smaller geographies, since urban development may concentrate in areas within TAZs, the adopted 2015 base population for each 208 Plan geography was adjusted using 2015 parcel-based housing unit information, converted to population. The remainder of growth from the adopted 2015-2045 forecast was then assigned to each geography using the area-ratio method. PAG double-checked 2015 base year population estimates against sewer connection numbers provided by the DMAs.

The datasets used to create the 2045 RMAP adopted projections contain information about growth rates. These datasets, apportioned to 208 Plan geographies, are the basis for estimating population growth in 5-year intervals for each wastewater planning area between the adjusted 2015 base and the 2045 forecast years. The result is a growth pattern normalized to align the population forecast for each geography with the adopted 2045 RMAP forecast control totals.

Although population projections are available for Agua Nueva and Tres Rios individually, PCRWRD and ADEQ recognize Agua Nueva and Tres Rios as one basin and service area, and so the areas were merged as one unified area for flow projections.

New base year estimates, growth rates and projections will be available after each RMAP update, typically completed every four years.

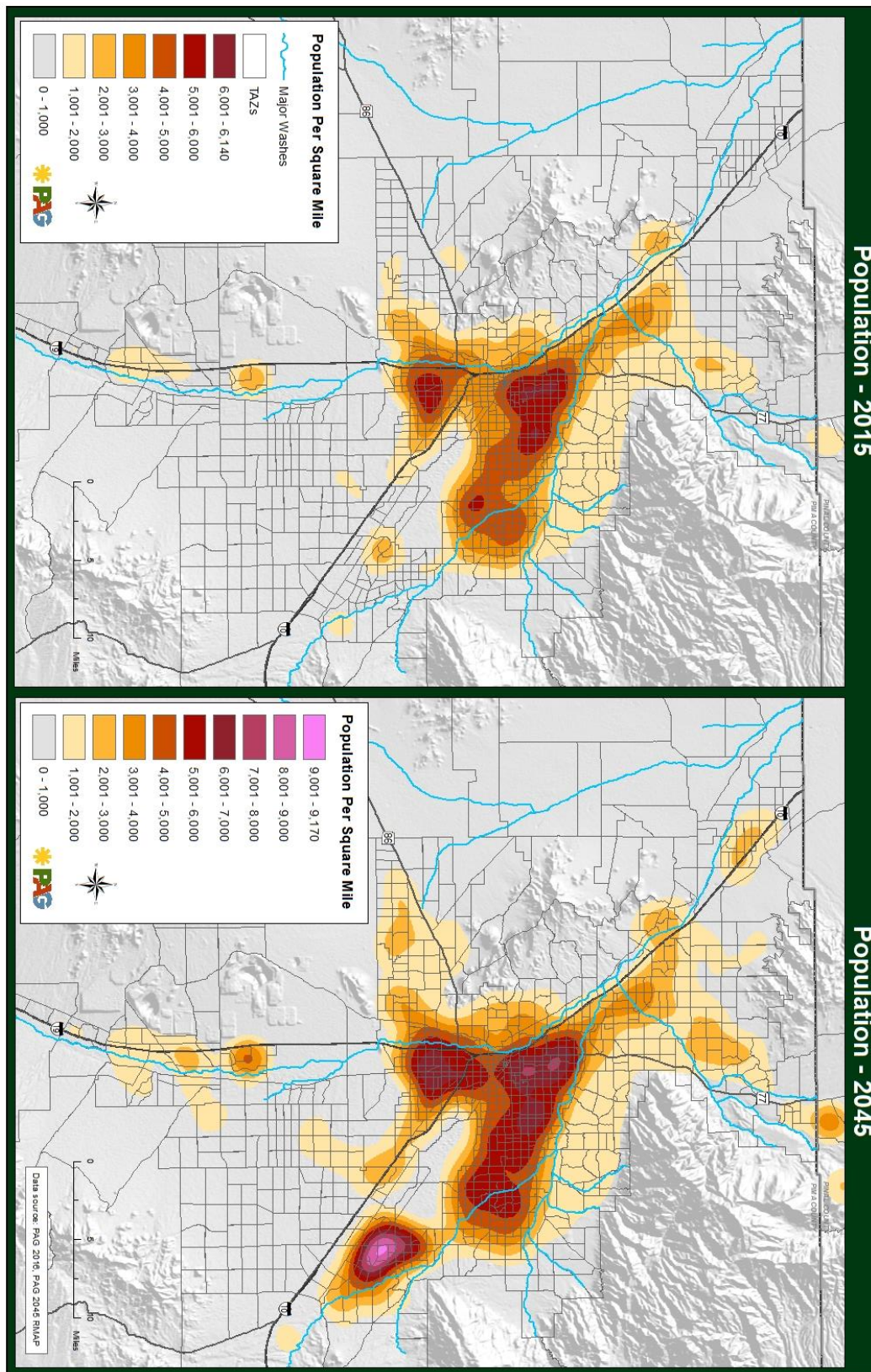
### *Daily Wastewater Flow Projections*

PAG, in agreement with the DMAs, assumed a per capita volume of wastewater generation of 80 gallons per day (GPD) to remain consistent with ADEQ requirements (A.A.C. § R18-9 Part E Table 1). Flow projections were calculated by multiplying the projected population of each planning area by 80 GPCD. No assumptions were made about the percentage of the population currently served by septic systems. Since PCRWRD and ADEQ recognize Agua Nueva and Tres Rios as one service area, flows represent a unified, combined area.

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<sup>104</sup><https://pagregion.com/wp-content/docs/pag/2021/05/2045RMAP-TechnicalAddendum.pdf>

**Figure 18. Map of Projected 2045 Population with TAZs**



### ***Maximum Flows Calculation***

The maximum flows for 208 consistency were calculated by adding 25 percent to the flow projection for the later date in the listed range, based on a Consistency Factor of 25 percent.

## **Methods for Listing Potential Facilities**

During their planning processes, the private or public sector may identify potential facilities or target areas to address future wastewater needs. PAG may list these facilities or areas in the Future Conditions section of the Wastewater Facilities Planning chapter.

When listing a facility, PAG will note the location and if that location is subject to change or approximate. Listing potential facilities does not require Consistency Review approval, but the need for a future facility should be identified in at least one planning document from the requesting entity. Potential facilities may be added to the Facility Inventory Portal when more information becomes available or when an application for Consistency Review is received by PAG.

## ***Chapter 4: Facility Inventory Report***

The printed PAG 208 Facility Inventory Report for all facilities is attached here as part of the 208 Plan. The full report is sorted by DMA, and the facilities within each DMA are sorted alphabetically. The Facility Inventory Portal (<http://gismaps.pagnet.org/pag208plan/>) is updated when data becomes available and after any applicable 208 process.

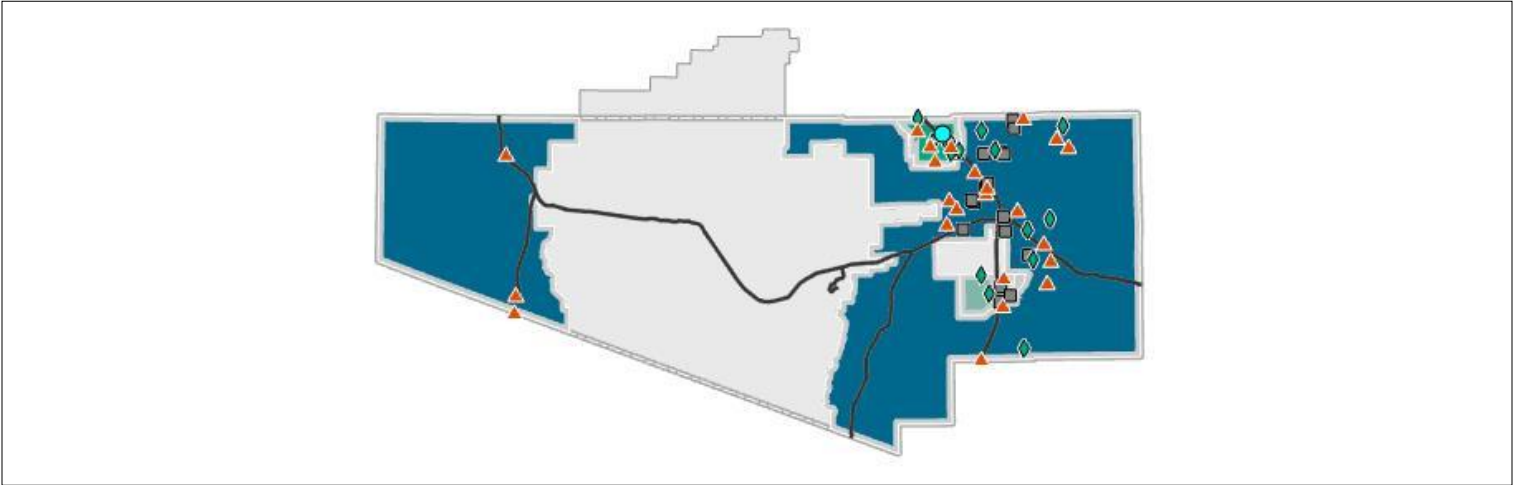
*The sewer service area boundaries provided herein are intended for general planning purposes only. Presence of a property or proposed development within these areas does not guarantee connection to a centralized sewer system. The maps may be used to determine the appropriate DMA, WMU and/or jurisdiction with which to discuss whether sewer connection is technically and economically feasible.*



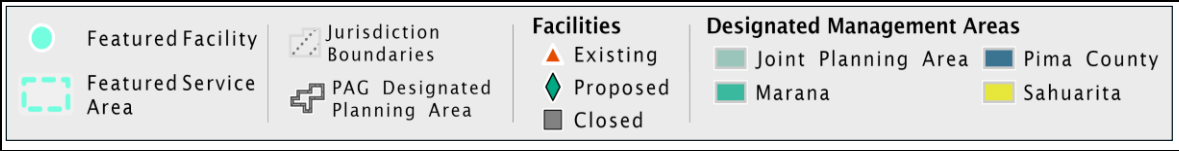
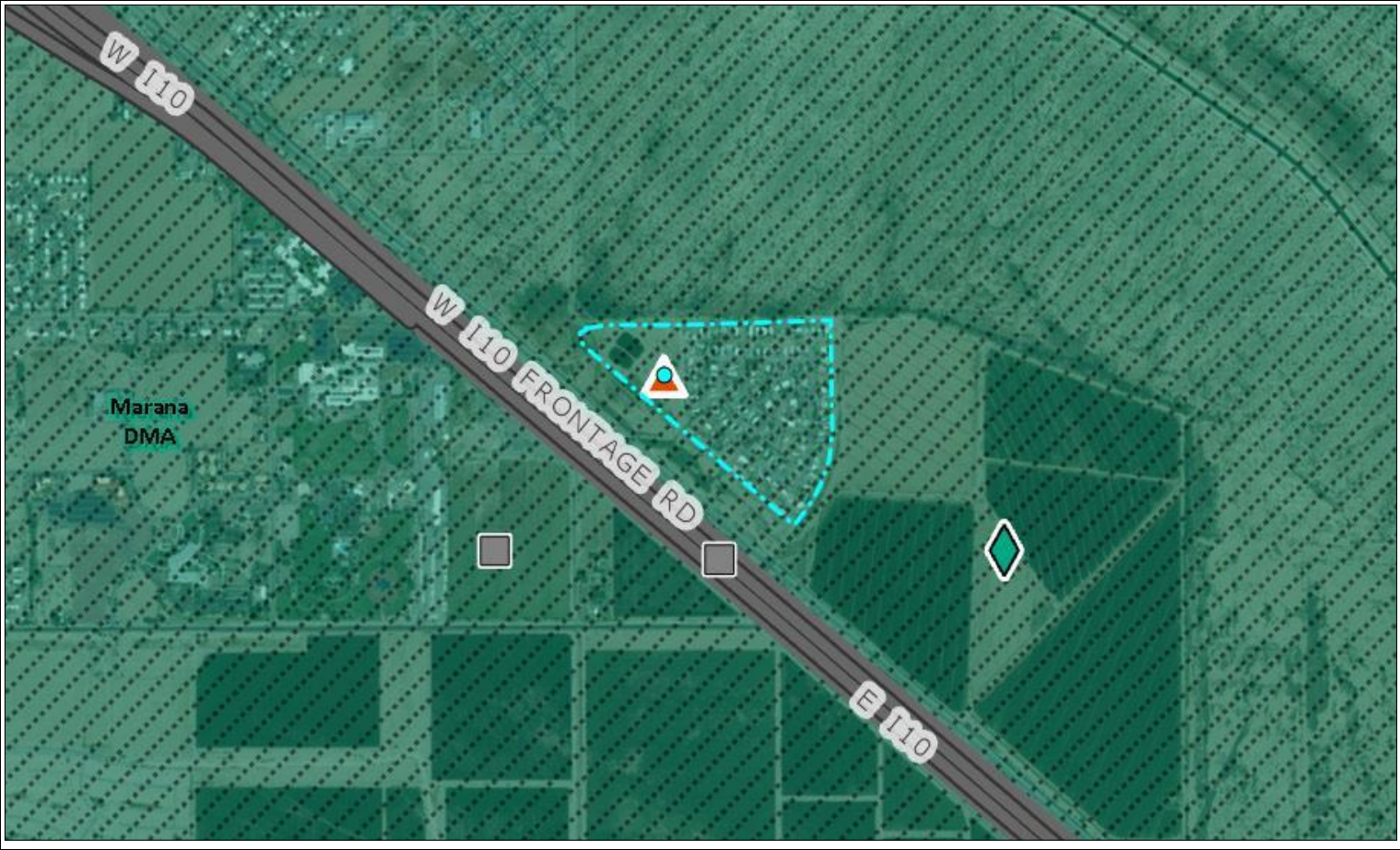
# Facilities within the Town of Marana DMA

## Adonis Mobile Home Park - Within Marana DMA

### Wastewater Reclamation Facilities in the PAG Region



### Adonis Mobile Home Park and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Adonis Mobile Home Park	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Marana, AZ - Immediately north and east of I-10, 3.4 miles south of Pima Co./Pinal Co. border	Town of Marana	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Marana	Marana	Built/Proposed prior to DMA Sponsorship requirement
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
100650	Not Available	Inconsistent
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.02 MGD	0.02 MGD	0.011 to 0.014 MGD
<b>Watershed</b>		
Lower Santa Cruz		
<b>General Description</b>		
The Adonis Sanitary Sewerage Facility serves residents of the Adonis Mobile Home Park at Grier Road east of I-10. The facility is operated by the Town of Marana. (correspondence with DMA contact, 12/2018)		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Approximately 150 units in the subdivision (208 Plan Amendment 2013)		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
The Town of Marana has secured WIFA funding, and is in process of designing a new lift station and force main to connect the Adonis Mobile Home Park to the regional sewage collection and treatment system. Once constructed, the Town will move forward with the clean closure of the existing sewer ponds. (correspondence with DMA contact, 12/2018)		

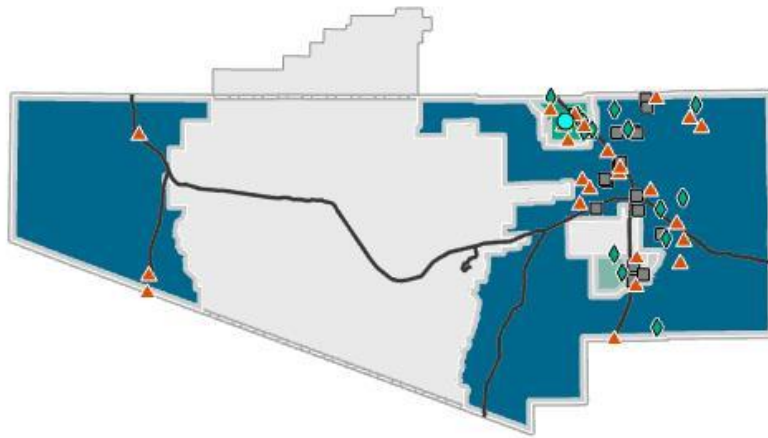
Amendments				
ID	Title	Author	Year	Document
19	208 Plan Amendment for Management & Training Corporation — Marana Treatment Facility, Wastewater Reclamation Facility	Moore and Associates, Inc.	1993	<a href="#">Link</a>
25	Marana 208 Areawide Water Quality Management Plan Update	Malcolm Pirnie	2000	<a href="#">Link</a>
29	Areawide Water Quality Management Plan Amendment for Town of Marana Facilities and DMA	WestLand Resources, Inc., for Town of Marana and PAG	2013	<a href="#">Link</a>
Links				
None				
Active Notes*				
None				
Historical Notes*				
<p>2013 208 Plan Amendment designated Town of Marana as the DMA for this facility and several others in the area. This facility is located in the Marana DMA, but this is an existing private WWTF.</p> <p>Ponds; 208 Amendment {25} suggests retiring the Adonis system once County wastewater service is available in the area.</p> <p>The facility was operated by the Homeowners Association for the Adonis Mobile Home Park and had compliance problems in the past. Plant closure and connection to the regional sewage collection and treatment system was recommended. (208 Plan Update 2006)</p>				

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

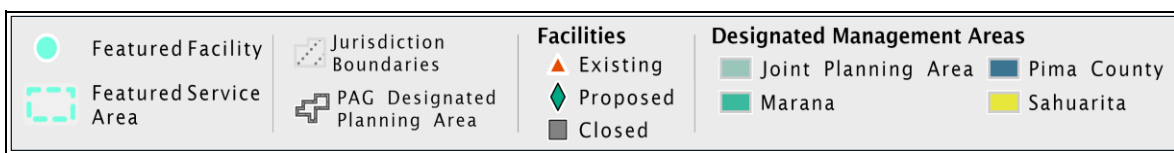
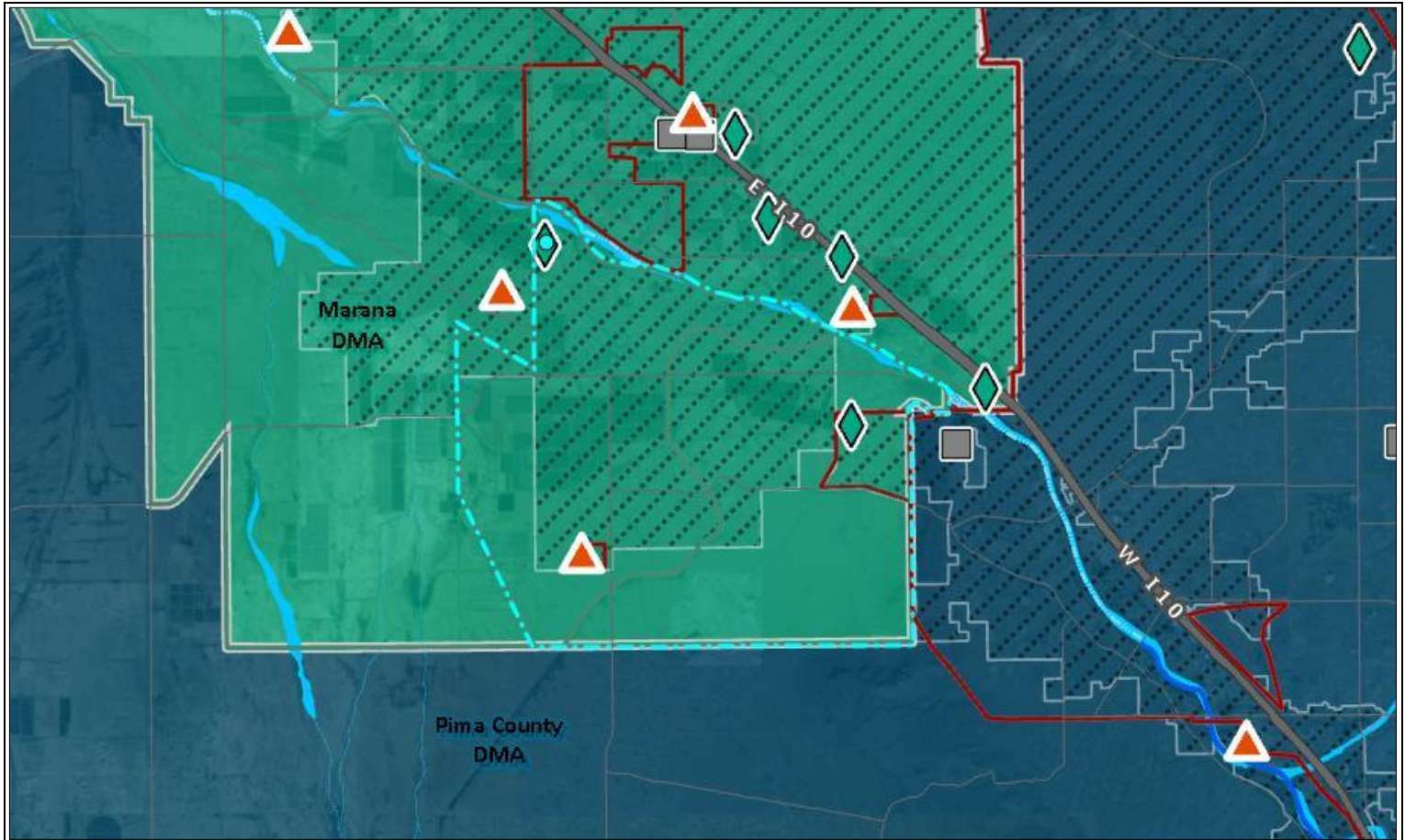


## Airport - Within Marana DMA

### Wastewater Reclamation Facilities in the PAG Region



### Airport and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Airport	No	Proposed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Marana, AZ - East side of N. Sanders Rd., 0.8 miles south of N. Sanders Rd./W. Moore Rd. intersection	Marana, TBA	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Marana	Marana	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Pending Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available

### Watershed

Lower Santa Cruz

### General Description

Proposed to provide service to growth areas tributary to the sewer basins adjacent to the Marana Airport. The growth projections for the area are generally for commercial and industrial development. The projected 20-year flows for this area range from .8 to 1.6mgd. {29} Proposed in Marana 208 Plan.

### Service Area Boundaries

Please see map (if available)

### Service Area Population

Not Available

### Service Area Land Uses

Not Available

### Treatment Method

Not Available

### Discharge Method and Location

Not Available

### Future Conditions

The Airport Wastewater Reclamation Facility has been identified as an alternative location for the Town to provide sanitary sewer service to the developments proposed adjacent to the Marana Airport. Sewer service is currently provided to existing developments at the airport by individual on-site septic leach systems. A 19,000 gpd onsite wastewater treatment system was



PAG 208 Plan - 2020

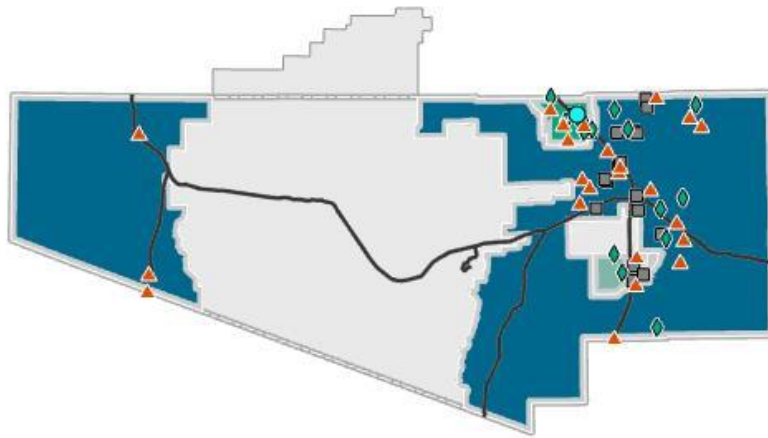
installed by the Town in 2010 to provide interim service for the airport area. In the future, the Town will provide sewer service to basins tributary to the airport by constructing conveyance infrastructure to direct flows to the Marana Water Reclamation Facility, or by constructing a new water reclamation facility at the Marana Airport.

Amendments				
ID	Title	Author	Year	Document
29	Areawide Water Quality Management Plan Amendment for Town of Marana Facilities and DMA	WestLand Resources, Inc., for Town of Marana and PAG	2013	<a href="http://apps.pagnet.org/paglibrary/Electronic/Environmental/Wastewater/Water-PAG-208-Plan-Marana-Amendment-2013.pdf">Link</a>
Links				
<a href="http://apps.pagnet.org/paglibrary/Electronic/Environmental/Wastewater/Water-PAG-208-Plan-Marana-Amendment-2013.pdf">http://apps.pagnet.org/paglibrary/Electronic/Environmental/Wastewater/Water-PAG-208-Plan-Marana-Amendment-2013.pdf</a>				
Active Notes*				
None				
Historical Notes*				
None				

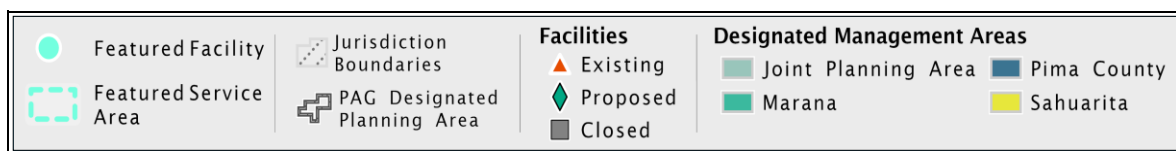
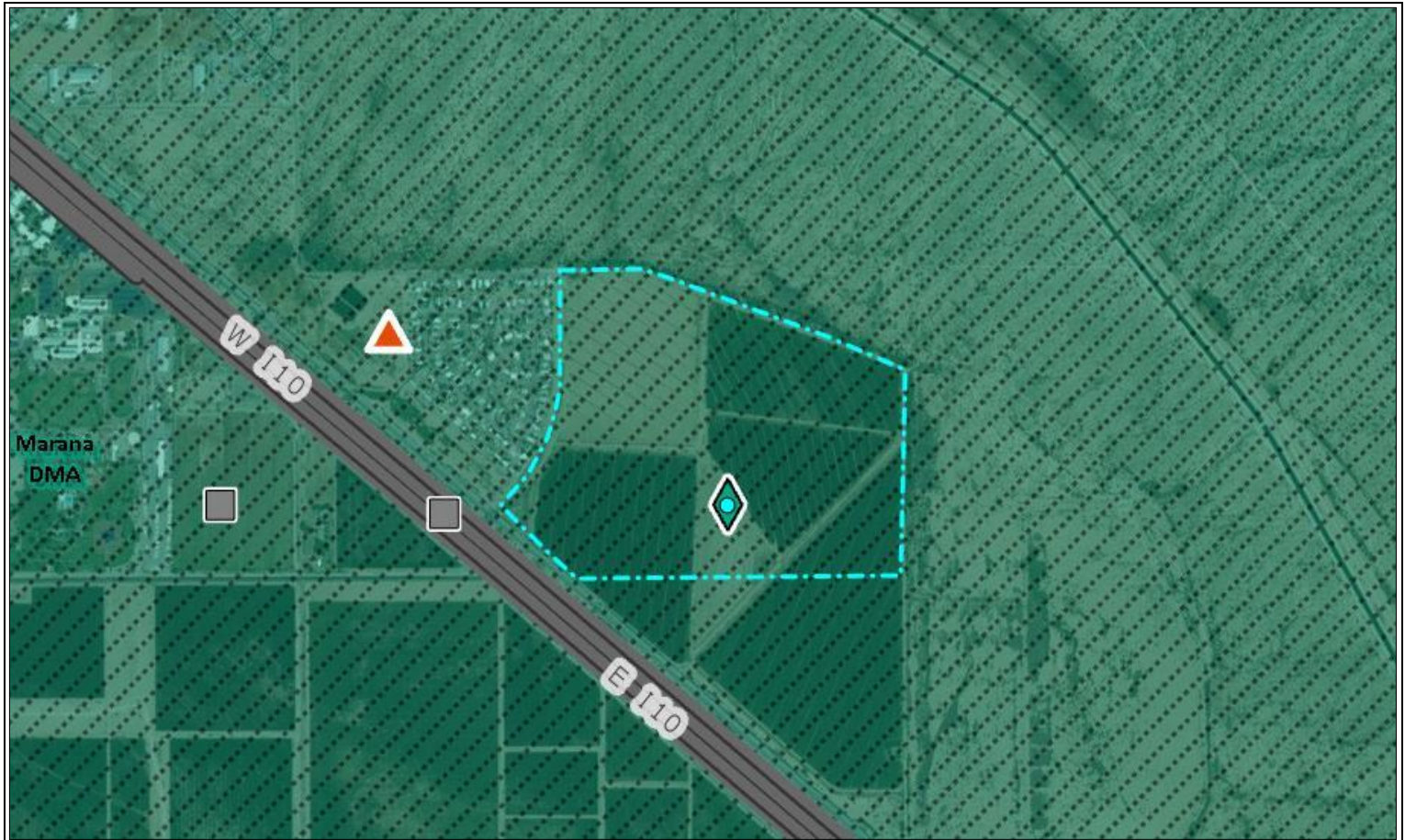
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

## La Mirage Estates - Within Marana DMA

### Wastewater Reclamation Facilities in the PAG Region



### La Mirage Estates and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
La Mirage Estates	No	No Longer Planned
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Marana, East of I-10 & south of Grier Rd	Not Available	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Marana	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Pending Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Lower Santa Cruz		
<b>General Description</b>		
Not Available		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		
<b>Amendments</b>		

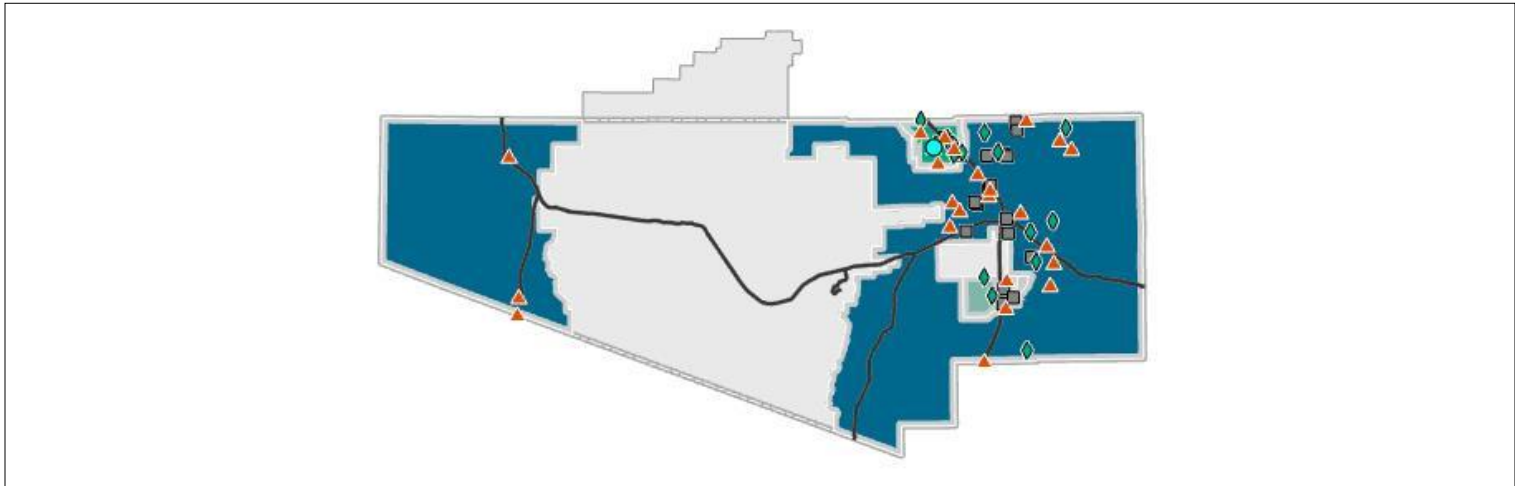
ID	Title	Author	Year	Document
20	208 Plan Amendment for La Mirage Estates WWTF	ICON Consultants	1995	<a href="#">Link</a>
<b>Links</b>				
None				
<b>Active Notes*</b>				
208 Amendment {20} that proposed the facility has expired. A subsequent proposal for a 208 Amendment was granted preliminary approval by the PAG Regional Council in February 2000, contingent upon several actions being completed by the developer. As of December 2003, these actions had not been completed.				
<b>Historical Notes*</b>				
None				

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

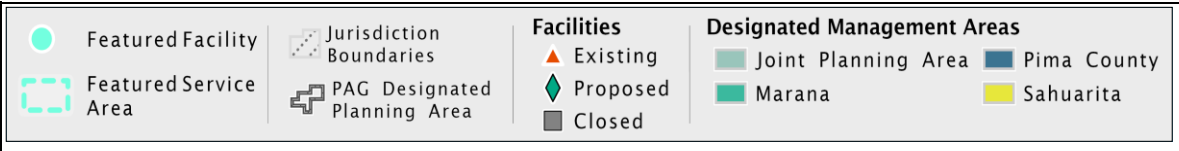


Management & Training Corp. (MTC) - Within Marana DMA

Wastewater Reclamation Facilities in the PAG Region



Management & Training Corp. (MTC) and Surrounding Area





## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Management & Training Corp. (MTC)	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Marana, west of Sanders Rd and north of Silverbell Rd	MTC	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Marana	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-102889	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.13 MGD	The design capacity of the treatment facility was recently expanded from 65,000 to 130,000 gallons per day (gpd). (Marana 208 Plan Amendment 2013, pg 14)	Not Available
<b>Watershed</b>		
Lower Santa Cruz		
<b>General Description</b>		
Management Training Corporation (MTC) operates the Marana Community Correctional Facility, which is served by an on-site wastewater treatment facility. The site is located in Section 5 of Township 12 South, Range 11 East, west of Sanders Road and north of Silverbell Road. The facility's first phase had a capacity of 0.065 MGD with a subsequent expansion to 0.13 MGD. The plant is permitted to only serve the correctional facility. If regional service becomes available, MTC will have the option to connect to a DMA-operated wastewater treatment facility.		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
450-persons (Marana 208 Plan Amendment 2013)		
<b>Service Area Land Uses</b>		
450-person correctional facility (Marana 208 Plan Amendment 2013)		
<b>Treatment Method</b>		
The treatment system consists of primary treatment, secondary treatment, disinfection, filtration, and sludge dewatering. (Marana 208 Plan Amendment 2013)		
<b>Discharge Method and Location</b>		
Treated effluent is used for turf and agricultural irrigation. (Marana 208 Plan Amendment 2013)		
<b>Future Conditions</b>		

Future Capacities for Non-Public Facilities: 0.13 MGD

**Amendments**

<b>ID</b>	<b>Title</b>	<b>Author</b>	<b>Year</b>	<b>Document</b>
19	208 Plan Amendment for Management & Training Corporation — Marana Treatment Facility, Wastewater Reclamation Facility	Moore and Associates, Inc.	1993	<a href="#">Link</a>
24	Standard Outline guidance document for private wastewater facilities pursuing a 208 Plan Amendment (Regional Council policy)	PAG	1999	<a href="#">Link</a>

**Links**

None

**Active Notes\***

2013 Marana 208 Plan Amendment designates Town of Marana as the DMA for this facility and several others in the area. In Marana DMA, but this is an existing private WWTF.

Proposed and constructed. Serves Community Treatment Complex only; will be abandoned and removed when regional facilities are available.

The plant is not authorized to serve any areas other than the correctional facility. When regional service is available, the existing plant will be abandoned and connection will be made to the regional infrastructure. (PAG 208 Plan Update 2006)

**Historical Notes\***

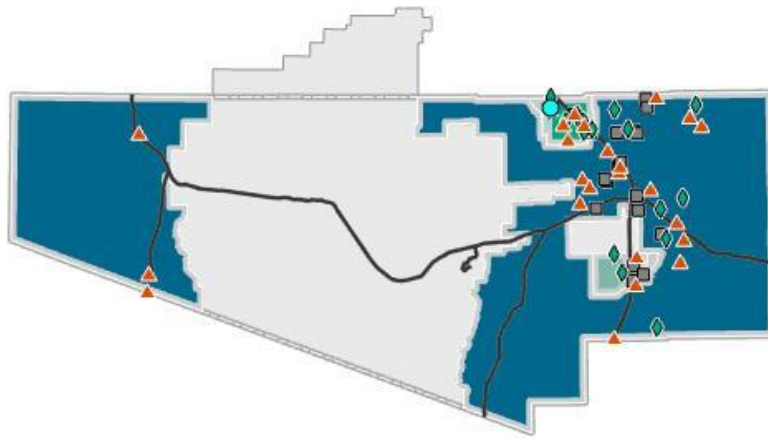
None

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

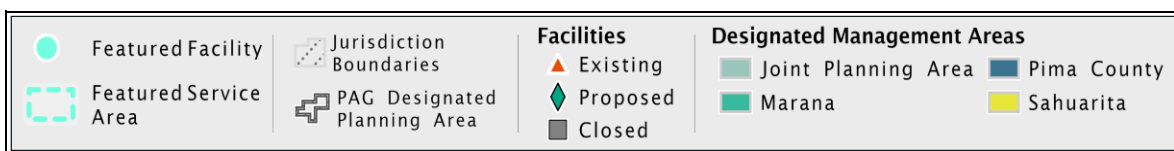
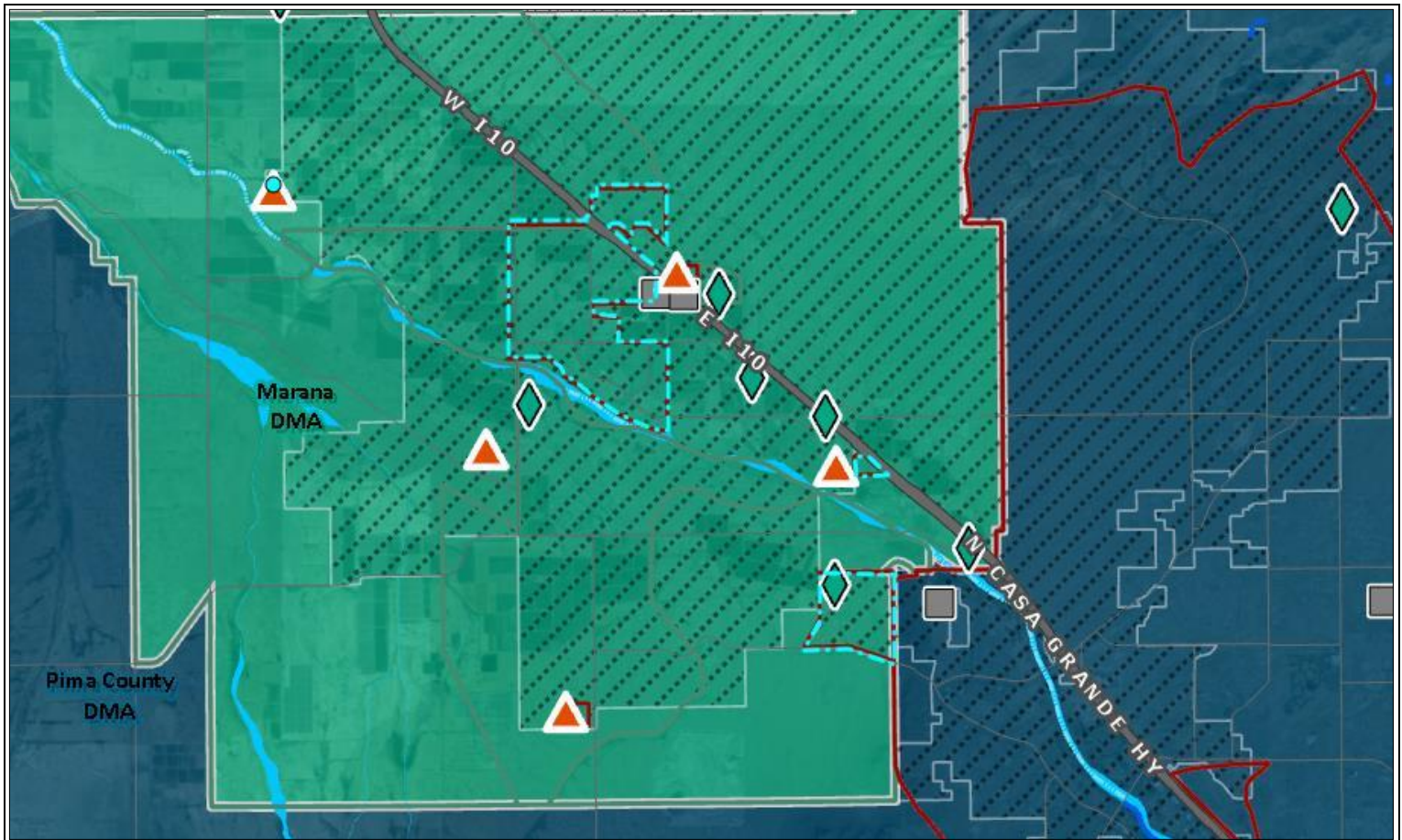
Data Last Updated: 12/10/2019

## Marana - Within Marana DMA

### Wastewater Reclamation Facilities in the PAG Region



### Marana and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Marana	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Marana, AZ - End of W. Treatment Plan Rd., 1 mile west of N. Lockett Rd./W. Treatment Plant Rd. intersection	Town of Marana {29}	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Marana	Marana	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-100631	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
1.65 MGD	The current capacity of the Marana WRF is 1.65 MGD.	Average daily flows are currently 0.518 MGD.

### Watershed

Lower Santa Cruz

### General Description

The Marana WRF is located one-half mile east of the Santa Cruz River, in an agricultural area three miles west of Marana. The facility is one-half mile north of Marana Road and one mile west of Lockett Road, in Township 11 South, Range 10 East, Section 14.

The Town of Marana (Town) owns and operates the Marana Water Reclamation Facility (WRF), which provides primary, secondary, and tertiary treatment at an operating capacity of 1,650,000 gallons per day (gpd), which serves approximately 3,800 connections (November 2018). The Town also operates a collection system comprising approximately 60 miles of gravity sewer, 1.25 miles of pressure sewer (force main), the Rillito Vista Lift Station and the Saguaro Bloom Sewer Lift Station.

Originally, the WRF was owned by Pima County, which approved several small expansions of the facility in 2007 and 2008, including adding the Biolac® treatment system currently in place and installing the tertiary filtration and disinfection systems. In 2012, the Town acquired the WRF, its infrastructure and the water rights to the treated effluent from the County. Currently, the treated effluent, which is classified as Class A+ reclaimed water, is discharged to a tributary of the Santa Cruz River. However, the Town has constructed the Phase 1 Expansion at the WRF and recharge basins adjacent to the WRF property to accrue reclaimed water storage credits by recharging effluent to the below ground aquifer. Construction Substantial Completion was realized on 06/25/2018, with Final Completion being called-out as January 2019.

### Service Area Boundaries

The Marana WRF service area serves residential areas in north and central Marana (north and south of Marana Road, east of Sanders Road, west of Postvale Road), the Gladden Farms development (south of Moore Road and east of Sanders Road), Rillito Vista (west of Interstate 10, south and east of Buena Vista Street) and Saguaro Bloom (north of Twin Peaks Road, south and west of Lambert Lane).

### Service Area Population

In 2018, the Marana WRF service area had an estimated population of 10,640, with 3,800 connections.

### Service Area Land Uses

Through 2027, 3,068 single family dwelling units are anticipated in the planned wastewater service area. Commercial lands (defined as any non-residential wastewater source, such as retail, offices, industrial, government or schools) are projected to compose 100 acres in the wastewater service planning area, equivalent to 400 dwelling units. (Town of Marana 2017 Sewer Impact Fee Infrastructure Improvement Plan)

## Treatment Method

The Phase 1 Expansion increased the WRF's total treatment capacity from 0.5 MGD to 1.65 MGD and changed the main treatment process used at the facility to conventional activated sludge treatment. The Phase 1 treatment process includes an upgraded influent pump station with new pumps, a new headworks with one mechanical fine screen and one manual screen, an existing emergency overflow basin, aeration basin splitter box, two new aeration basins with anoxic and aerobic zones, a new clarifier splitter box, two new secondary clarifiers, existing filtration system, existing UV disinfection system, back-up chlorination and de-chlorination, two new sludge holding tanks, a new screw press for sludge dewatering and an existing lined effluent storage pond. The existing filtration and UV disinfection units are designed to handle the flow up to 3.5 mgd. The existing Biolac treatment system was taken out of service once the Phase 1 became operational. The Biolac basin will be used for flow equalization during emergency. The waste activated sludge from the activated sludge treatment units will be thickened, dewatered and stored in two new sludge holding tanks, and hauled to a State approved site for stabilization, dewatering and disposal.

## Discharge Method and Location

Effluent will predominantly be recharged into basins located east of the Marana WRF. There are options to discharge effluent to an unnamed wash to the Santa Cruz River, reuse effluent on site or apply treated effluent as reclaimed water. Currently, the treated effluent is permitted for Class A+ reclaimed water standards and was historically discharged to a tributary of the Santa Cruz River. The Town of Marana has constructed recharge basins adjacent to the WRF site for the accrual of reclaimed water storage credits under an Underground Storage Facility permit issued by ADWR.

## Future Conditions

Currently, the Marana WRF is operating at 31 percent capacity, or an average daily flow rate of approximately 0.518 MGD, and flows are projected to increase. Initial projections suggest that the Marana WRF may require a capacity between 1.0 - 1.5 MGD within the next ten years, although economic conditions may extend or shorten this period. The Town of Marana's Master Plan provided an evaluation of the WRF for the phased expansion of the facility to a buildout capacity of 4.5 MGD. This evaluation included flow projections, an assessment of the existing facilities and solids handling processes and the alternative treatment process selection.

Future Phases 2 and 3 include 1.5 MGD increments, to 3.0 and 4.5 MGD, respectively, as future growth and development required. Increasing the initial plant capacity to 1.5 MGD facilitates the Town of Marana's desire to undergo only one plant expansion within the next 10-year Capital Improvement Plan budgeting period and meets its financing objectives. The Phase 2 Expansion will increase the WRF's total treatment capacity from 1.5 MGD to 3.0 MGD. The estimated timing of the Phase 2 Expansion is between the years 2027 and 2032. The Phase 3 Expansion will increase the Marana WRF's total treatment capacity from 3.0 MGD to 4.5 MGD. (Source for above information: Marana Water Reclamation Facility Master Plan — Carolla Engineers, May 2016).

Various alternatives for new WRF locations and phasing have been reviewed by the Town of Marana through the Sewer Basin Study process. The proposed WRFs include the Airport WRF and the Marana County Line WRF. The County Line WRF location was identified in the Central Arizona Governments (CAG) Town of Marana 208 Plan Amendment located north of the Pima County boundary and south of Pinal Airpark Road. The County Line WRF is proposed to be constructed in Pinal County with the ability to provide sewerage collection and treatment from both Pima County and Pinal County. The 20-year projected flow rate was estimated at 2.0 to 3.0 MGD based on 62 gallons per capita per day (GPCD) to 85 GPCD, respectively. The ultimate buildout capacity of 15 MGD to 20 MGD was estimated based on these same criteria (Town of Marana Final CAG 208 Plan Amendment, December 2012).

## Amendments

ID	Title	Author	Year	Document
4	Domestic Point Source Water Quality Planning Update Report for Areas A1 & A2	PRC Toups for PAG	1982	<a href="#">Link</a>
15	Marana Study Area 208 Consistency Report	Pima County Wastewater Management Department	1988	<a href="#">Link</a>
25	Marana 208 Areawide Water Quality Management Plan Update	Malcolm Pirnie	2000	<a href="#">Link</a>
29	Areawide Water Quality Management Plan Amendment for Town of Marana Facilities and DMA	WestLand Resources, Inc., for Town of Marana and PAG	2013	<a href="#">Link</a>

## Links

<http://www.maranaaz.gov/water-reclamation/>

## Active Notes\*

2013 Amendment {29} designates Town of Marana as the DMA for this facility and several others in the area.

Before Marana acquired the Marana WRF service area in 2012, Pima County had permitted both AZPDES and APP for 3.5 MGD (for future phases). With the last APP Amendment Marana chose to go only with a permitted capacity of 1.65 MGD, which is built out capacity for just Phase 1 (that has recently realized substantial completion and is in-service). Marana in the future will apply for amending the permitted APP capacity as-needed for each future phase. The AZPDES permitted capacity is still 3.5 MGD.



Previous treatment methods included primary, secondary and tertiary treatment, including a BIOLAC secondary treatment system. The treatment process selected for future expansions by the Town of Marana was the Biological Nutrient Removal Conventional Activated Sludge (BNR-CAS). CAS bioreactors are multi-stage concrete basins with multiple internal zones that are custom designed to meet the desired treatment goals. This process provides the most flexibility for capacity, basin arrangement and treatment needs. The CAS system has a custom-designed anoxic and aeration volumes to provide maximum flexibility under different conditions. By compartmentalizing the treatment basins into separate zones for nitrification and denitrification, the CAS system will provide optimum conditions to nitrify and denitrify under a relatively wide range of wastewater characteristics. With this, the WRF can consistently meet is APP treatment goals and AZPDES discharge limits.

## Historical Notes\*

2000 Amendment {25} indicates eventual expansion to 3 MGD. When flows reach 2.4 MGD, plans for regional WWTP at County Line or pump station to send flows to I-10/Tangerine site should be initiated.

As of December 2005, four package plants had been installed, raising the capacity of the Marana facility to 0.2 MGD. Replacement of the existing package plants with a new 0.5 MGD facility is expected in 2006, followed by a new 1.5 MGD BNROD facility in 2007.

Average daily flow in FY2003-04 was 0.04475 MGD. (PAG 208 Plan Update 2006) The Current flows to the facility are approximately .32 mgd. (Amendment 29, Current Conditions, pg 13)

Capacity Notes: 0.023 MGD {15}; 3 MGD {25}; 3.5 {29} as per ADEQ APP

CR - 28: (01.22.2007) expanded capacity to 2.2 mgd found to be consistent as per Section 5.4 pg 91 and table 2-3 (pg 13) of 2006 208 Plan. (Given the similarity in timespan, this might be related to CR02, but not confirmed.)

CR-1: On ADEQ list of submitted CRs "Marana WWTF AZPDES Renewal & Expansion" (February 6, 2006) but no other information is available at this time. (208 Plan Update 2020)

CR-11: On AZDEQ list of submitted CRs "Pima County Marana WWTF" (1/26/2011) but no other information is available at this time. (208 Plan Update 2020)

CR-2 July 19 2006, related to expansion, finding was "consistent." no other details available in this reference.

Effluent is discharged to the Santa Cruz River via an AZPDES permit or reused on site. (PAG 208 Plan Update 2006)

Existing; 2 ponds in parallel; 1982 208 amendment {4} recommended expansion or upgrade after 5-10 years; 1988 208 Amendment {15} considered relocating out of floodplain.

In 2017, the Marana WRF service area had an estimated population of 5,617, with 3,565 connections.

Land use in the service area previously was primarily residential, consisting of 66 percent small lots (< 2.5 acres, mixed use); and 21 percent medium lots (between 2.5 and 25 acres, mixed use). Approximately 12 percent of the service area corresponded to a specific plan. Only 0.4 percent was zoned commercial. The surrounding area was mostly farmland.

Prior to 2018 updates by the DMAs, it was noted that the Marana WRF was operating at 74 percent capacity, or an average daily flow rate of approximately 371,000 gpd, and flows were projected to increase. Initial projections suggest that the Marana WRF may require a capacity between 1.0 - 1.5 mgd within the next ten years, although economic conditions may extend or shorten this period.

Prior to the Phase 1 expansion, the Marana WRF was operating at 96 percent capacity, or an average daily flow rate of approximately 0.48 MGD. In its previous state, the facility had limited capacity to treat wastewater with the Biolac® secondary treatment system.

Prior to the Phase 1 expansion, the WRF was authorized to operate with a maximum monthly average flow of 0.65 mgd. The existing treatment plant includes two treatment systems. The Biolac treatment system has a capacity of 0.5 mgd, and the Biological Nutrient Removal (BNR) treatment system has a capacity of 0.15 mgd. The WRF consists of headworks with a bar screen and grit chambers, an influent pump station/equalization basin, three Biological Nutrient Removal (BNR) package plants with a capacity of 0.05 mgd each, a Biolac treatment system with an aeration basin and a clarifier, an emergency overflow basin, filtration, ultraviolet (UV) disinfection, back-up chlorination and de-chlorination, a lined effluent storage pond and a waste activated sludge system. The existing three BNR packaged treatment plants (0.15 mgd capacity) will be closed, once the new Phase I activated sludge treatment train is operational. One existing BNR Packaged treatment plant (0.05 mgd) is closed under this amendment. The waste activated sludge from the Biolac system and BNR packaged treatment plants is stored in the existing sludge holding tank for thickening and dewatering, and hauled to a State approved site. The waste activated sludge from the BNR and Biolac Treatment units may also be disposed of at an alternate disposal site in accordance with State and Federal waste disposal rules and regulations.

The facility, which has been owned by Pima County since 1980, previously consisted only of two ponds operating in series. The 2000 Marana 208 Update stated that average flows at that time were 27,000 gallons per day from approximately 100 residential and fewer than 10 commercial dischargers. Since that time, the facility has been expanded to include three package treatment plants, each rated at 50,000 GPD. (PAG 208 Plan Update 2006)

The Marana WRF service area serves residential areas in central Marana (north and south of Grier Road, east of Sanders Road) and the Gladden Farms development south of Moore Road and east of Sanders Road.

## PAG 208 Plan - 2020

The Marana WWTF consists of three 50,000 GPD Smith and Loveless biological nutrient removal package treatment plants. The facility also has two lined facultative/evaporative basins, one of which is used as an overflow basin.

The Marana WWTF currently serves a relatively small area in Marana (Figure 5-7). Areas served include residential areas in central Marana (north and south of Grier Road, east of Sanders Road) and the new Gladden Farms development south of Moore Road and east of Sanders Road. As of early 2005, there also were plans for constructing sewers to serve the existing Honea Heights subdivision (Town of Marana, 2005), which was previously served by individual on-site systems. Honea Heights is located north of the Santa Cruz River, east of Sanders Road.

The projected 2005 population for the TAZ in which the service area is located was 2,616.

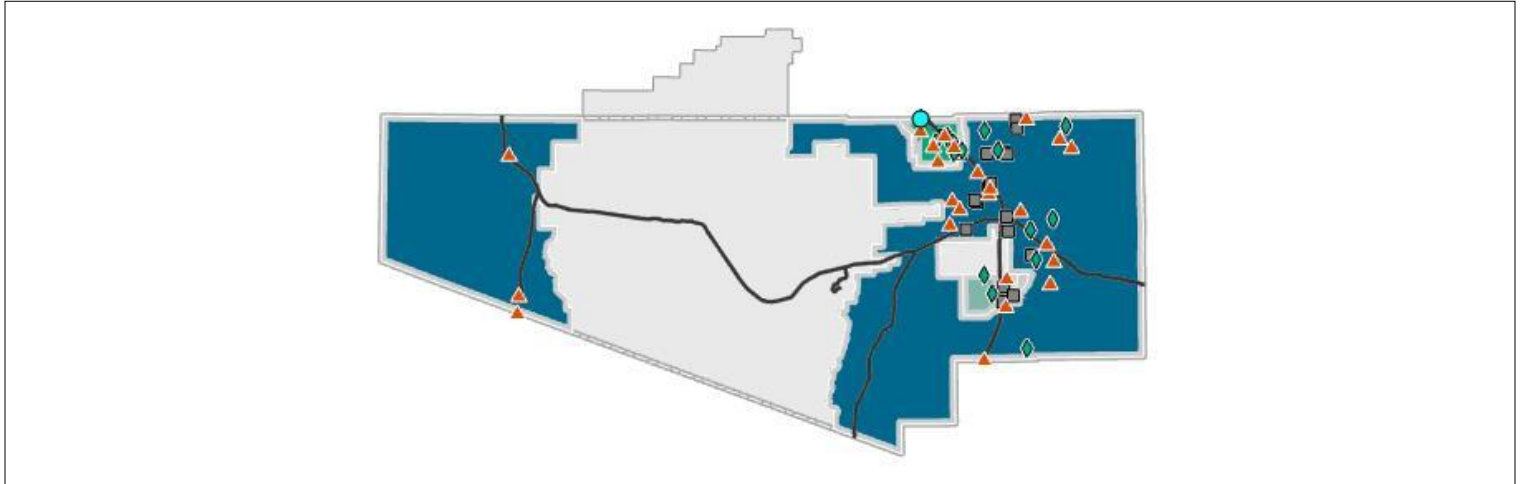
The WRF has been expanded to accommodate development within its service area. (Amendment 29, Current Conditions pg 13)

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

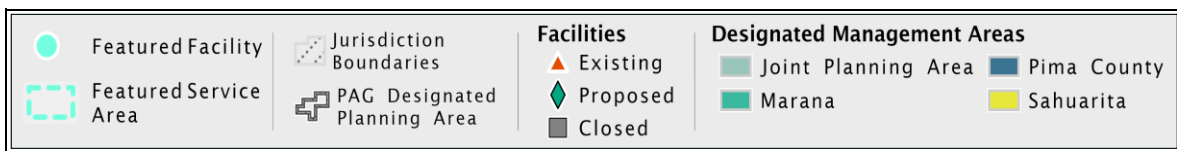
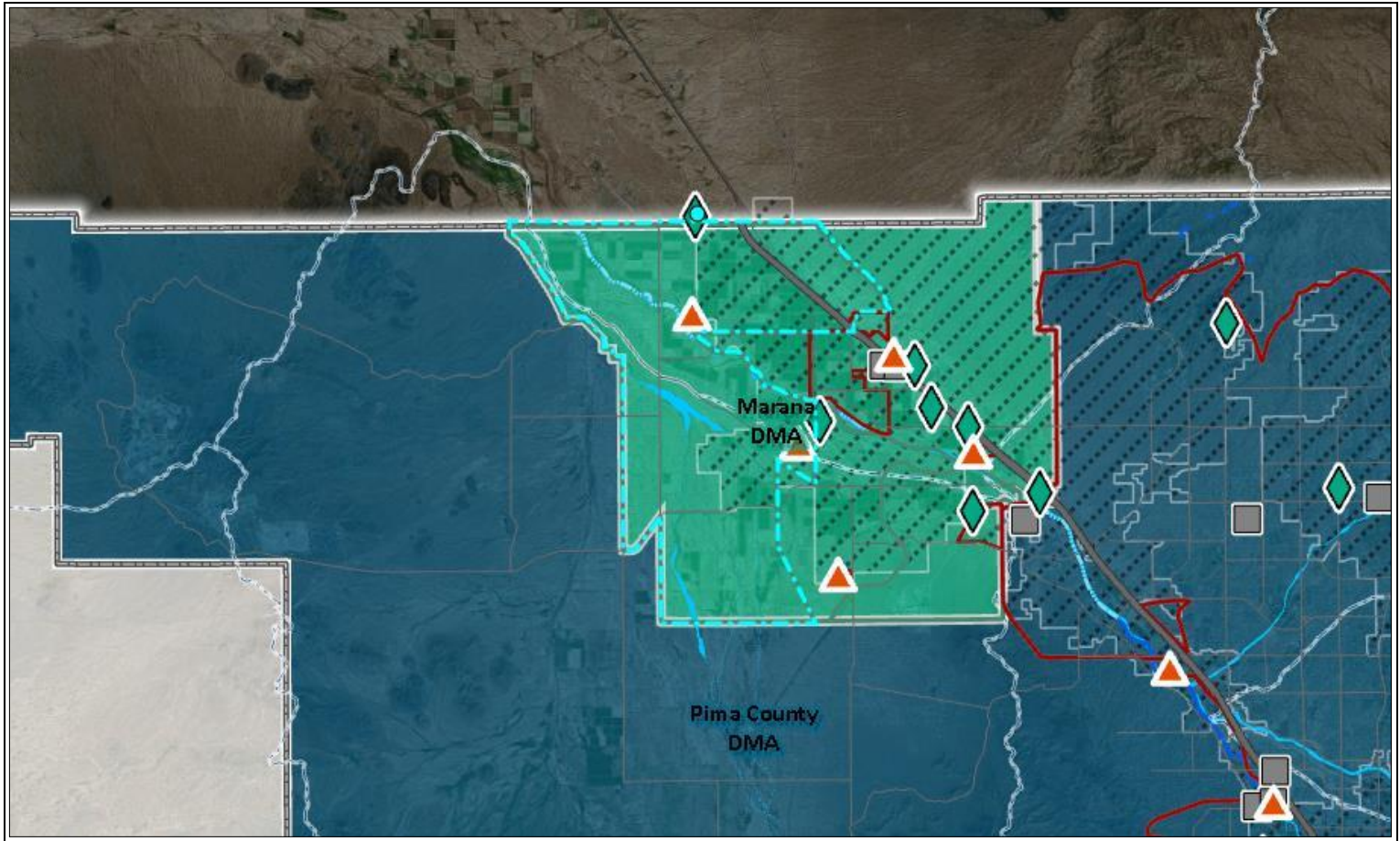
Data Last Updated: 12/10/2019

## Marana County Line Regional - Within Marana DMA

### Wastewater Reclamation Facilities in the PAG Region



### Marana County Line Regional and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Marana County Line Regional	No	Proposed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Near Marana, AZ - South side of W. Marana Airpark Rd., 1.1 miles west of I-10/ W. Marana Airpark Rd interchange	Town of Marana	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Marana	Marana	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Pending Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
4.8 MGD	Not Available	Not Available
<b>Watershed</b>		
Lower Santa Cruz		
<b>General Description</b>		
Proposed in a 208 Amendment		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		

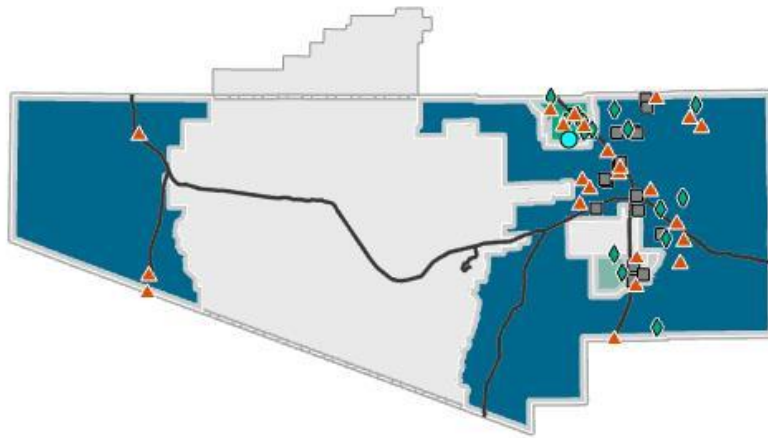
Amendments				
ID	Title	Author	Year	Document
15	Marana Study Area 208 Consistency Report	Pima County Wastewater Management Department	1988	<a href="#">Link</a>
25	Marana 208 Areawide Water Quality Management Plan Update	Malcolm Pirnie	2000	<a href="#">Link</a>
29	Areawide Water Quality Management Plan Amendment for Town of Marana Facilities and DMA	WestLand Resources, Inc., for Town of Marana and PAG	2013	<a href="#">Link</a>
Links				
None				
Active Notes*				
Proposed				
Historical Notes*				
None				

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

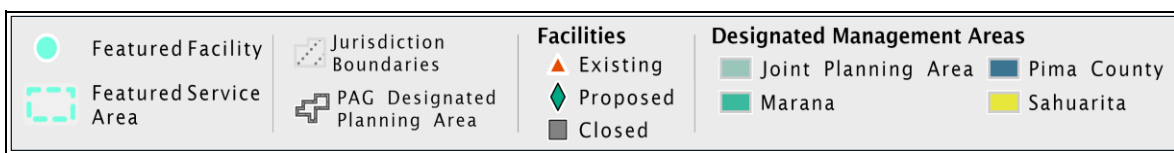
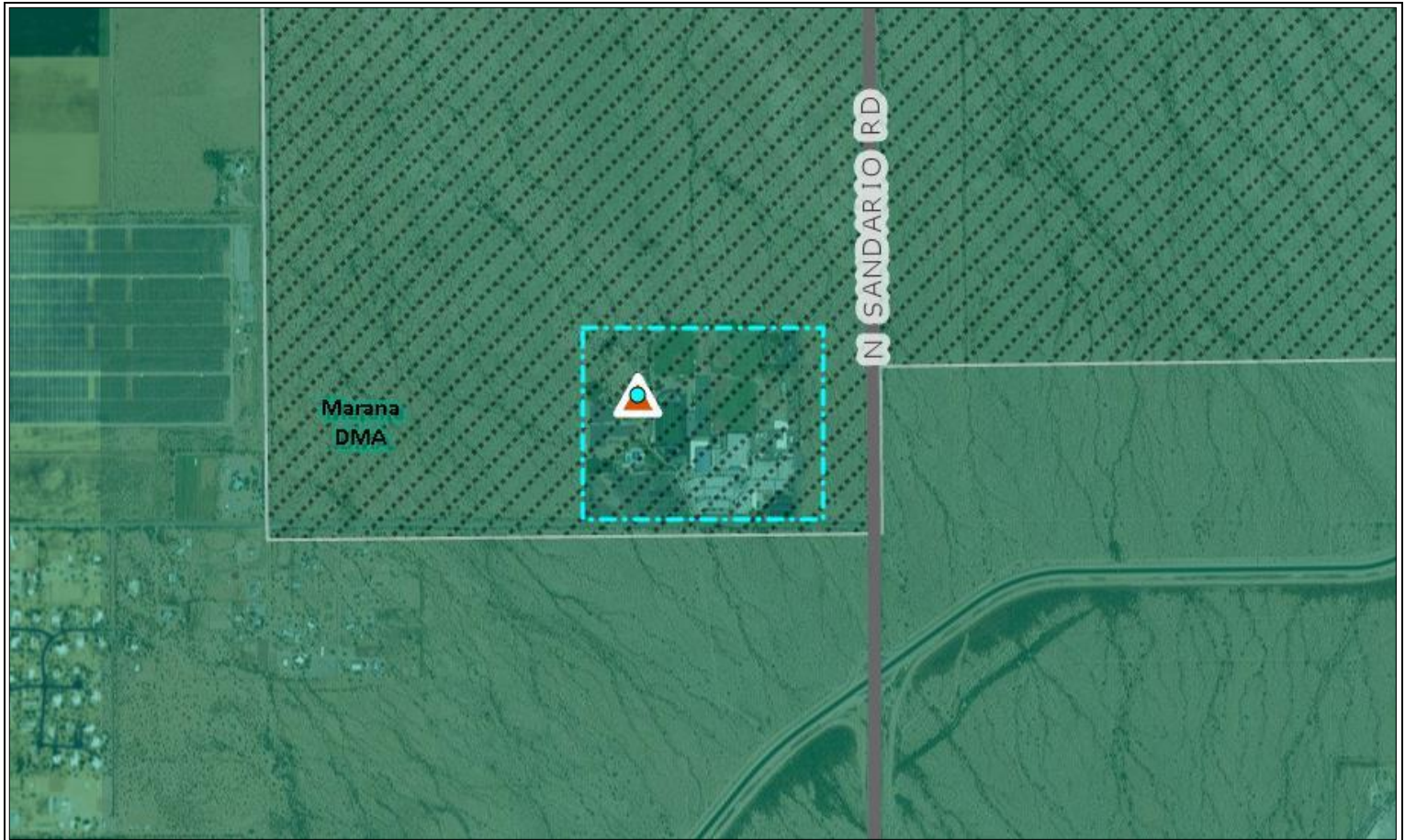


## Marana High School - Within Marana DMA

### Wastewater Reclamation Facilities in the PAG Region



### Marana High School and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Marana High School	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Marana, AZ - Marana High School, 0.5 miles NW of N. Sandario Rd./W. Emigh Rd. intersection	Marana Unified School District	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Marana	Built/Proposed prior to DMA Sponsorship requirement
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-103122	Not Available	Built Prior to 208 Requirement
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.07 MGD	Currently served by a 0.07 MGD package plant.	Not Available
<b>Watershed</b>		
Brawley Wash		
<b>General Description</b>		
The Marana High School was previously served by a septic system. The school is now served by a 0.07 MGD package plant, which provides wastewater treatment services only to the school property. Regional service is expected to be available by the end of the treatment plant's operational life, at which time the school may connect to the Town of Marana's sewer system.		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
0.07 MGD; plant may eventually connect to regional system		

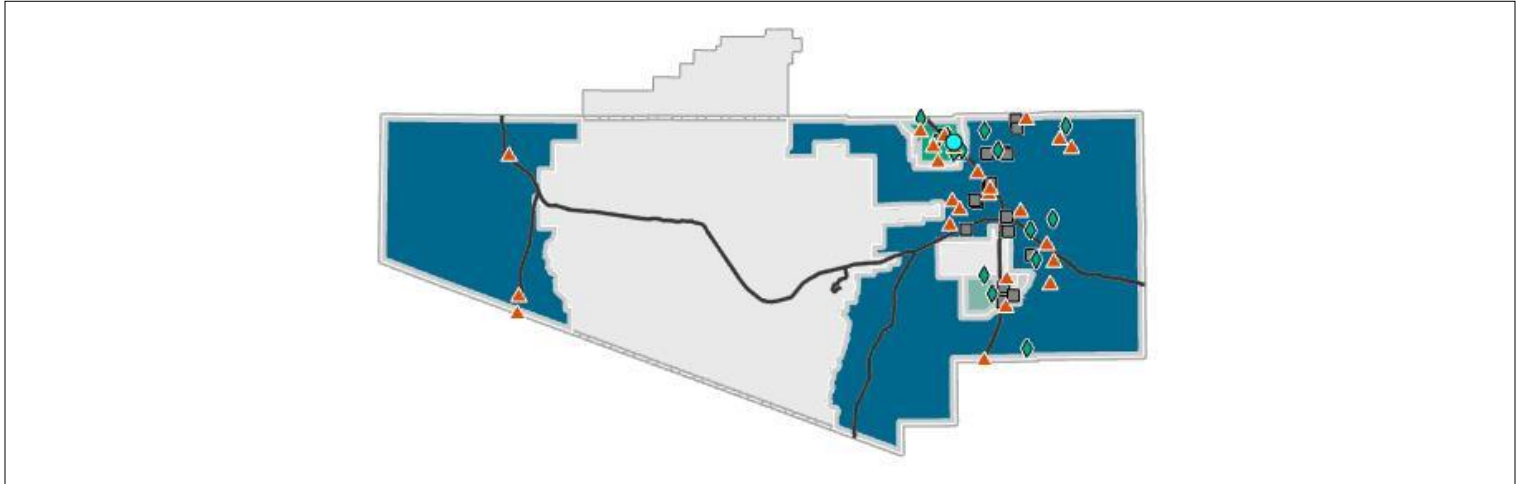
<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
2013 Marana 208 Plan Amendment designates Town of Marana as the DMA for this facility and several others in the area. In Marana DMA, but this is an existing private WWTF.
<b>Historical Notes*</b>
None

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

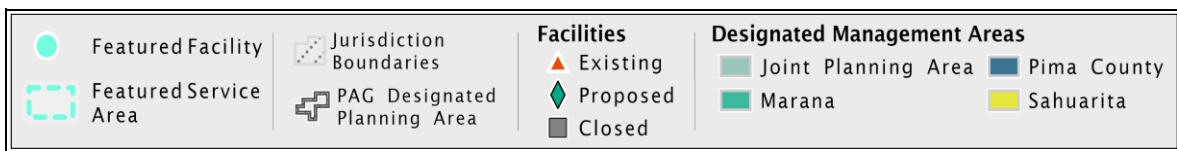


## Marana I-10/Tangerine - Within Marana DMA

### Wastewater Reclamation Facilities in the PAG Region



### Marana I-10/Tangerine and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Marana I-10/Tangerine	No	No Longer Planned
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Marana, AZ - I-10/W. Tangerine Rd interchange	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Marana	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Pending Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
18 MGD	Not Available	Not Available
<b>Watershed</b>		
Lower Santa Cruz		
<b>General Description</b>		
A facility proposed by Pima County, but never built. The facility was proposed to treat waste from east of the CAP canal. This plant would have been in the current Marana DMA, but the majority of the service area would have been to the east of the current Marana DMA. The formerly proposed facility was not included in the 2013 Marana 208 Plan Amendment.		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		



**Amendments**

<b>ID</b>	<b>Title</b>	<b>Author</b>	<b>Year</b>	<b>Document</b>
25	Marana 208 Areawide Water Quality Management Plan Update	Malcolm Pirnie	2000	<a href="http://apps.pagnet.org/paglibrary/Electronic/Environmental/Wastewater/Water-PCWMD-Marana-208-WQ-Mgmt-Plan-Update-2000.pdf">Link</a>

**Links**

<http://apps.pagnet.org/paglibrary/Electronic/Environmental/Wastewater/Water-PCWMD-Marana-208-WQ-Mgmt-Plan-Update-2000.pdf>

**Active Notes\***

Proposed in the 2000 Marana 208 Areawide Water Quality Management Plan Update; according to 208 Amendment {25}, construction would have been triggered by average daily flow rate of 5.4 MGD at Continental Ranch Pump Station.

**Historical Notes\***

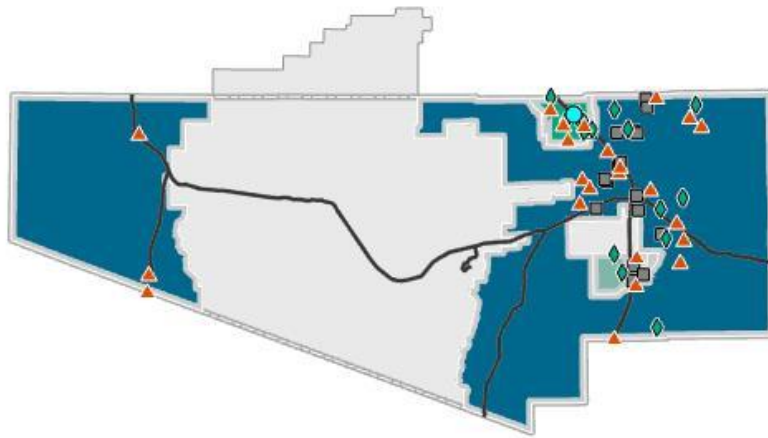
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\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

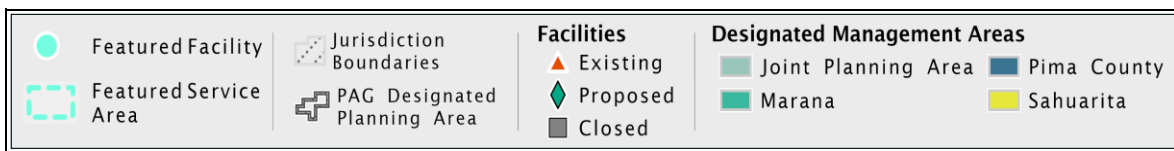
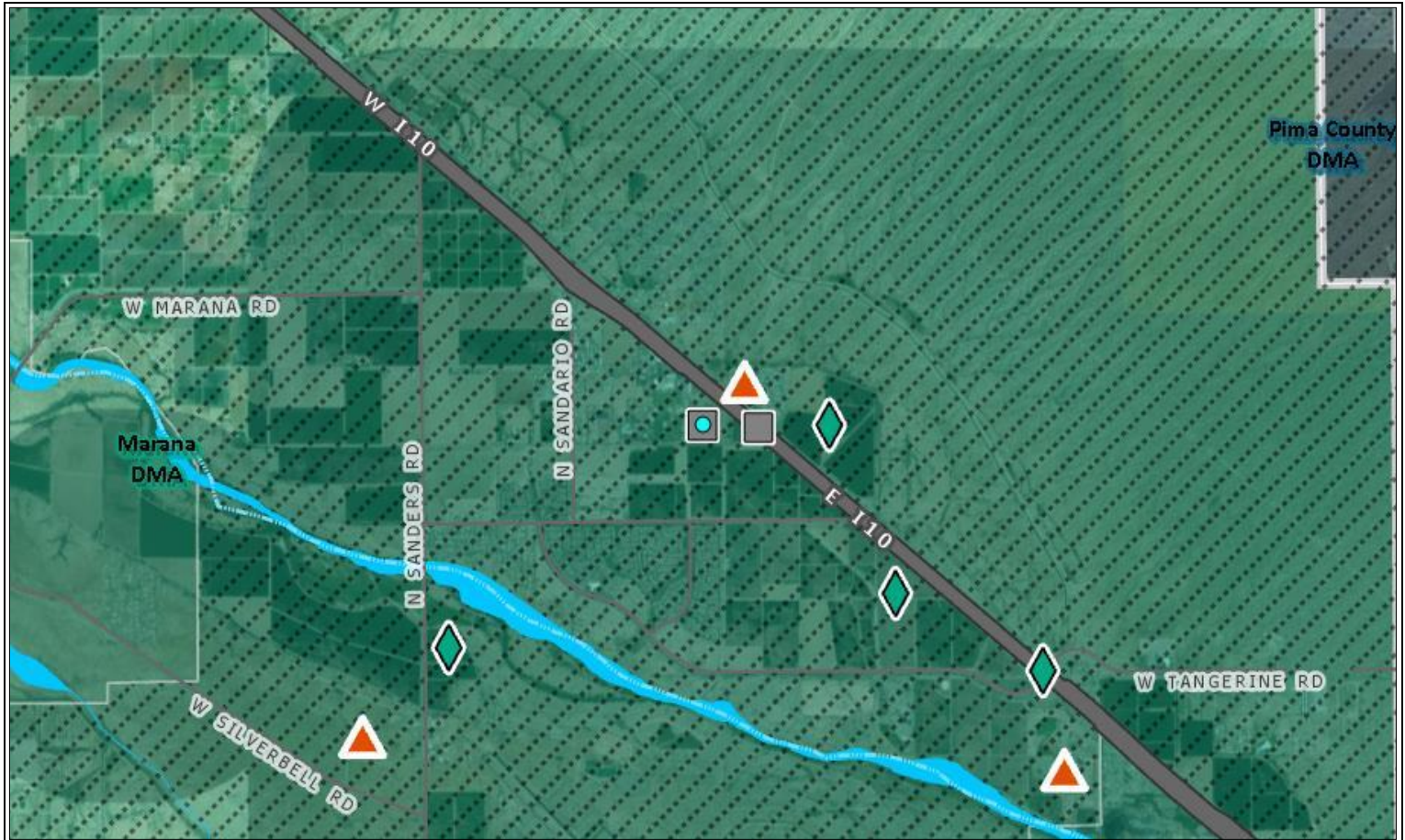
Data Last Updated: 12/10/2019

## Marana Jr. High - Within Marana DMA

### Wastewater Reclamation Facilities in the PAG Region



### Marana Jr. High and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Marana Jr. High	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Marana, AZ - Marana Jr. High, 0.6 miles west of N. Frontage Rd./W. Banner Rd. intersection	Marana Unified School District	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Marana	Built/Proposed prior to DMA Sponsorship requirement. Marana School District was owner. 2006 208 Plan Update, Section 4.3.5: "This facility was identified in the original PAG 208 Plan and in the 2000 Marana 208 Update. However, the school connected to the County sewer system in 1999."
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Built Prior to 208 Requirement
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Lower Santa Cruz		
<b>General Description</b>		
Facility closed. The Marana Junior High School, located southeast of Grier Road and Lon Adams Road, formerly had its own sewage treatment facility. This facility was identified in the original PAG 208 Plan and in the 2000 Marana 208 Update. However, the school connected to the County sewer system in 1999. This facility now serves as a lift station (correspondence with DMA contact, 12/2018).		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		

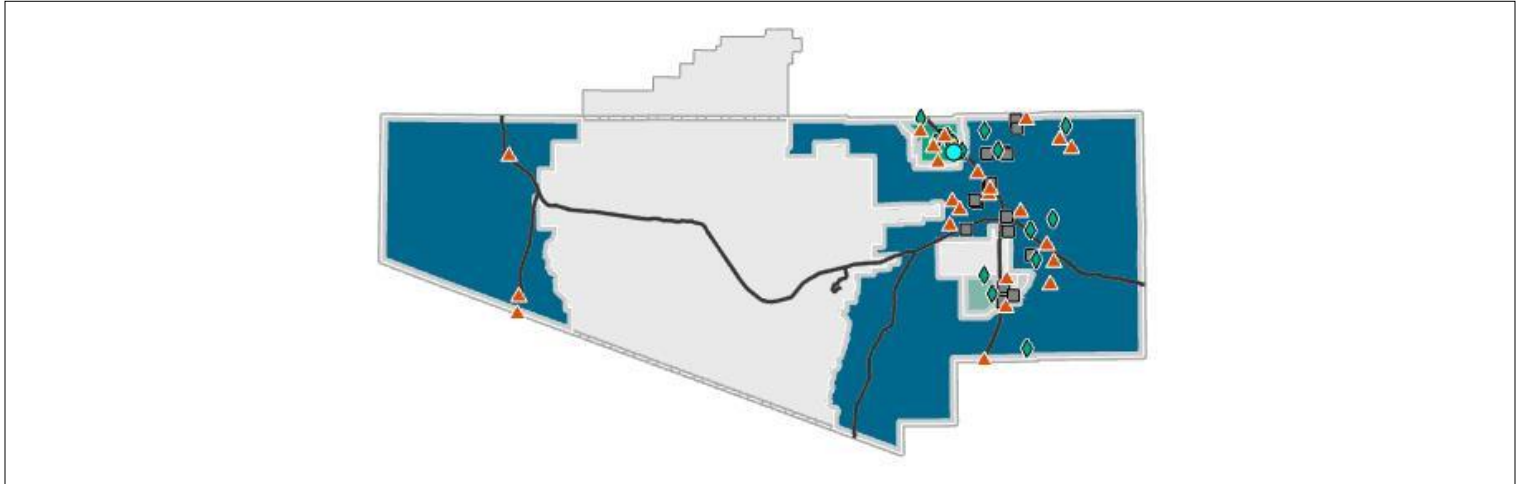
Not Available				
<b>Future Conditions</b>				
Not Available				
<b>Amendments</b>				
<b>ID</b>	<b>Title</b>	<b>Author</b>	<b>Year</b>	<b>Document</b>
15	Marana Study Area 208 Consistency Report	Pima County Wastewater Management Department	1988	<a href="#">Link</a>
25	Marana 208 Areawide Water Quality Management Plan Update	Malcolm Pirnie	2000	<a href="#">Link</a>
<b>Links</b>				
None				
<b>Active Notes*</b>				
Served the school exclusively, was not envisioned to provide service to surrounding areas.				
<b>Historical Notes*</b>				
2006 208 Plan Update, Section 4.3.5: "This facility was identified in the original PAG 208 Plan and in the 2000 Marana 208 Update. However, the school connected to the County sewer system in 1999."				

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

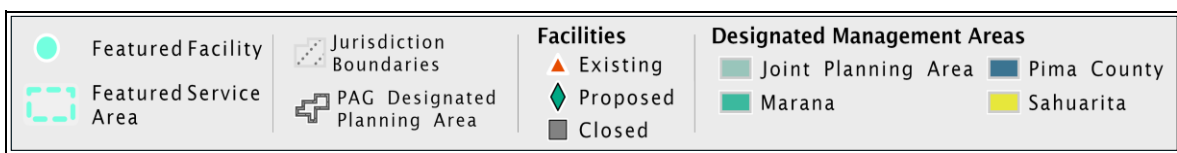
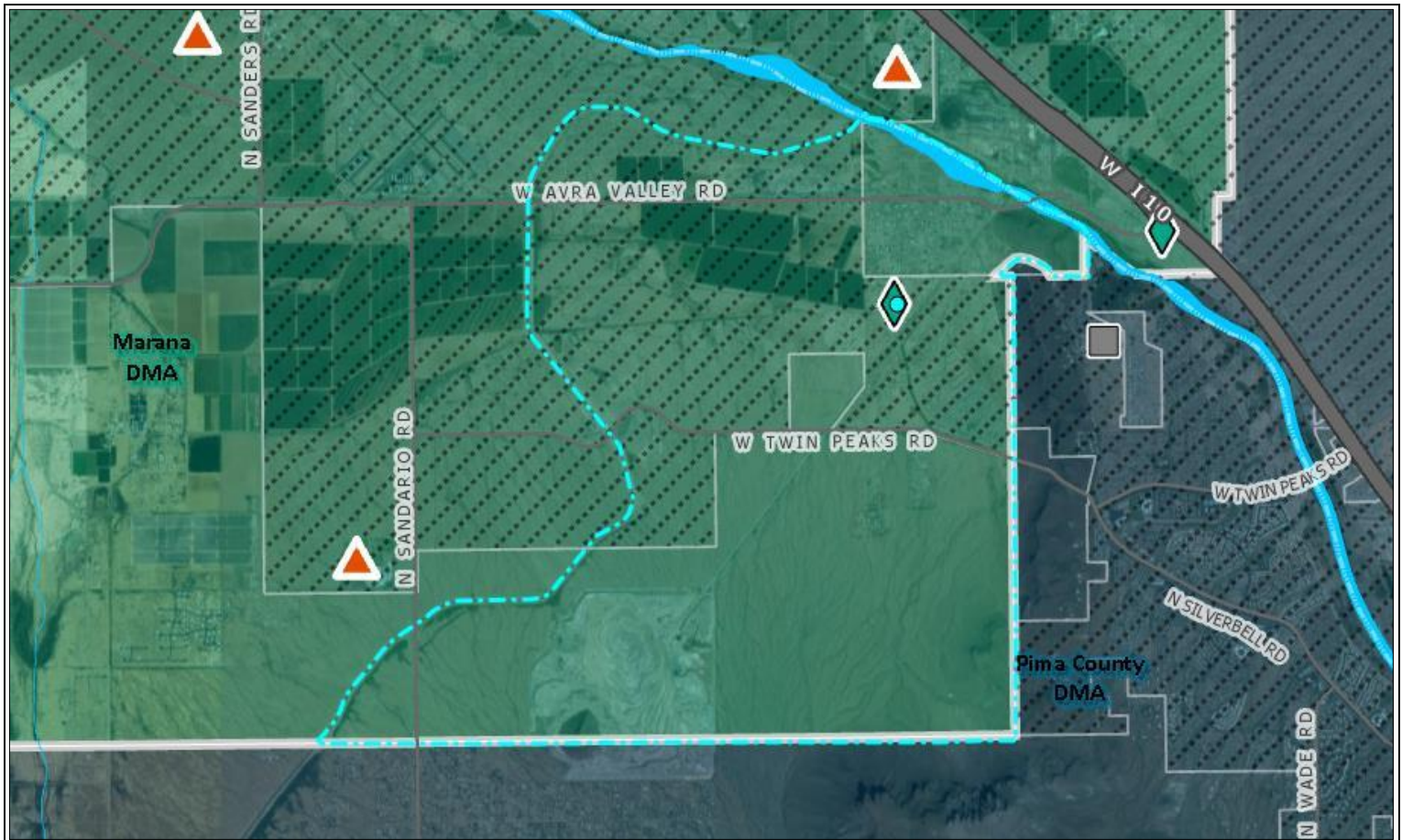


## Narrows - Within Marana DMA

### Wastewater Reclamation Facilities in the PAG Region



### Narrows and Surrounding Area





## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Narrows	No	No Longer Planned
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Marana, AZ - South side of N. Airline Rd, 0.4 miles SW of Cement Plant Rd./W. Lambert Lane intersection	Marana, TBA	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Marana	Marana	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Pending Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Brawley Wash		
<b>General Description</b>		
Not Available		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		

**Amendments**

<b>ID</b>	<b>Title</b>	<b>Author</b>	<b>Year</b>	<b>Document</b>
29	Areawide Water Quality Management Plan Amendment for Town of Marana Facilities and DMA	WestLand Resources, Inc., for Town of Marana and PAG	2013	<a href="#">Link</a>

**Links**

None

**Active Notes\***

The Narrows Water Reclamation Facility was identified as an alternative location for the Town of Marana to provide sanitary sewer service to the Saguaro Bloom development. The Town and Pima County agreed that the Town may provide service to Saguaro Bloom when it had adequate infrastructure to do so. Initial flows from Saguaro Bloom were pumped to Pima County facilities tributary to the Tres Rios Water Reclamation Facility. Rather than constructing the Narrows facility at this time, the Town of Marana provides service to the development through connection to the Marana Water Reclamation Facility.

**Historical Notes\***

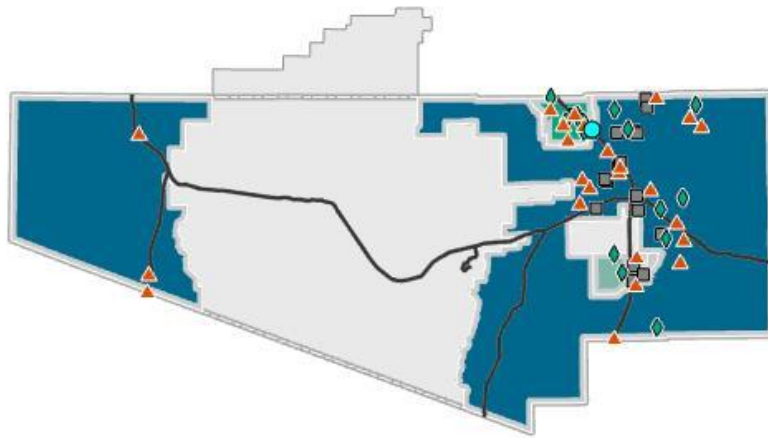
The Narrows WRF was proposed to serve the flows from the Saguaro Bloom development. This facility was to be designed and constructed if the Town determined it was economically feasible. The projected 20-year flows for this area were estimated to range from .9 to 1.6 mgd. (Marana 208 Plan Amendment 2013)

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

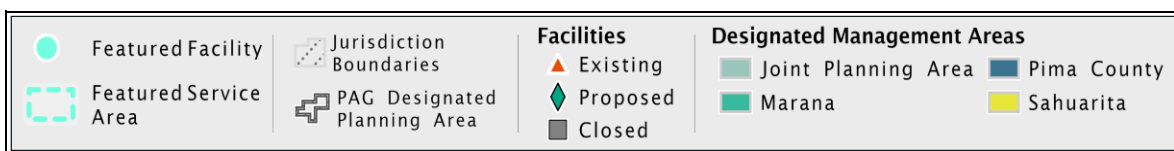
Data Last Updated: 12/10/2019

## Peppertree - Within Marana DMA

### Wastewater Reclamation Facilities in the PAG Region



### Peppertree and Surrounding Area



Facility Details		
<b>Facility Name</b> Peppertree	<b>Operational</b> No	<b>Status</b> No Longer Planned
<b>Location</b> SW Corner Avra Valley Rd & I-10	<b>Owner Name</b> Pima County	<b>Public Owned?</b> Public
<b>DMA Sponsor</b> Pima County	<b>DMA Location</b> Marana	<b>DMA Notes</b> Not Available
<b>Aquifer Protection Permit Number</b> Not Available	<b>AZPDES Number</b> Not Available	<b>Consistency Status</b> Pending Consistency Review
<b>Permitted Capacity</b> 0 MGD	<b>Current Capacity</b> Not Available	<b>Current Flows</b> Not Available
<b>Watershed</b> Upper Santa Cruz		
<b>General Description</b> Not Available		
<b>Service Area Boundaries</b> Please see map (if available)		
<b>Service Area Population</b> Not Available		
<b>Service Area Land Uses</b> Not Available		
<b>Treatment Method</b> Not Available		
<b>Discharge Method and Location</b> Not Available		
<b>Future Conditions</b> Not Available		

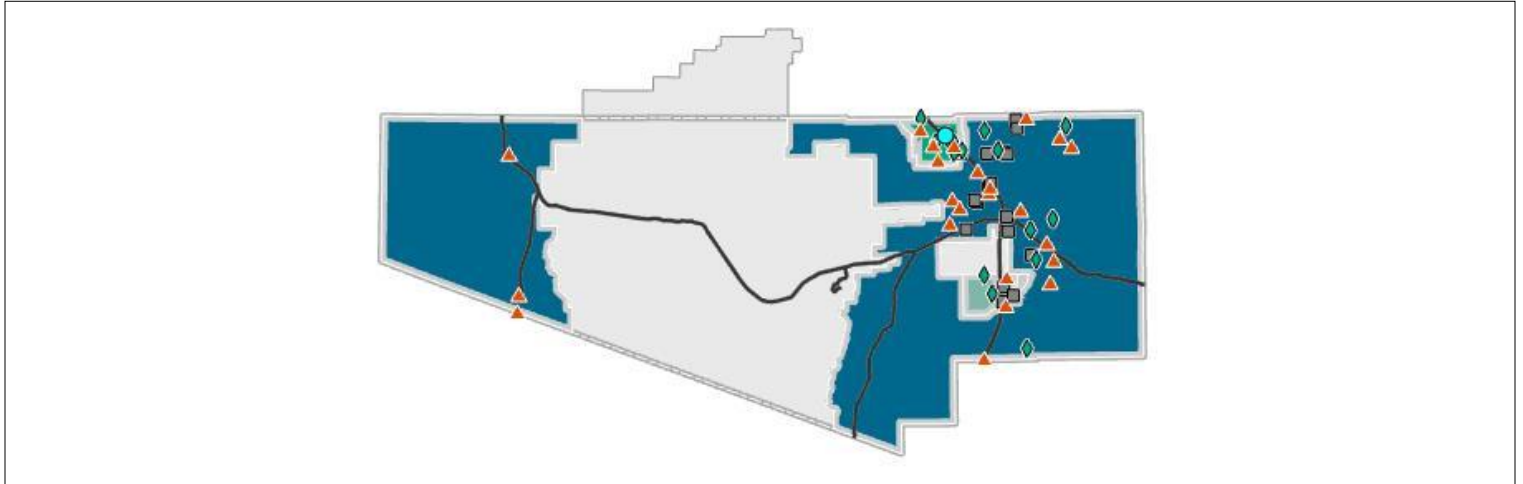
Amendments				
ID	Title	Author	Year	Document
4	Domestic Point Source Water Quality Planning Update Report for Areas A1 & A2	PRC Toups for PAG	1982	<a href="#">Link</a>
12	Continental Ranch 208 Consistency Report — Continental Ranch Pump Station	WLB Group	1986	<a href="#">Link</a>
Links				
None				
Active Notes*				
208 Plan Amendment {12} recommended pump station instead.				
Historical Notes*				
None				

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

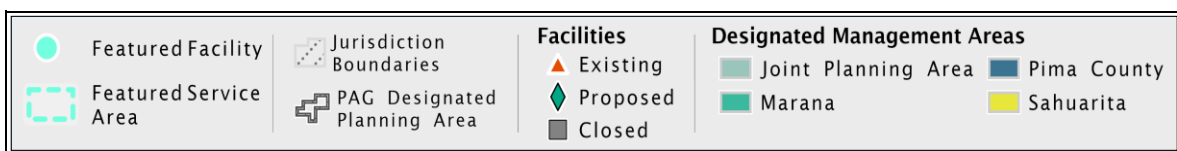
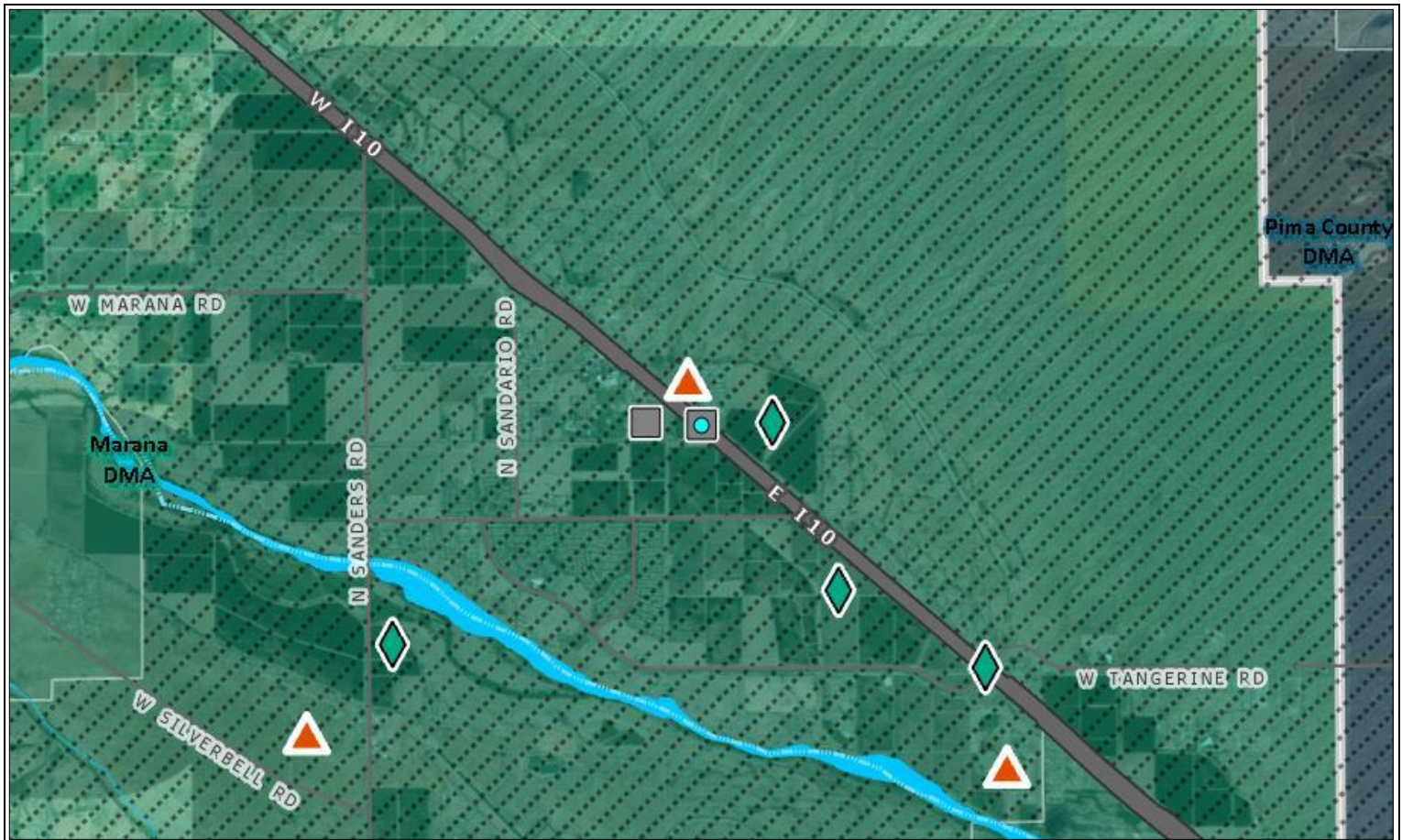


## R & M Farms - Within Marana DMA

### Wastewater Reclamation Facilities in the PAG Region



### R & M Farms and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
R & M Farms	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Marana, AZ - Underneath I-10, 0.12 miles NW of N. Frontage Rd./W. Barnett Rd. intersection	Not Available	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Marana	Built/Proposed prior to DMA Sponsorship requirement
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	NPDES Number 0021661 (1978 PAG 208 Plan)	Built Prior to 208 Requirement
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Lower Santa Cruz		
<b>General Description</b>		
Identified in original 208 Plan but no longer exists.		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		

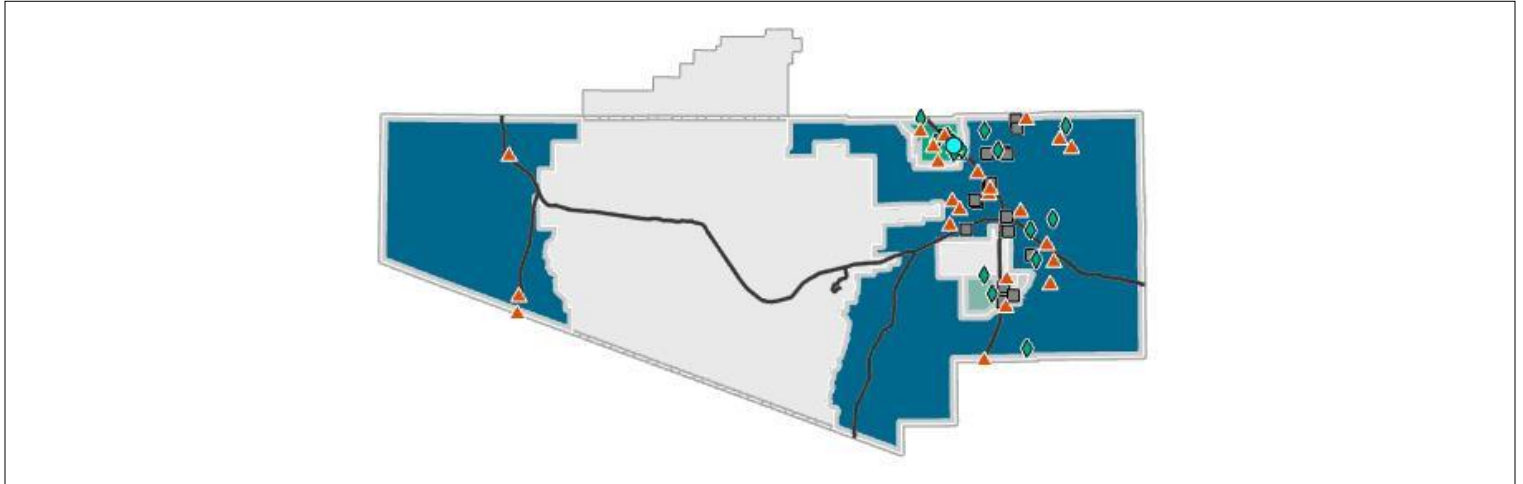
<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
Retention pond for run-off from 2.9"/24 hr. storm. (1978 PAG 208 Plan)

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

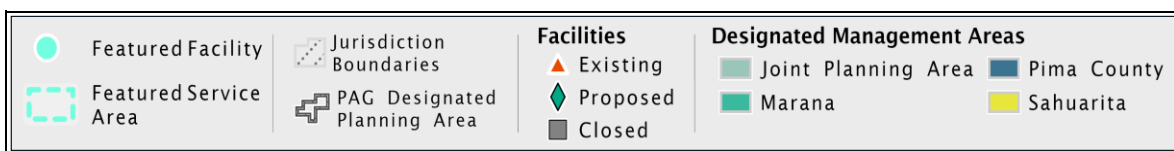


## Rillito Vista - Within Marana DMA

### Wastewater Reclamation Facilities in the PAG Region



### Rillito Vista and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Rillito Vista	No	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Marana, AZ - Cemex Plant, 11500 Calmat Dr., 0.6 miles SW of N. Rillito Village Trl/W. Tangerine Rd. intersection	Town of Marana {29}	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Marana	Marana	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.009 MGD	The current capacity at Rillito Vista is 0.020 MGD (Pima County WWM, 2005a). Permitted, average flows are currently approximately .01 MGD (Marana 208 Plan Amendment 2013)	Current inflows average 0.010 MGD (Pima County WWM, 2005a). No Change (Marana 208 Plan Amendment 2013, Table 2)
<b>Watershed</b>		
Lower Santa Cruz		
<b>General Description</b>		
Rillito Vista WWTF is located northwest of Tucson, between Avra Valley Road and Tangerine Road, and between Interstate 10 and the Santa Cruz River. It served the Rillito Vista subdivision. However, the plant is now connected to the Marana gravity sewer system and is no longer in operation.		
<b>Service Area Boundaries</b>		
The service area boundaries correspond to the Rillito Vista subdivision boundaries.		
<b>Service Area Population</b>		
The subdivision has 60 lots. This corresponds to a service-area population of 156 people, based on the average owner-occupied rate (2.59 persons/household) published in the Pima County SDCP Housing Report.		
<b>Service Area Land Uses</b>		
The entire service area is residential. (208 Plan Update 2006) Currently serves total of 60 units. (Marana 208 Plan Amendment 2013, Table 2)		
<b>Treatment Method</b>		
The facility consists of two stabilization/evaporation/percolation ponds. Only one pond is used at a time, with the inactive pond dried and scraped before being returned to service.		
<b>Discharge Method and Location</b>		
Effluent disposal consists of evaporation and percolation.		



## Future Conditions

Currently the Rillito Vista WWTF is non-operational since wastewater flows were connected to the Town of Marana's sewerage collection system for treatment at the Marana WRF. The Town of Marana is expected to proceed with clean closure of Rillito Vista WWTF in the future.

## Amendments

ID	Title	Author	Year	Document
4	Domestic Point Source Water Quality Planning Update Report for Areas A1 & A2	PRC Toups for PAG	1982	<a href="#">Link</a>
15	Marana Study Area 208 Consistency Report	Pima County Wastewater Management Department	1988	<a href="#">Link</a>
25	Marana 208 Areawide Water Quality Management Plan Update	Malcolm Pirnie	2000	<a href="#">Link</a>
29	Areawide Water Quality Management Plan Amendment for Town of Marana Facilities and DMA	WestLand Resources, Inc., for Town of Marana and PAG	2013	<a href="#">Link</a>

## Links

None

## Active Notes\*

The 2013 Marana 208 Plan Amendment designates Town of Marana as the DMA for this facility and several others in the area. The facility was located in the Marana DMA, but this WWTF has been connected to the Marana sewer collection system.

## Historical Notes\*

Existing; 2 ponds (208 Plan Update 2006)

Future expansion of the facility not anticipated; abandonment will be considered when public trunk sewers are constructed nearby (208 Plan Update 2006)

PAG did not develop future population and flow projections for the Rillito Vista WWTF, because the facility's future was uncertain. Pima County's draft Facility Plan Update posed the following alternatives for the facility's future:

- 1) The facility will continue as a limited service facility serving its present customers.
- 2) The facility will be abandoned with its flow incorporated in the larger Marana WWTF system as a tributary basin.
- 3) The facility site will be increased in size by additional land purchases and be enlarged to treat the flow from the service area tributary to the Continental Ranch Pump Station (CRWWPS) as well as flows generated by the area east of the Central Arizona Project (CAP) canal and north and south of Tangerine Road. (208 Plan Update 2006)

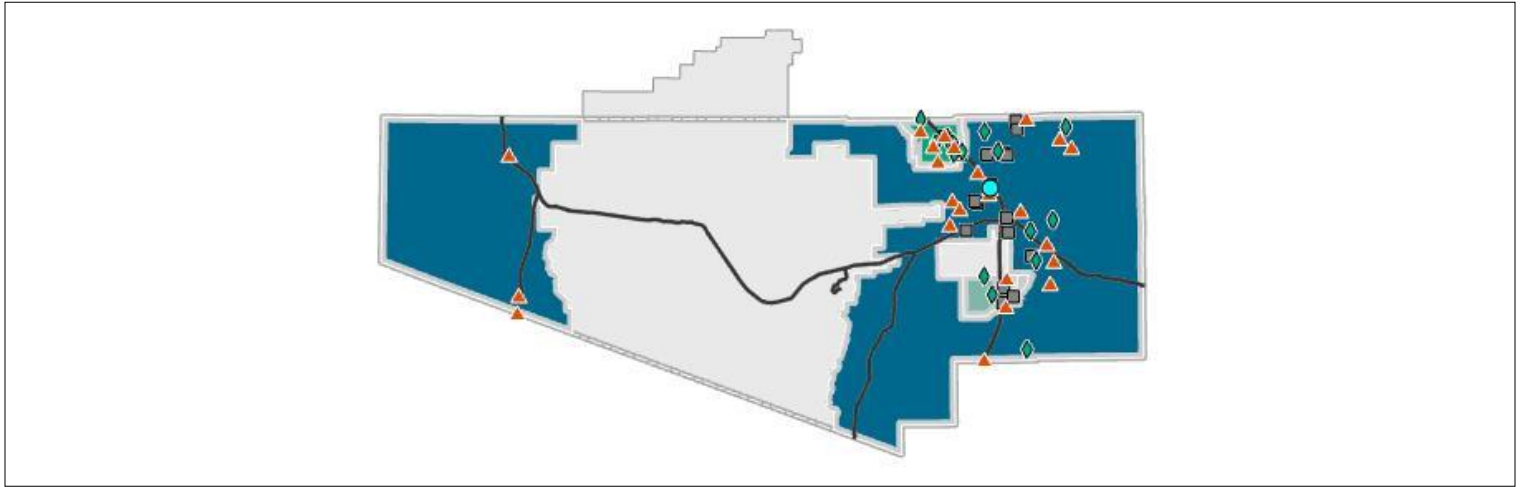
Serves approx. 59 lots; ultimately to be abandoned (208 Plan Update 2006)

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

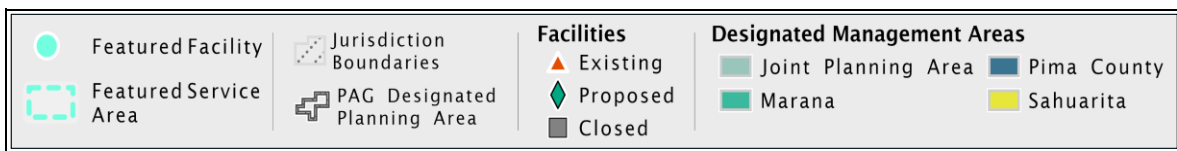
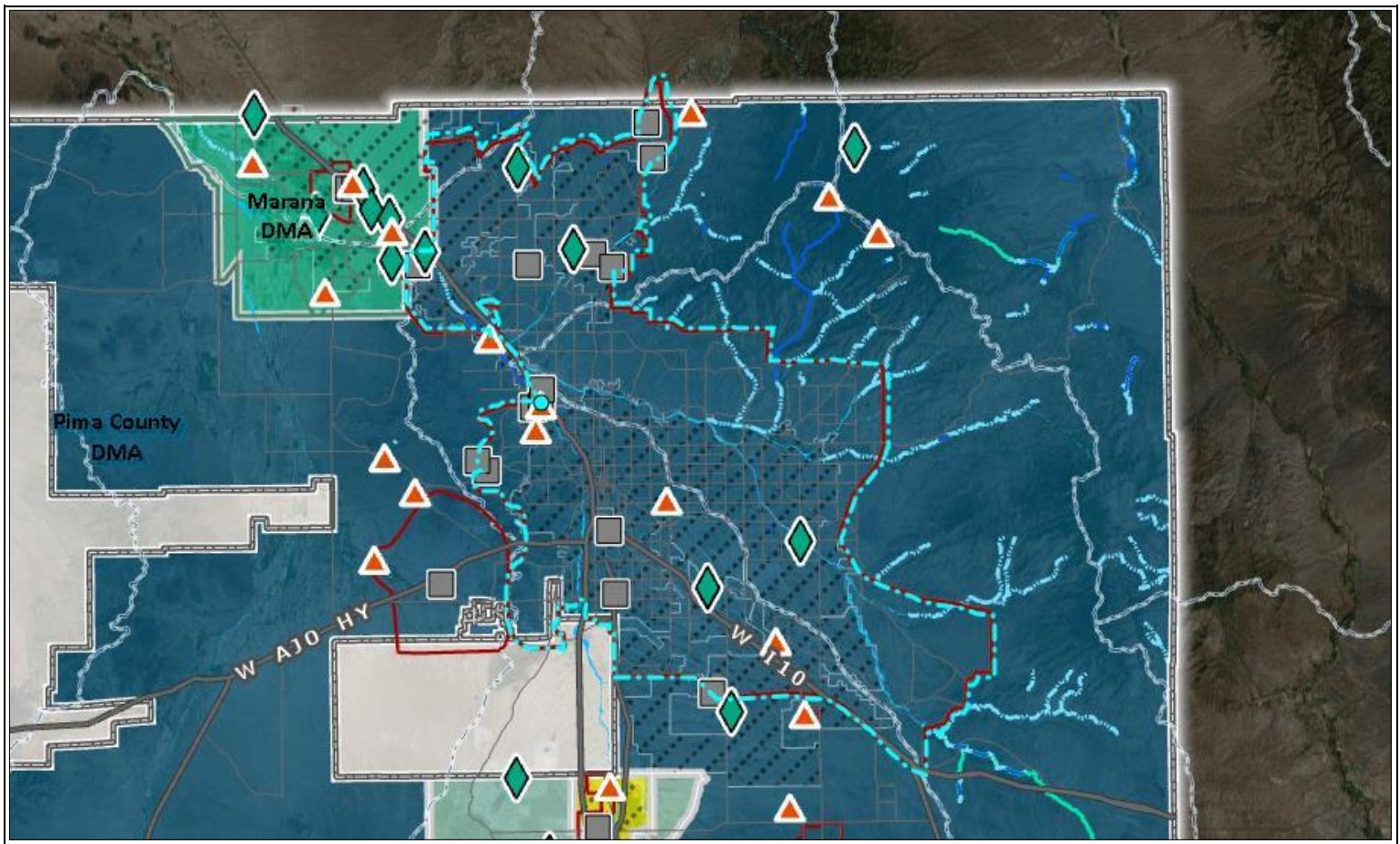
Data Last Updated: 12/11/2019

## Agua Nueva - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Agua Nueva and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Agua Nueva	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Tucson, AZ - 2955 W. Calle Agua Nueva, 0.5 miles west of I-10 Frontage Rd./W. Calle Agua Nueva intersection	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-100655	AZ0026107	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
32 MGD	The Agua Nueva WRF has a permitted treatment capacity of 32.0 MGD.	2016 and 2017 average monthly influent flows were 24.9 MGD.

### Watershed

Not Available

### General Description

Managed together with the Tres Ríos WRF. The Agua Nueva WRF replaced the decommissioned Roger Road WWTF. The Agua Nueva WRF has a capacity of 32 MGD and the amount of nutrients (ammonia and nitrogen) in the reclaimed water was reduced. The facility meets higher water quality standards to allow discharge into the Santa Cruz River and provides a higher quality reclaimed water to the City of Tucson's Reclaimed Water System. The Agua Nueva WRF is owned by Pima County, but is operated by the consulting firm CH2M for a period of 15 years. At the end of 15 years, Pima County has the right to extend CH2M's contract for an additional five years or take over operations of the facility.

Agua Nueva operates 24-hours per day, 365 days a year. The facility is permitted for B+ reclaimed water through Arizona Department of Environmental Quality. Since the Randolph Park WRF closure in December of 2014, Agua Nueva supplies the City of Tucson with all of their reclaimed water needs.

The Agua Nueva WRF features include:

- Headworks structure for raw wastewater screening and pumping
- Grit removal ahead of innovative dissolved air flotation thickeners
- Four modified 5-stage Bardenpho wastewater treatment system bioreactors and clarifiers
- Disk filters
- Sodium hypochlorite disinfection
- A sludge pumping station for conveyance of sludge to the Tres Ríos WRF by a dedicated force main
- Plant-wide odor control systems
- Plant security system
- Landscaping and external architectural screening walls pleasing to the adjacent communities.

A plant interconnect pipeline was constructed as an interceptor sewer to transfer some of the flows from the Aqua Nueva WRF to the Tres Rios WRF. The interceptor balances the flow between the Agua Nueva and Tres Rios WRFs to optimize facility operations.

### Service Area Boundaries

The Agua Nueva/Tres Rios WRF service area encompasses approximately 333 square miles and is served by two principal water reclamation facilities, the Agua Nueva WRF and the Tres Rios WRF. The service area includes five jurisdictions: the City of Tucson, the City of South Tucson, a southeastern portion of the Town of Marana, the Town of Oro Valley, and Pima County. The Agua Nueva/Tres Rios service area includes most of the metropolitan Tucson area. It extends from the Tucson Mountains on the west, to the Town of Oro Valley on the north, including an area north of the Pima/Pinal County line along State Route 77, to the Rincon Mountains on the east, and continues south beyond the City limits.

### Service Area Population

Based on the 2015 average monthly flow of 25.6 MGD, the Agua Nueva WRF serves approximately 320,000 people. (2016 Wastewater PC Facility Plan, pg 76)

### Service Area Land Uses

Based on current zoning, land uses in the Agua Nueva/Tres Rios service area consist of mostly urban residential (47%). Rural land use comprises 31% of service area, followed by industrial/commercial uses, which comprise 12% of total land use. Business and mixed land uses comprise 7%, while 3% is attributed to “other” uses. (2016 Wastewater Facility Plan, pg 36)

### Treatment Method

The Agua Nueva WRF's treatment process features headworks for raw wastewater screening and pumping, grit removal ahead of dissolved air flotation thickeners, four modified 5-stage Bardenpho wastewater treatment system bioreactors and clarifiers, disk filters, sodium hypochlorite disinfection, sludge pumping station for conveyance of sludge by a dedicated force main to the Tres Rios WRF and plant-wide odor control systems. For more information, see 2016 Wastewater Facility Plan, pg 77.

ADEQ requires pretreatment for wastewater treatment facilities 5 MGD or greater (Taunt 2005). The Pima County Regional Wastewater Department is the only DMA in the PAG region with facilities of “large” size (greater than 5MGD). Its pretreatment program is described in the Facility Inventory as follows (Pima County Regional Wastewater Department 2002):

The Industrial Waste Control Group (IWC) is the pre-treatment arm of the Treatment Division. IWC has jurisdiction over commercial sewer users in the incorporated and unincorporated areas within Pima County boundaries. Because it has jurisdiction throughout the county, IWC is able to achieve consistency in permitting, monitoring, and enforcing discharge requirements. The Field Services Unit of IWC monitors all Significant Industrial Users of the system twice a year. Significant Industrial Users are those businesses that have discharges that significantly impact the sanitary sewage conveyance system or treatment facilities. Strict procedures are adhered to in gathering samples.

### Discharge Method and Location

High quality effluent is discharged to the Santa Cruz River in accordance with an AZPDES permit and Aquifer Protection Permit (APP). Approximately 18 MGD of reclaimed water is used for turf irrigation and other purposes, primarily through the City of Tucson's reclaimed water system which includes additional treatment before distribution to customers.

### Future Conditions

The Agua Nueva WRF is equipped with the adequate treatment capacity to meet the projected population needs for at least the next decade.

### Amendments

ID	Title	Author	Year	Document
28	Ina Road Wastewater Reclamation Facility and New Water Reclamation Campus at Roger Road (Regional Optimization Master Plan — ROMP)	Greeley & Hansen for Pima County Regional Wastewater Reclamation Department	2009	<a href="#">Link</a>

### Links

[https://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan\\_2016.pdf](https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan_2016.pdf)

### Active Notes\*

"Although the Agua Nueva WRF is permitted to produce class B+ effluent, the facility produces Class A+ reclaimed water, utilizing chlorination for disinfection. After dechlorination, it also meets AZPDES permit standards for discharge to the Santa Cruz River, as well as numeric Aquifer Water Quality Standards. RWRD sends an average of 18 MGD of the total effluent produced to the City of Tucson reclaimed water system. The remaining effluent is conveyed to the same outfall previously used by the Roger Road WRF and is discharged into the Santa Cruz River." (2016 Wastewater PC Facility Plan, pg 77)

"The Agua Nueva WRF utilizes a 5-stage Bardenpho treatment process to achieve nutrient removal. Solids collected at the facility are conveyed to the upgraded Tres Rios WRF via a sludge force main." (2016 Wastewater PC Facility Plan, pg 76)

"The average monthly influent flow in 2014 was 21.6 MGD, and in 2015 it was measured at 25.6 MGD, or a 4 MGD increase. The facility is not held to the typical 75% of capacity concerns. Excess flows from the facility are diverted to Tres Rios WRF via the Plant Interconnect designed to carry 79.7 MGD of wastewater per day." (2016 Wastewater PC Facility Plan, pg 77)

"The regional service area consists of the Agua Nueva/Tres Rios service area (which includes most of the metropolitan Tucson area) and several smaller sub-regional service areas, which include unincorporated areas of Pima County.

The Agua Nueva/Tres Rios service area encompasses approximately 333 square miles and is served by two principal water reclamation facilities: the Agua Nueva WRF and the Tres Rios WRF (formerly the Ina Road WRF). They are located on the west side of Interstate 10 (I-10) and serve five jurisdictions: the City of Tucson, the City of South Tucson, the Town of Marana, the Town of Oro Valley, and Pima County. Together, the two facilities function as a single interchangeable system providing treatment and reclamation of wastewater for the entire region." (2016 Wastewater PC Facility Plan, pg 34)

Based on the 2015 average monthly flow of 30.6 MGD, the Tres Rios WRF served approximately 383,000 people. Together, the two facilities served approximately 703,000 people in 2015. (2016 Wastewater PC Facility Plan, pg 76)

Both the Tres Rios Water Reclamation Facility and the Agua Nueva Water Reclamation Facility meet ADEQ discharge requirements for nitrogen reduction. The total two-plant capacity of 82 mgd serves the county's municipal treatment needs through the 2030 planning horizon.

Since December 16, 2013, the Pima County Regional Wastewater Reclamation Department (RWRD) has been diverting flows from the Roger Road WRF to the Agua Nueva Water Reclamation Facility (WRF). The Agua Nueva WRF is a new state-of-the-art water reclamation facility that will allow Pima County to meet new strict environmental standards for effluent discharges into the Santa Cruz River. (<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=52858>)

## Historical Notes\*

2015 average monthly influent flow was 25.6 MGD.

Based on current zoning, land uses in the Roger Road WWTF (since replaced by the Agua Nueva WRF) service area consist of 69.5 percent residential, 17 percent industrial, 6.5 percent commercial, 3.8 percent specific plan, 1.4 percent federal and state land and 0.8 percent multiple use. (208 Plan Update 2006)

Before the service area was combined with that of the Tres Rios WRF, the Agua Nueva WRF service area encompassed most of the City of Tucson and most of the major Tucson metropolitan area. The service area extended from the Tucson Mountains on the west, to roughly Rillito Creek on the north, to the Rincon Mountains on the east, and continues south beyond the current City limits. The sewer basin was approximately 275 square miles. The Tres Rios WRF service area was north of the Agua Nueva service area.

CR-14 (April 17 2012): Finding Consistent as per 2008 ROMP amendment: "Reclamation Facility (PCWRF) located at T13S R13E S20. This plant will replace, and have the same service area, as the existing Roger Road Wastewater Treatment Facility. The design capacity will be for an annual average daily flow of 32 MGD and effluent will be disposed of via discharge to the Santa Cruz River and effluent reuse via the City of Tucson's reclaimed water system. Since the design capacity will be somewhat less than that currently treated at the Roger Road plant, some of the wastewater flow will be conveyed to the Ina Road plant. The PCWRF effluent will undergo Tertiary treatment and de-chlorination before being discharged. Solids will be stored and transferred to the Ina Road WRF."

CR-22: (07.02.2015) Agua Nueva APP Significant Amendment Application Form & Narrative to revise AQLS "the proposed amendment would create a monitoring approach in the APP for recording and analyzing trends as the high levels of nitrate from upgradient recharge are decreased by further recharge and completion of flushing salts from the vadose zone and groundwater system at the site. [the APP amendment application lists further steps]" - Amendment Objectives, pg 8 of pdf

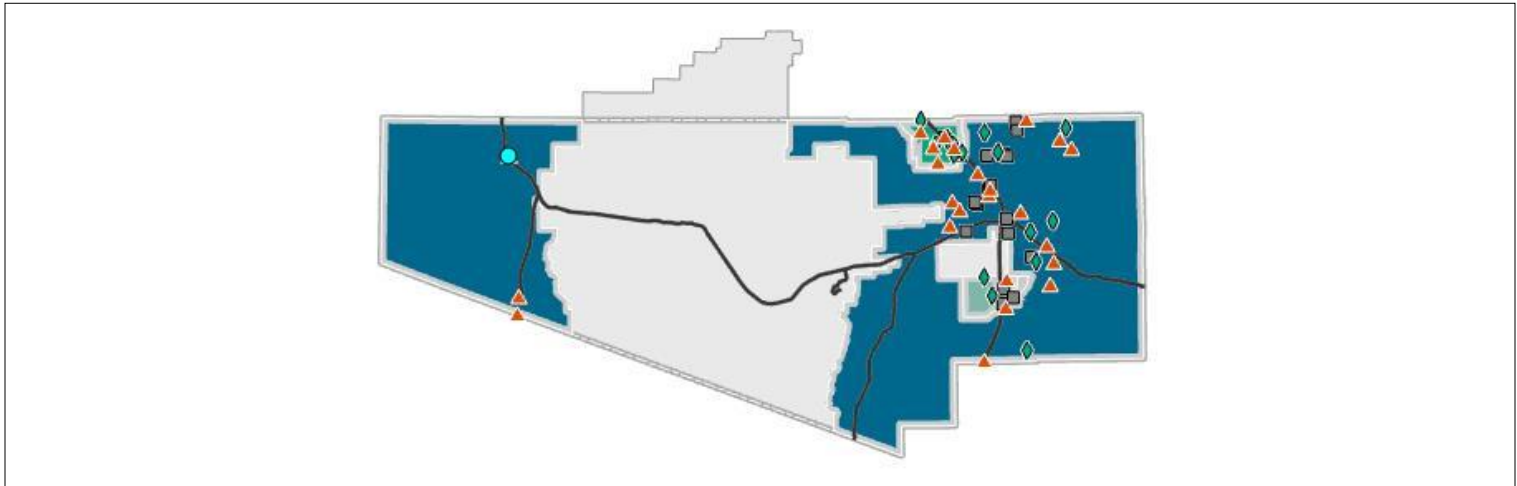
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

Data Last Updated: 12/10/2019

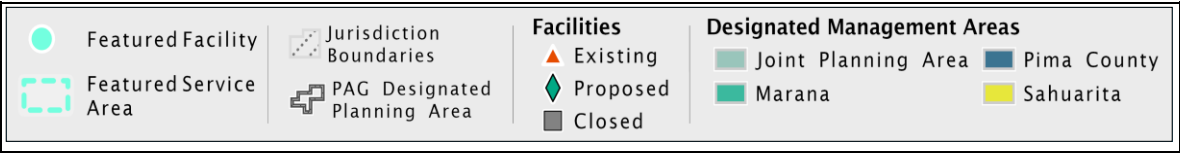
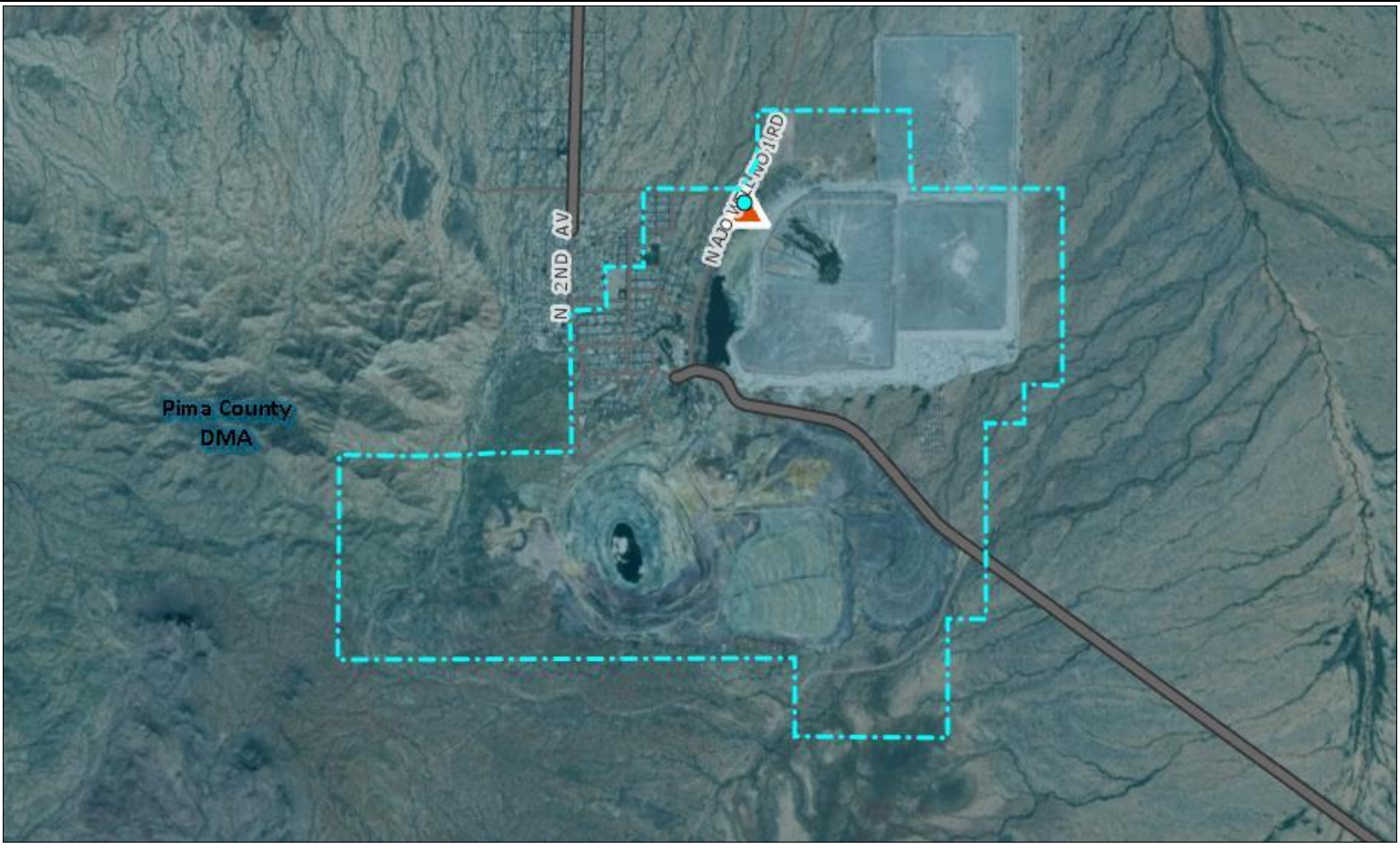


Ajo Improvement Company - Within Pima County DMA

Wastewater Reclamation Facilities in the PAG Region



Ajo Improvement Company and Surrounding Area



## Facility Details

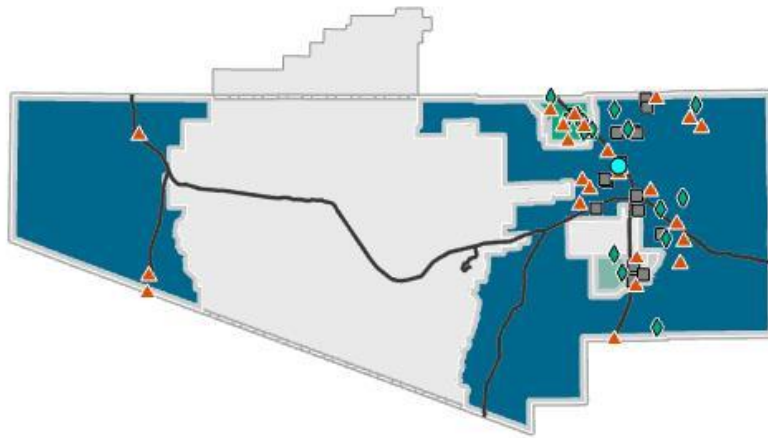
<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Ajo Improvement Company	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Ajo, between Well Road and the Phelps Dodge tailing pond; T12S. R6W, Section 14	Ajo Improvement Company	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Built/Proposed prior to DMA Sponsorship requirement
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-101678	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.6 MGD	Not Available	Not Available
<b>Watershed</b>		
Tenmile Wash		
<b>General Description</b>		
A sewage treatment facility serving the community of Ajo was identified in the original 208 Plan. A 208 Plan Amendment approved in July 1999 addressed construction of a new 0.6 MGD facility to be operated by the Ajo Improvement Company on the site of the old facility. The facility is located in Section 14 of Township 12 South, Range 6 West, between Well Road and the Phelps Dodge tailing pond. Ajo Improvement Company has a Certificate of Convenience and Necessity from the Arizona Corporation Commission.		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		

Amendments				
ID	Title	Author	Year	Document
23	Ajo Improvement Company 208 Plan Amendment	Ajo Improvement Company	1999	<a href="#">Link</a>
Links				
None				
Active Notes*				
208 Plan Amendment {23} recommended this new facility to replace the existing inadequate pond facility. (208 Plan Update 2006)				
Historical Notes*				
None				

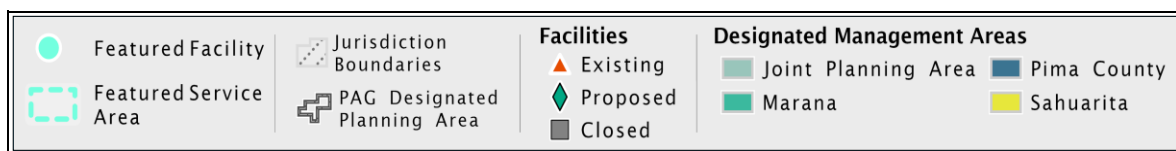
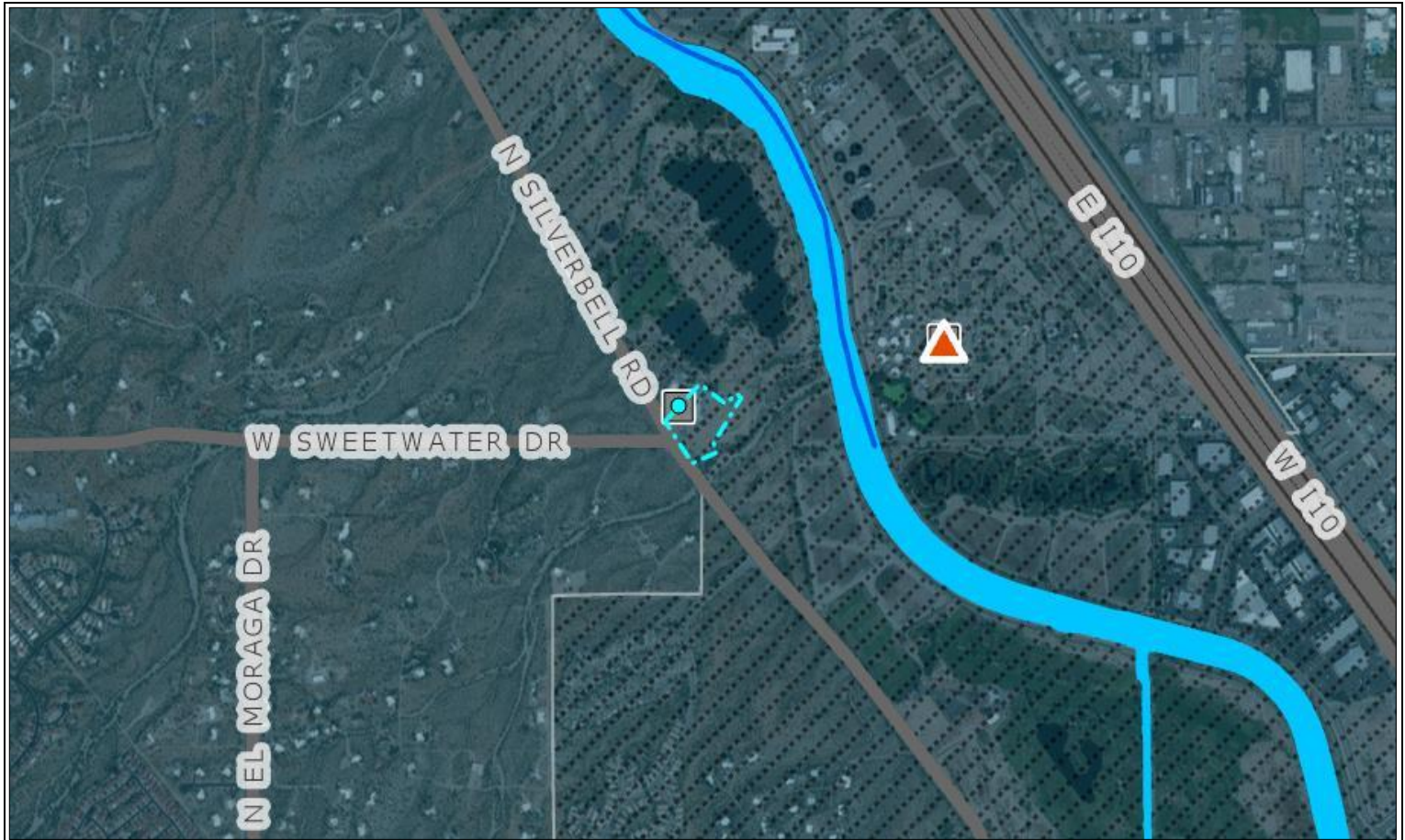
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

## Animal Control Center - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Animal Control Center and Surrounding Area





## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Animal Control Center	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Tucson, AZ - 4000 N Silverbell Rd, 0.1 miles north of N.Silverbell Rd./W. Sweetwater Dr. intersection	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-100634	Not Available	Built Prior to 208 Requirement
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.021 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Point source identified in the original PAG 208 Plan, but is now closed. The 21,000-gallon evaporation pond that previously operated at this site has been abandoned and closed (correspondence with DMA contact 12/2018).		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		



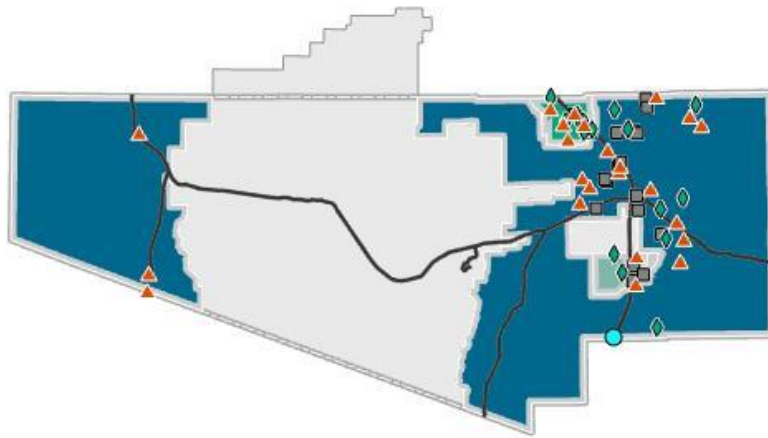
<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
None

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

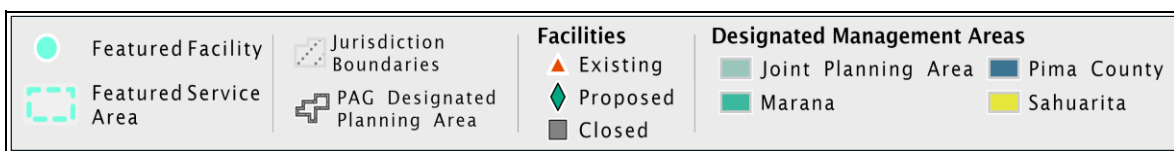
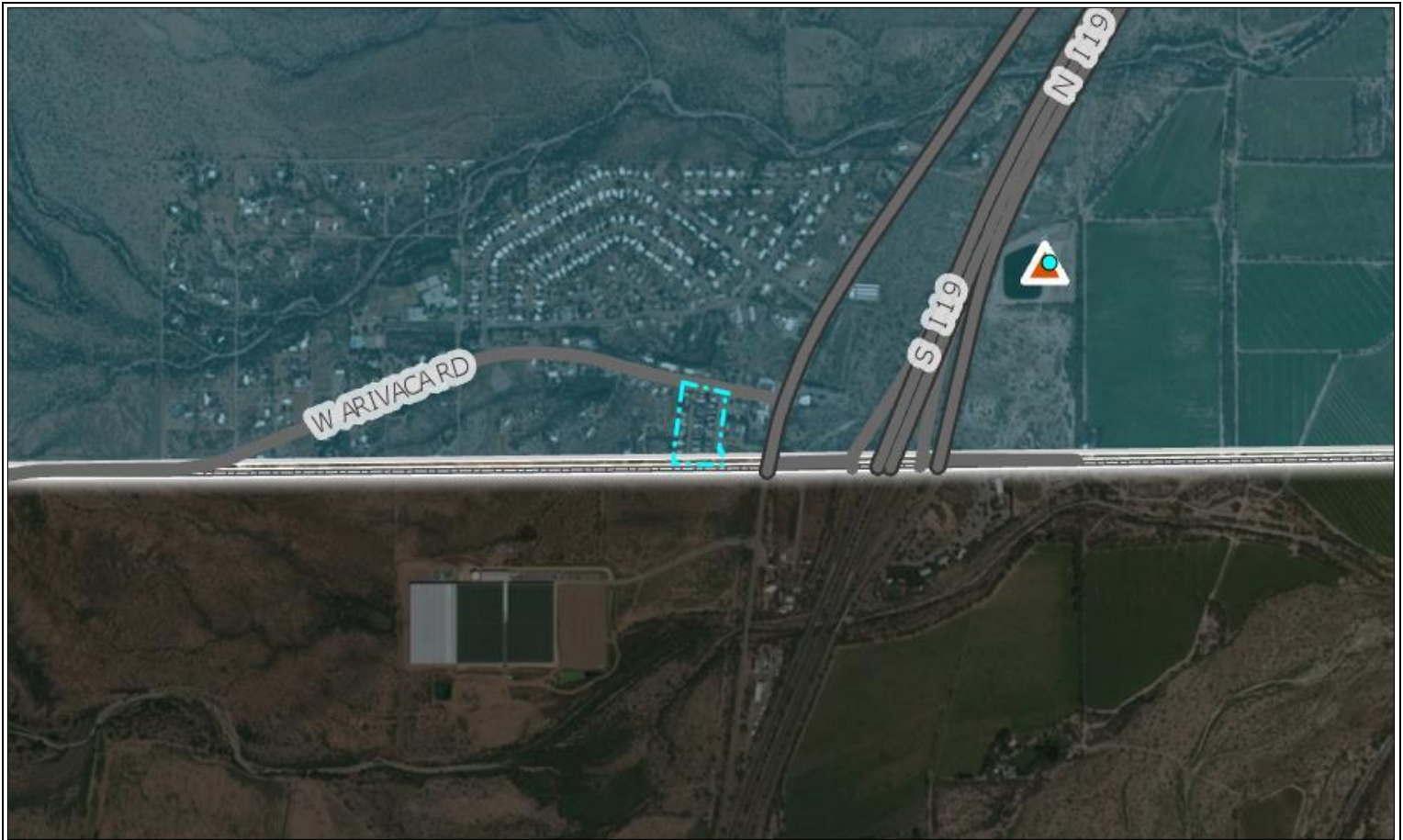
Data Last Updated: 12/10/2019

## Arivaca Junction - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Arivaca Junction and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Arivaca Junction	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Near Arivaca Junction, AZ - East of I-19, 0.3 miles north of I-19/W. Arivaca Rd. intersection	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-100640	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.1 MGD	The Arivaca Junction WRF has a permitted treatment capacity of 100,000 GPD	<p>2015 average monthly influent flows were 43,000 GPD;</p> <p>2016 average monthly influent flows were 42,000 GPD;</p> <p>2017 average monthly influent flows were 44,000 GPD</p>
<b>Watershed</b>		
Not Available		
<b>General Description</b>		
The Arivaca Junction WRF is located approximately 30 miles south of Tucson, near the Santa Cruz County line, west of the Santa Cruz River. It is owned and operated by Pima County and serves a rural area. It has been in operation since 1972.		
<b>Service Area Boundaries</b>		
The Arivaca WRF service area encompasses a small rural residential area west of I-19 and north of Arivaca Road. The service area is approximately 1.8 square miles with 5 miles of public sewer lines (2016 Wastewater Facility Plan).		
<b>Service Area Population</b>		
The Arivaca Junction service area encompasses 293 lots. The estimated population is 538 people based on the 2015 average monthly flows of 43,000 gallons per day. (2016 Wastewater Facility Plan)		
<b>Service Area Land Uses</b>		
The service area for this facility is primarily residential with a few commercial properties served by the facility.		
<b>Treatment Method</b>		

## PAG 208 Plan - 2020

The facility consists of a single 3.2 acre, 15-foot-deep, unlined, partially mixed aerated lagoon (Pima County WWM, 2005a). Chlorination is used for disinfection in two fiberglass tanks (2016 Wastewater Facility Plan).

### Discharge Method and Location

Effluent is rated as Class C and is used at the adjacent Oswald Cattle Company Ranch (formally known as Reventone Ranch). The cattle company has reuse rights through an Effluent Reuse Agreement 11-03-R-133090-0803 with Pima County (2016 Wastewater Facility Plan).

### Future Conditions

Expansion of the Arivaca Junction WRF is unlikely given that growth in the area is slow. The plant will be evaluated for closure if the proposed gravity sewer connection to the Green Valley WRF is completed. There are no plans for the facility to serve Santa Cruz County. If the cattle company stops taking effluent there will be concerns of how to manage the flows. Currently the plan is to continue operating the facility in its current state with improvements only as needed. (2016 Wastewater Facility Plan)

### Amendments

ID	Title	Author	Year	Document
10	Green Valley Cortaro Area Management Plans	PAG	1984	<a href="#">Link</a>

### Links

[https://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan\\_2016.pdf](https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan_2016.pdf)

### Active Notes\*

None

### Historical Notes\*

Average daily flows in FY 2003-04 were 0.06132 MGD.

Effluent disposal consisted of evaporation, percolation, and reuse at the Reventone Ranch. (208 Plan Update 2006)

The Arivaca Junction facility may close. The flows could be diverted to either the Green Valley plant or a package plant at Canoa Ranch to produce reclaimed water that would support an environmental restoration project. A combination of these options is also possible. (208 Plan Update 2006)

The Arivaca Junction service area formerly encompassed 323 lots. This corresponded to a service area population of 840 people, assuming 2.59 persons/household. (208 Plan Update 2006)

The service area for this facility was formerly entirely residential. (208 Plan Update 2006)

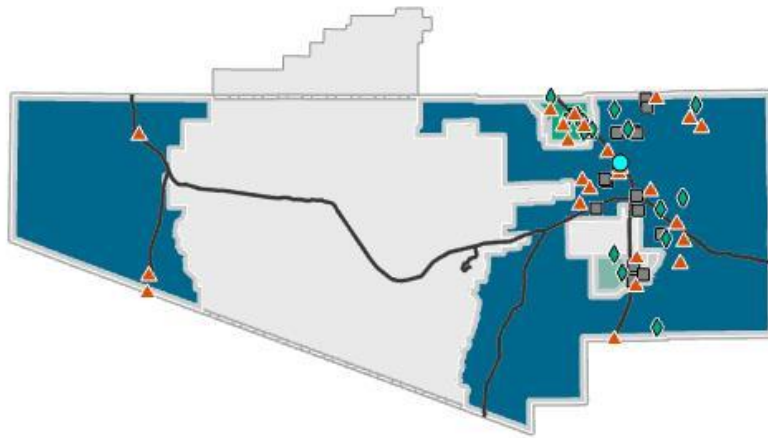
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

Data Last Updated: 12/10/2019

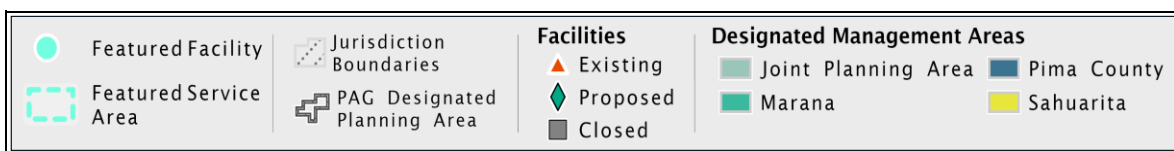
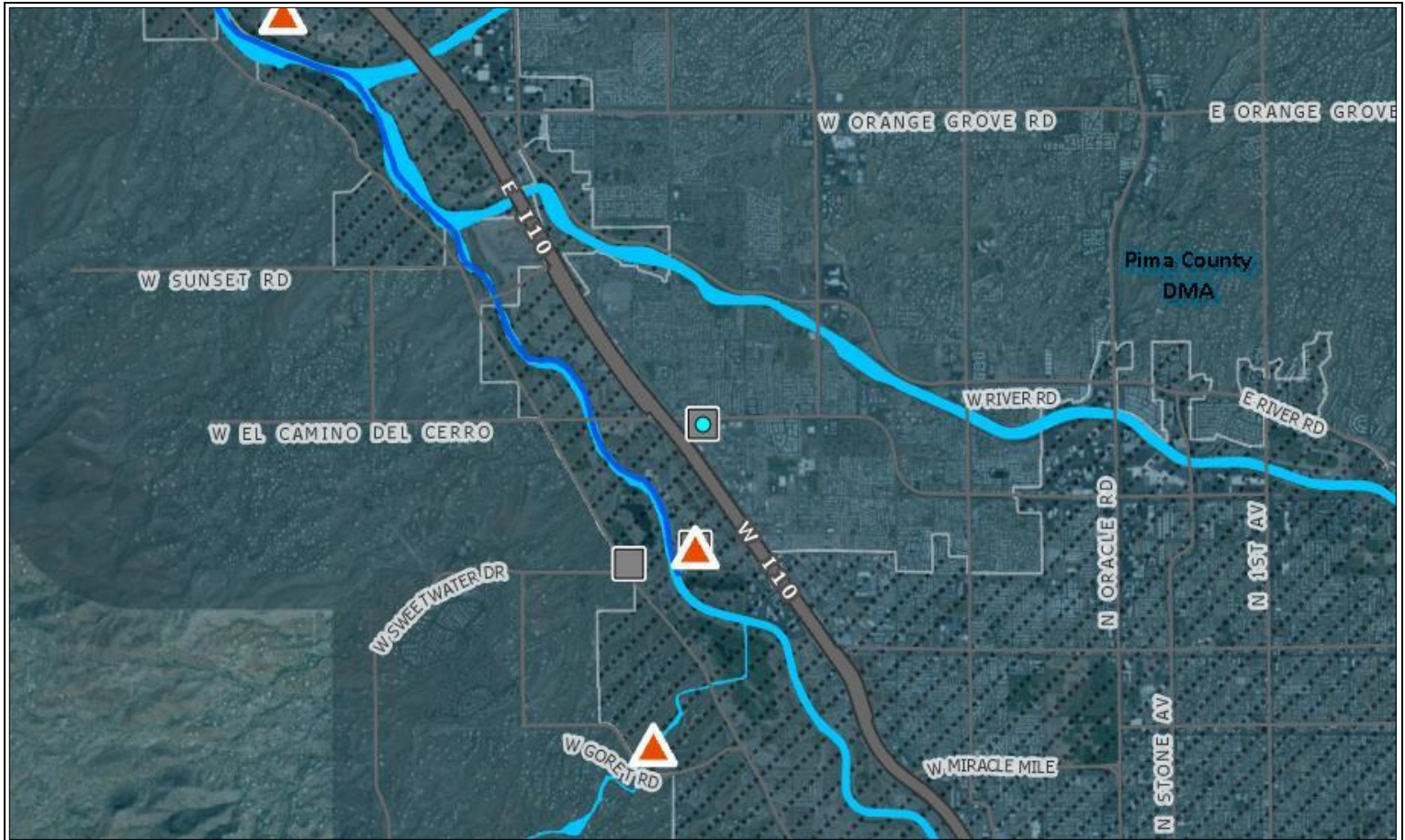


## Arizona Feeds Poultry Farm - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Arizona Feeds Poultry Farm and Surrounding Area





## Facility Details

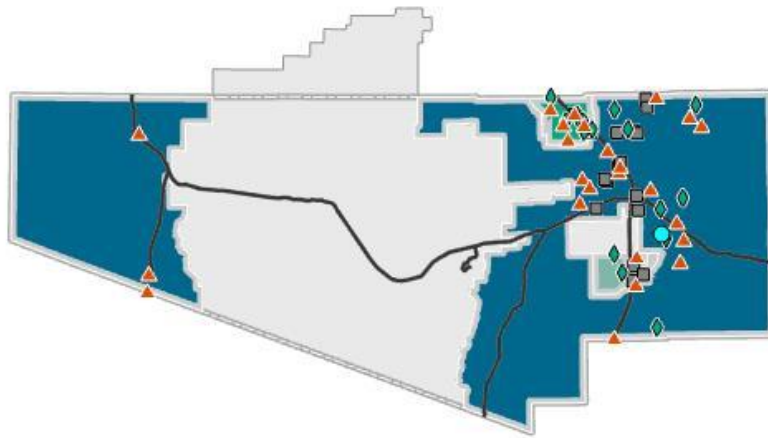
<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Arizona Feeds Poultry Farm	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Tucson, AZ - 2729 W Ruthrauff Rd, 0.2 miles east of N Hwy Dr./W. Ruthrauff Rd. intersection	Not Available	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Built/Proposed prior to DMA Sponsorship requirement
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Built Prior to 208 Requirement
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Identified in original 208 Plan but no longer exists		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		

<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
None

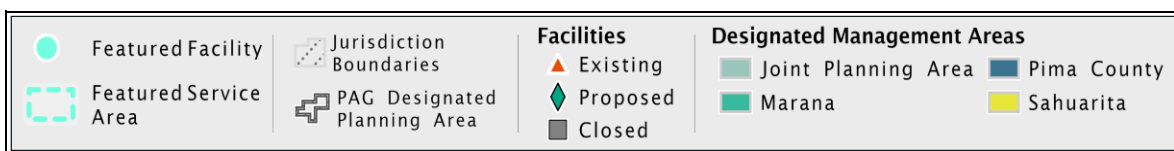
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

## Arizona State Prison - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Arizona State Prison and Surrounding Area



**Facility Details**

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Arizona State Prison	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
10000 S Wilmot Rd, Tucson, AZ 85734	Arizona Department of Corrections	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Built/Proposed prior to DMA Sponsorship requirement. Built inconsistent with the 208 Plan.
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not available	Not available	Inconsistent
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	0	0
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
The wastewater treatment facility which served the Arizona State Prison on South Wilmot Road. This facility was constructed despite the fact that it was not part of the 208 Plan and no 208 Plan Amendment was completed. The facility remained inconsistent with the 208 Plan until its closure. The prison should have been served by Pima County, which is the DMA for the area. Flows are now conveyed to the Pima County public sewer collection system.		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Past method unknown		
<b>Discharge Method and Location</b>		
Past method unknown		
<b>Future Conditions</b>		

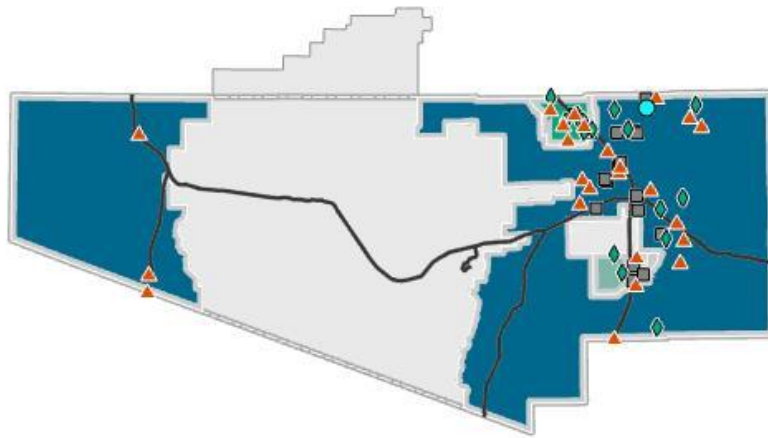
Not consistent with 208 Plan — no expansions allowed
<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
None

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

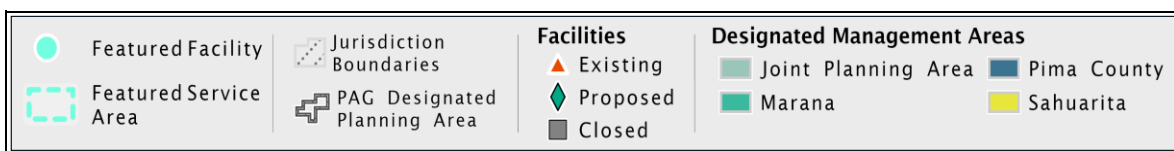
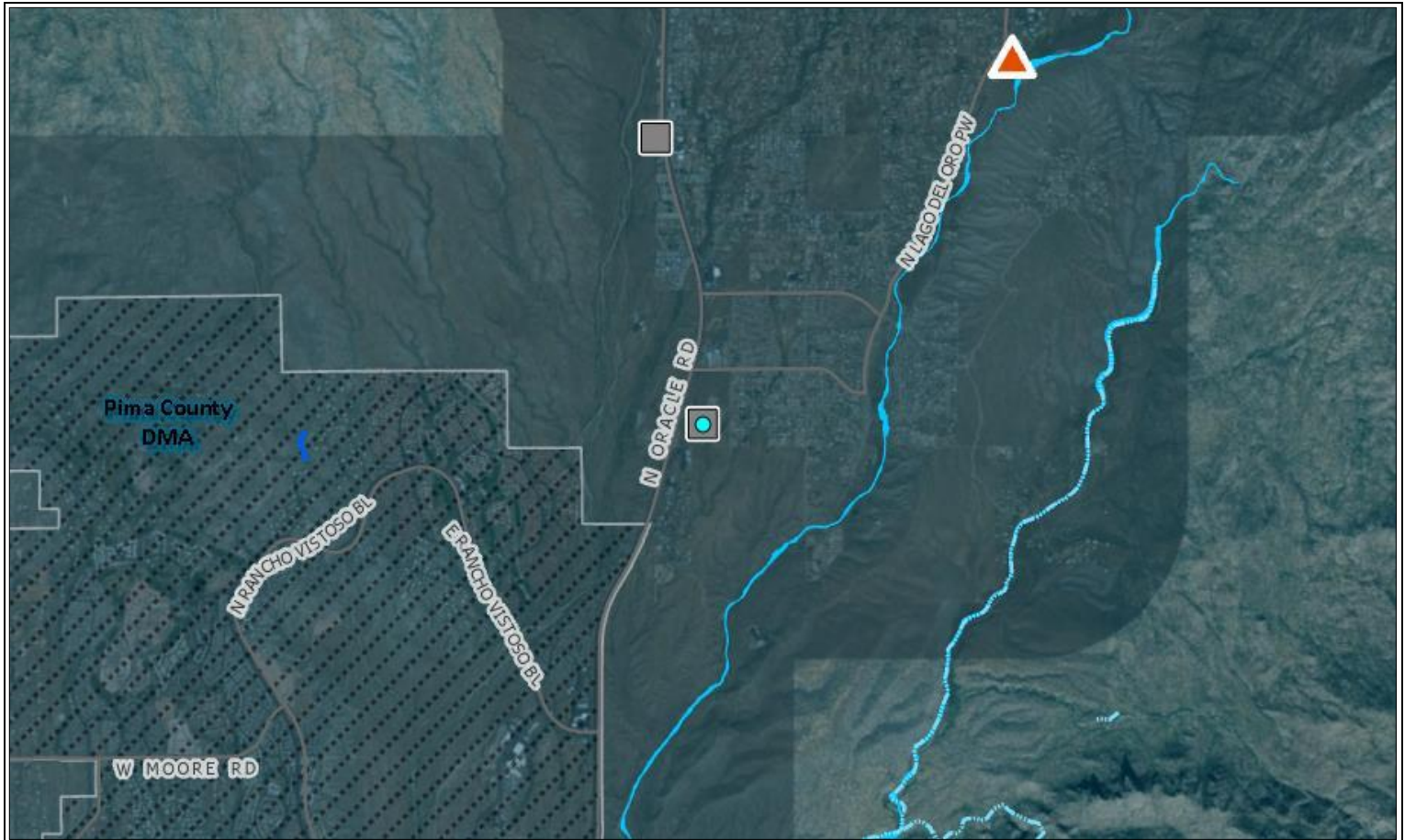


## Arizona Youth Center - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Arizona Youth Center and Surrounding Area



## Facility Details

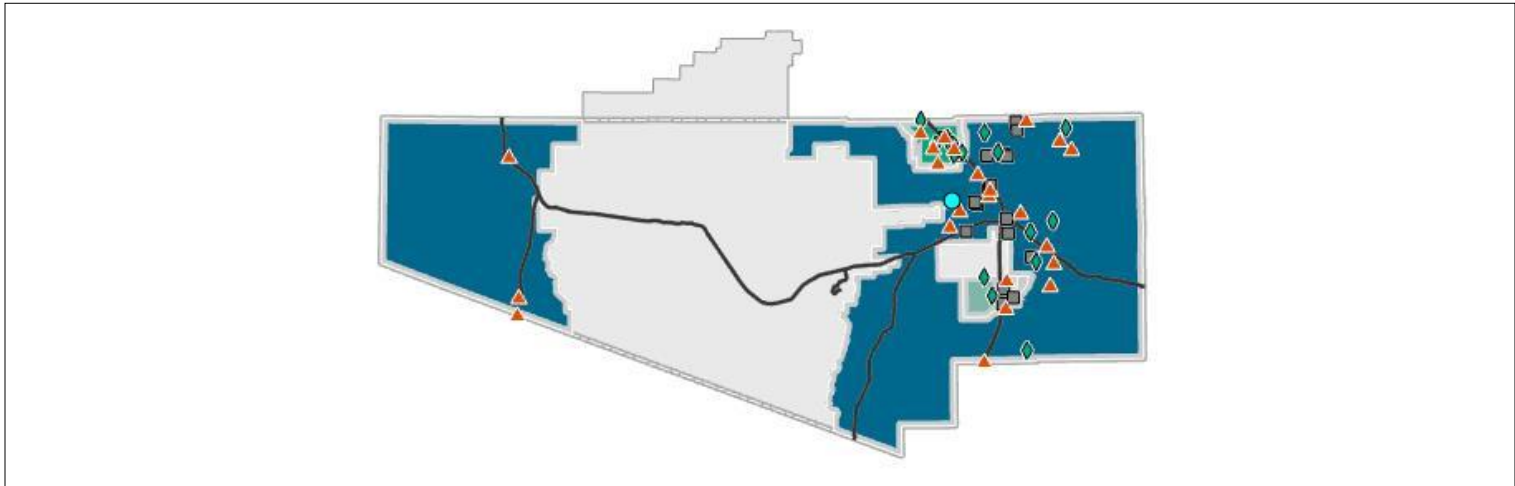
<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Arizona Youth Center	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Catalina, AZ - Off N. Oracle Rd. 0.3 miles south of N. Oracle Rd./E Wilds Rd. intersection	Not Available	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Built/Proposed prior to DMA Sponsorship requirement. In the Pima County DMA Boundary
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Built Prior to 208 Requirement
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Wastewater treatment facility point source identified in the original 1978 PAG 208 Plan no longer exists. (208 Plan Update 2006, pg 105)		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		

<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
None

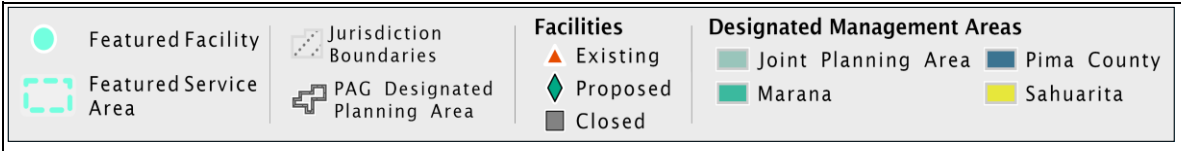
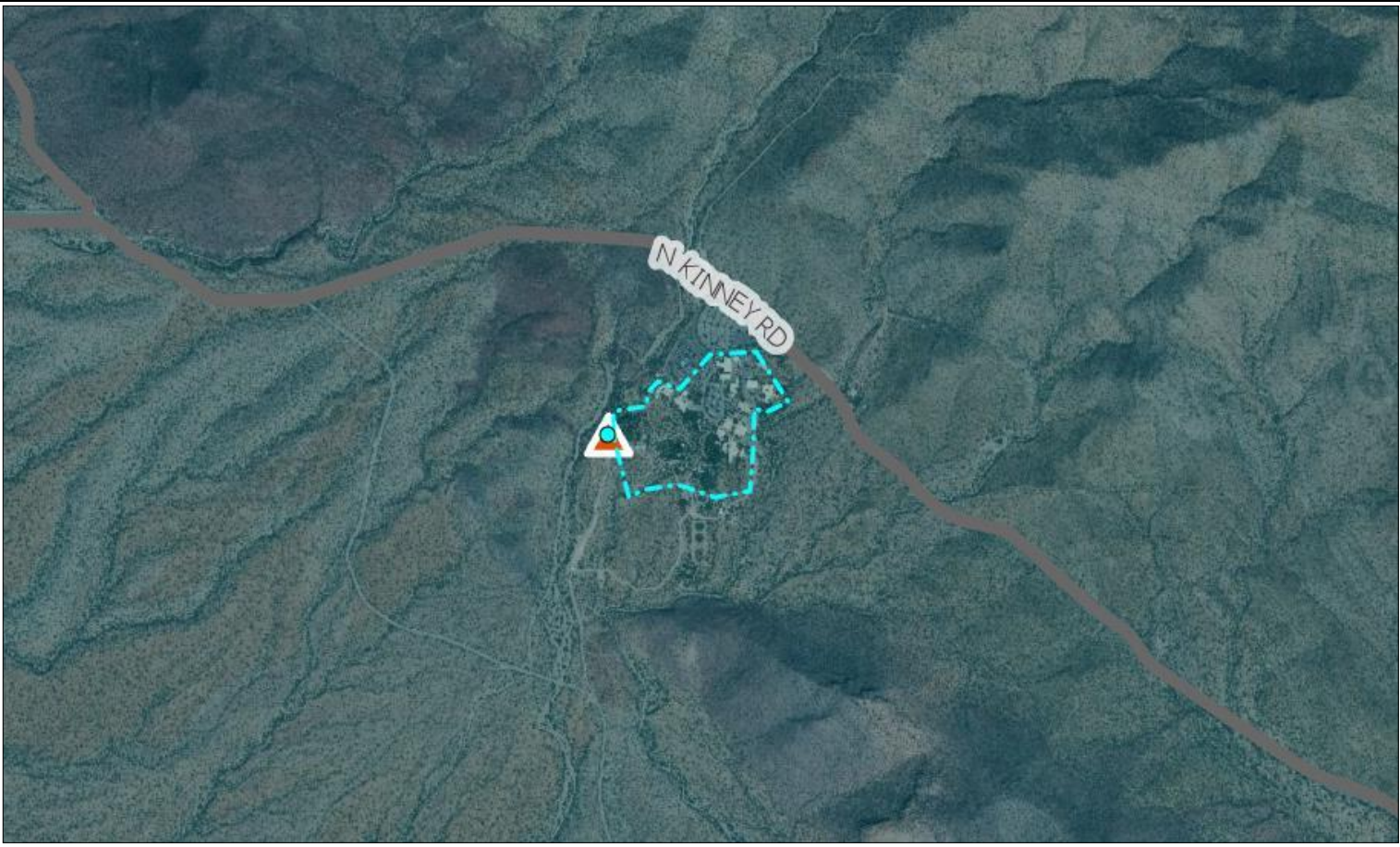
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

Arizona-Sonora Desert Museum - Within Pima County DMA

Wastewater Reclamation Facilities in the PAG Region



Arizona-Sonora Desert Museum and Surrounding Area





## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Arizona-Sonora Desert Museum	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
2021 N Kinney Rd, Tucson, AZ 85743	Arizona-Sonora Desert Museum non-profit	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-100628	Unknown	Not Available
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.015 MGD	Unknown	Unknown
<b>Watershed</b>		
Brawley Wash		
<b>General Description</b>		
<p>The Arizona-Sonora Desert Museum (ASDM) has its own wastewater treatment facility in the Tucson Mountains west of Tucson. The facility serves ASDM, which is a zoo, natural history museum and botanical garden. ASDM also has a restaurant, a gift shop and several snack shops. The wastewater treatment facility only serves ASDM. It does not serve any off-site properties. The facility operates pursuant to Aquifer Protection Permit number P100628, which specifies a maximum monthly average domestic wastewater flow of 15,000 gallons per day.</p>		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
<p>The treatment system consists of settling tanks, a flow equalization basin, subsurface leach beds, recirculating sand filter and disposal trenches. Sludge is hauled off-site for disposal.</p>		
<b>Discharge Method and Location</b>		
Unknown		
<b>Future Conditions</b>		



## PAG 208 Plan - 2020

No expansion of service area anticipated; if necessary, treatment capacity could be expanded to continue serving the museum grounds if greater wastewater volumes are generated in the future.

### Amendments

None

### Links

None

### Active Notes\*

The ASDM WWTP was previously operated by Pima County Wastewater Management Department but has been turned over to the ASDM. The facility APP identifies Pima County Parks and Recreation Department as the landowner of the facility site and Westland Resources Inc. as the operator.

### Historical Notes\*

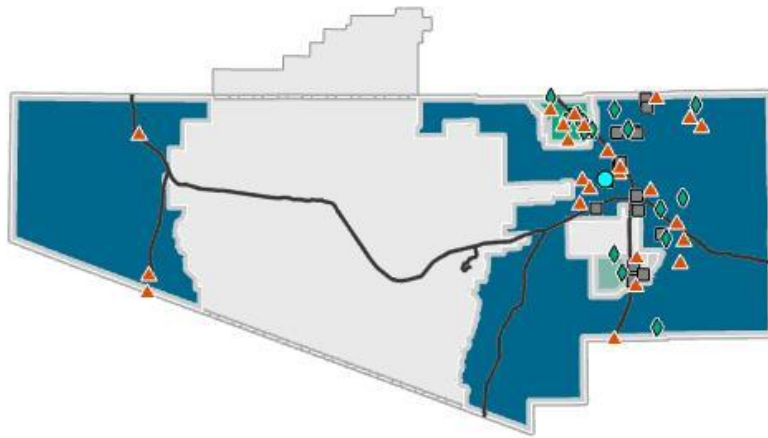
None

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

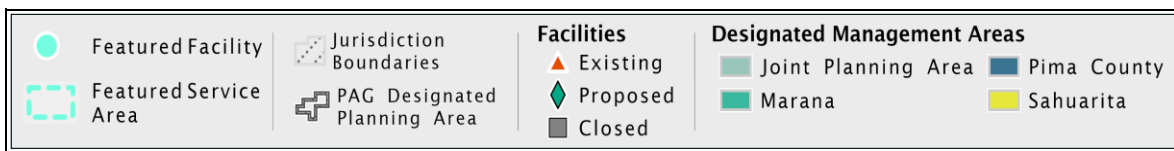
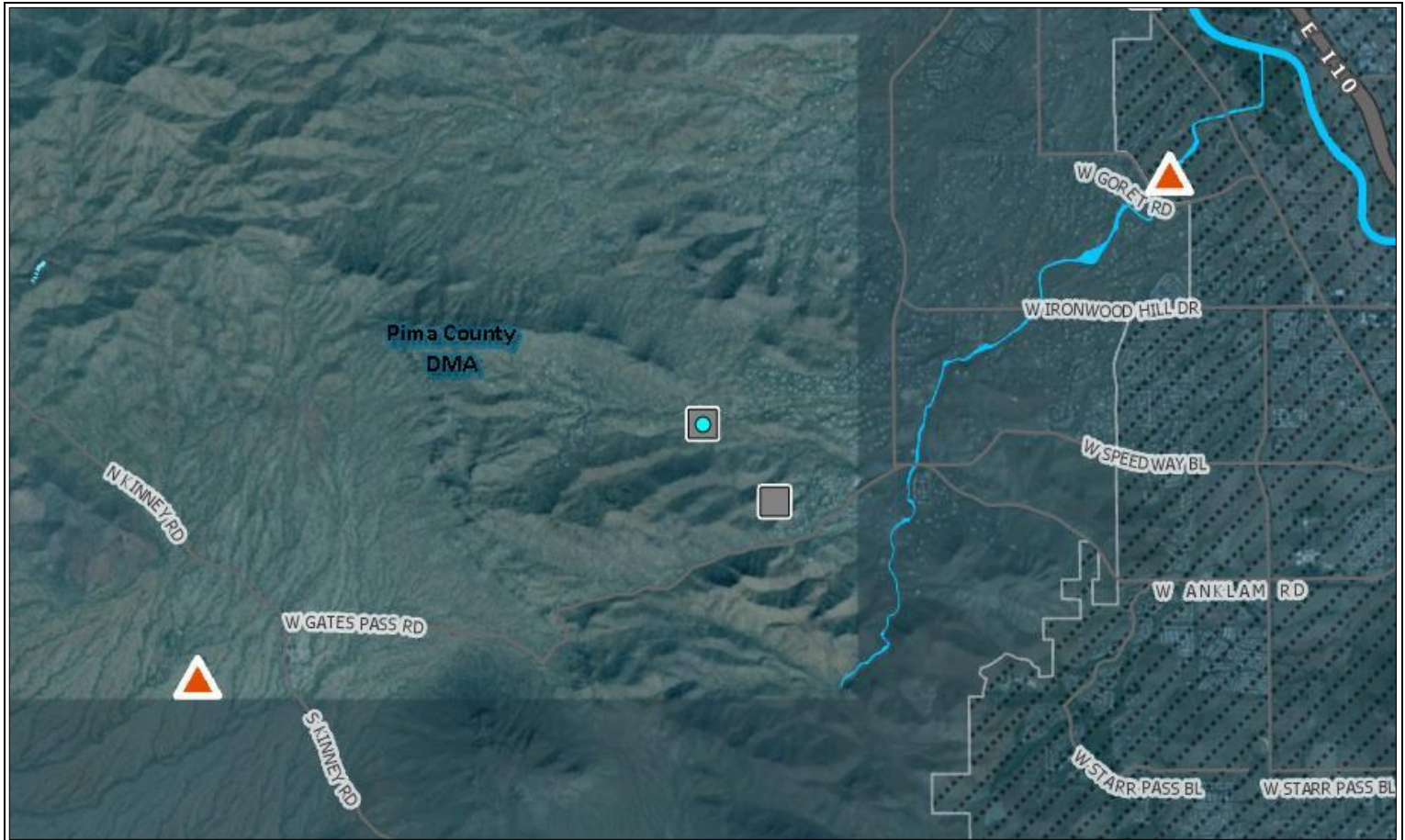
Data Last Updated: 10/22/2019

## Asthmatic School - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Asthmatic School and Surrounding Area



## Facility Details

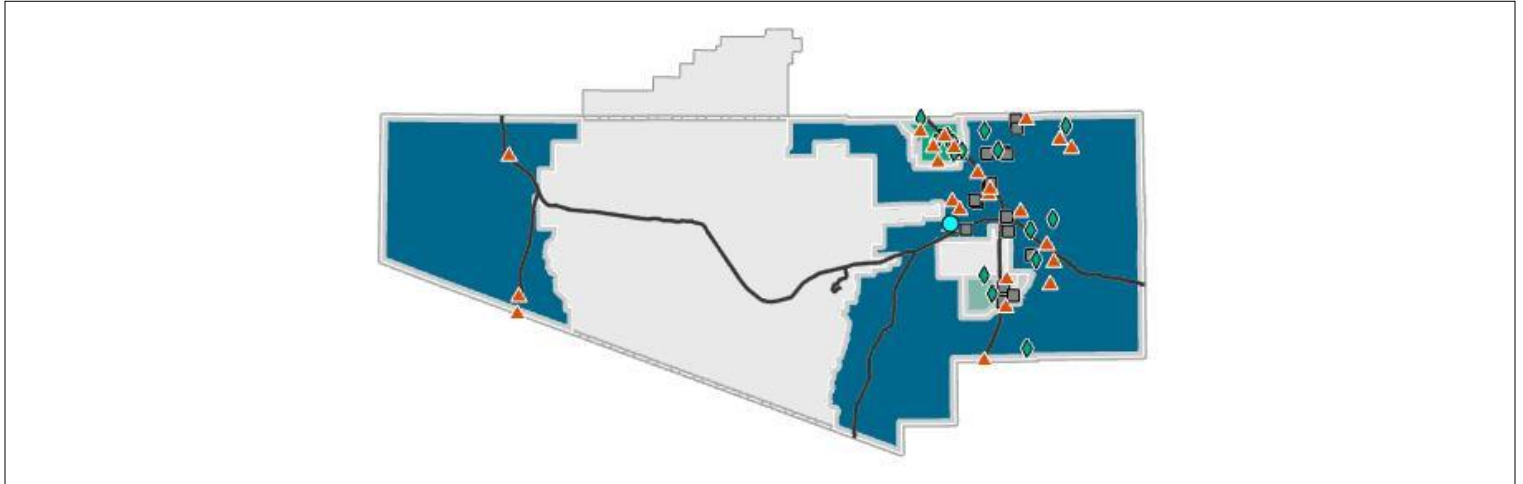
<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Asthmatic School	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Near Tucson, AZ - 5601 W Trails End Rd, 1.3 miles west of N. Camino de Oeste/W. Trails End Rd. intersection	Not Available	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Built/Proposed prior to DMA Sponsorship requirement. In the Pima County DMA Boundary.
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Built Prior to 208 Requirement
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Wastewater treatment facility point source identified in the original 1978 PAG 208 Plan no longer exists. (208 Plan Update 2006, pg 105)		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		

<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
None

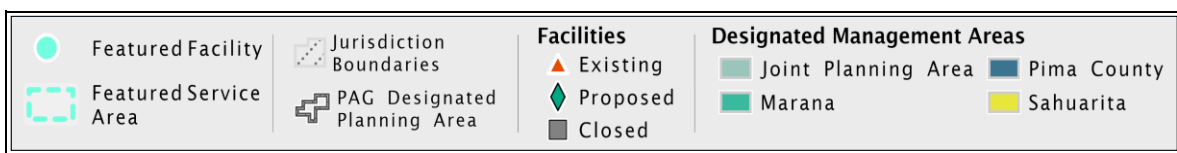
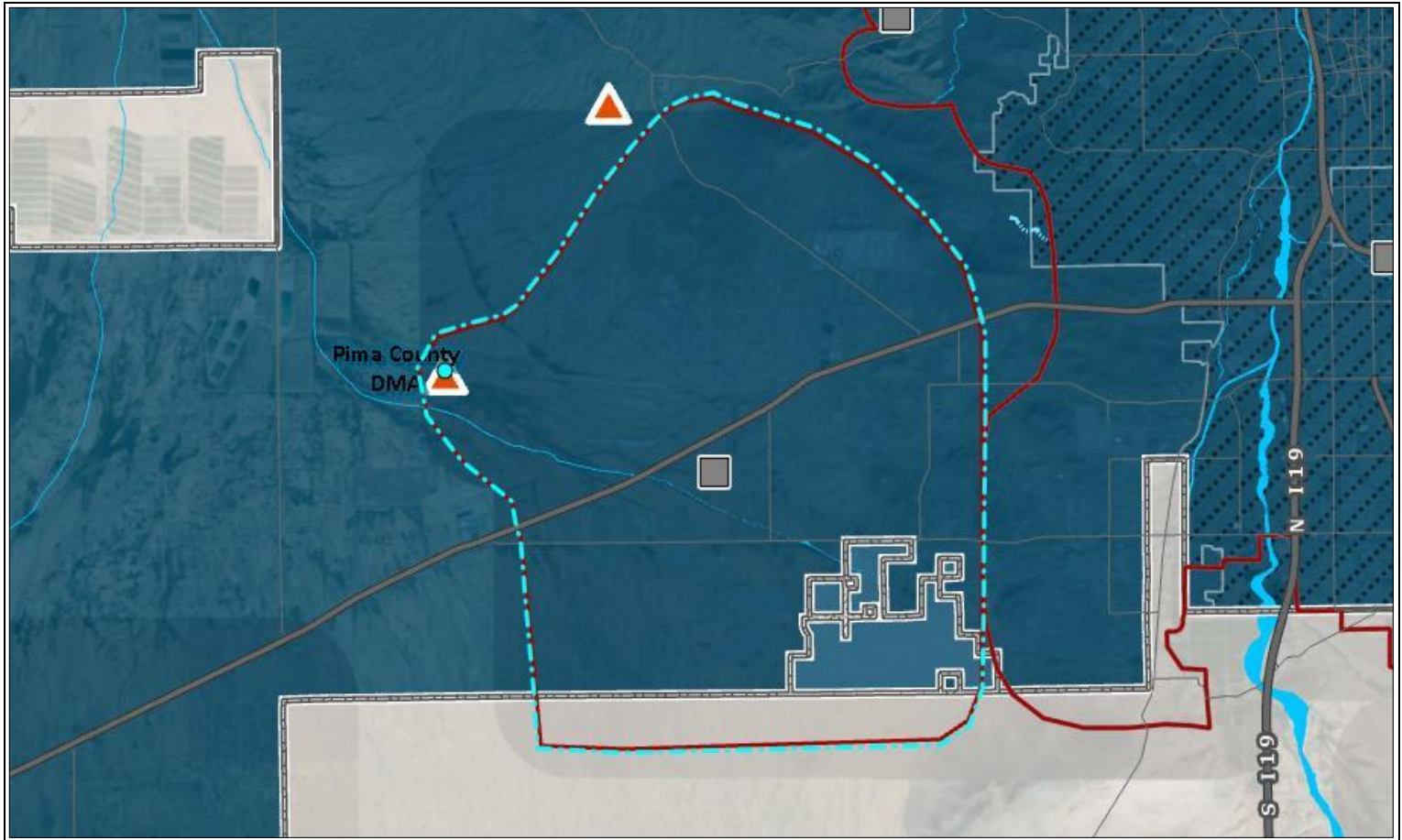
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

## Avra Valley - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Avra Valley and Surrounding Area





## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Avra Valley	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Near Tucson Estates, AZ - North side of W. Snyder Hill Rd 0.5 miles west of S. Airline Rd./ W. Snyder Hill Rd. intersection	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-100642	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
4 MGD	The current capacity is 4.0 MGD	2015 average monthly flow was 1.27 MGD (2016 Wastewater Facility Plan). 2016 average monthly flow was 1.29 MGD. 2017 average monthly flow was 1.32 MGD.
<b>Watershed</b>		
Brawley Wash		
<b>General Description</b>		
The Avra Valley WRF is owned and operated by Pima County. It is located approximately 20 miles southwest of Tucson in southern Avra Valley, north of Highway 86 and east of Three Points. This is a semi-rural but rapidly growing area. The facility has operated since 1967. (2016 Wastewater Facility Plan)		
<b>Service Area Boundaries</b>		
The current service area for the Avra Valley WRF is roughly centered on the intersection of Highway 86 (Ajo Way) and San Joaquin Road. From this point the service area extends roughly four miles to the north, four miles to the south, four miles to the west and three miles to the east. The service area is approximately 24 square miles and consists of 121 miles of public sewer line. (2016 Wastewater Facility Plan).		
<b>Service Area Population</b>		
The service area currently serves approximately 15,875 people based on the 2015 average monthly flow of 1.27 MGD. (2016 Wastewater Facility Plan)		
<b>Service Area Land Uses</b>		
Land uses in the service area include rural residential (70.7 percent), urban residential (9.4 percent), commercial (1.5 percent), industrial (1.7 percent), multiple use (1.0 percent), specific plan (4.7 percent), and federal and state land (10.9 percent).		
<b>Treatment Method</b>		
This facility uses a biological nutrient removal, oxidation ditch (BNROD) treatment process. The process includes a lift station, headworks with screens and grit removal, a lined emergency influent storage basin, two oxidation ditches, secondary clarifiers, sand filters and the UV treatment system. The oxidation ditches have a capacity of 2.0 MGD each for a total of 4.0 MGD and are used to achieve nitrification and denitrification with surface aeration. Disinfection is achieved through sand filtration and UV		

treatment. The secondary clarifiers include a return activated sludge and wasting system. Solids are hauled offsite for treatment at Tres Rios WRF. (2016 Wastewater Facility Plan)

### Discharge Method and Location

Effluent is mainly discharged by percolation through five recharge basins. Effluent can be discharged to the Black Wash under the AZPDES permit, but this is not currently being done. Effluent can be reused on site for irrigation and dust control. The Avra Valley WRF is a permitted Underground Storage Facility and receives recharge credits through recharging. The facility is permitted for up to 4,480 acre feet of credit. Sludge is hauled to Tres Rios WRF for treatment (2016 Wastewater Facility Plan)

### Future Conditions

Population projections have the plant reaching 100% capacity after 2035. Full capacity population is 50,000 people. Plans for the facility mainly focus on monitoring population growth and development in order to plan for capacity expansions as needed. (2016 Wastewater Facility Plan).

### Amendments

None

### Links

[https://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan\\_2016.pdf](https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan_2016.pdf)

### Active Notes\*

None

### Historical Notes\*

Average daily flow for March 2005 was 1.016 MGD (Pima County WWM, 2005b).

CR-15: From AZDEQ List of Submitted CRs "Avra Valley WRF AZPDES Renewal" (November 01, 2013) but no additional information was found at this time (208 Plan Update 2020)

CR-6 June 12, 2008 "Consistent as per pg 132 of 2006 Plan Update: a 4.0 MGD facility as an expansion to the existing 2.2 MGD facility. The county may make a future management decision to either continue to use, to rehabilitate and modernize, or take out of service the 2.2 MGD facility."

Effluent disposal consists of on-site irrigation reuse, evaporation, percolation, and discharge to Black Wash via a spray field in accordance with an AZPDES permit. Use of effluent for a riparian restoration project has been proposed. According to Pima County Wastewater (2005a), sludge is returned to the oxidation ditch or wasted to thickeners and then stored in drying beds. (PAG 208 Plan Update 2006)

2007 CR-4 additional discharge point finding "not inconsistent."

Expansion and upgrade projects incorporating Best Available Demonstrated Control Technology (BADCT) were completed at Avra Valley Wastewater Treatment Facility WWTF in 2007 and 2009. (2016 Wastewater Facility Plan)

Prior to expansion to 4.0 MGD in 2009, flows at this facility were nearing the facility's 1.2 MGD capacity. According to Pima County's draft facility plan update, the existing facility at the time could be operated at 2.2 MGD with operational and equipment modifications. The planned expansion of the facility was to add 4.0 MGD of capacity to serve existing and planned developments in the area while taking the existing facility out of service for rehabilitation.

The current design capacity of the Avra Valley WWTF is 1.2 MGD (Pima County WWM, 2005b). CR-6 June 12 2008 finding is "consistent: a 4.0 MGD facility as an expansion to the existing 2.2 MGD facility. The county may make a future management decision to either continue to use, to rehabilitate and modernize, or take out of service the 2.2 MGD facility."

The estimated population served by the Avra Valley WWTF in 2005 was 12,104. Average daily flow for March 2005 was 1.016 MGD. (Pima County WWM, 2005b)

The process is described in The Pima County Effluent Generation and Utilization Report 2004 (Pima County WWM, 2005a) as follows:

Influent is equalized in a 1.37 million gallon basin prior to being pumped to a channel that discharges into the 1.2 MGD oxidation ditch. The process is based on extended 93 aeration, nitrification, and de-nitrification within the oxidation ditch by cycling the aeration on and off. The activated sludge mixed liquor flows into two secondary clarifiers. . . . The clarifiers are designed to provide quiescent conditions for the sludge to settle. (PAG 208 Plan Update 2006)

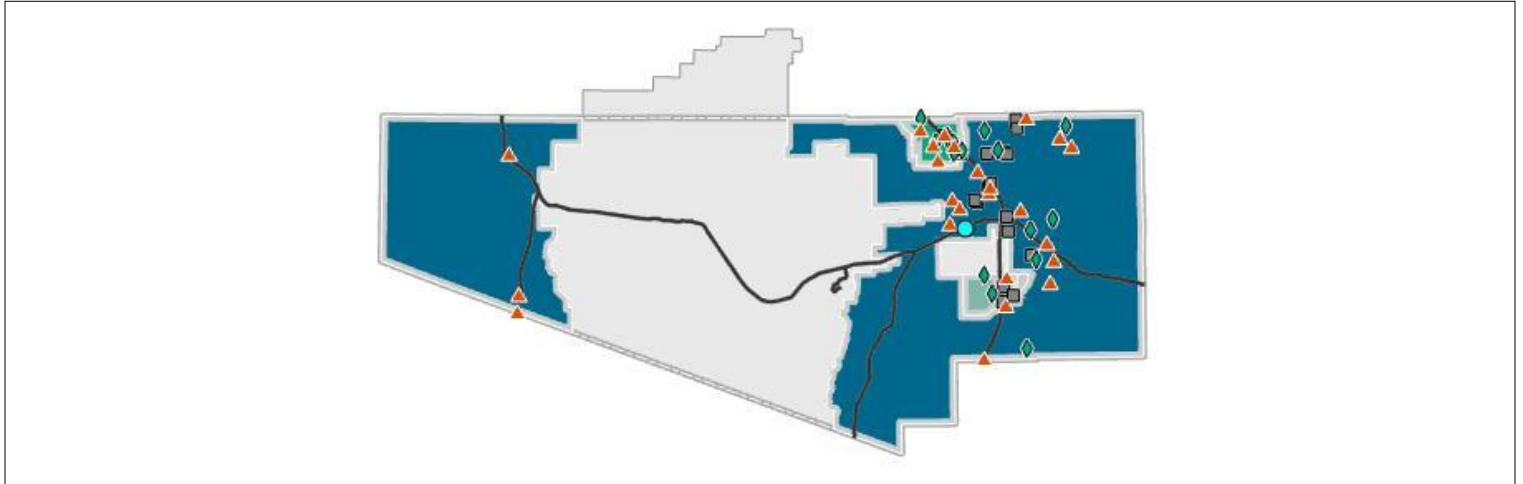
2007 CR-4 adding filtration and UV disinfection and adding percolation basins, finding "not inconsistent."

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

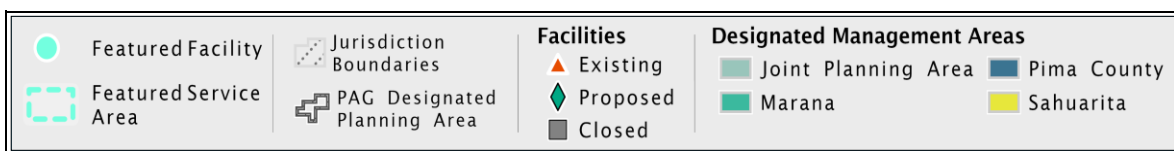
Data Last Updated: 12/10/2019

## Branding Iron - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Branding Iron and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Branding Iron	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Valencia West, Az - South side of W. Drexel Rd., 0.75 miles west of S. Camino Verde/W. Drexel Rd. intersection	Not Available	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Built/Proposed prior to DMA Sponsorship requirement
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Built Prior to 208 Requirement
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Brawley Wash		
<b>General Description</b>		
Wastewater treatment facility point source identified in the original 1978 PAG 208 Plan; no longer exists. (208 Plan Update 2006, pg 105)		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		

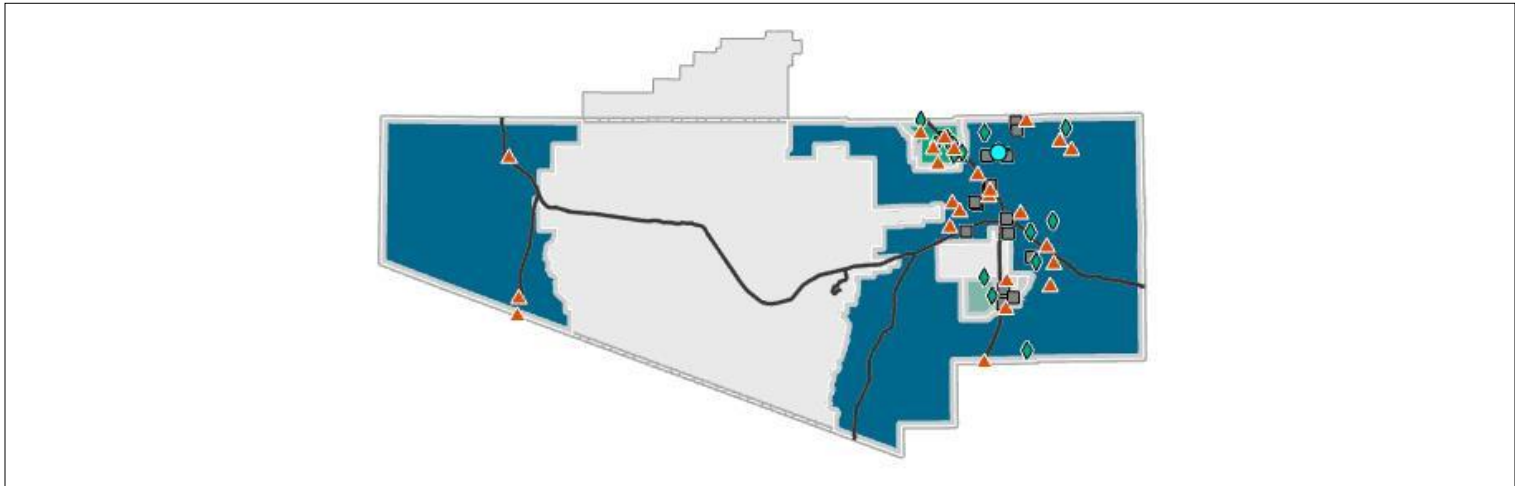


<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
None

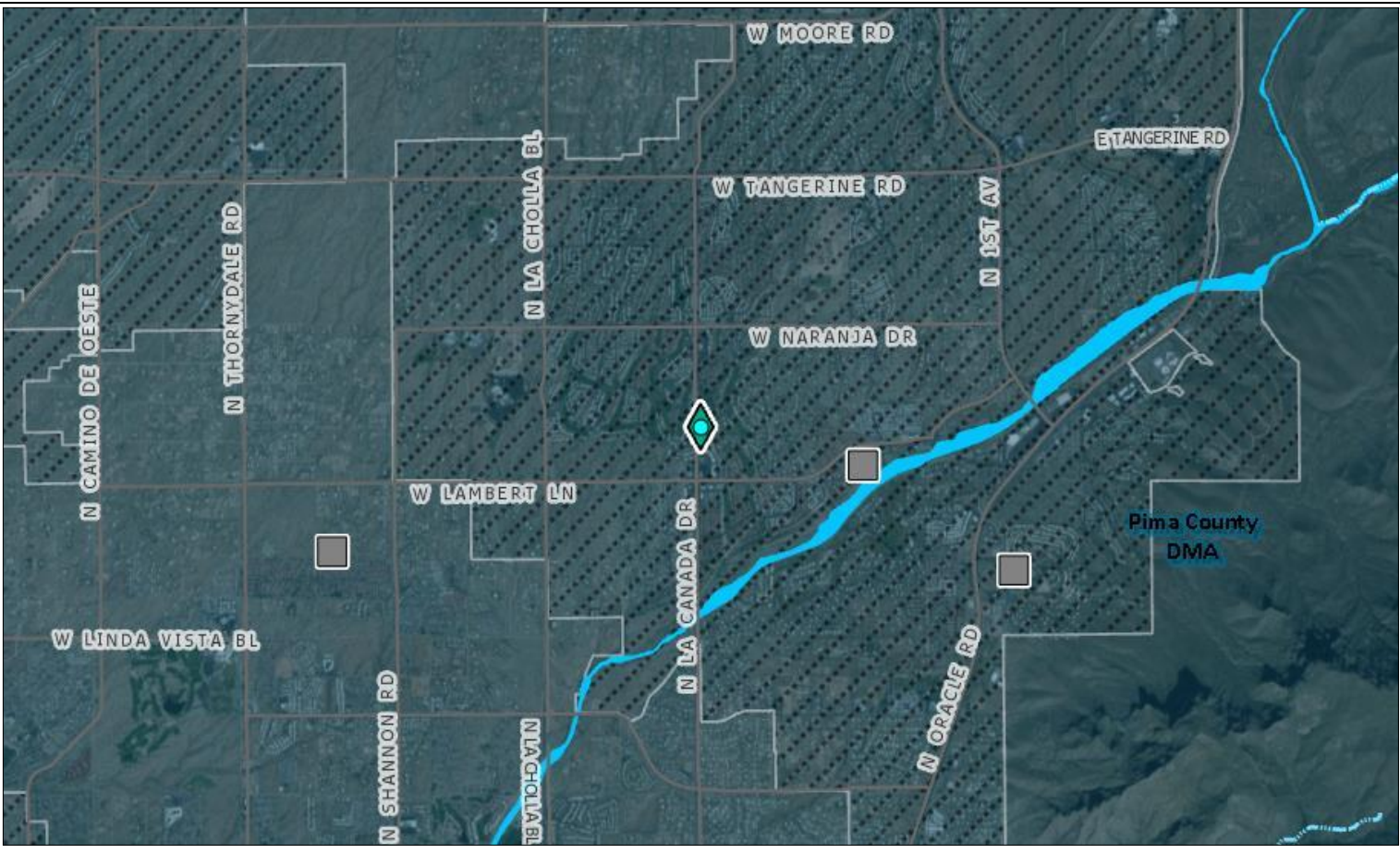
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.











Broadmoor a.k.a. Canada Hills - Within Pima County DMA

Wastewater Reclamation Facilities in the PAG Region



Broadmoor a.k.a. Canada Hills and Surrounding Area



	Featured Facility		Jurisdiction Boundaries		Existing		Proposed		Closed		Joint Planning Area		Pima County		Sahuarita
	Featured Service Area		PAG Designated Planning Area												



## Facility Details

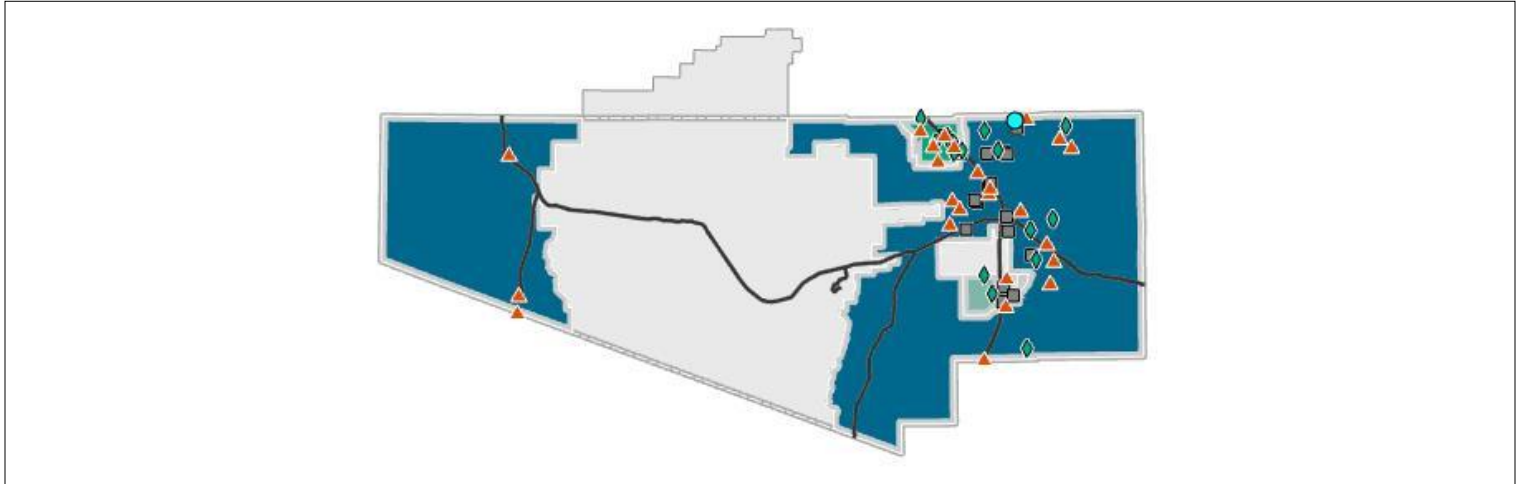
<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Broadmoor a.k.a. Canada Hills	No	No Longer Planned
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Oro Valley, near Lambert Ln, Naranja Dr, La Cañada Dr.	Foothills Utility company	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Pending Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
1 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Not Available		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		
<b>Amendments</b>		

ID	Title	Author	Year	Document
9	Foothill Utility Wastewater Reclamation Facility Broadmoor Golf Course	Dooley-Jones & Associates	1984	<a href="#">Link</a>
11	Areawide Wastewater Management Plan Point Source Update	PAG	1985	<a href="#">Link</a>
14	208 Plan Amendment for Canada Hills Development Company L.P.	Arthur Beard Eng	1987	<a href="#">Link</a>
<b>Links</b>				
None				
<b>Active Notes*</b>				
Proposed by Atlas-Glenex but never built. Superseded by amendment {14} in 1987 calling for connection to regional system instead of construction of new facility.				
<b>Historical Notes*</b>				
None				

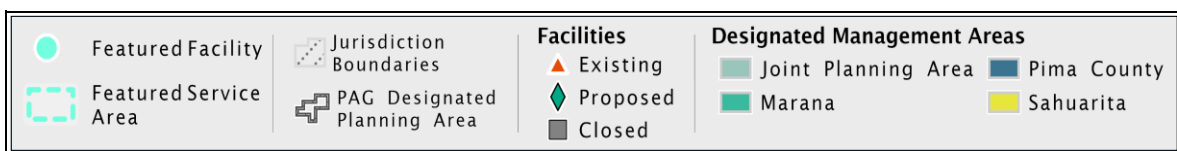
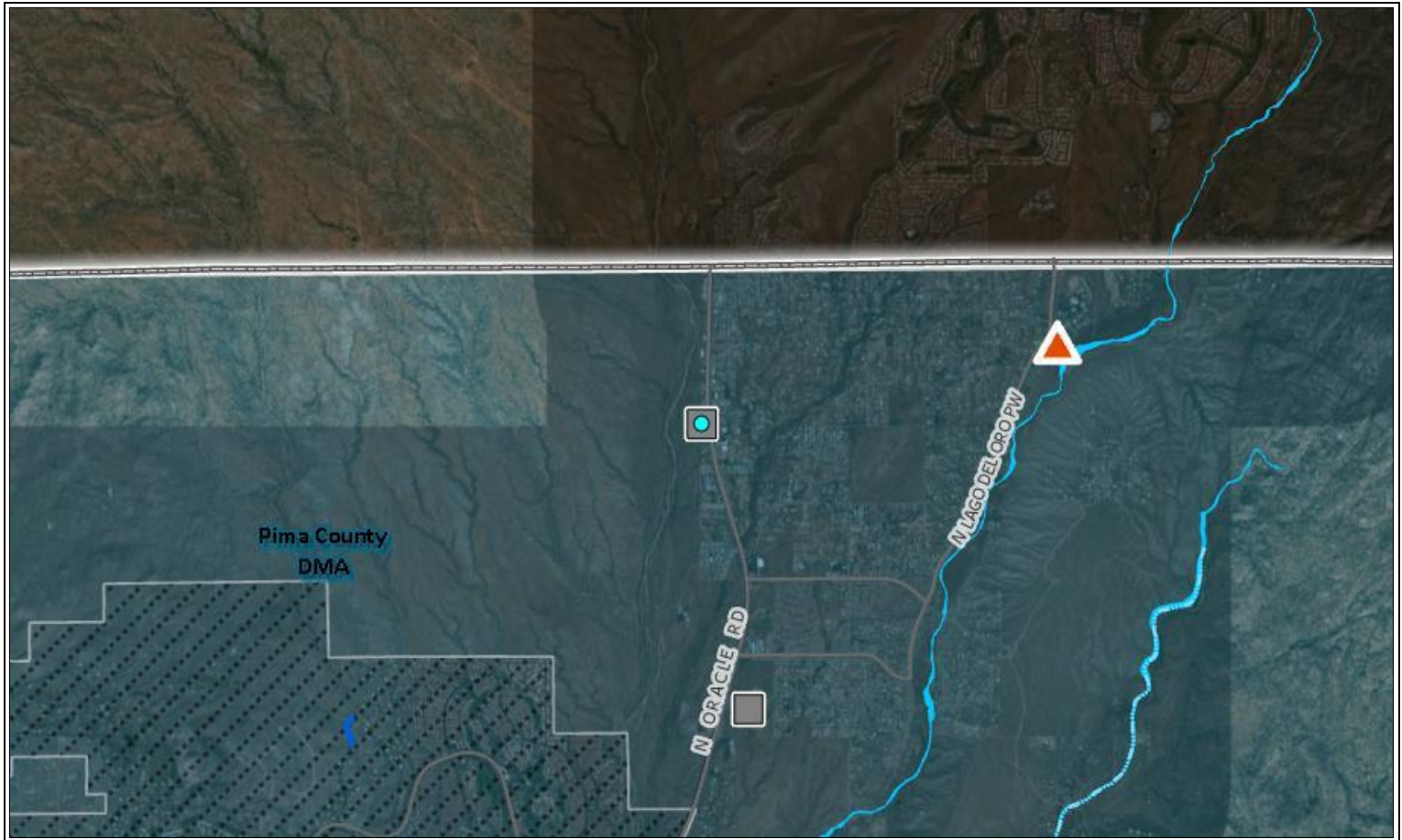
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

## Catalina - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Catalina and Surrounding Area





## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Catalina	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Catalina, AZ - 16001 N Oracle Rd., 1 mile south of N. Oracle Rd./E Edwin Rd. intersection	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Built/Proposed prior to DMA Sponsorship requirement
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.025 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Facility no longer exists. Recommended in 1982 for expansion or replacement at same site. Future regional facility proposed in 1982. 208 Amendment {13} in 1982 concluded that connection to existing regional facility via a new sewer line would be equally appropriate.		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		

Not Available

**Amendments**

<b>ID</b>	<b>Title</b>	<b>Author</b>	<b>Year</b>	<b>Document</b>
5	Domestic Point Source Water Quality Planning Update Report for the Upper Canada del Oro Area	PRC Toups for PAG	1982	<a href="#">Link</a>
13	Catalina 208 Consistency Report and Plan Amendment (one document 1985 and 1987)	Pima County Wastewater Management Department	1987	<a href="#">Link</a>

**Links**

None

**Active Notes\***

None

**Historical Notes\***

Existing at time, no longer exists. Recommended in 1982 for expansion or replacement at same site. Future regional facility proposed in 1982. 208 Amendment {13} in 1982 concluded that connection to existing regional facility via a new sewer line would be equally appropriate. Catalina, one mile south of Pinal County line, discharge to Big Wash via NPDES. 0.025 MGD.

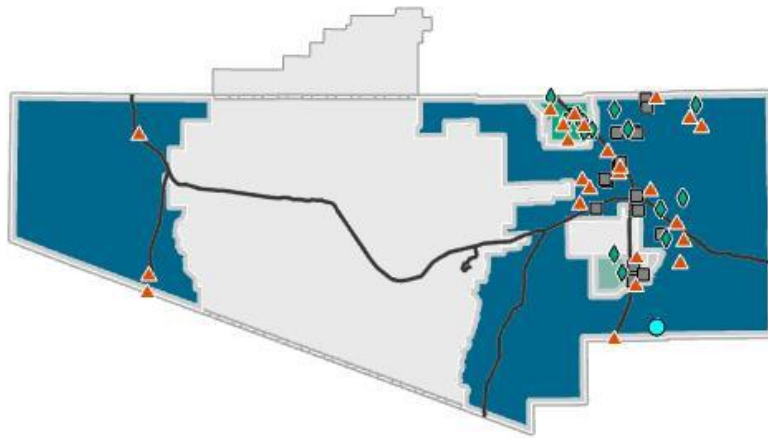
Wastewater treatment facility point source identified in the original 1978 PAG 208 Plan no longer exists. {208 Plan, pg 105}

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

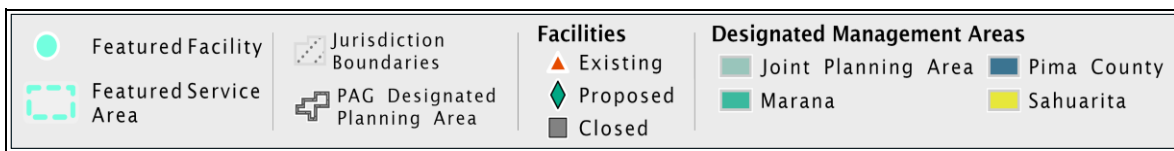
Data Last Updated: 12/10/2019

## Cielo Madera - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Cielo Madera and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Cielo Madera	No	No Longer Planned
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Near Green Valley, AZ - 1/3 mile west of S. Madera Canyon Rd, 2.4 Miles north of Pima Co./Santa Cruz Co. boundary	private	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	In the Pima County DMA Boundary
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Pending Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Not Available		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		

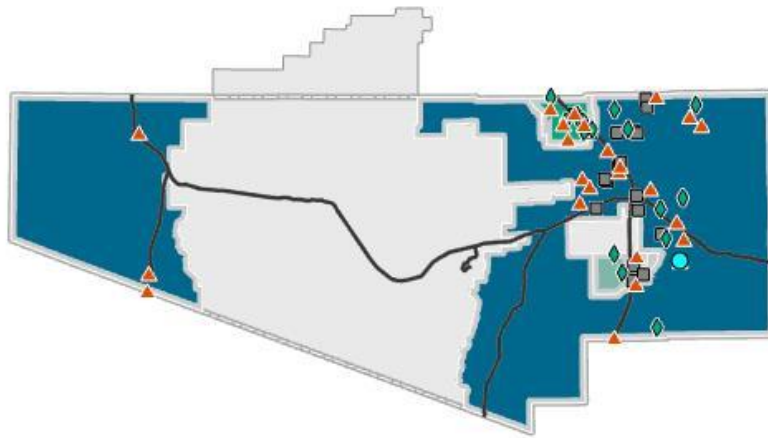
<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
CR-19 (March 16 2007): no final record of decision, but a memo from DRC to unanimously voted to continue hearing the proposal for the Cielo Madera cluster subdivision... no follow up records of this proposal have been found.

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

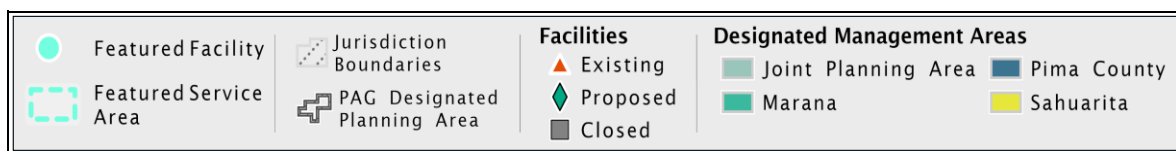
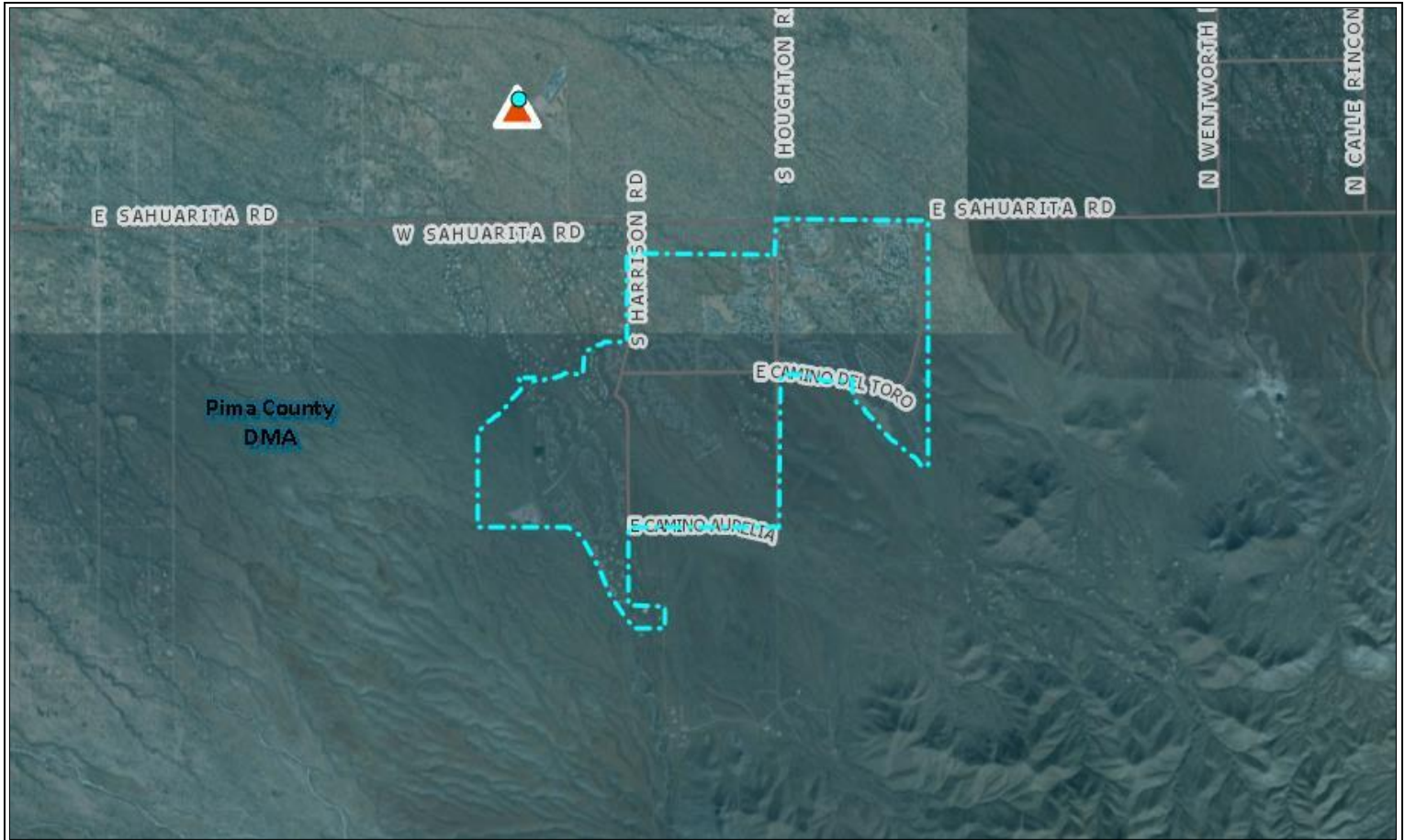


## Corona de Tucson - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Corona de Tucson and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Corona de Tucson	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
22 miles southeast of Tucson; northwest of the intersection of Sahuarita Rd and Houghton Rd; T 17 S, R 15 E, Sec 10	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-100644	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
1.3 MGD	The current permitted capacity is 1.3 MGD	2015 average monthly flow was 0.295 MGD. 2016 average monthly flow was 0.296 MGD. 2017 average monthly flow was 0.350 MGD.

### Watershed

Upper Santa Cruz

### General Description

The Corona de Tucson WRF is located southeast of Tucson in an area that is currently rural but facing very rapid population growth. The plant site is northwest of the intersection of Sahuarita Road and Houghton Road. It is owned and operated by Pima County. Because of rapid growth in the area, and forecasts that the rapid growth will continue, this facility was the subject of a PAG 208 Consistency Report approved by the Regional Council in December 2004.

### Service Area Boundaries

The service area is approximately 6.3 square miles with 42 miles of public sewer line. The service area mainly includes residential subdivisions near Sahuarita and Houghton Road (2016 Wastewater Facility Plan)

### Service Area Population

The plant serves approximately 4,400 people based on the 2017 average monthly flow of 0.350 MGD.

### Service Area Land Uses

Land uses include residential (48.1 percent), commercial (7 percent), multiple use (12.9 percent), and specific plan (31.7 percent).

### Treatment Method

Treatment methods include a lagoon system and a Biological Nutrient Removal Ditch (BNROD) system. The treatment system includes "headworks, grit removal, influent parshall flumes, two CLR oxidation ditches, submersible motive pumps, a jet aeration system, diversion structures, a RAS/WAS pump station, sludge holding tanks, a scum pump station and recharge basins." (2016 Wastewater Facility Plan)

### Discharge Method and Location

Effluent is recharged through percolation basins. The method of disinfection is Soil Aquifer Treatment (SAT). Sludge is hauled to Tres Rios WRF for treatment.

## Future Conditions

The remaining 1.0 MGD is allocated to development. This capacity has been secured via the Master Sewer Service Agreement (MSSA). Full capacity will be reached when 4,690 SFR additional units are connected to the system. Plans for the facility include monitoring growth and development to plan for potential expansions. PCRWRD is updating the odor control and SCADA/operations at the facility. (2016 Wastewater Facility Plan)

## Amendments

ID	Title	Author	Year	Document
26	Corona de Tucson WWTF Expansion Consistency Report	Pima County Wastewater and PAG	2004	<a href="#">Link</a>

## Links

[https://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan\\_2016.pdf](https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan_2016.pdf)

## Active Notes\*

There are no longer plans for the Corona de Tucson WRF to serve a master planned development called Hook M Ranch located west of the facility. This development will likely be provided sewer services via an extended public sewer line in Wilmot Rd. (correspondence with DMA contact 12/2018)

Upgrades incorporating Best Available Demonstrated Control Technology (BADCT) were completed at Corona de Tucson Wastewater Treatment Facility in 2007. (2016 Wastewater Facility Plan)

## Historical Notes\*

As of 2002, the only areas served by the Corona de Tucson WWTF were south of Sahuarita Road, including parts of the Santa Rita Ranch, Santa Rita Bel Air Estates and New Tucson subdivisions east of Houghton Road and a small part of the New Tucson subdivision west of Houghton Road (Figure 5-10). The service area has since expanded and continues to expand.

As of December 2004, discharge consisted of evaporation. Discharge via soil aquifer treatment will commence after approval of the new APP for the upgraded facility.

As of December 2004, when the PAG Regional Council approved a 208 Consistency Report for a facility expansion, the Corona de Tucson WWTF consisted of two facultative stabilization lagoons operating in series. However, plans were already under way at that time to upgrade the facility by installing an aeration system and implementing soil aquifer treatment to expand the treatment capacity to 300,000 GPD. Aerators already had been installed as of April 2005. As of December 2004, discharge consisted of evaporation. Discharge via soil aquifer treatment will commence after approval of the new APP for the upgraded facility.

Average daily flow in FY2003-04 was 0.064 MGD.

Existing. Consistency Report was for proposed expansion.

The Corona de Tucson facility was the subject of a 208 Consistency Report adopted by the PAG Regional Council in December 2004. The Consistency Report addressed a phased expansion to 1.3 MGD from 0.117 MGD. The latest population projections for the service area indicate that by 2030, flows to the facility will reach 2.63 MGD.

The plant serves approximately 3,700 people based on the 2015 average monthly flow of 0.295 MGD. (2016 Wastewater Facility Plan)

The population served by the Corona de Tucson facility is rather small but expected to grow rapidly. The 2000 Census showed a population of 993 for the Traffic Analysis Zones in which the service area is located. The 2005 PAG population projections for these zones indicate a population of 3,396. Average annual daily flows at the facility were 0.058 MGD in 2002 and 0.065 in 2003 (Pima County WWM and PAG, 2004). Assuming an average of 85 gallons of wastewater generated per person per day, this translates to a service area population of 682 in 2002 and 765 in 2003.

This facility previously had a design capacity of 0.117 MGD. Minor modifications have expanded the capacity to 0.300 MGD, pending approval of an APP for the increased capacity.

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

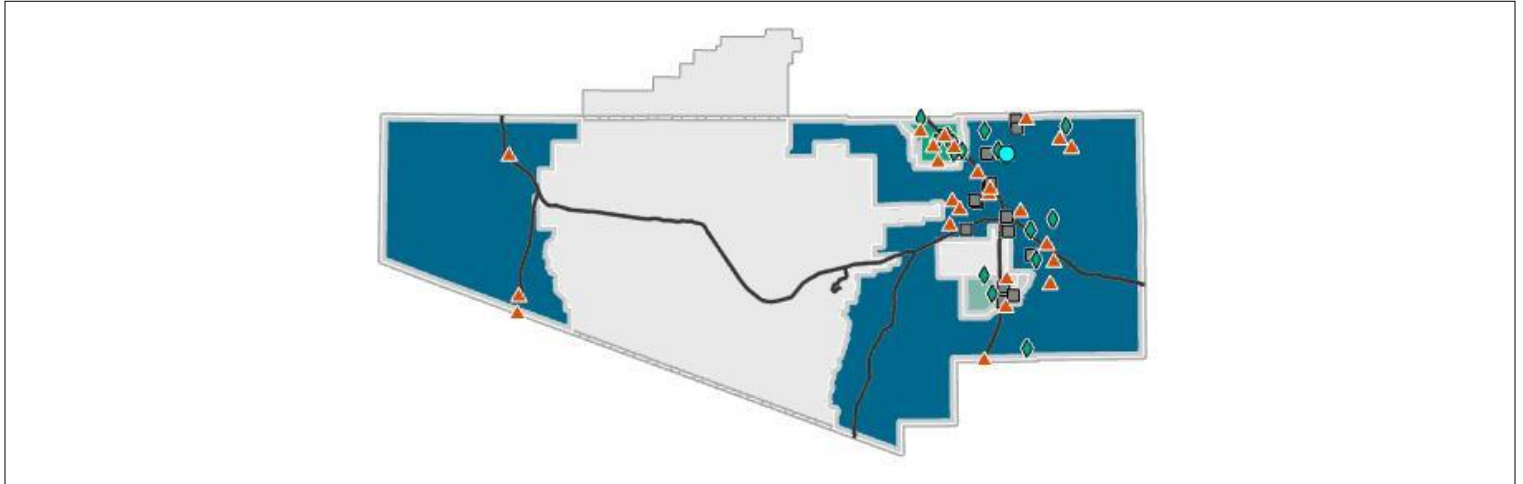
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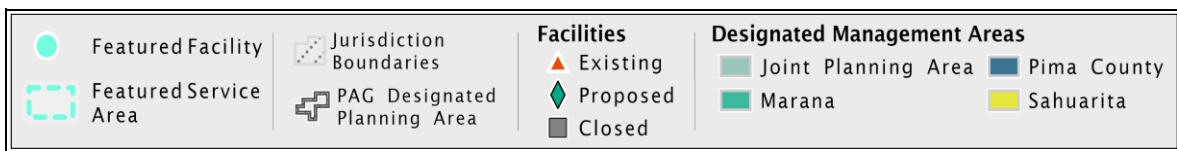
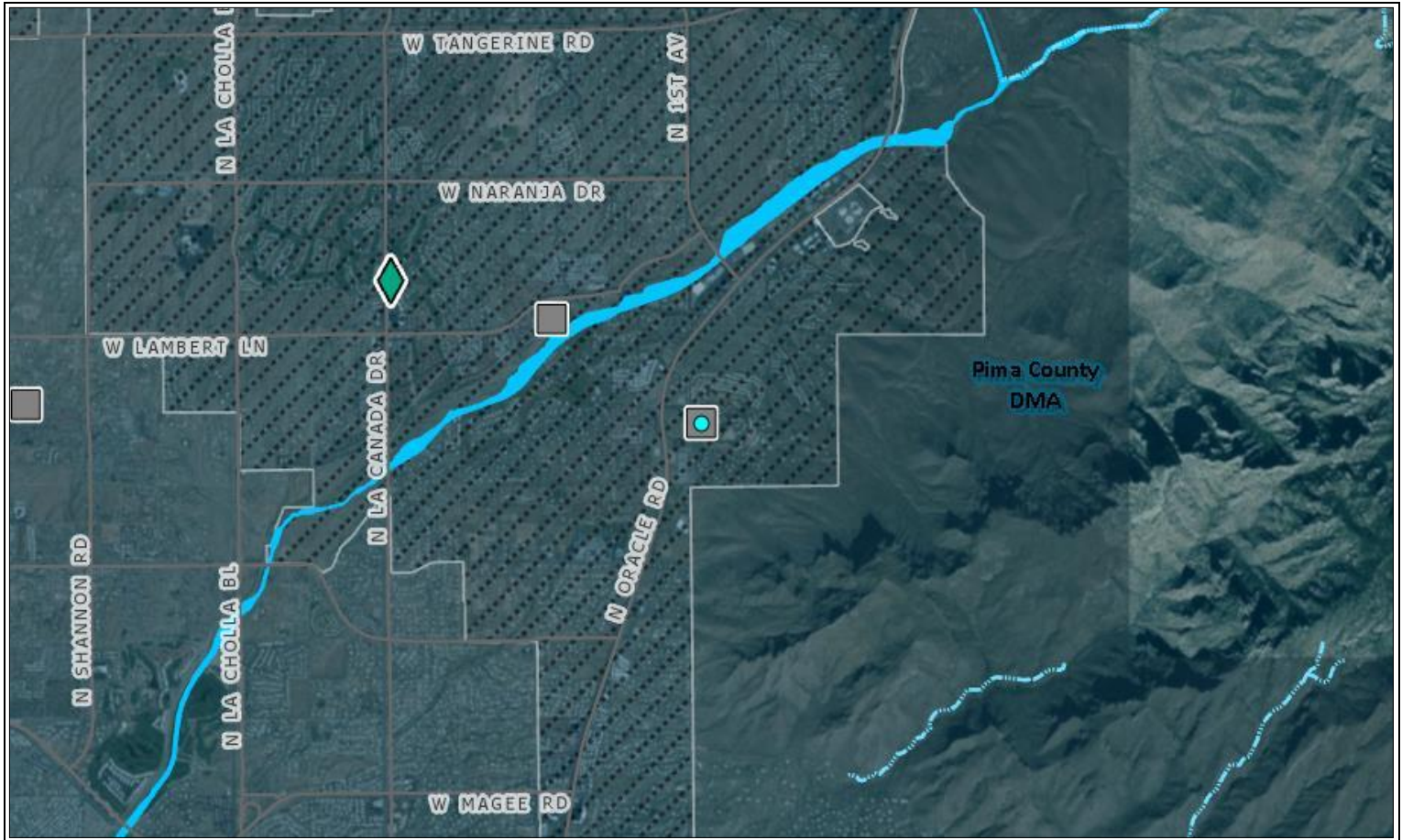


## El Conquistador - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### El Conquistador and Surrounding Area





## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
El Conquistador	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
T12S, R14E, west half of sec 18	Foothills Water Company	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Built/Proposed prior to DMA Sponsorship requirement
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
1 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Proposed and constructed; now closed.		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		

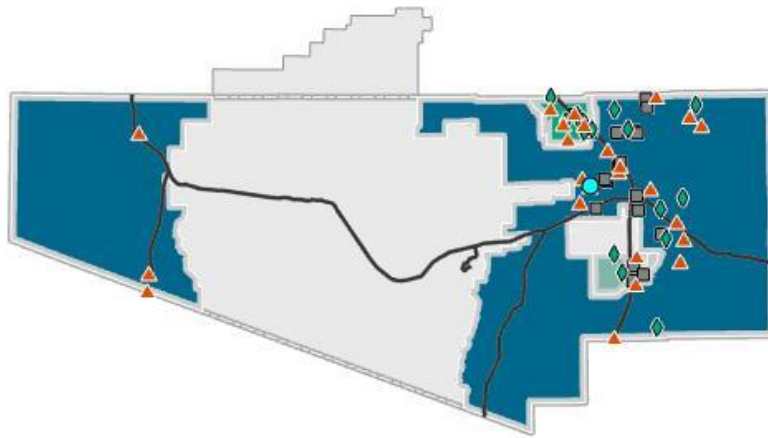
Amendments				
ID	Title	Author	Year	Document
2	El Conquistador Wastewater Reclamation Facility and Service Area	PAG	1981	<a href="#">Link</a>
11	Areawide Wastewater Management Plan Point Source Update	PAG	1985	<a href="#">Link</a>
Links				
None				
Active Notes*				
Proposed and constructed. Now closed.				
Historical Notes*				
None				

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

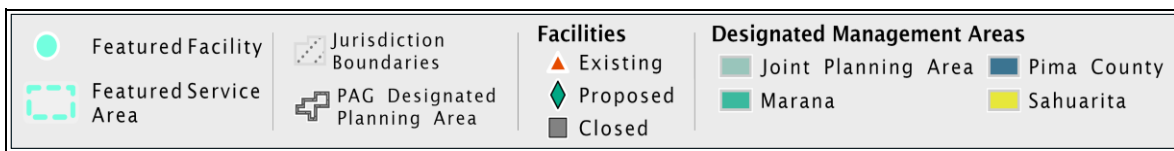
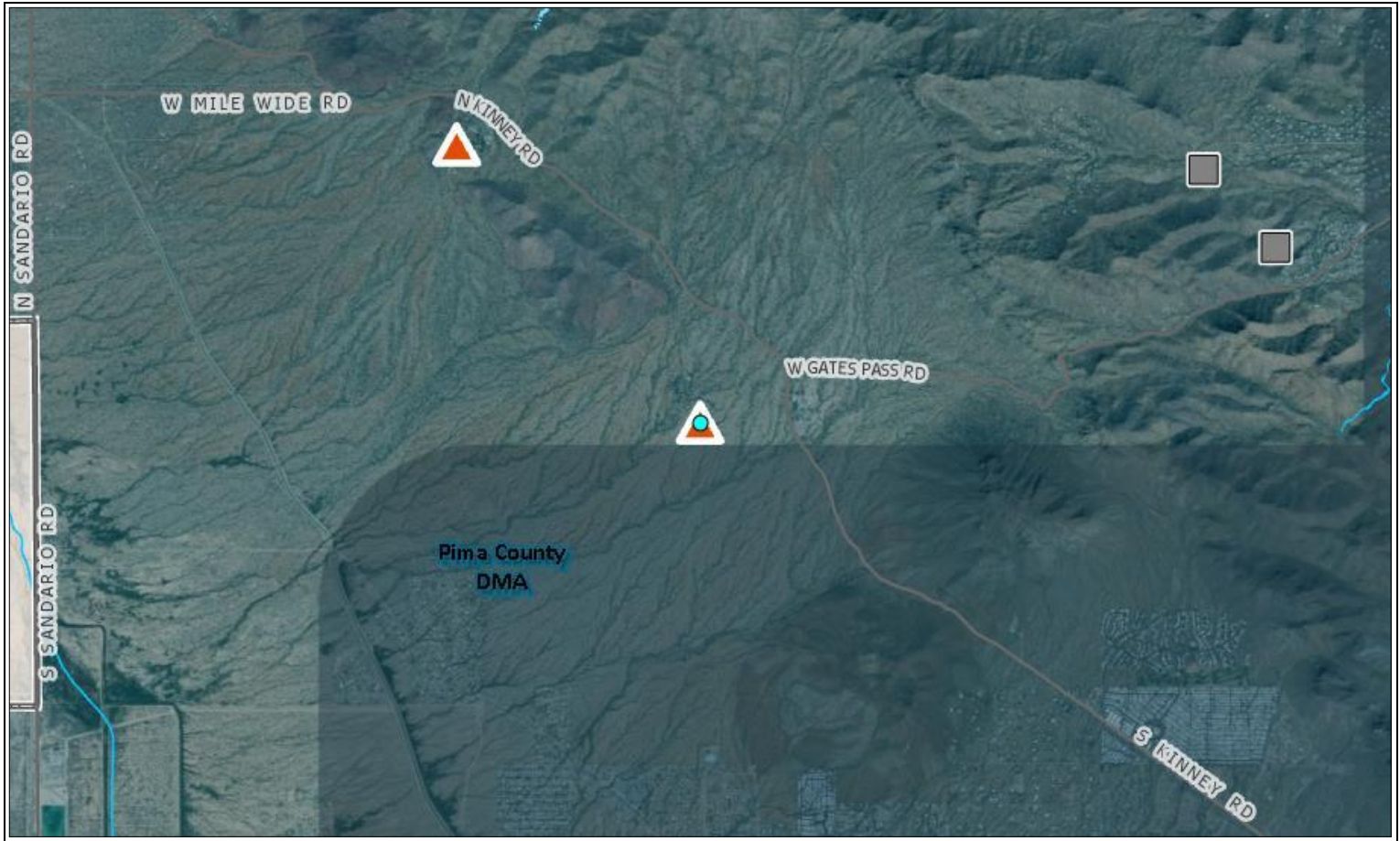
Data Last Updated:

## Gilbert Ray Campground - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Gilbert Ray Campground and Surrounding Area



**Facility Details**

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Gilbert Ray Campground	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
8451 W McCain Loop, Tucson, AZ 85735 in Tucson Mountain Park, across from Old Tucson Studios	Pima County Parks and Natural Resources	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Built/Proposed prior to DMA Sponsorship requirement
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
NA	NA	Built Prior to 208 Requirement
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	The lagoon is approximately 40x50 feet with a eight foot high berm. Lagoon is only used January to March during peak season each year. Maximum height of wastewater liquids in lagoon tends to be less than two feet.

**Watershed**

Brawley Wash

**General Description**

Wastewater point source identified in the original 1978 PAG 208 Plan {208 Plan, pg 105}. No data available until contact is made with Mark Brosseau with Pima County Parks and Natural Resources, Park Manager for Tucson Mountain Park. Descriptions provided in phone conversation on 9-9-19. Estimated to have been built in the 1950s. No sheet flows or wash nearby the lagoon.

**Service Area Boundaries**

Please see map (if available)

**Service Area Population**

Seventy-eight RV sites directed to lagoon. Seventy-three sites use septic.

**Service Area Land Uses**

Campground in Pima County's Tucson Mountain Park.

**Treatment Method**

Seventy-eight RV sites along one campground loop get directed to an RV dump station with two holding vaults for solids. Solids are pumped out twice a year. Liquids flow to a lagoon for evaporation. The lagoon is approximately 40x50 feet with an eight foot high berm.

**Discharge Method and Location**

Not Available

**Future Conditions**

No anticipated changes as of 9-9-2019.

**Amendments**

None

**Links**

None

**Active Notes\***

None

**Historical Notes\***

None

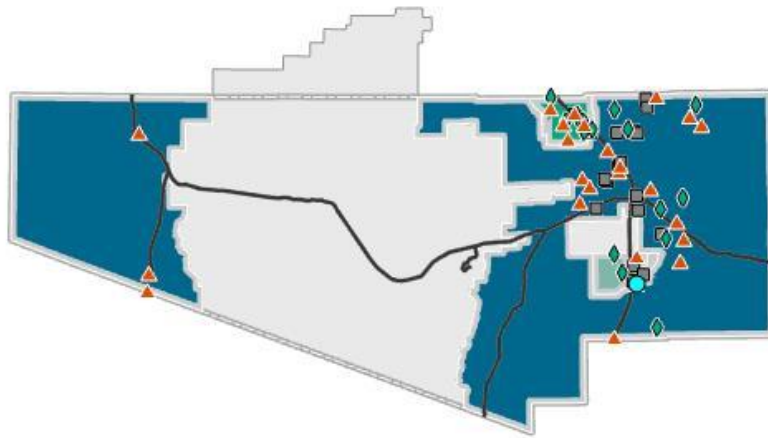
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

Data Last Updated: 12/10/2019

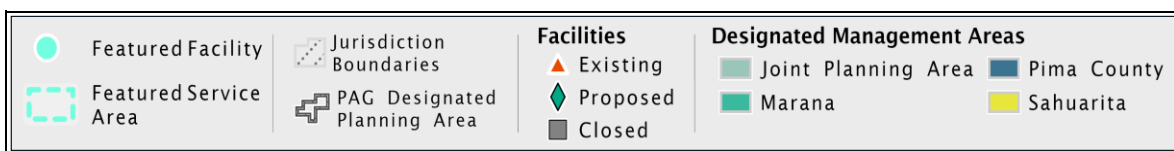
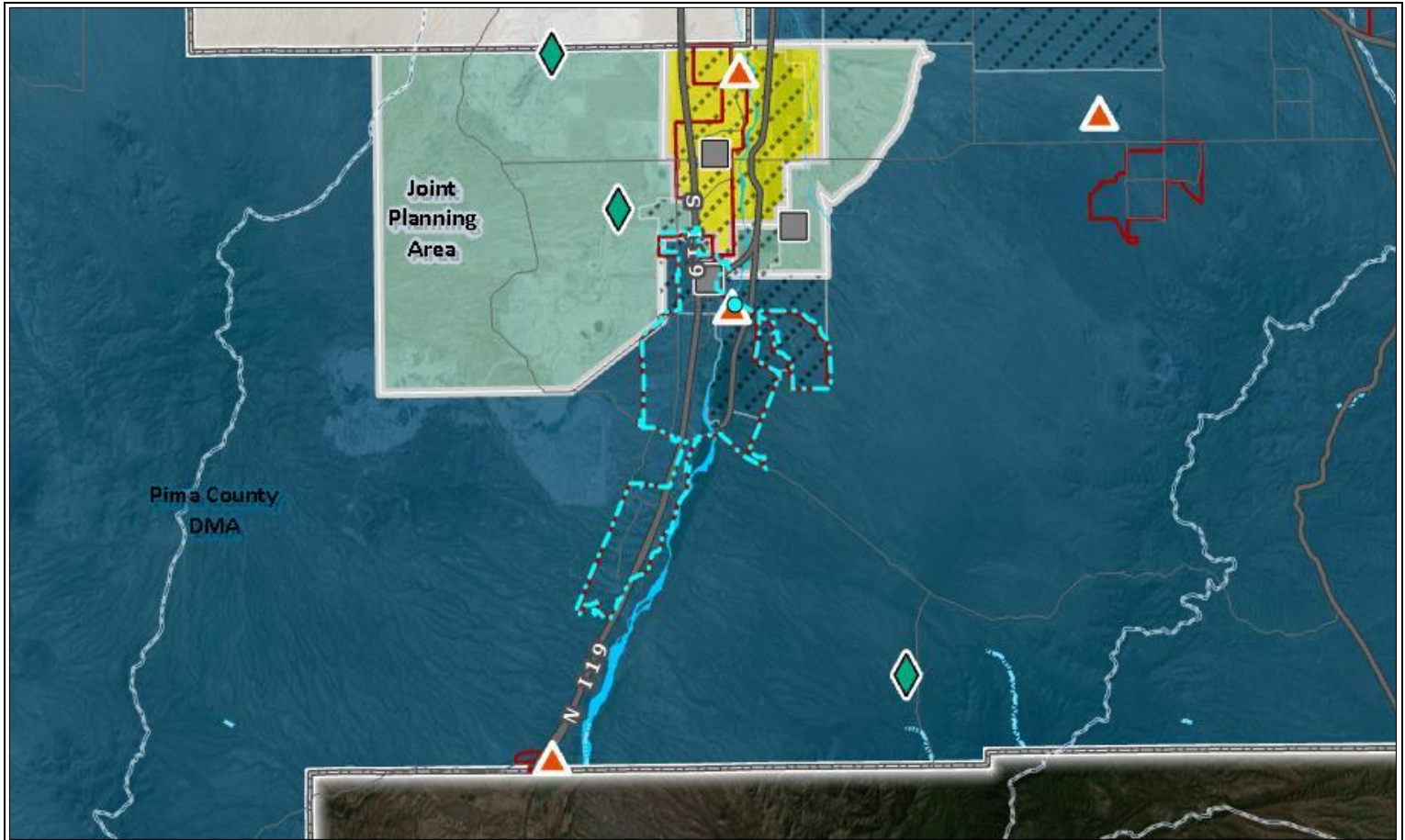


## Green Valley - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Green Valley and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Green Valley	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Sahuarita, AZ - 1.8 miles SSW of S. Old Nogales Hwy/S Nogales Hwy intersection on Santa Cruz River	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-100629	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
4.1 MGD	The facility's design capacity is 4.1 MGD. The BNROD treatment train has a capacity of 2.0 MGD. The aerated lagoon system has a capacity of 2.1 MGD.	2015 average monthly influent flow was 1.84 MGD (2016 Wastewater Facility Plan). 2016 average monthly influent flow was 1.87 MGD. 2017 average monthly influent flow was 1.88 MGD.
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
The Green Valley WRF is located south of Tucson along the east side of the Santa Cruz River. It serves the retirement community of Green Valley and a small southern part of the Town of Sahuarita. It is owned and operated by Pima County. It has been in operation since 1964.		
<b>Service Area Boundaries</b>		
The Green Valley WRF service area extends along both sides of Interstate 19, primarily serving properties west of the Santa Cruz River, but also some properties east of the river, including the southern half of the Town of Sahuarita. The service area extends roughly 9.5 miles north to south, from about a half-mile south of Twin Buttes Road, to about a mile and a half south of the Duval Mine Road. Along most of its length, the current service area is between one and four miles wide from east to west.		
<b>Service Area Population</b>		
Currently serves approximately 23,500 people based on the 2017 average influent flow of 1.88 MGD (2016 Wastewater Facility Plan). Most of the service area is the retirement community of Green Valley.		
<b>Service Area Land Uses</b>		
The facility also serves parts of the Town of Sahuarita. Land use in the service area is primarily residential and commercial.		
<b>Treatment Method</b>		
The Green Valley WRF has two treatment trains with a common headworks consisting of automatic screens and degritting. The two treatment trains are described in the 2016 Wastewater Facility Plan as follows: "The facility is comprised of two independent treatment trains, a 2.1 MGD aerated lagoon system with percolation bed disposal built in 1981, and a 2.0 MGD Biological Nutrient Removal Oxidation Ditch (BNROD) facility built during a 2003 expansion. Combined, both treatment trains provide a total		

permitted capacity of 4.1 MGD. The BNROD acts as the primary treatment process while the lagoon system acts as an overflow system. Each treatment train shares a common headworks, a 2.1 million gallon lined emergency influent storage basin and an influent pump station" (2016 Wastewater Facility Plan, pg 80). The facility is equipped with odor control system.

### Discharge Method and Location

The aerated lagoon treatment process produces the equivalent of Class C reclaimed water. Effluent from this portion of the facility is disposed of only through percolation. The BNROD treatment train produces Class A+ reclaimed water which is delivered to Robson Quail Creek for groundwater recharge. In 2016 an ADEQ permit amendment was issued to allow discharge of BNROD effluent into selected on-site percolation ponds (2017 Effluent Generation and Utilization Report, pg 15). The permit amendment allowed for the increased infiltration rates and higher recharge capacity. Sludge produced by the facility is hauled to a discharge point in the Tucson metropolitan area to be treated at Tres Rios WRF (2016 Wastewater Facility Plan).

### Future Conditions

PCRWRD has a long-term plan to build new recharge basins east of the current plant site. New recharge basins would increase storage capacity from 2,335 acre feet per year to 3,500 acre feet per year. Pima County has purchased 290 acres of adjacent State Trust Land to secure a 1,000-foot wide buffer that is required for a facility expansion. Expansion will most likely occur as an additional 2.0 MGD BNROD. Pima County will continue to monitor population growth and flows to determine when expansion is needed. SCADA and automation improvements are underway at the facility. (2016 Wastewater Facility Plan)

### Amendments

ID	Title	Author	Year	Document
10	Green Valley Cortaro Area Management Plans	PAG	1984	<a href="#">Link</a>
22	The Wastewater Management Plan for Sahuarita — An Amendment to the PAG Town of Sahuarita Areawide 208 Plan	Town of Sahuarita	1999	<a href="#">Link</a>

### Links

[https://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan\\_2016.pdf](https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan_2016.pdf)

### Active Notes\*

None

### Historical Notes\*

Average inflow in FY 2003-04 was 1.63 MGD.

Capacity: 1 MGD to 3 MGD; 4.1 MGD noted in Sahuarita 208 Plan Amendment.

County also has entered into an agreement with ASARCO to use biosolids for reclamation of mine tailings (Pima County WWM, 2005b).

PCRWRD plans to submit an application for modification of APP to allow some of the BNROD effluent to be discharged into percolation basins. New recharge basins are currently under design to increase capacity from 2,335 acre feet per year to 3,500 acre feet per year. Expansion will most likely include a 2.0 MGD BNROD system. Population projections estimate the current plant capacity will be met in 2045 with a population of 51,250 people connected. Pima County has evaluated the expansion from 4.1 to 6.0 MGD and has purchased 290 acres of State Trust Land. This land will ensure the 1,000 foot wide buffer that is required for the facility's expansion. The expansion would include two additional secondary clarifiers and a new tertiary disk filter. Pima County will continue to monitor population growth and flows to determine when expansion is needed. Pima County plans to implement odor control at the facility and continue with SCADA and automation improvements. (2016 Wastewater Facility Plan)

Population projections for the Green Valley WWTP service area in 2030 range from 44,181 to 52,129. The lower projection assumes that the facility will not serve any of the joint planning areas near Sahuarita. The higher projection assumes that the facility will serve all of the joint planning areas. Flow projections range from 3.65 MGD to 4.32 MGD.

Served approximately 23,000 people based on the 2015 average monthly flow of 1.84 MGD. (2016 Wastewater Facility Plan)

The aerated lagoon treatment process produces Class B effluent and the BNROD treatment train produces Class A+ effluent. The BNROD effluent is delivered to the Robson Quail Creek recharge basins. The aerated lagoon effluent also is disposed via percolation and reused on-site. PCRWRD plans to submit an application for modification of APP to allow some of the BNROD effluent to be discharged into percolation basins. This would increase the infiltration rates and achieve the highest recharge capacity. Biosolids are hauled to a discharge point in the Tucson metropolitan area to be treated at Tres Rios WRF (2016 Wastewater Facility Plan).

The estimated 2005 service area population was 17,469.

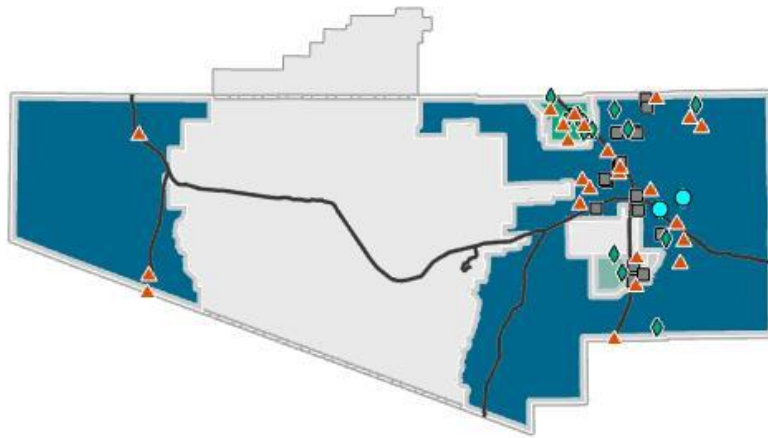
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

Data Last Updated: 12/10/2019

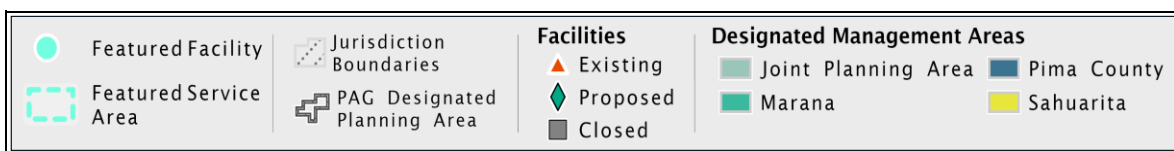
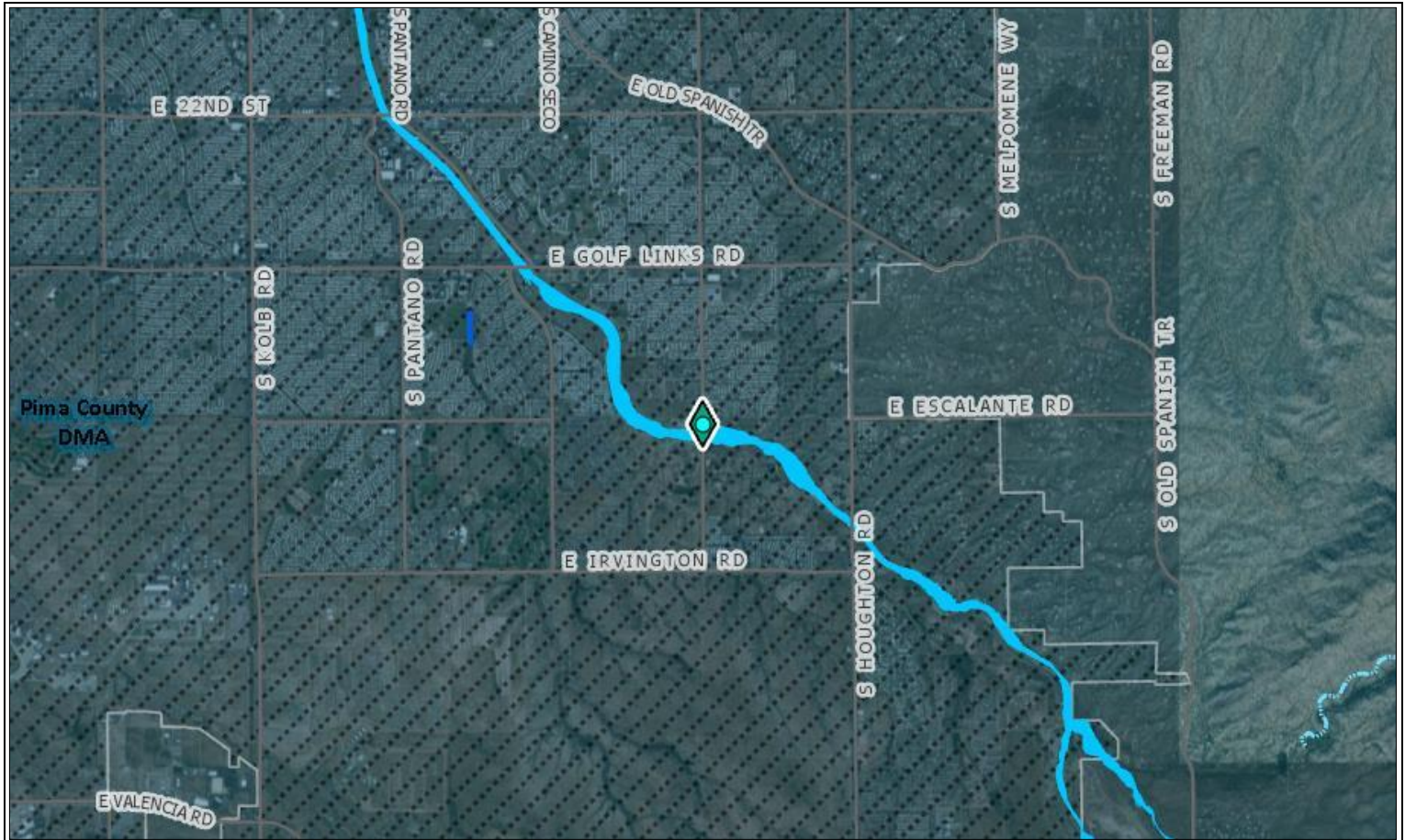


## Harrison-Pantano - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Harrison-Pantano and Surrounding Area





## Facility Details

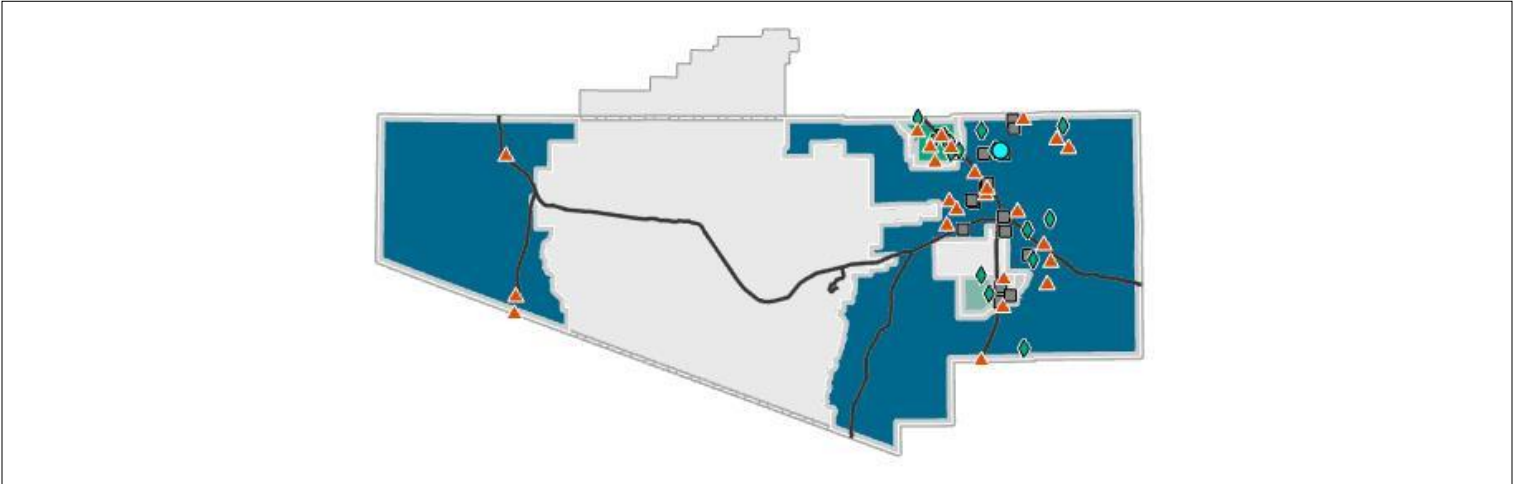
<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Harrison-Pantano	No	No Longer Planned
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Vicinity of Pantano Wash and Harrison Rd	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Pending Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
1 MGD	Not Available	Not Available
<b>Watershed</b>		
Rillito		
<b>General Description</b>		
Not Available		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		
<b>Amendments</b>		

ID	Title	Author	Year	Document
11	Areawide Wastewater Management Plan Point Source Update	PAG	1985	<a href="#">Link</a>
<b>Links</b>				
None				
<b>Active Notes*</b>				
Pima County RWRD currently does not have plans for a Harrison-Pantano WRF (correspondence with DMA contact, 12/2018).				
<b>Historical Notes*</b>				
Identified in 1985 203 Plan Amendment {11} as "necessary at some time in the future."				
The need for a sub-regional facility on the southeast side was identified in PAG's 208 Plan since 1985, when the Point Source Update for the metropolitan basin (Greeley and Hansen, 1985) was completed. The 1985 update noted that a wastewater reclamation facility would be needed in the Harrison-Pantano target area. The same report also noted that a facility could be needed in the Kolb-Bilby area, but not as soon as the facility in the Harrison-Pantano area.				

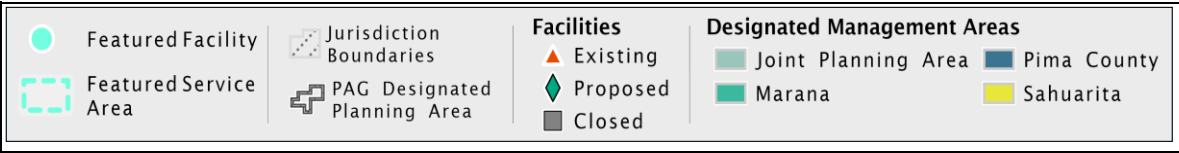
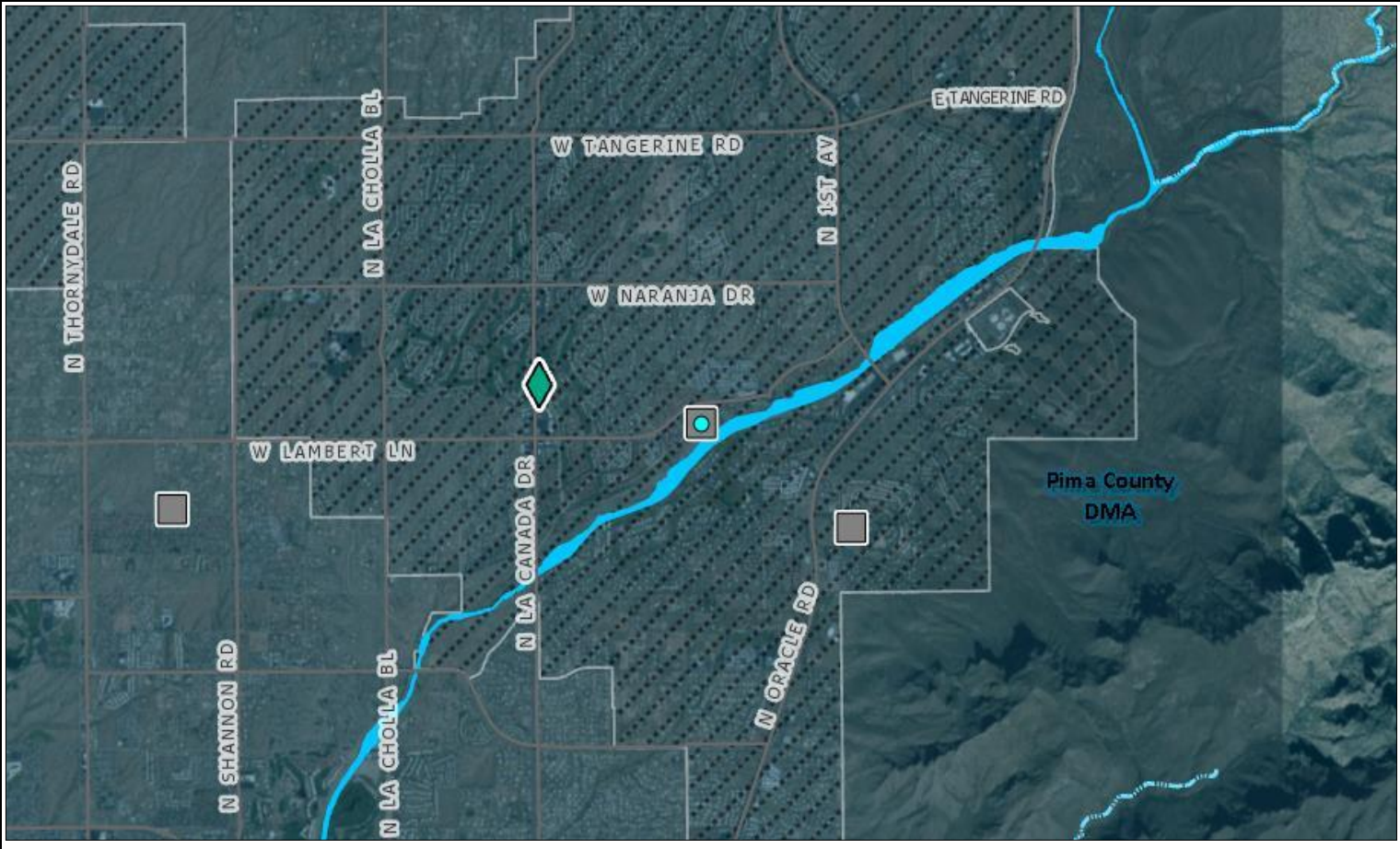
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

Highlands - Within Pima County DMA

Wastewater Reclamation Facilities in the PAG Region



Highlands and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Highlands	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Near Lambert Ln and the Canada del Oro Wash	Pima County	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Not Available
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Facility closed		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		
<b>Amendments</b>		

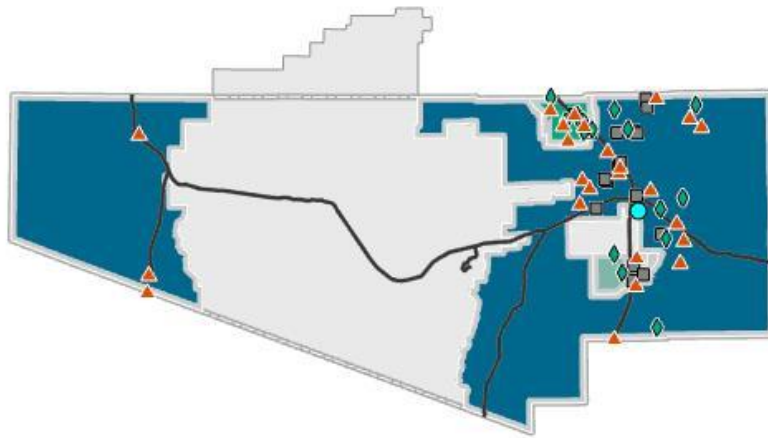
ID	Title	Author	Year	Document
1	PAG Areawide Wastewater Management Plan 1980 Amendment	PAG	1980	<a href="#">Link</a>
<b>Links</b>				
None				
<b>Active Notes*</b>				
None				
<b>Historical Notes*</b>				
Existing at time, recommended to be abandoned when CDO interceptor completed. Now closed.				

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

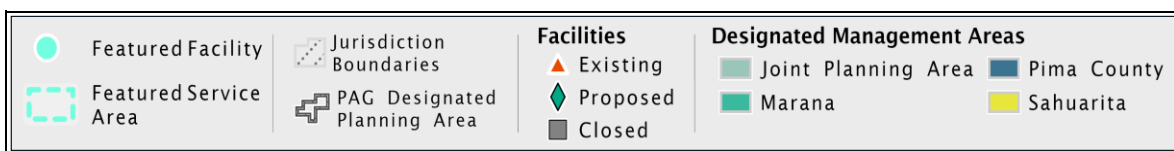
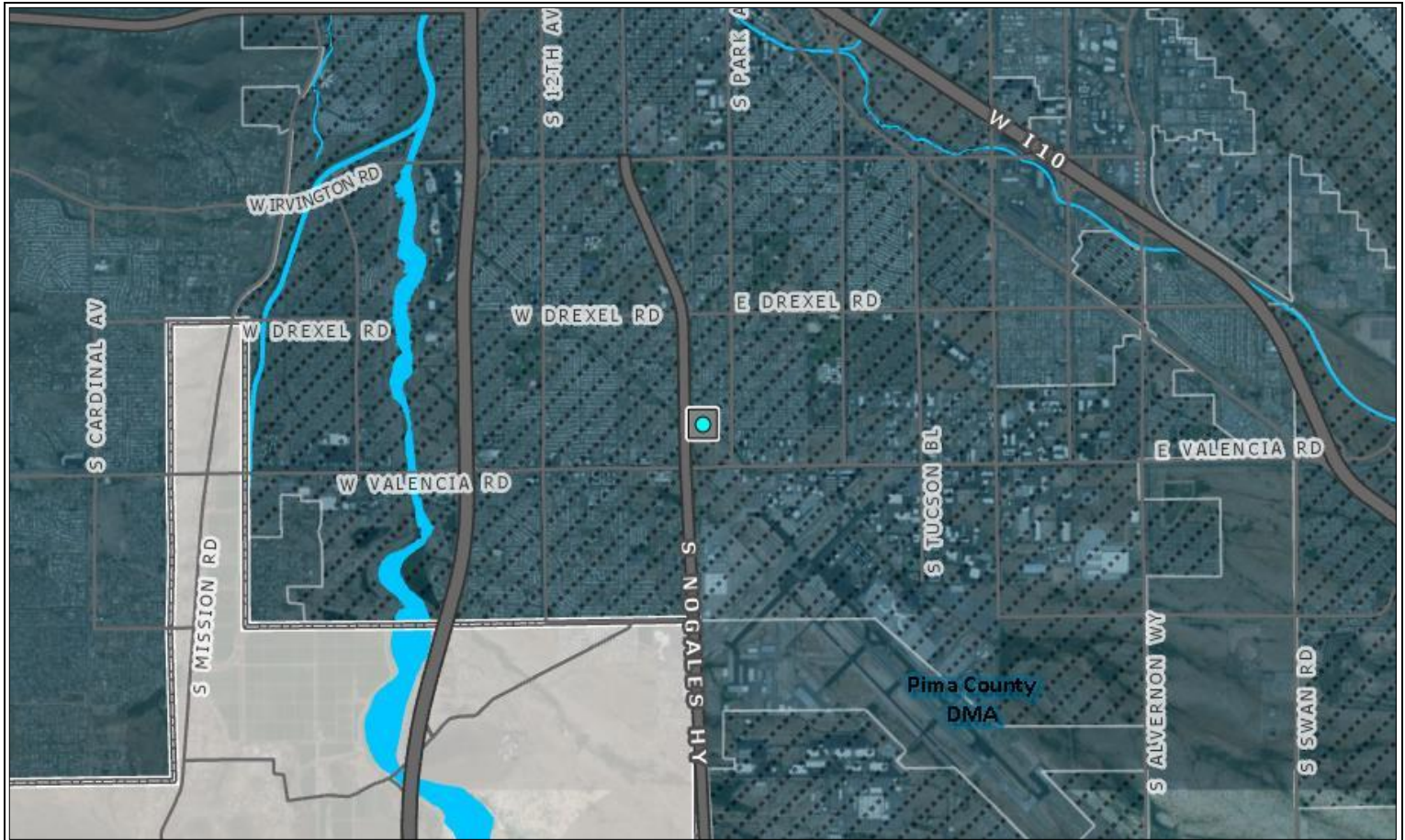


## Hughes Aircraft - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Hughes Aircraft and Surrounding Area



## Facility Details

<b>Facility Name</b> Hughes Aircraft	<b>Operational</b> No	<b>Status</b> Closed
<b>Location</b> Tucson, AZ - 6200-6298 S Southland Blvd, 0.22 miles south of S. Southland Blvd./E. Bilby Rd. intersection	<b>Owner Name</b> Not Available	<b>Public Owned?</b> Non-Municipal
<b>DMA Sponsor</b> N/A	<b>DMA Location</b> Pima County	<b>DMA Notes</b> Built/Proposed prior to DMA Sponsorship requirement
<b>Aquifer Protection Permit Number</b> Not Available	<b>AZPDES Number</b> Not Available	<b>Consistency Status</b> Built Prior to 208 Requirement
<b>Permitted Capacity</b> 0 MGD	<b>Current Capacity</b> Not Available	<b>Current Flows</b> Not Available
<b>Watershed</b> Upper Santa Cruz		
<b>General Description</b> Identified in original 208 Plan but no longer exists.		
<b>Service Area Boundaries</b> Please see map (if available)		
<b>Service Area Population</b> Not Available		
<b>Service Area Land Uses</b> Not Available		
<b>Treatment Method</b> Not Available		
<b>Discharge Method and Location</b> Not Available		
<b>Future Conditions</b> Not Available		

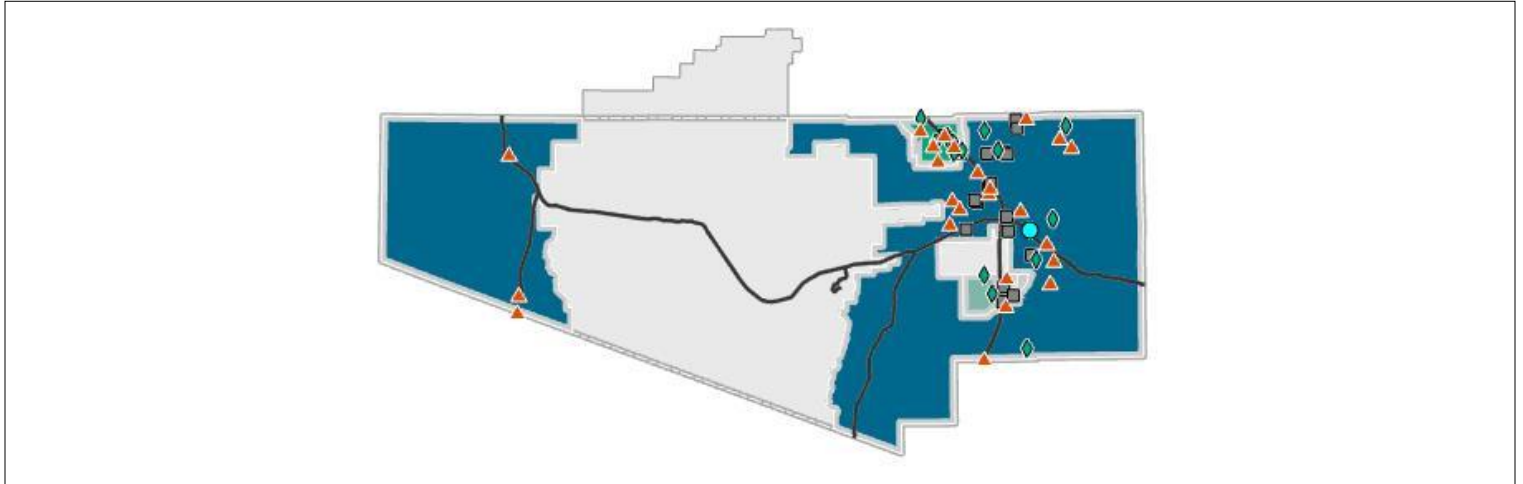
<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
Cooling tower for avionics equipment manufacturing facility. (1978 PAG 208 Plan)
NPDES Number 0110264. (1978 PAG 208 Plan)

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

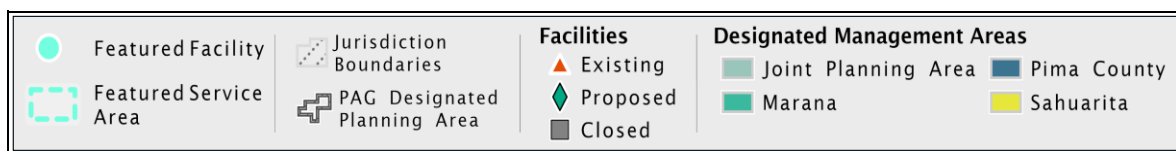
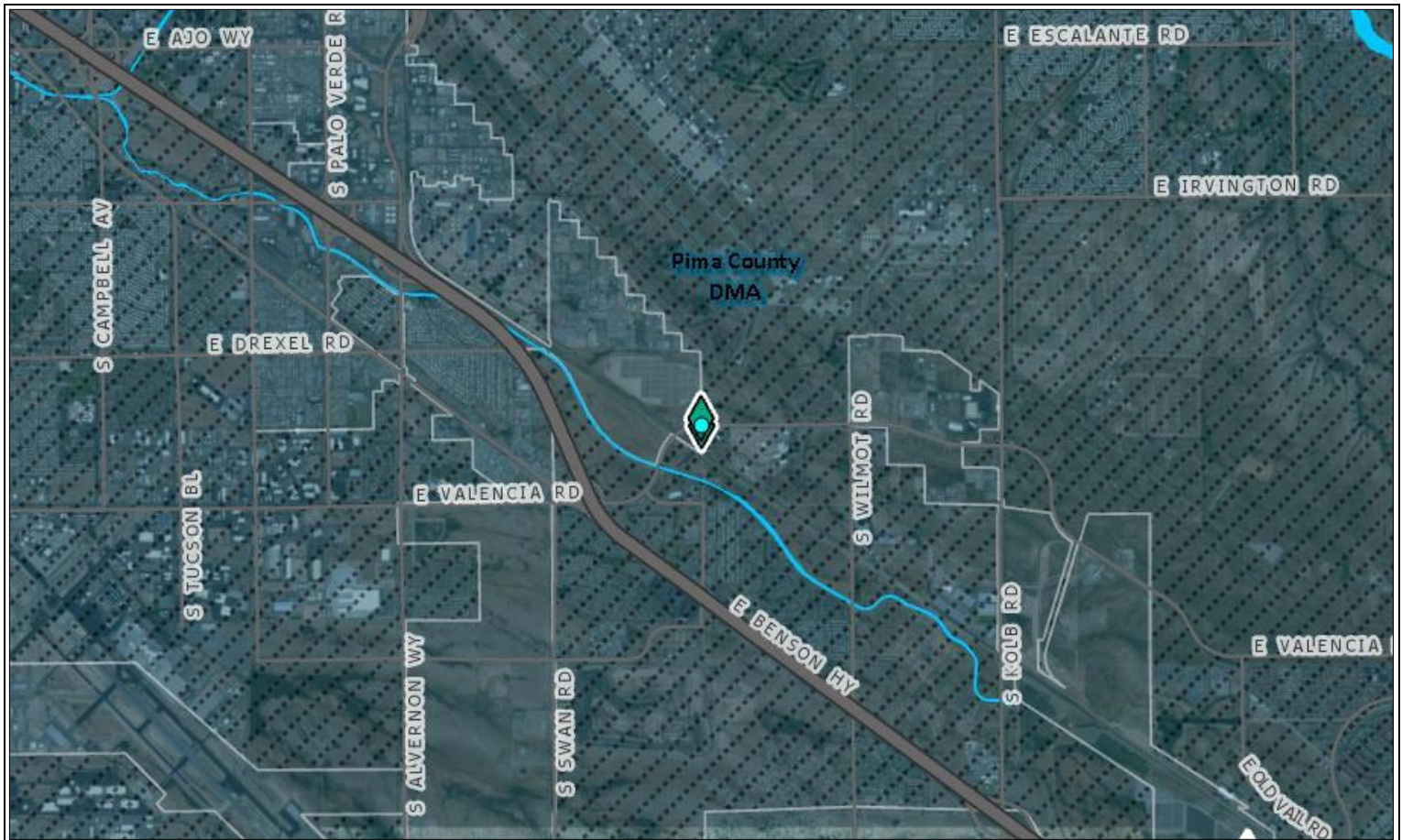


## Kolb-Bilby - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Kolb-Bilby and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Kolb-Bilby	No	No Longer Planned
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Vicinity of intersection of Craycroft Rd & Valencia Rd	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Pending Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
1 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Not Available		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		
<b>Amendments</b>		

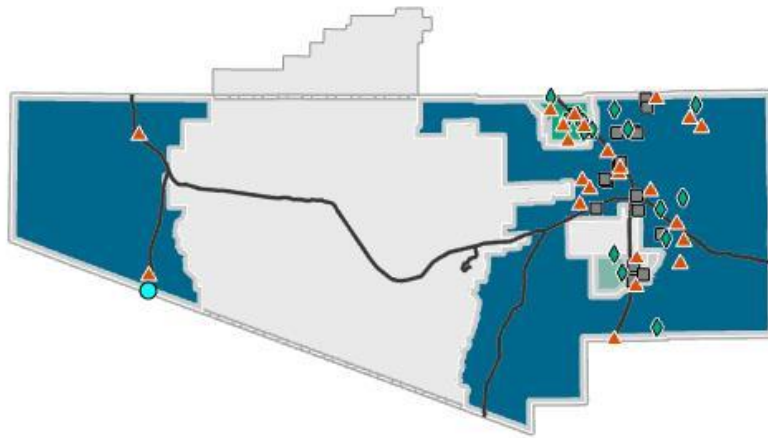


ID	Title	Author	Year	Document
11	Areawide Wastewater Management Plan Point Source Update	PAG	1985	<a href="#">Link</a>
<b>Links</b>				
None				
<b>Active Notes*</b>				
RWRD currently does not have plans for a Kolb-Bilby WRF (correspondence with DMA contact, 12/2018).				
<b>Historical Notes*</b>				
Identified in 1985 208 Plan Amendment {11} as “necessary at some time in the future” but “will not be needed as soon as in the Harrison-Pantano area.”				
Proposed Capacity: 1 MGD Minimum. (PAG 208 Plan Update 2006)				

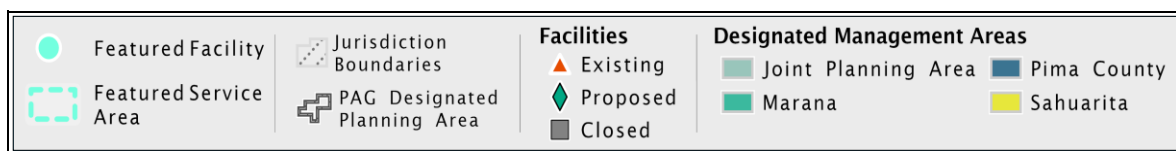
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

## Lukeville - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Lukeville and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Lukeville	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
190 AZ-85, Lukeville, AZ 85341	Not Available	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Built/Proposed prior to DMA Sponsorship requirement. Within Pima County DMA boundaries
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Built Prior to 208 Requirement
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.01 MGD	Not Available	Not Available
<b>Watershed</b>		
Rio Sonoyta		
<b>General Description</b>		
The Lukeville border station has a package treatment plant with a capacity of 10,000 GPD. Daily flow is approximately 2,500 GPD. The system serves 13 employee residences, a trailer space and two sets of public rest rooms (Wallin, 2005).		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Future Capacities for Non-Public Facilities: 0.01 MGD; no expansion anticipated. (208 Plan Update 2006)		

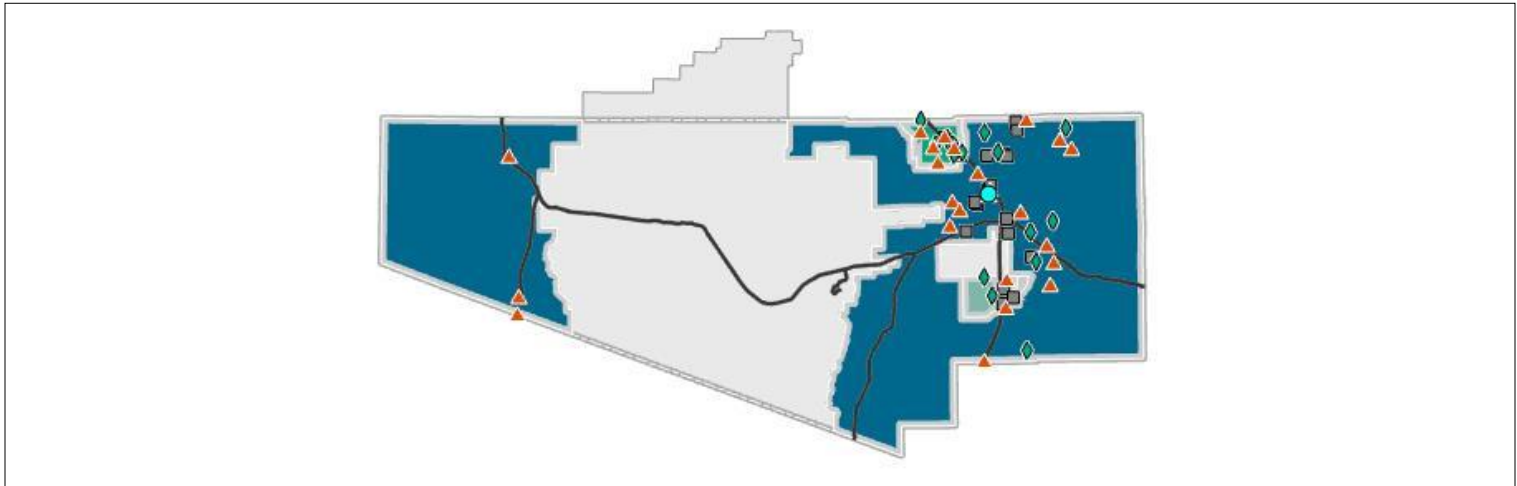
<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
None

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

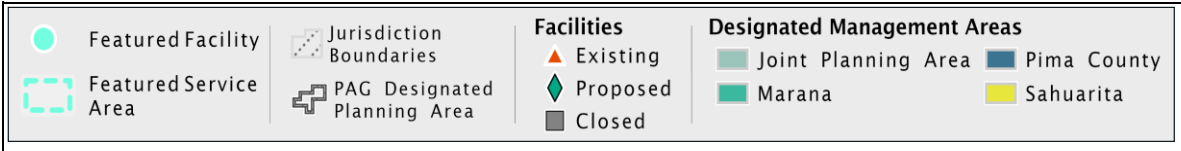
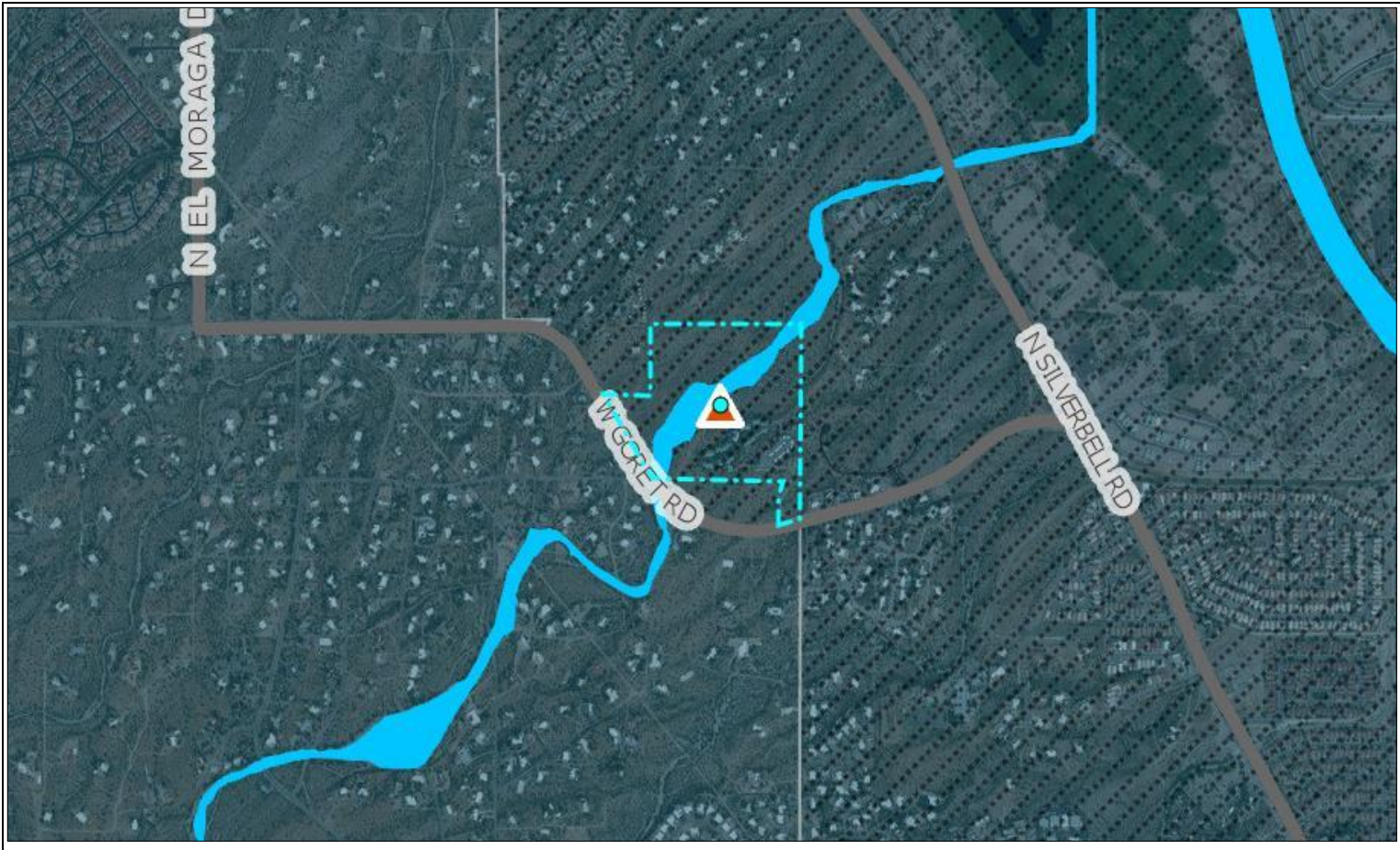


Milagro Subdivision - Within Pima County DMA

Wastewater Reclamation Facilities in the PAG Region



Milagro Subdivision and Surrounding Area





## Facility Details

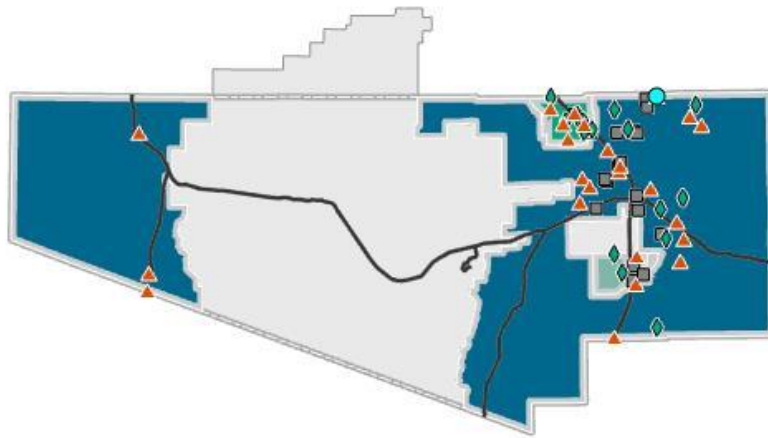
<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Milagro Subdivision	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
3057 N Gaia Pl, Tucson, AZ 85745	Not Available	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Built/Proposed prior to DMA Sponsorship requirement. Within Pima County DMA boundaries.
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Not Available
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Built in 1994, the Milagro Subdivision on Tucson's west side is served by a wetland treatment system with subsurface drip disposal. The community's homeowners association is responsible for operation and maintenance of the treatment system, which serves 28 homes, a guest house and common building.		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
No expansion anticipated; facility will only serve the subdivision. (208 Plan Update 2006)		

<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
The Milagro Subdivision on Tucson’s west side is served by a common septic system with disposal via wetlands and subsurface drip irrigation. (208 Plan Update 2006)

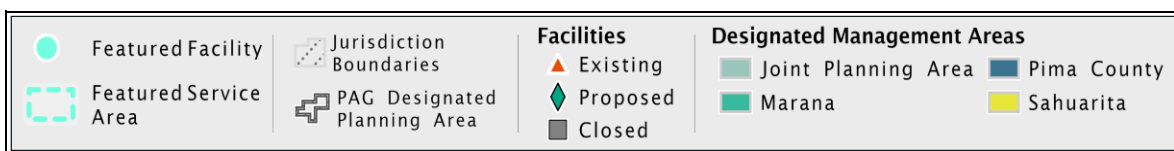
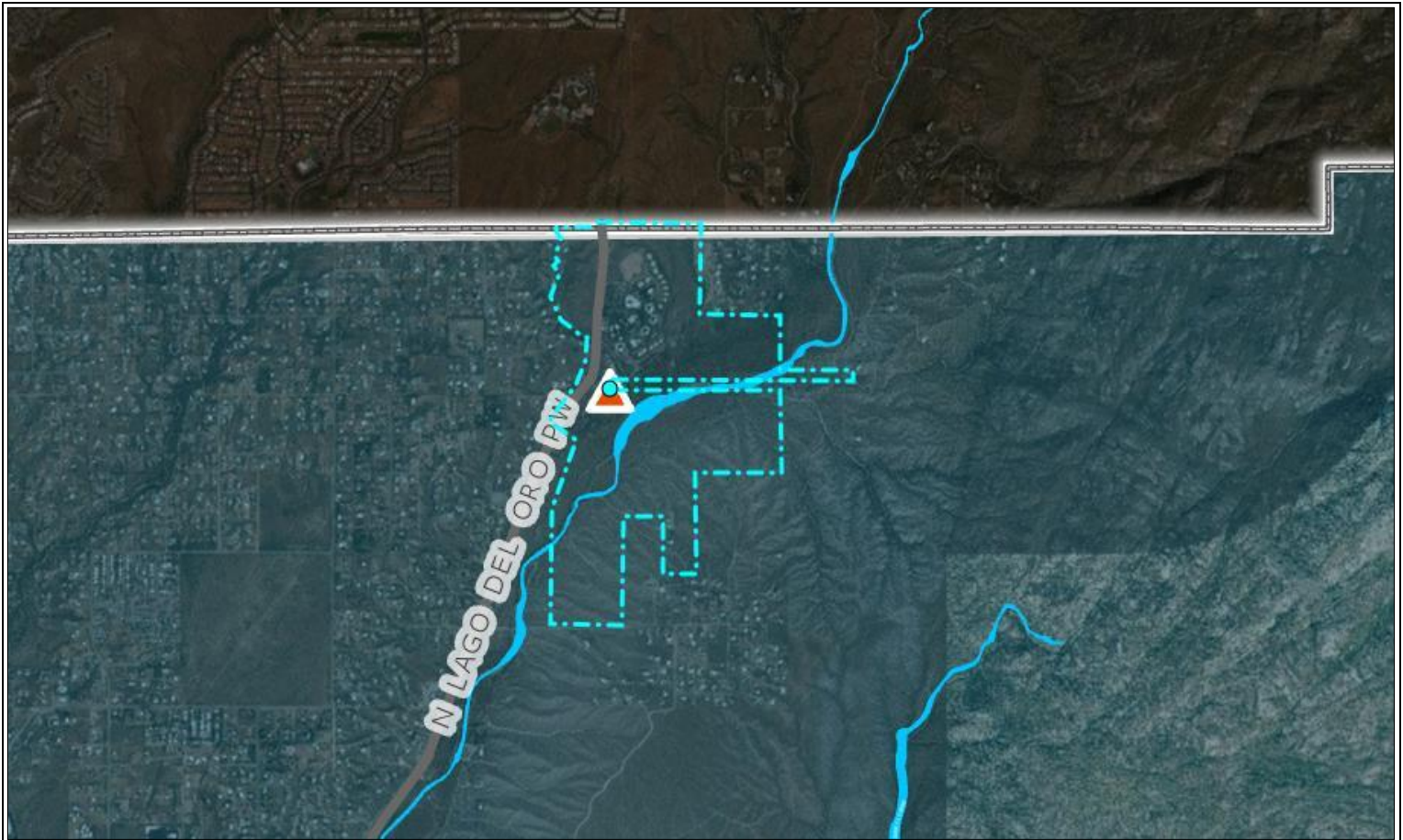
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

## Miraval Resort Tucson, LLC - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Miraval Resort Tucson, LLC and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Miraval Resort Tucson, LLC	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Catalina, AZ - East side of N Lago del Oro Pkwy, 0.5 miles south of Pima Co./Pinal Co. border	Miraval Resort	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-106011	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.05 MGD	The proposed WWTF is planned for a treatment capacity of 50,000 gpd. Peak wet weather flow of 159,015 gpd (Amendment 27; Proposed Wastewater Treatment Facility pg 17)	Phase 1 (2009 existing) 38,000 gpd; Phase 2 (completed approximately 2011) 12,000 gpd (Amendment 27, Table 1, pg 12)
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
The Miraval Resort and Spa WRF was constructed to replace seven (7) large septic leach systems that were abandoned under ADEQ clean closure procedures. The Miraval WRF was designed to treat up to 0.05 mgd and serves only resort buildings. The Miraval WRF is capable of treating to Class A+ reclaimed water quality standards, however, at this time treated wastewater is being disposed to rapid infiltration basins.		
<b>Service Area Boundaries</b>		
The property encompasses approximately 232 acres within the Upper Santa Cruz Valley Sub-basin at an approximate elevation of 3100 feet. An additional 182 acres is owned by Miraval and is intended for open space. Total property is currently 414 total acres. Facilities are located west of Canada del Oro wash, southeast of Edwin Road and adjacent (east) or Lago Del Oro Parkway. (Amendment 27; Figure 3 pg 7; Plan Area pg13)		
<b>Service Area Population</b>		
The population served by Miraval WWTF is 444 persons, which includes the current and projected population upon completion of Phase 2 construction (complete in 2011). Possible Phase 3 completion will increase the total served population to 920 total. (Amendment 27, pg 14)		
<b>Service Area Land Uses</b>		
Mixed residential Resort and spa with Auditorium. Note: Specific Plan (Amendment 27 Appendix C) designates an area for a golf course, but Miraval does not intend to include a golf course on this property. (Amendment 27, pg 13)		
<b>Treatment Method</b>		
The proposed WWTF will be an activated sludge bioreactor system followed by wetland treatment for polishing, filtration, and chlorine based disinfection that will process effluent to meet ADEQ Class A+ Reclaimed Water Reuse Standards. (Amendment 27; Proposed Wastewater Treatment Facility pg 17)		

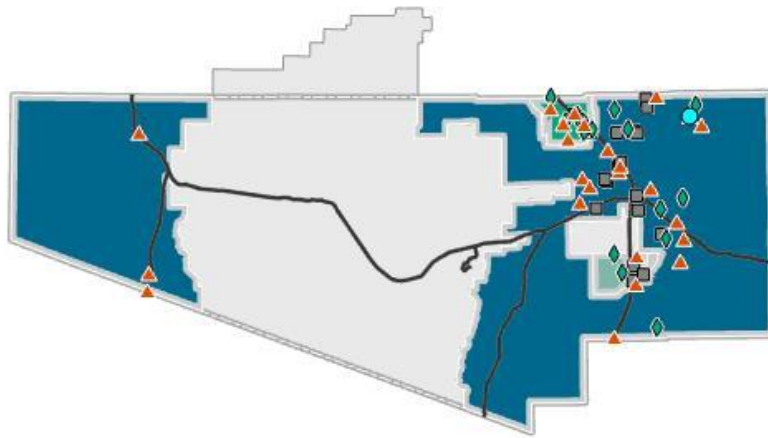
<b>Discharge Method and Location</b>  The WWTF effluent will be used for landscape irrigation and for features to the maximum extent. Additional effluent not used to meet landscaping demand may be disposed to onsite recharge basins. (Amendment 27, Introduction pg 8)				
<b>Future Conditions</b>  Tentative Phase 3 development plans project flow rate will increase by 41,800 gpd. (Amendment 27, pg 15)				
<b>Amendments</b>				
<b>ID</b>	<b>Title</b>	<b>Author</b>	<b>Year</b>	<b>Document</b>
27	Miraval Resort, LLC. 208 Plan Amendment	WestLand Resources, Inc., for Miraval Resort Tucson and PAG	2007	<a href="#">Link</a>
<b>Links</b>  None				
<b>Active Notes*</b>  The Miraval Resort and Spa was added to the 208 Plan via Amendment 27 in 2007. Owned and operated by Miraval Resort LLC. The WWTF is designed to treat waste generated by the facilities associated with Phases 1 and 2. Content referring to phase three is tentative and included to facilitate future 208 Amendments. (Amendment 27, Introduction) The WWTF is located in NE 1/4 NE1/4 SW 1/4, of Township 11 South, Range 14 East, Section 2. (Amendment 27, pg 13)				
<b>Historical Notes*</b>  None				

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

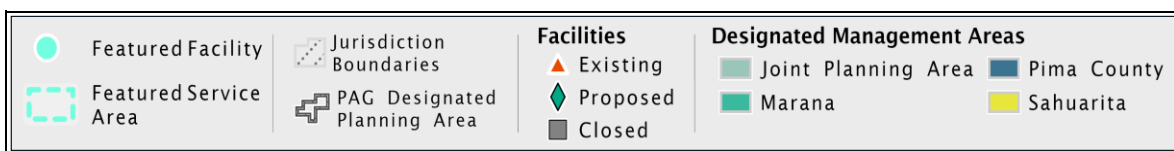
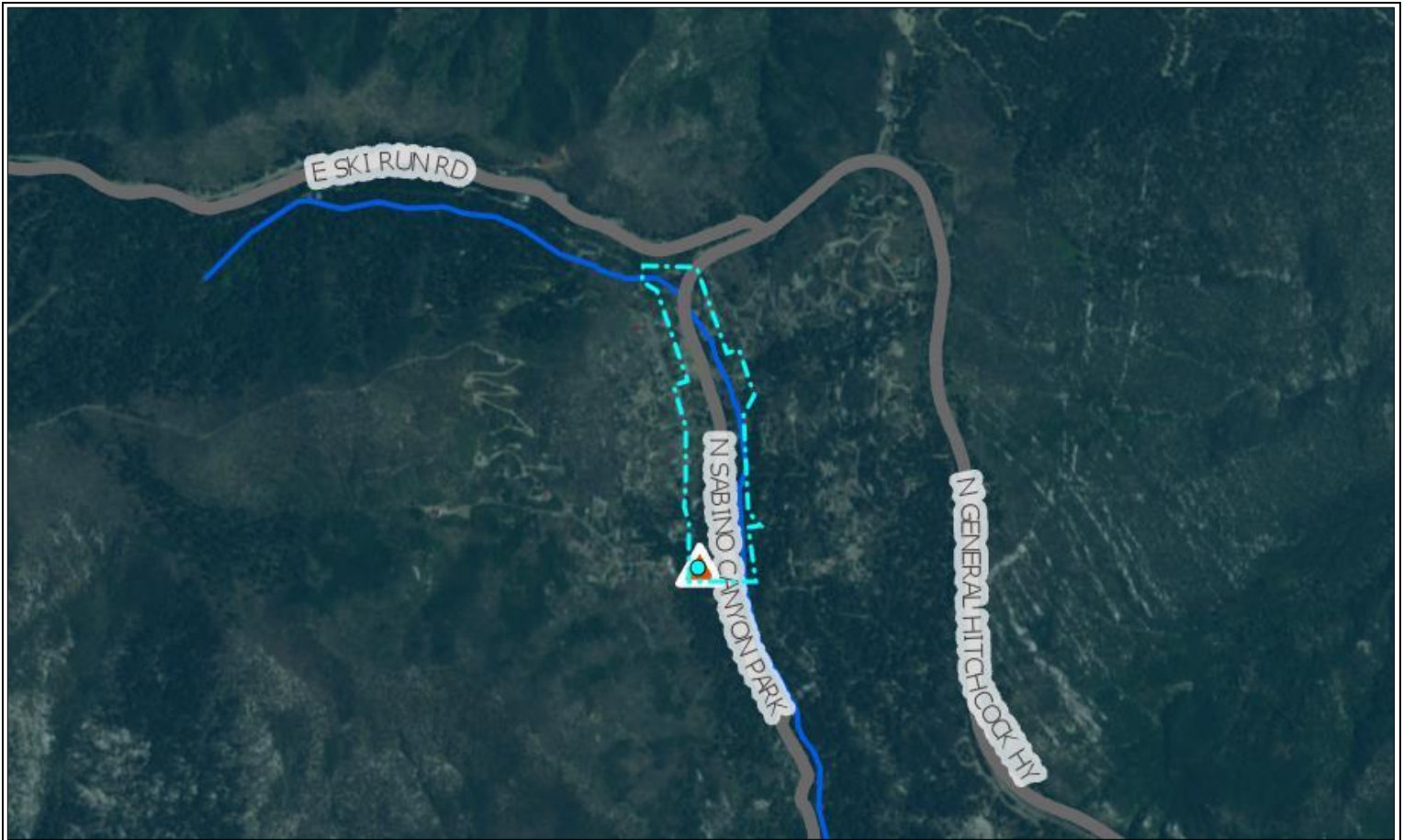


## Mount Lemmon - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Mount Lemmon and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Mount Lemmon	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Mount Lemmon, Village of Summerhaven	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-100345 (see Active Notes)	AZ0022250	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.017 MGD	According to the PCRWRD 2016 Wastewater Facility Plan, the Mt. Lemmon WRF is rated to treat a total of 15,000 GPD. The facility operates under a special use permit issued by the USFS that authorizes a treatment capacity of 17,000 GPD, provided the daily average flows do not exceed 12,500 GPD average flow.	The flows of the plant are mostly governed by transient populations during the summer and winter months. 2015 average monthly influent flow was 2,700 GPD (2016 Wastewater Facility Plan). 2016 average monthly influent flow was 2,860 GPD. 2017 average monthly influent flow was 3,200 GPD.
<b>Watershed</b>		
Lower San Pedro		
<b>General Description</b>		
<p>The Mount Lemmon WRF is owned and operated by Pima County Regional Wastewater Reclamation Department. It is located near the small community of Summerhaven on Mount Lemmon, north of Tucson.</p> <p>The Mount Lemmon WRF began operations in 1984 and was constructed to replace a failing wastewater storage system and in response to septic systems concerns in the area of Sabino Creek. Given concerns over Creek water quality, the facility was required to discharge treated effluent on National Forest land. All the effluent generated at the facility is discharged to a spray field and reused for irrigation of forest vegetation. In the event the spray heads are inoperative, the effluent can be disposed via three combined outfalls, which discharge to unnamed washes, all tributary to the San Pedro Watershed.</p>		
<b>Service Area Boundaries</b>		
The service area is approximately 0.75 square miles with 2 miles of public sewer line (2016 Wastewater Facility Plan) Only a small number of the lots (77) can be served pursuant to an agreement between Pima County and the USFS.		
<b>Service Area Population</b>		
There are 49 active connections (PCRWRD, August 2018). Based on the average monthly water use data, there are 21 to 22 active connections on any given day. The residences connected to the conveyance system are not inhabited year round.		
<b>Service Area Land Uses</b>		
The service area is primarily residential, with a few commercial customers such as restaurants and gift shops.		

### Treatment Method

The facility is a package plant inside a building. The facility uses an oxidation ditch and clarifier for secondary treatment. "Chlorination and dechlorination processes provide disinfection treatment of domestic sewage. Sludge is stored in a waste holding tank and is aerated to reduce odors. PCRWRD transports the sludge offsite and deposits it into the County collection system at Manhole 8716-03" for subsequent treatment at the Tres Rios WRF. (2016 Wastewater Facility Plan).

### Discharge Method and Location

Effluent disposal consists of spray irrigation on 10 acres of vacant USFS land on the San Pedro Watershed side of Mount Lemmon. The disposal area burned in the 2002 Bullock Fire, causing some damage to the disposal system. The damage has since been repaired. PCRWRD disposes effluent during freezing or inoperable conditions to three combined outfalls. (2016 Wastewater Facility Plan)

The forcemain runs north thru Summerhaven and ends at a holding tank at the effluent disposal spray, the system called the booster station. Treated effluent is disposed of either via a normal spray header discharge (normally) or a direct discharge at three existing outfalls. Direct discharge, which would only be used if the spray headers were unusable, is achieved by switching the valving at the booster station so the flow goes to the three direct discharge outfall points.

### Future Conditions

PCRWRD will continue to monitor potential development on vacant lots in the Mt. Lemmon WRF service area. In the past, PCRWRD was concerned with the condition of this 34 year old facility, but during a recent evaluation and rehabilitation project, the facility was found to be in extremely good condition which should allow the facility to operate for another 20-30 years. Peak flows coming to the facility are currently below permit limits. RWRD will typically begin planning, design, and permit application/amendments for expansion when flows approach 80% current WRF capacity. The 80% level for this facility is 12,000 GPD. (2018 PAG 208 Plan Update)

Land to the north of the Planning Area is owned by the USFC and consists of steep and inaccessible terrain. Expanding a gravity sewer to the lots located northeast and northwest of the Planning Area would be unfeasible and expensive due to topography and distance from the existing system.

### Amendments

ID	Title	Author	Year	Document
3	Amendment to PAG 208 Plan Point Source Element: Mt. Lemmon	PAG	1981	<a href="#">Link</a>

### Links

[https://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan\\_2016.pdf](https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan_2016.pdf)

### Active Notes\*

Facility is located in the Rillito Watershed, but discharges to Lower San Pedro Watershed. (208 Plan Update 2020)

Proposed and constructed to eliminate discharges to Sabino Creek.

The facility holds a U.S. Forest Service Special Use Permit USFS SAN0139, dated February 18, 2003 and amended through four amendments in 2004, 2009, 2011, and 2012 to allow disposal of effluent onto Forest Service land; the permit is for use of a 10-acre area in the San Pedro Watershed.

The WRF operates under an ADEQ General APP Permit No. P-100345 and an Arizona Pollution Discharge Elimination System (AZPDES) Permit No. AZ0022250. The General APP regulates discharges to the local aquifer. The AZPDES permit allows for the discharge of effluent from the facility to three unnamed washes in the Upper San Pedro Watershed, which is permitted only during freezing or inoperable conditions of the spray fields. The discharge flow records show that the facility has not discharged to the washes since 2002 (AZPDES, Fact Sheet, pg. 2). Discharge from the facility is currently prohibited from entering the Upper Sabino Creek Watershed by both environmental rule and also the current amended 208 Certified Area-wide Water Quality Management Plan (EEC et. al., 2008). The current AZPDES permit is valid through 2021.

While the three existing outfalls are located on National Forest land in the Upper San Pedro watershed, the WRF and service area are located in the Rillito watershed.

### Historical Notes\*

## PAG 208 Plan - 2020

Average daily flow in FY2003-04 was .00162 MGD. Flows are currently minimal as a result of the 2003 Aspen fire that destroyed most of the residential area served by the facility.

Capacity Notes: 18,189 GPD (2006 PAG 208 Plan Update)

CR-9: From AZDEQ list of submitted CRs "Mount Lemmon WRF" (9/8/2010) but no other information is available at this time. (208 Plan Update 2020)

PCRWRD will monitor development on lots outside the service area for a possible connection to the sewer system. Continue to maintain PCRWRD's involvement in ongoing sustainable planning efforts that include watershed management, water supply and water distribution. The Mt. Lemmon WRF is 30 years old. The department is presently evaluating options to replace this aging facility, and weighing the options of rehabilitating the existing facility or replacing it with a modern facility. PCRWRD believes that providing this popular tourist destination with a new water reclamation facility is an appropriate investment for the county and the community. (2016 Wastewater Facility Plan).

Permitted Capacity was 0.018189 MGD (2006 PAG 208 Plan Update)

Pima County's draft Facility Plan Update contains the following discussion of the Mount Lemmon WWTF: The Mount Lemmon sewage system upgrading was included in the 2004 Bond Authorization. This system is entirely within the boundaries of the Coronado National Forest. The US Forest Service has significant input into future plans for growth, water use and effluent disposal for this system. The long-range plans for the future of the Mt. Lemmon sewer system will be evaluated and discussed with the Forest Service and the Mt. Lemmon community prior to implementing any changes or improvements.

The 2005 population estimate for the TAZ encompassing Summerhaven was 132. The TAZ includes all of Summerhaven and vacant USFS land. As noted above, only 77 lots can be served by this facility, based on agreements with the USFS.

The approximate service population is 34 based on the 2015 average monthly influent flow of 2,700 GPD. There are 31 active connections (2016 Wastewater Facility Plan).

The approximate service population is 40 based on the 2017 average monthly influent flow of 3,200 GPD.

The current capacity of the Mount Lemmon facility is 0.015 MGD. (2006 PAG 208 Plan Update)

The facility was constructed by Pima County in 1982 after a series of events in the late 1970s and early 1980s. Sabino Creek, a popular recreation area with headwaters on Mount Lemmon, was polluted in the 1970s. Marshall Gulch picnic ground was closed in 1975 because of the pollution, the major source of which was attributed to the discharge of inadequately treated sewage (PAG, 1977). Pima County and the Arizona Department of Health Services agreed on a Stipulation of Facts and Consent Order related to the water quality situation in July 1980. The Consent Order required construction of a new wastewater treatment facility. In April 1981, the State issued a prohibition against the surface discharge of treated wastewater into Sabino Creek, thus forcing the County to find a different disposal site for treated effluent. In September 1981, the PAG Regional Council approved a 208 Plan Amendment that recommended construction of a new wastewater treatment plant that would discharge on National Forest land in the San Pedro River watershed, and limiting sewerage service to only the 47 properties the County was obligated to serve at that time (PAG, 1977; PAG, 1981). The U.S. Forest Service has since approved an additional 30 connections, provided the daily average flows do not exceed 12,500 GPD average flow and 17,000 GPD daily maximum flow (Pima County WWM, 2005b).

The service area was severely impacted by the 2003 Aspen fire, with most of the buildings in Summerhaven destroyed. The WRF itself was spared.

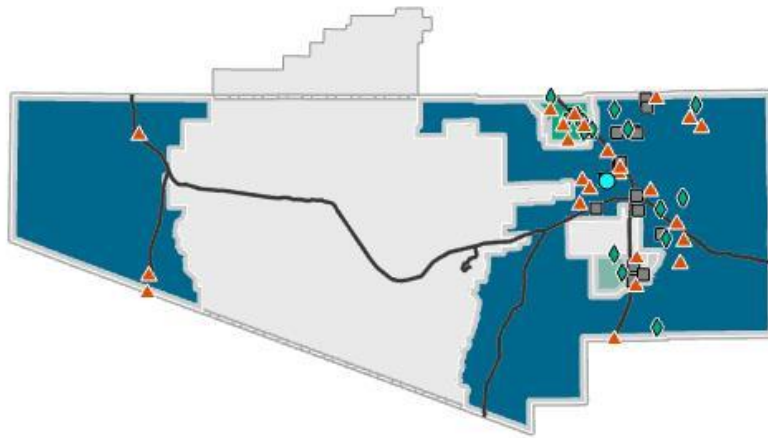
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

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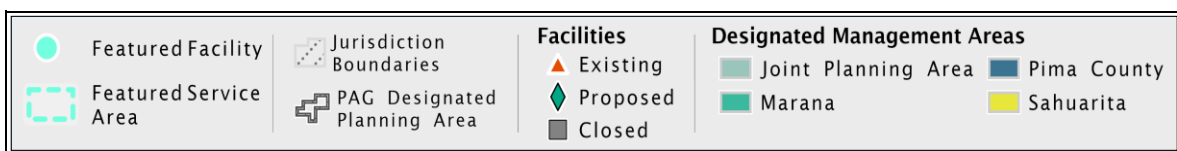
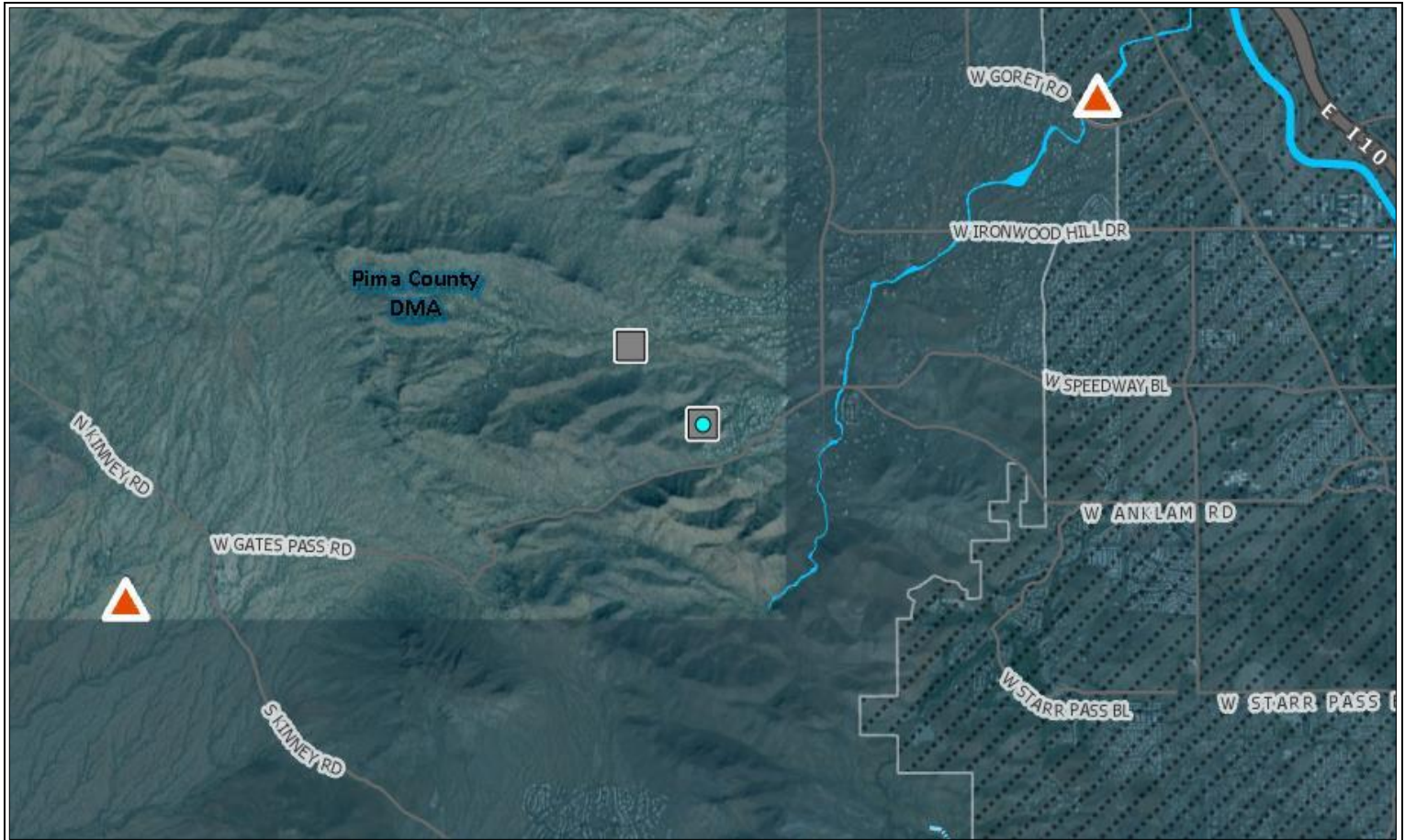


## Mountain Gardens - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Mountain Gardens and Surrounding Area





## Facility Details

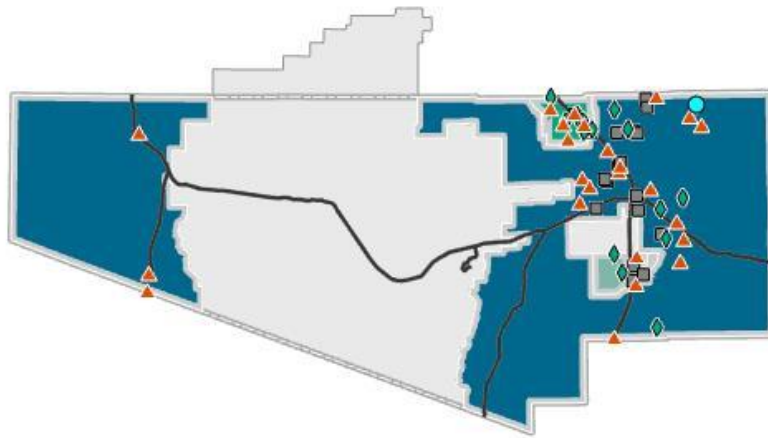
<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Mountain Gardens	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Near Tucson, AZ - 0.33 miles NW of N. Via Roma/W. Gates Pass Rd. intersection	Not Available	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Built/Proposed prior to DMA Sponsorship requirement
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Not Available
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Wastewater treatment facility point source identified in the original 1978 PAG 208 Plan; no longer exists. (208 Plan Update 2006, pg 105)		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		

<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
None

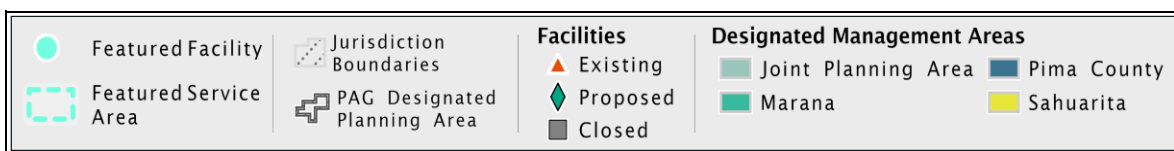
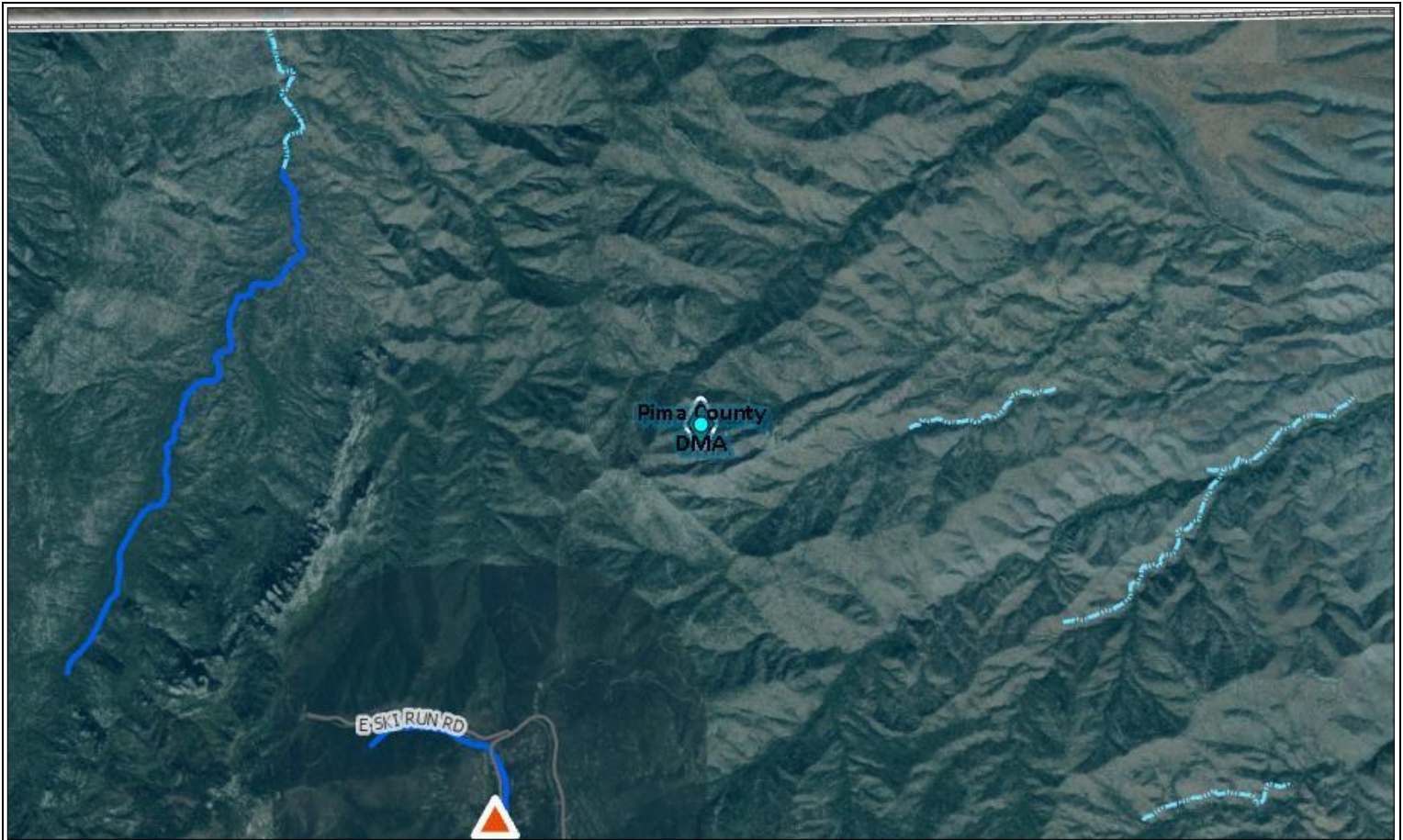
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

## Oracle Ridge Mine - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Oracle Ridge Mine and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Oracle Ridge Mine	No	Proposed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
12151 Old Mt. Lemmon Road in T11S R16E, Section 14 and Section 16 of Pima County, Arizona	EnviroIntegration Services LLC	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.00745 MGD	Not Available	Not Available

### Watershed

Lower San Pedro

### General Description

"As described in Section 9.3 of PAG's Areawide Water Quality Management Plan, small private wastewater treatment facilities can be deemed "not inconsistent" if a number of criteria are met. I have received a "Decline to Serve" letter from Pima County, which is the Designated Management Agency, indicating that it is improbable that the County will provide service to this area within the next 10 years since it is not technically or economically feasible to provide service to this remote location. Given that County declines to serve, and the fact that the facilities will not exceed 20,000 gpd, will not receive commercial or industrial waste, and will not discharge to Waters of the United States, these facilities are appropriate candidates for a "not inconsistent" determination by PAG. The final requirement for a finding of "not inconsistent" is that all property owners within ½ mile of the proposed facility location be notified of the proposal and that none of them object to the proposal within 30 days of being notified. If no objections are received, PAG finds this proposal to be "not inconsistent" with its Areawide Water Quality Management Plan." - (Claire Zucker, CR letter, Jan 23 2007)

### Service Area Boundaries

Please see map (if available)

### Service Area Population

Not Available

### Service Area Land Uses

Not Available

### Treatment Method

Not Available

### Discharge Method and Location

Not Available

**Future Conditions**

Not Available

**Amendments**

None

**Links**

None

**Active Notes\***

CR-20 1/23/2012 (found in PAG files, not on ADEQ list of approved CRs) states: "As described in Section 9.3 of PAG's Areawide Water Quality Management Plan, small private wastewater treatment facilities can be deemed "not inconsistent" if a number of criteria are met.... "Oracle Ridge Mine WWTFs located at 12151 Old Mt. Lemmon Road in T11S R16E, Section 14 and Section 16 of Pima County, Arizona. I have reviewed ADEQ's 208 Consistency Review Form, which provides details about the two proposed facilities; a 7200 GPD onsite treatment facility to be located at the Mine, and a 250 gpd on site facility to be located at the Tailings Storage Facility. Both would be added to the existing APP No 102110, and both facilities would only handle wastewater from showers, sinks and toilets or other sources other than commercial and industrial activity. Neither facility will discharge because all effluent will be recycled back into the mine process..."Given that County declines to serve, and the fact that the facilities will not exceed 20,000 GPD, will not receive commercial or industrial waste, and will not discharge to Waters of the United States, these facilities are appropriate candidates for a "not inconsistent" determination by PAG.

The final requirement for a finding of "not inconsistent" is that all property owners within ½ mile of the proposed facility location be notified of the proposal and that none of them object to the proposal within 30 days of being notified. If no objections are received, PAG finds this proposal to be "not inconsistent" with its Areawide Water Quality Management Plan."

**Historical Notes\***

None

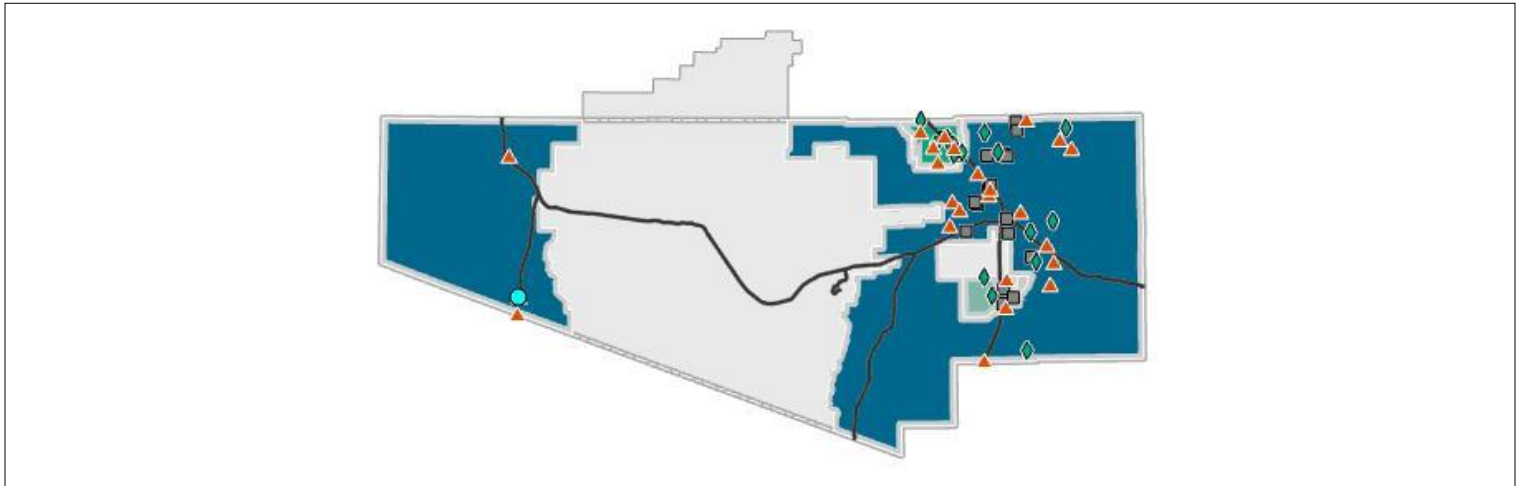
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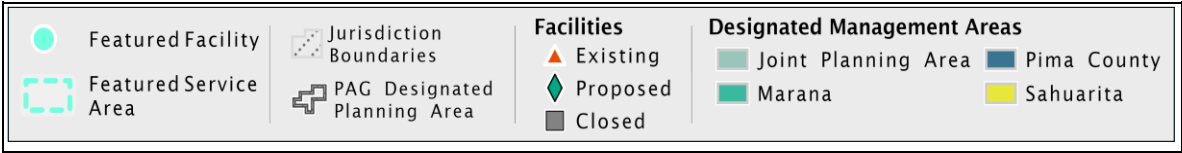
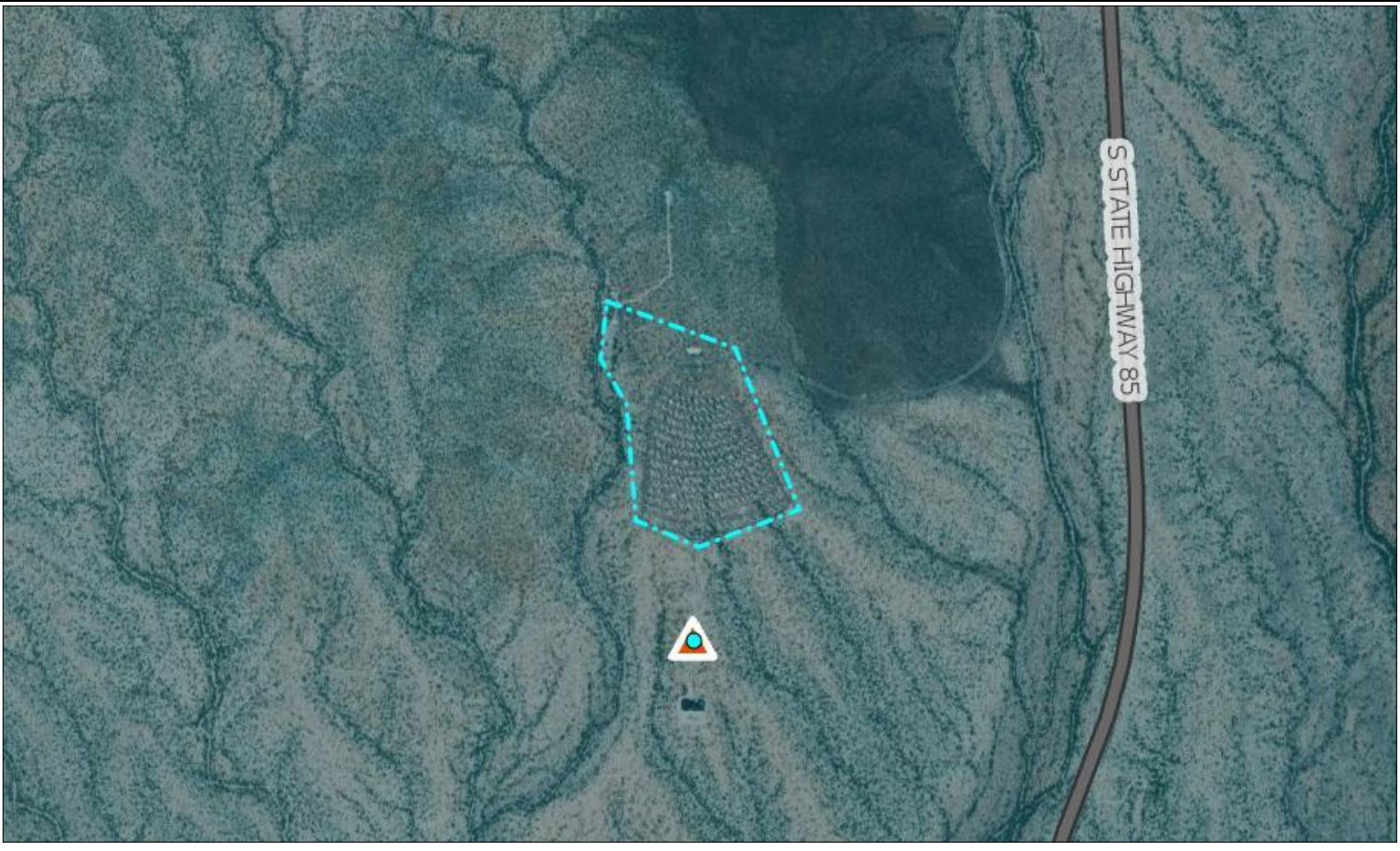


Organ Pipe Cactus National Monument - Within Pima County DMA

Wastewater Reclamation Facilities in the PAG Region



Organ Pipe Cactus National Monument and Surrounding Area



Facility Details		
<b>Facility Name</b> Organ Pipe Cactus National Monument	<b>Operational</b> Yes	<b>Status</b> Existing
<b>Location</b> Organ Pipe Cactus National Monument - 0.2 miles south of Twin Peaks Campground, 10 Organ Pipe Dr.	<b>Owner Name</b> National Park Service	<b>Public Owned?</b> Non-Municipal
<b>DMA Sponsor</b> N/A	<b>DMA Location</b> Pima County	<b>DMA Notes</b> Built/Proposed prior to DMA Sponsorship requirement.
<b>Aquifer Protection Permit Number</b> Not Available	<b>AZPDES Number</b> Not Available	<b>Consistency Status</b> Not Available
<b>Permitted Capacity</b> 0 MGD	<b>Current Capacity</b> Not Available	<b>Current Flows</b> Not Available
<b>Watershed</b> Rio Sonoyta		
<b>General Description</b>  The Organ Pipe Cactus National Monument's ADEQ Waste Water system is # 40-600. The system consists of three lagoons. Only two of the lagoons have ever been used and were lined in October 2003 and they are schedule for new liners in 2020. The system operates by gravity flow and employs no headwork or aeration. Flow is directed to the primary pond for treatment. An overflow pipe directs excess flow to the second pond. Disposal is through evaporation. The system is used primarily during the winter months and nearly evaporates during the summer. (Correspondence with Bob Bryant, Organ Pipe Cactus National Monument's Chief of Facilities Maintenance/Infrastructure, August 2019)		
<b>Service Area Boundaries</b>  Please see map (if available)		
<b>Service Area Population</b>  The system serves six restrooms and a dump station at the campground and two employee residences. Maximum occupancy is 400. (Wallin, 2005)		
<b>Service Area Land Uses</b>  Not Available		
<b>Treatment Method</b>  Not Available		
<b>Discharge Method and Location</b>		

Not Available
<b>Future Conditions</b>  No expansion of service area anticipated; if necessary, treatment capacity could be expanded to continue serving the park if greater wastewater volumes are generated in the future. (208 Plan Update 2006)
<b>Amendments</b>  None
<b>Links</b>  None
<b>Active Notes*</b>  CR-8: On AZDEQ list of submitted CRs "Organ Pipe Cactus National Monument WWTS" (April 23, 2010)
<b>Historical Notes*</b>  None

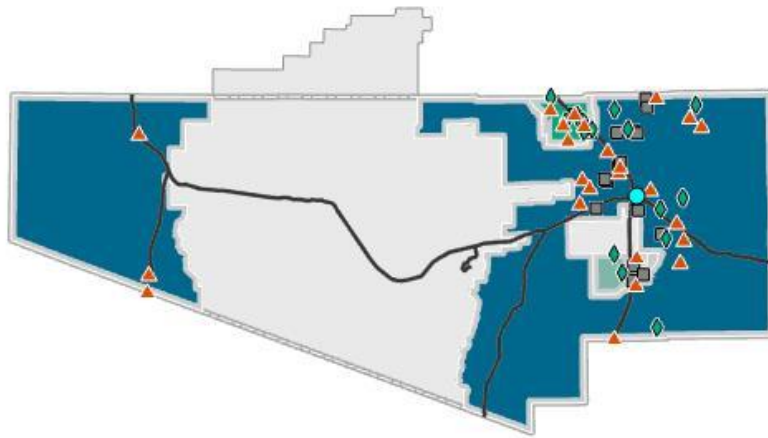
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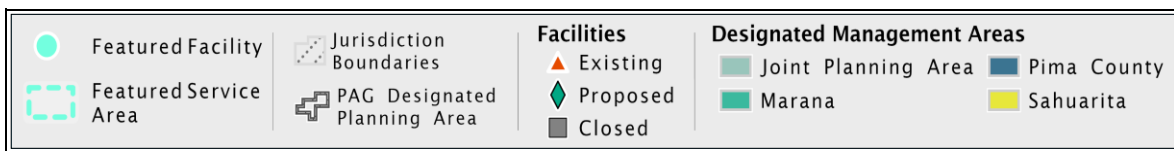
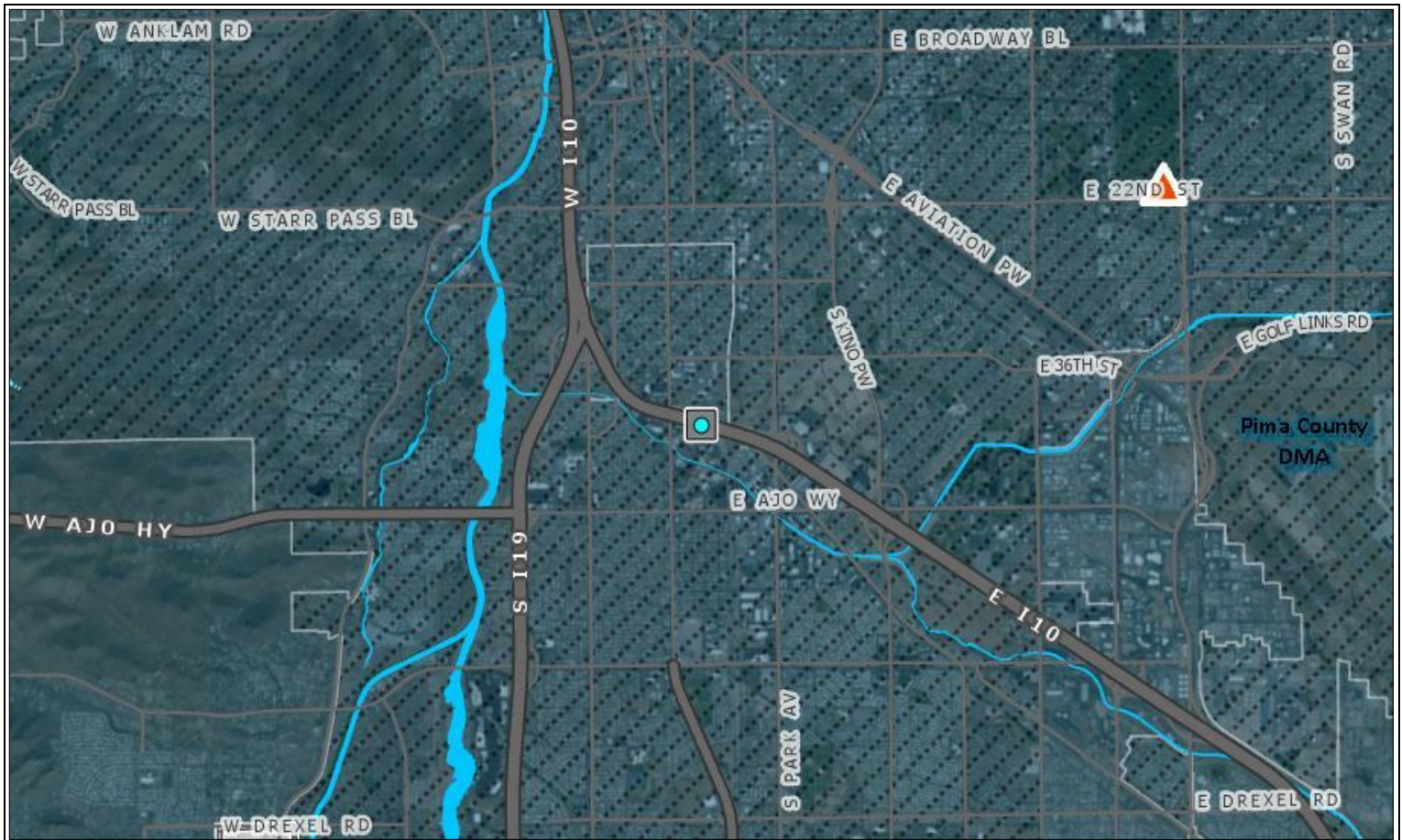


## Pacific Fruit Express - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Pacific Fruit Express and Surrounding Area



## Facility Details

<b>Facility Name</b> Pacific Fruit Express	<b>Operational</b> No	<b>Status</b> Closed
<b>Location</b> Tucson, AZ - Underneath I-10, 0.21 miles east of S. 6th Ave./E. Benson Hwy intersection	<b>Owner Name</b> Not Available	<b>Public Owned?</b> Non-Municipal
<b>DMA Sponsor</b> N/A	<b>DMA Location</b> Pima County	<b>DMA Notes</b> Built/Proposed prior to DMA Sponsorship requirement
<b>Aquifer Protection Permit Number</b> Not Available	<b>AZPDES Number</b> Not Available	<b>Consistency Status</b> Built Prior to 208 Requirement
<b>Permitted Capacity</b> 0 MGD	<b>Current Capacity</b> Not Available	<b>Current Flows</b> Not Available
<b>Watershed</b> Upper Santa Cruz		
<b>General Description</b> Identified in original 208 Plan but no longer exists.		
<b>Service Area Boundaries</b> Please see map (if available)		
<b>Service Area Population</b> Not Available		
<b>Service Area Land Uses</b> Not Available		
<b>Treatment Method</b> Not Available		
<b>Discharge Method and Location</b> Not Available		
<b>Future Conditions</b> Not Available		



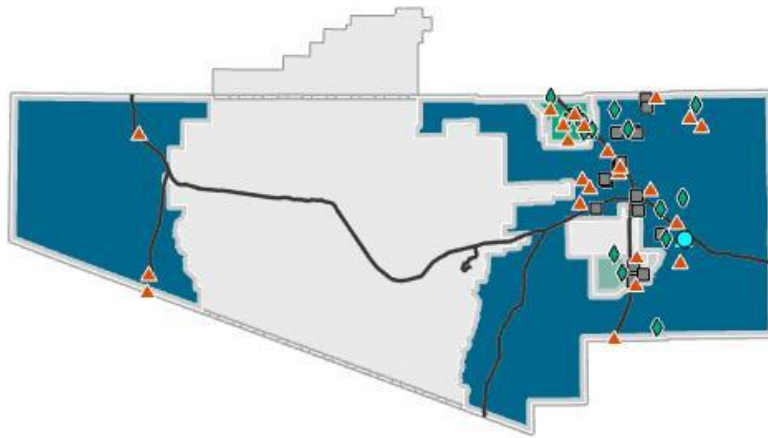
<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
None

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

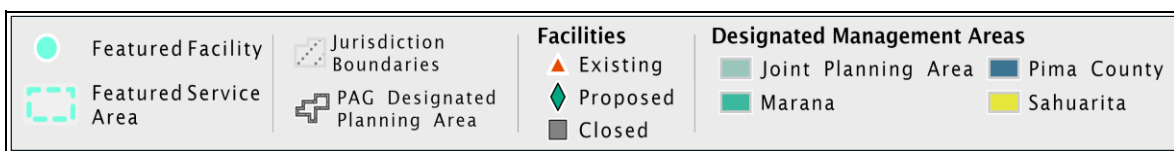
Data Last Updated: 12/11/2019

## Pima County Fairgrounds - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Pima County Fairgrounds and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Pima County Fairgrounds	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Near Tucson, AZ - On Pima County Fairgrounds, 0.3 miles SE of S. Harrison Rd/S. Brekke Rd intersection	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Type 1 - GP	Not Available	Not Available
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.02 MGD	Limited to 20,000 GPD based on an annual average. (2016 Wastewater Facility Plan)	2015 average monthly influent flow was 13,720 gpd (2016 Wastewater Facility Plan). 2016 average monthly influent flow was 10,750 GPD. 2017 average monthly influent flow was 15,100 GPD.
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
<p>The Pima County Fairgrounds WRF is located southeast of Tucson at the county fairgrounds south of Interstate 10 and west of Houghton Road. The facility only serves the fairgrounds and typically only has measurable flow in the month of April when the Pima County Fair is held (Pima County WWM, 2005a). However, the fairgrounds also are used for a variety of public meetings and events (Pima County WWM, 2002). The facility consists of two primary stabilization ponds and an overflow pond. The facility has a permitted capacity of 0.020 MGD. It is operated by the Pima County Regional Wastewater Reclamation Department.</p>		
<b>Service Area Boundaries</b>		
The service area is 0.25 square miles and consists of one mile of public sewer line. The service area only includes the fairgrounds property (2016 Wastewater Facility Plan).		
<b>Service Area Population</b>		
The facility serves the equivalent of 7,550 people (assuming 2 gallons per person per day) based on the 2017 average monthly flow of 15,100 GPD. During the County Fair, flows of up to 63,700 GPD were recorded in April 2013 (2016 Wastewater Facility Plan).		
<b>Service Area Land Uses</b>		
The service area includes only the fairgrounds property; however, a variety of public meetings and events take place on the property (2016 Wastewater Facility Plan).		
<b>Treatment Method</b>		
Two primary stabilization ponds with an overflow pond (2016 Wastewater Facility Plan).		

**Discharge Method and Location**

Effluent is disposed through evaporation and percolation (2016 Wastewater Facility Plan)

**Future Conditions**

PCRWRD has no current plans to increase the size of the facility. The near-term plan for the facility is to retain the existing pond treatment process until the proposed gravity sewer line is constructed to serve the fairgrounds and adjacent development areas. Service by a gravity sewer has been determined to be the most cost-effective alternative. The new gravity line would extend from the Fairgrounds WRF to the Southeast Interceptor where it would connect near the Rita Road/I-10 interchange. The Fairgrounds WRF would be decommissioned upon conversion to the gravity system. PCRWRD will continue to enhance the System-Wide Odor Control Program at the Fairgrounds WRF as long as the facility remains operational.

**Amendments**

None

**Links**

[https://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan\\_2016.pdf](https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan_2016.pdf)

**Active Notes\***

None

**Historical Notes\***

A Fairgrounds WRF and Alignment Feasibility Analysis prepared by RBF Consulting in 2010, discussed several potential alternatives to the facility, including the diversion of flow by gravity to the Southeast Interceptor (SEI) and subsequent decommissioning of the existing ponds. One alternative included the addition of a pump station and force main (approximately 15,000 linear feet) that would be tied into the SEI to handle the excess flows during large events at the Fairgrounds facility. The proposed force main would have connected to the SEI near the Rita Road/I-10 interchange. The pump station and force main would have served as an overflow or equalization facility to the ponds. The long-term plan proposed a gravity connection to the SEI, provided that the necessary base flow from new developments occurred.

Considerations and plans for the Fairgrounds WRF included:

- PCRWRD would continue monitoring peak flows at the facility during the month of April.
- PCRWRD had no plans to increase the size of the facility. In the event that development in the Fairgrounds service area materialized, conversion to the gravity system or force main would become a possibility.
- PCRWRD would continue to consider the most cost-effective option of the extension of a gravity sewer line from the Fairgrounds WRF to the Southeast Interceptor, where it would connect near the Rita Road/I-10 interchange.

The capacity of the Fairgrounds WWTF is anticipated to increase as required to serve the onsite and adjacent property wastewater demands with corresponding facility improvements.

The WRF serves the equivalent of 6,860 people based on the 2015 average monthly flow of 13,720 GPD. During the County Fair, flows of up to 63,700 GPD were recorded in April 2013 (2016 Wastewater Facility Plan).

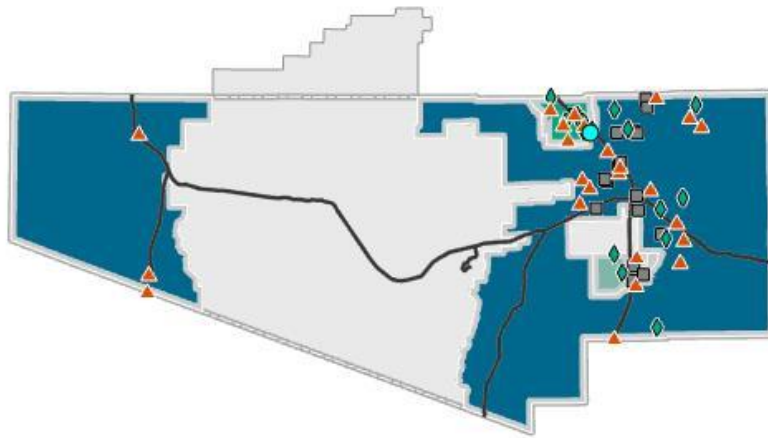
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

Data Last Updated: 9/17/2019

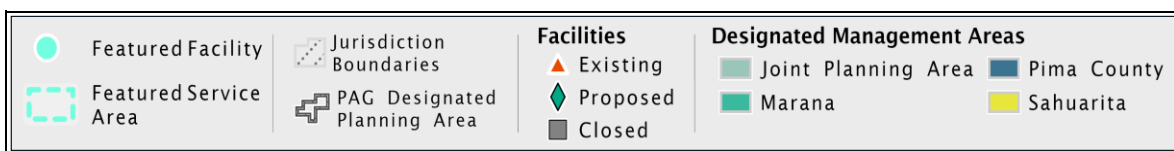


## Puerto del Norte - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Puerto del Norte and Surrounding Area





**Facility Details**

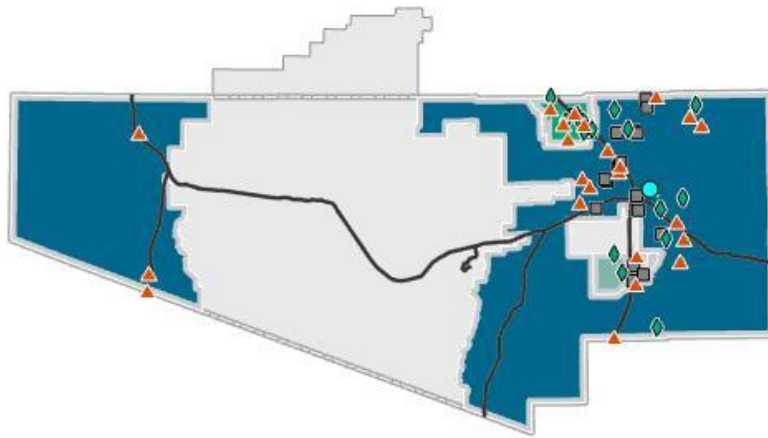
<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Puerto del Norte	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Silverbell & Linda Vista; T12S, R12E	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Built Prior to 208 Requirement
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.015 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Wastewater treatment facility point source identified in the original 1978 PAG 208 Plan; no longer exists. (208 Plan Update 2006, pg 105)		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		
<b>Amendments</b>		

ID	Title	Author	Year	Document
4	Domestic Point Source Water Quality Planning Update Report for Areas A1 & A2	PRC Toups for PAG	1982	<a href="#">Link</a>
12	Continental Ranch 208 Consistency Report — Continental Ranch Pump Station	WLB Group	1986	<a href="#">Link</a>
<b>Links</b>				
None				
<b>Active Notes*</b>				
Subsequent 208 Plan Amendment {12} recommended pump station instead.				
<b>Historical Notes*</b>				
None				

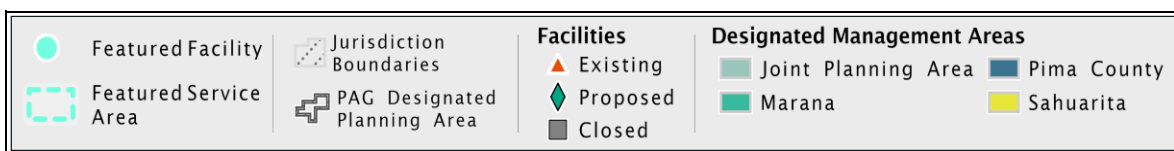
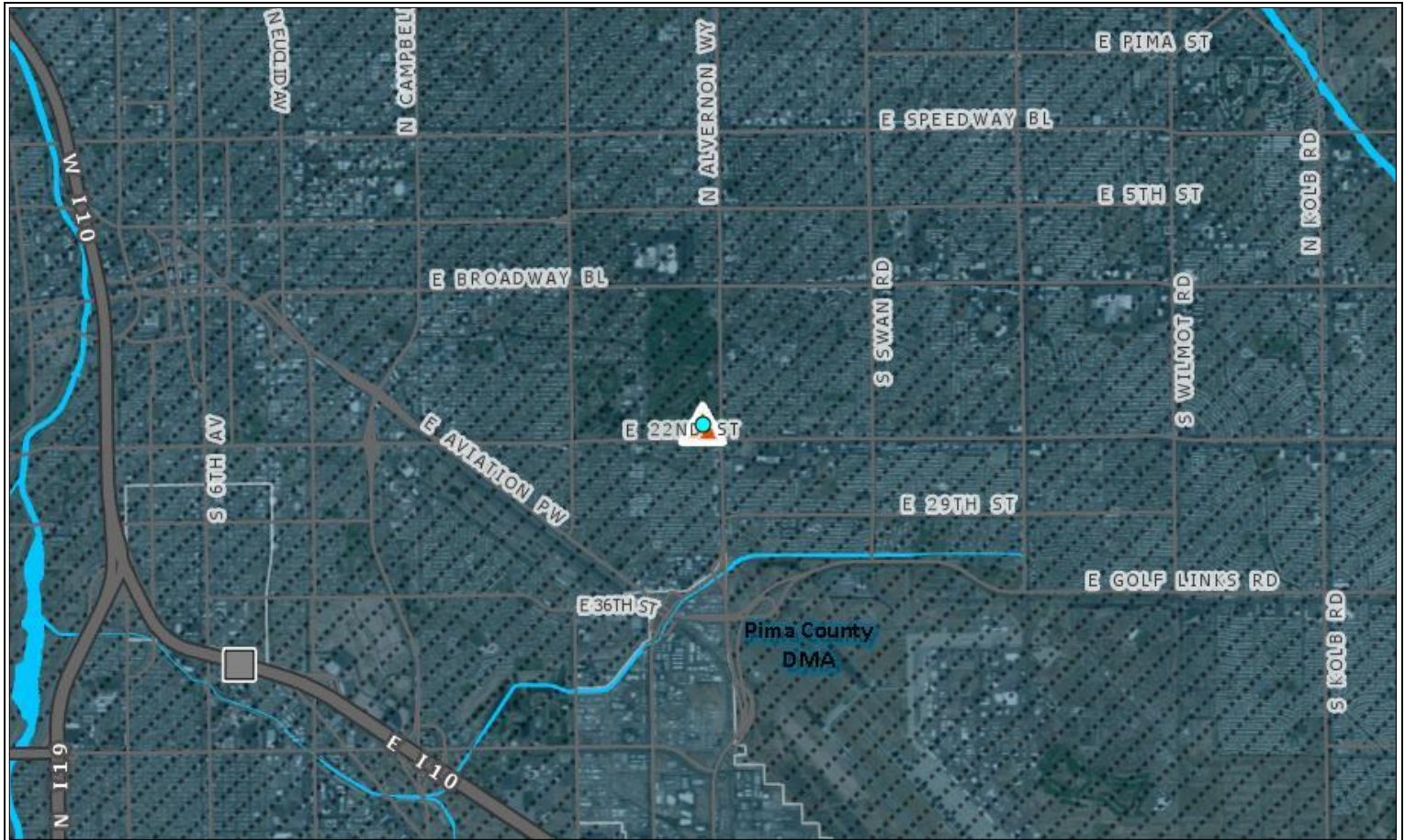
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

## Randolph Park - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Randolph Park and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Randolph Park	No	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Tucson, AZ - In Reid Park, 820 ft NW of Alvernon Blvd/E 22nd St intersection	Pima county	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Not Available
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	The facility is currently rated at 3.0 MGD.	The facility is currently not in operation. Decommissioned in December 2014.

### Watershed

Upper Santa Cruz

### General Description

The original Randolph Park WRF was put into operation in 1975 and is owned and operated by Pima County. It was temporarily removed from active service in 1995, until a replacement WRF was constructed. The replacement WRF operated until December 30, 2014. Since then operations indefinitely ceased at the Randolph Park WRF to reduce Pima County's operational costs. The wastewater that used to be treated at Randolph is now treated at the Agua Nueva and Tres Rios WRF's.

### Service Area Boundaries

This facility treated wastewater en route to the Roger Road facility, which has since been decommissioned and replaced with the Agua Nueva WRF. The treated effluent is reused on turf facilities. PAG did not delineate a service area for this facility.

### Service Area Population

PAG did not estimate a service area population for this facility. Its service area lies within that of the Agua Nueva WRF.

### Service Area Land Uses

The area tributary to Randolph Park is within the Agua Nueva WRF service area.

### Treatment Method

The Randolph Park treatment method is described as follows in The Pima County Effluent Generation and Utilization Report 2004 (Pima County WWM, 2005a): Influent to the WRF is processed through a series of mechanically mixed anoxic basins. Effluent from these basins enters a mixed-liquor channel where it is distributed to six parallel aeration and membrane bioreactor cassette basins. Activated sludge is returned to the cassette basin for reuse, while skimmed solids and excess activated sludge are pumped through a force main. Effluent is disinfected through an in-vessel, low-pressure, high-output, ultraviolet disinfection system.

### Discharge Method and Location

PAG 208 Plan - 2020

Effluent is reused on the adjacent Randolph Park, Randolph Golf Course and Dell Ulrich Golf Course, and is delivered into the City of Tucson's reclaimed water system. The Tucson Reclaimed Water Plant is located near Pima County's Roger Road facility.

Future Conditions

There are no plans to expand the capacity of the Randolph Park water reclamation facility at this time. (208 Plan Update 2006)

Amendments

None

Links

[https://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan\\_2016.pdf](https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan_2016.pdf)

Active Notes\*

Randolph is non-operational but could be switched back in operation if there is a need. The facility was decommissioned primarily due to high O&M cost.

Historical Notes\*

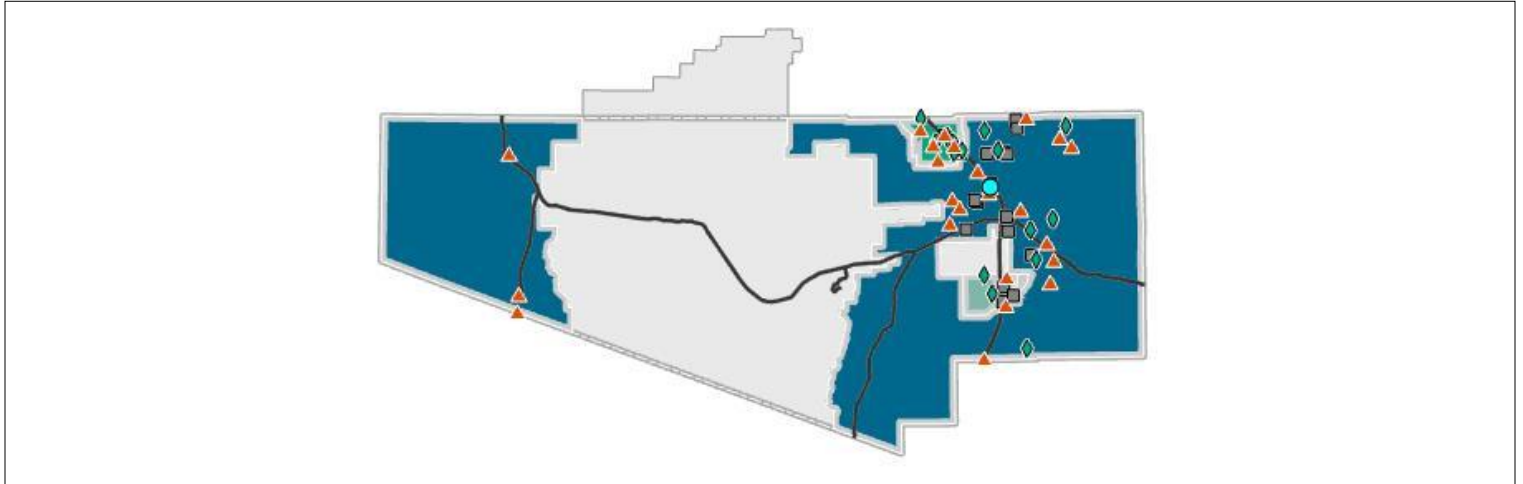
Flows were 1.4 MGD to 1.6 MGD as of September 2005 (Tucson Water, 2005).

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

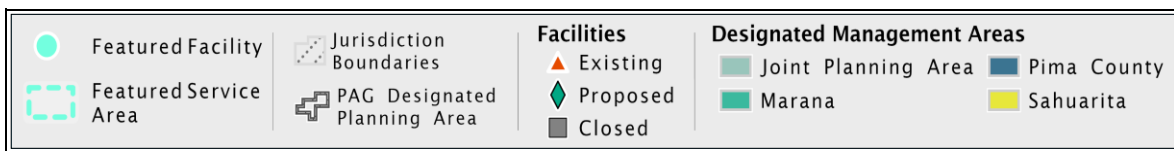
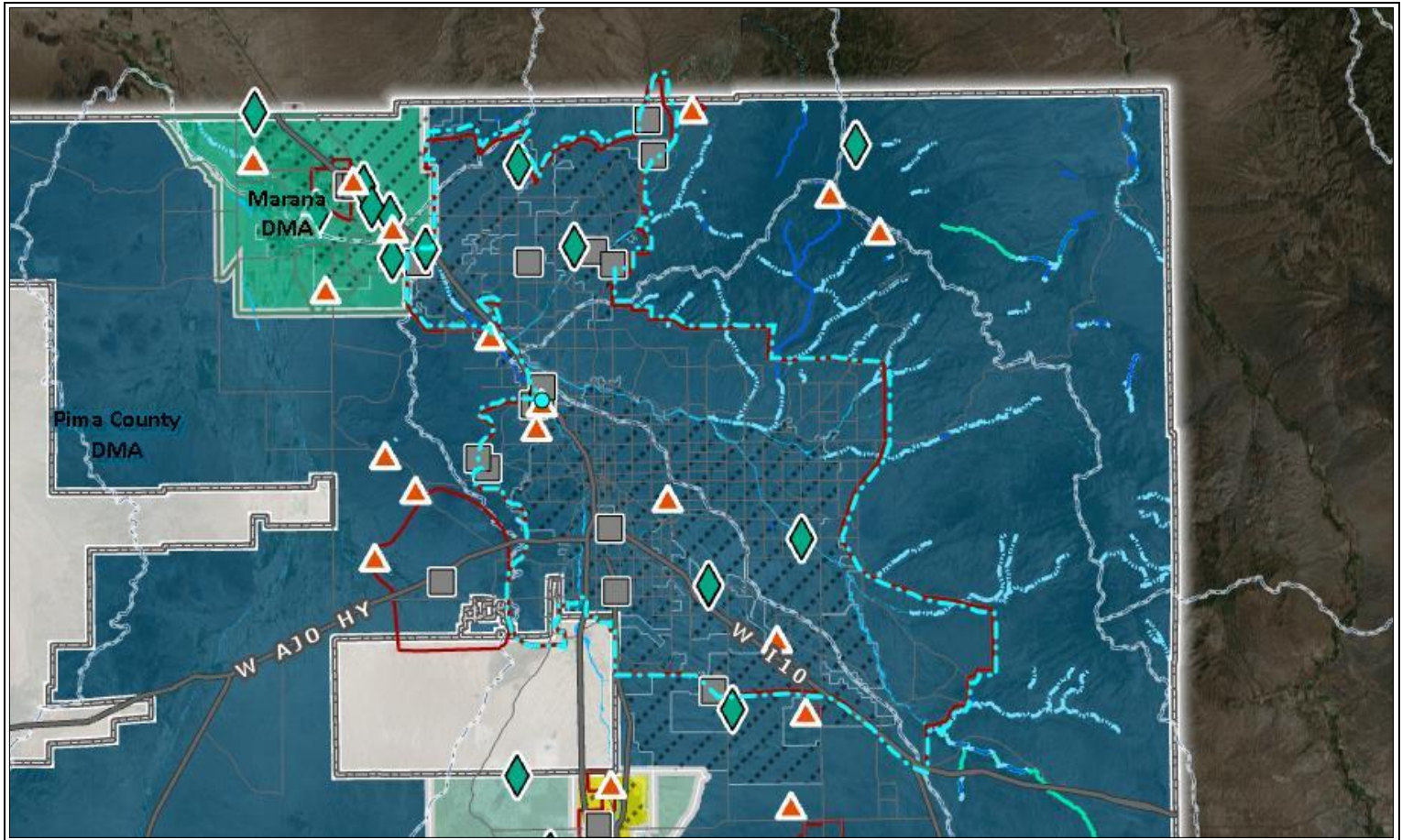


## Roger Road - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Roger Road and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Roger Road	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Tucson, AZ - 2600 W Sweetwater Dr., 0.5 miles west of I-10 Frontage Rd./W. Sweetwater Dr. intersection	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
41 MGD	Not Available	Not Available

### Watershed

Upper Santa Cruz

### General Description

Facility decommissioned and replaced by Agua Nueva WRF. The Roger Road Wastewater Treatment Facility was constructed in 1951 along the east side of the Santa Cruz River at roughly the Roger Road alignment. It was originally owned by the City of Tucson and remained under the City's ownership at the time the original 1978 PAG 208 Plan was adopted. However, the City transferred ownership of the Roger Road plant to Pima County in 1979 pursuant to an Intergovernmental Agreement (IGA), consistent with the recommendations of the original 208 Plan and EPA's desire for consolidation of the metropolitan sewerage system. (208 Plan Update 2006)

### Service Area Boundaries

The Roger Road WWTF service area covered 275 miles, encompassing most of the City of Tucson and most of the major Tucson metropolitan area. It extended from the Tucson Mountains on the west, to roughly Rillito Creek on the north, to the Rincon Mountains on the east, and continued south beyond the City limits. (208 Plan Update 2006)

### Service Area Population

The population served by the Roger Road WWTF in 2005 was 497,039, based on PAG 2005 population projections at the TAZ level, as assigned to tributary sewer-basins by Pima County Wastewater for its Facility Plan update. (208 Plan Update 2006)

### Service Area Land Uses

Based on zoning at the time of operation, land uses in the Roger Road WWTF service area consisted of 69.5 percent residential, 17 percent industrial, 6.5 percent commercial, 3.8 percent specific plan, 1.4 percent federal and state land and 0.8 percent multiple use. (208 Plan Update 2006)

### Treatment Method

The Roger Road facility's treatment process consisted of: headworks for initial screening of large materials and settling out of heavy sand and rocks; clarifiers to separate sludge and scum; biotowers to remove suspended particles by biological treatment; and chlorination. (208 Plan Update 2006)

### Discharge Method and Location

Effluent was discharged to the Santa Cruz River in accordance with an AZPDES permit and Aquifer Protection Permit. Effluent was also reused for turf irrigation and other purposes, primarily through the City of Tucson's reclaimed water system which includes additional treatment before distribution to customers. Biosolids were conveyed to the Ina Road Water Pollution Control Facility for processing. (208 Plan Update 2006)

## Future Conditions

Not Available

## Amendments

ID	Title	Author	Year	Document
6	Metropolitan Tucson Regional Wastewater Management System Facility Plan: Sludge Management and Disposal Program for the Roger Road Wastewater Treatment Facility	Pima County Wastewater Management Department	1983	<a href="#">Link</a>
11	Areawide Wastewater Management Plan Point Source Update	PAG	1985	<a href="#">Link</a>
28	Ina Road Wastewater Reclamation Facility and New Water Reclamation Campus at Roger Road (Regional Optimization Master Plan — ROMP)	Greeley & Hansen for Pima County Regional Wastewater Reclamation Department	2009	<a href="#">Link</a>

## Links

None

## Active Notes\*

"As of January 8, 2014 the last flows to the Roger Road WRF were diverted from the old plant to the new facility, Agua Nueva WRF."  
(<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=52858>)

## Historical Notes\*

Additional expansion of Roger Rd WWTF, construction of a plant interconnect and expansion of the Ina Road WCPF, or both, to combined capacity of 77 MGD recommended in 208 Amendment {11} in 1985.

Based on zoning at the time of the 2006 208 Plan Update, land uses in the Roger Road WWTF service area consisted of 69.5 percent residential, 17 percent industrial, 6.5 percent commercial, 3.8 percent specific plan, 1.4 percent federal and state land and 0.8 percent multiple use. (PAG 208 Plan Update 2006) No Change {28} The Roger Road facility's treatment process consisted of: headworks for initial screening of large materials and settling out of heavy sand and rocks; clarifiers to separate sludge and scum; biotowers to remove suspended particles by biological treatment; and chlorination. (PAG 208 Plan Update 2006) Recommendations for Roger Road were to construct a new 32 MGD wastewater treatment facility using Bardenpho technology to meet the stringent standards imposed by the Arizona Department of Environmental Quality (ADEQ). (ROMP 208 Plan Amendment 2009, Section 8.2.1)

Effluent was discharged to the Santa Cruz River in accordance with an AZPDES permit and Aquifer Protection Permit. Effluent was also reused for turf irrigation and other purposes, primarily through the City of Tucson's reclaimed water system which includes additional treatment before distribution to customers. Biosolids were conveyed to the Ina Road Water Pollution Control Facility for processing (PAG 208 Plan Update 2006). The Roger Road WRF outfall was at latitude +32° 16' 47.3226" and longitude -111° 01' 21.0288". Treated effluent from these facilities discharged into the Santa Cruz River through outfalls adjacent to these locations. Treated effluent was discharged from the Roger Road WRF into the Santa Cruz River from Outfall 001 which was located at latitude +32° 17' 05" and longitude -111° 01' 41". {28, Section 2.8} Effluent water was made available to Tucson Water for their reclaimed water service system at the WRC, Ina Road WRF and Randolph Park WRF. The plan allowed for approximately 30 MGD at the WRC and approximately 20 MGD at Ina Road WRF based on allocated effluent water shares in the year 2030. The 3 MGD effluent from Randolph Park WRF was also available for reclaimed water use. Up to 7 MGD could be made available for discharge into the Santa Cruz River at the New WRC at Roger Road site. This would require that up to at least 5 MGD of the Ina Road WRF effluent be transferred to the Roger Road WRF site via a pumping station/force main system. The balance of the Ina Road WRF effluent beyond reuse needs provided directly from the Ina Road WRF was discharged into the Santa Cruz River. (ROMP 208 Plan Amendment 2009, Section 8.5)

Expansion to 41 MGD, including additional digestion facilities, was recommended in 1985 208 Amendment. (208 Plan Update 2006)

Formerly Existing Regional Facility. 1983 208 Amendment recommended transfer of treated sludge from Roger Road to Ina Road WWTF via pipeline. (208 Plan Update 2006)

PCRWRD favors long-range planning so it is possible to make clear, timely, and cost-effective decisions regarding the wastewater treatment plants and conveyance. As such, a Regional Optimization Master Plan (ROMP) was initiated and completed. That report revealed capacity needs at treatment plants and conveyance issues within the Ina Road and Roger Road service areas through 2030. The main issues that are prompted the need for a new Water Reclamation Campus (WRC) at Roger Road and modifications/expansions to the Ina Road WRF was the need for a reduction in ammonia and nitrogen concentrations discharged into the Santa Cruz River to comply with the near future environmental regulatory requirements set forth by the Arizona Department of Environmental Quality (ADEQ). (ROMP 208 Plan Amendment 2009, Section 6.3)

The 1985 208 Amendment recommended a 201 Facility Planning effort; 1990 201 Facility Plan Update recommended phased expansion to 50 MGD. (208 Plan Update 2006)

The 2009 ROMP 208 Amendment for the Ina Road Wastewater Reclamation Facility and a New Water Reclamation Campus (WRC) at Roger Road {28} described wastewater treatment and disposal with regards to both the new WRC at Roger Road and the Ina Road WRF. Accordingly, the change in water quality to be discharged from the plants as a result of compliance with the regulatory requirements of the Arizona Department of Environmental Quality (ADEQ) to reduce the ammonia and nitrogen concentration discharged into the Santa Cruz River required a 208 Plan amendment.

The population served by the Roger Road WWTF in 2005 was 497,039, based on PAG 2005 population projections at the TAZ level, as assigned to tributary sewer-basins by Pima County Wastewater for its Facility Plan update. (PAG 208 Plan Update 2006) No Change (ROMP 208 Plan Amendment 2009)

The Roger Road facility's rated capacity was 41 MGD. (PAG 208 Plan Update 2006) Ability to transfer flow between the Roger Road service area and the Ina Road WRF was critical for the management of wastewater to accommodate growth. Based on growth projections, it was anticipated that Roger Road WRF's capacity would be reached by the year 2011, or 2012. The plant interconnect pipeline, or some other method of transferring supplemental flows, to the Ina Road WRF needed to be placed into operation by this time. Because of the capacity limitations at the Roger Road WRF, there was an urgency in advancing the construction of the plant interconnect pipeline (Santa Cruz Interceptor Phase IV). (ROMP 208 Plan Amendment 2009, Section 8.4)

The Roger Road facility's treatment process consisted of: headworks for initial screening of large materials and settling out of heavy sand and rocks, clarifiers to separate sludge and scum, biotowers to remove suspended particles by biological treatment and chlorination. (208 Plan Update 2006) Recommendations for Roger Road were to construct a new 32 MGD wastewater treatment facility using Bardenpho technology to meet the stringent standards imposed by the Arizona Department of Environmental Quality (ADEQ). (ROMP 208 Plan Amendment 2009, Section 8.2.1)

The Roger Road plant received flows averaging 37 MGD during Fiscal Year 2003-2004.

The Roger Road Wastewater Treatment Facility was constructed in 1951 along the east side of the Santa Cruz River at roughly the Roger Road alignment. It was originally owned by the City of Tucson and remained under the City's ownership at the time the original 1978 PAG 208 Plan was adopted. However, the City transferred ownership of the Roger Road plant to Pima County in 1979 pursuant to an Intergovernmental Agreement (IGA), consistent with the recommendations of the original 208 Plan and EPA's desire for consolidation of the metropolitan sewerage system. (208 Plan Update 2006)

The Roger Road WWTF service area encompassed most of the City of Tucson and most of the major Tucson metropolitan area. It extended from the Tucson Mountains on the west, to roughly Rillito Creek on the north, to the Rincon Mountains on the east, and continued south beyond the current City limits. The Ina Road WPCF service area lay to the north of the Roger Road service area. (PAG 208 Plan Update 2006) The Roger Road Wastewater Reclamation Facility (WRF) service area extended from Rillito Creek to the north, outside of the city boundaries on the south, and from the Tucson Mountains on the west to the Rincon Mountains on the east. The service area of the Roger Road WRF was 275 square miles. (ROMP 208 Plan Amendment 2009, Section 3.1)

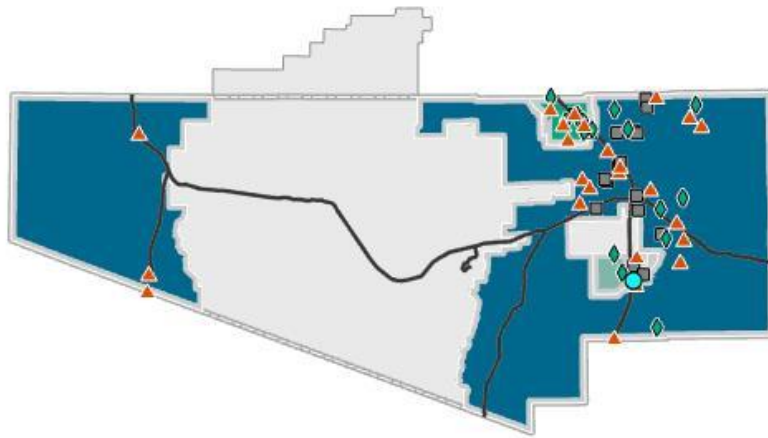
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

Data Last Updated: 12/11/2019

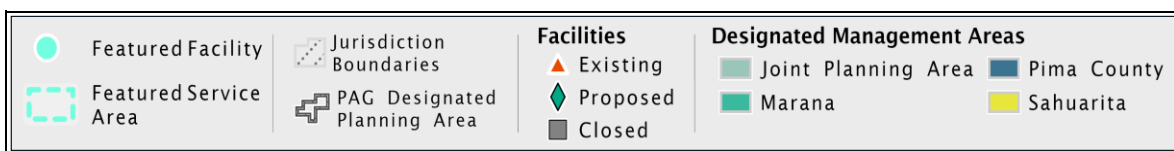
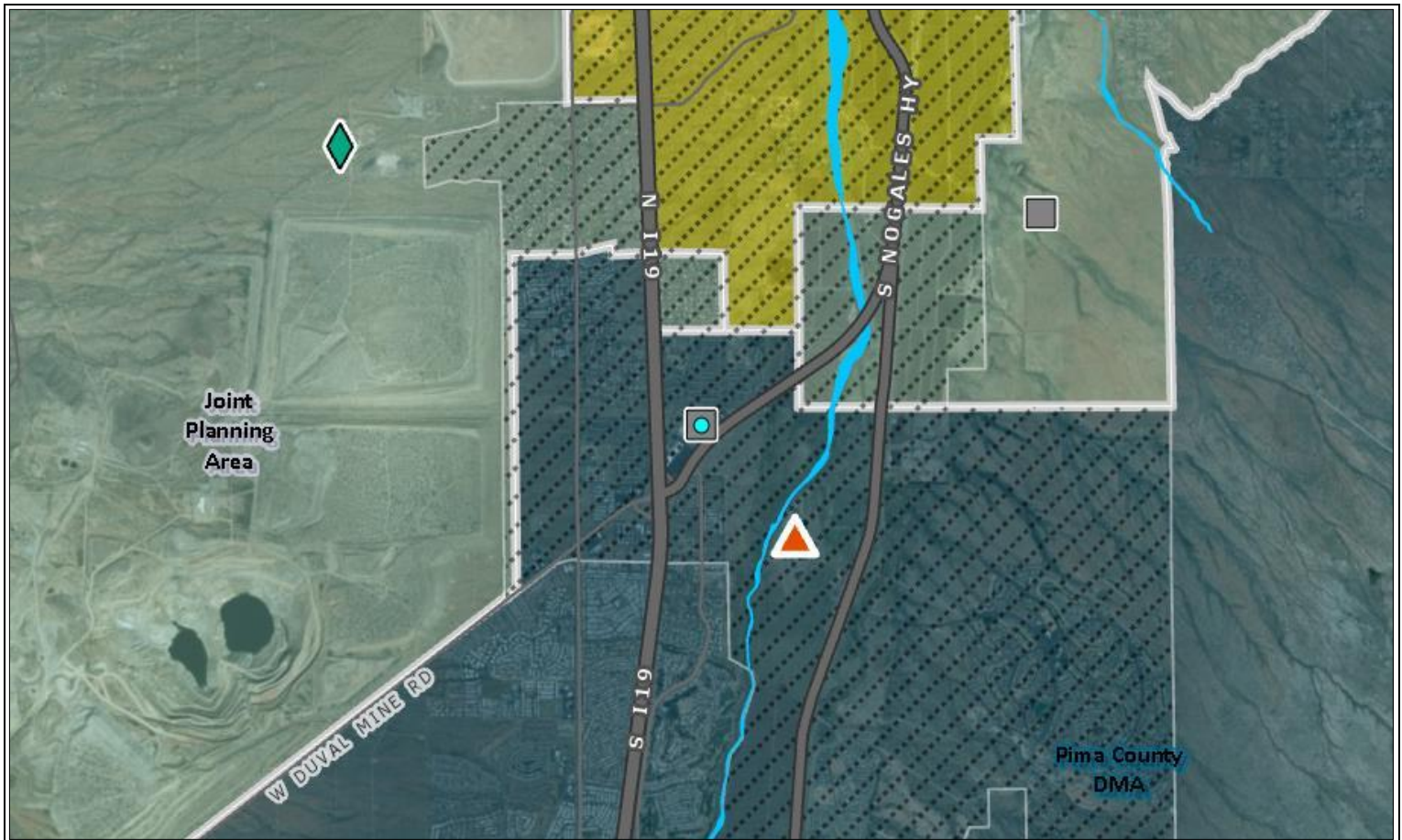


## Santo Tomas - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Santo Tomas and Surrounding Area





## Facility Details

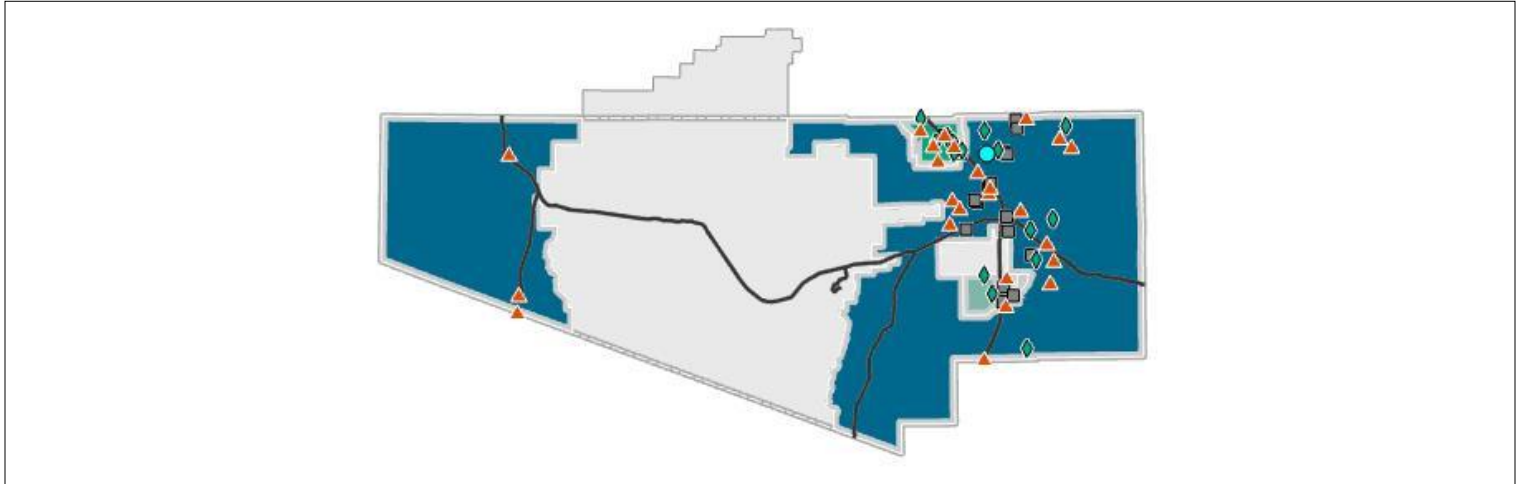
<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Santo Tomas	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Sahuarita, AZ - Underneath Madera Marketplace shopping center, 0.1 miles NW of S. Nogales Hwy/W. Calle Arroyo Sur intersection	Pima County	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Built Prior to 208 Requirement
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.07 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Wastewater treatment facility point source identified in the original 1978 PAG 208 Plan; no longer exists. (208 Plan Update 2006, pg 105)		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		

Amendments				
ID	Title	Author	Year	Document
10	Green Valley Cortaro Area Management Plans	PAG	1984	<a href="#">Link</a>
Links				
None				
Active Notes*				
None				
Historical Notes*				
None				

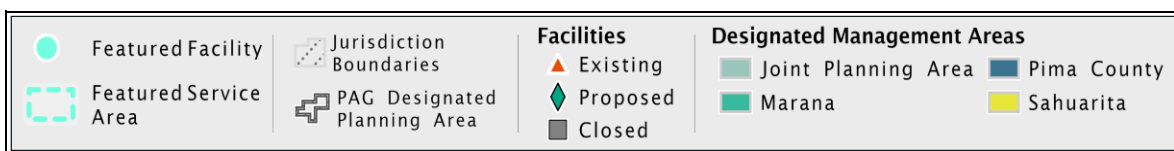
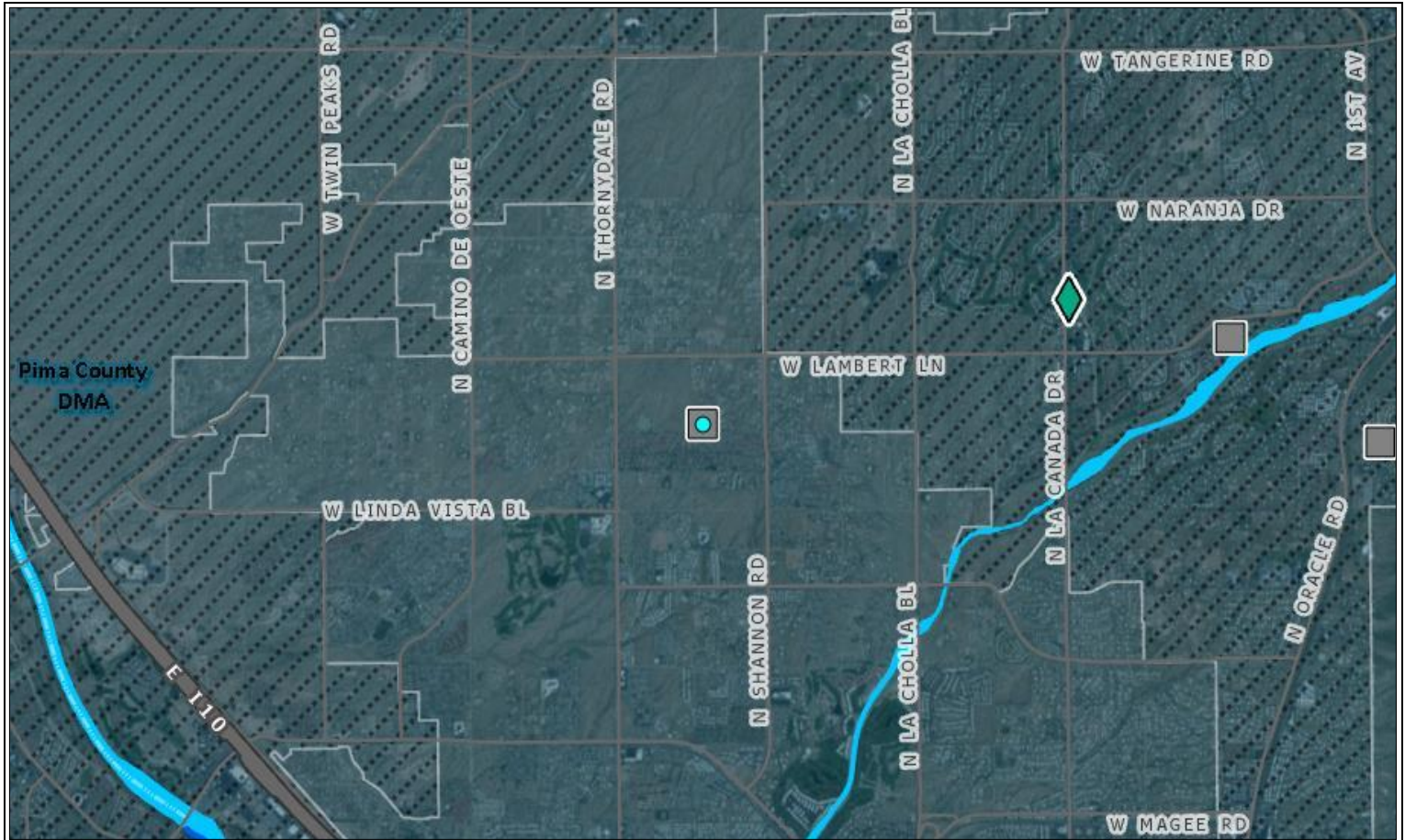
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

## Shamrock Farms - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Shamrock Farms and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Shamrock Farms	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Casas Adobes, AZ - 3220 W Oasis Rd, 0.6 miles SW of N Shannon Rd/W. Lambert Ln. Intersection,	Shamrock Farms	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Built/Proposed prior to DMA Sponsorship requirement. In the Pima County DMA Boundary.
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
unknown	NPDES Number 0021717 (1978 PAG 208 Plan)	Built Prior to 208 Requirement
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	0	0
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Identified in original 208 Plan but no longer exists.		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
unknown		
<b>Discharge Method and Location</b>		
ponds, unknown		
<b>Future Conditions</b>		
Not Available		

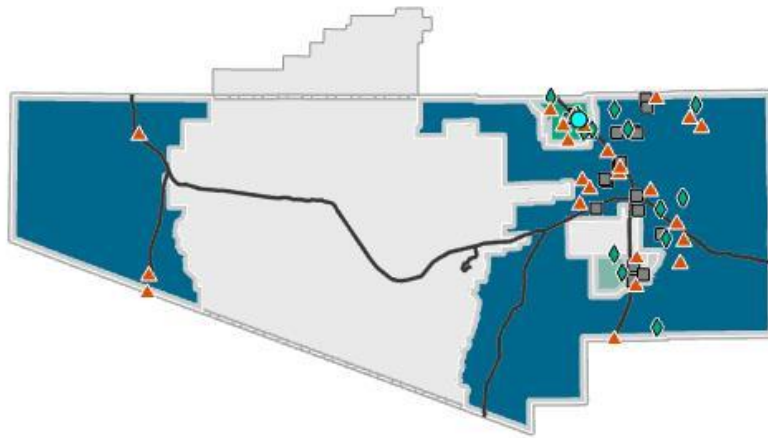
Amendments				
ID	Title	Author	Year	Document
10	Green Valley Cortaro Area Management Plans	PAG	1984	<a href="#">Link</a>
Links				
None				
Active Notes*				
Existing at time; ponds now closed.				
Historical Notes*				
Retention pond for run-off from 2.9"/24 hr. storm. (1978 PAG 208 Plan)				
Waste generated from 2,400 cows was sacked for fertilizer. (1978 PAG 208 Plan)				

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

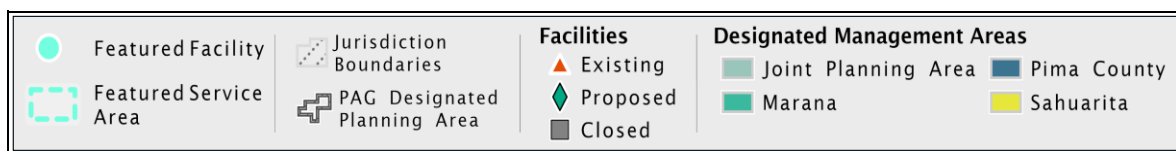
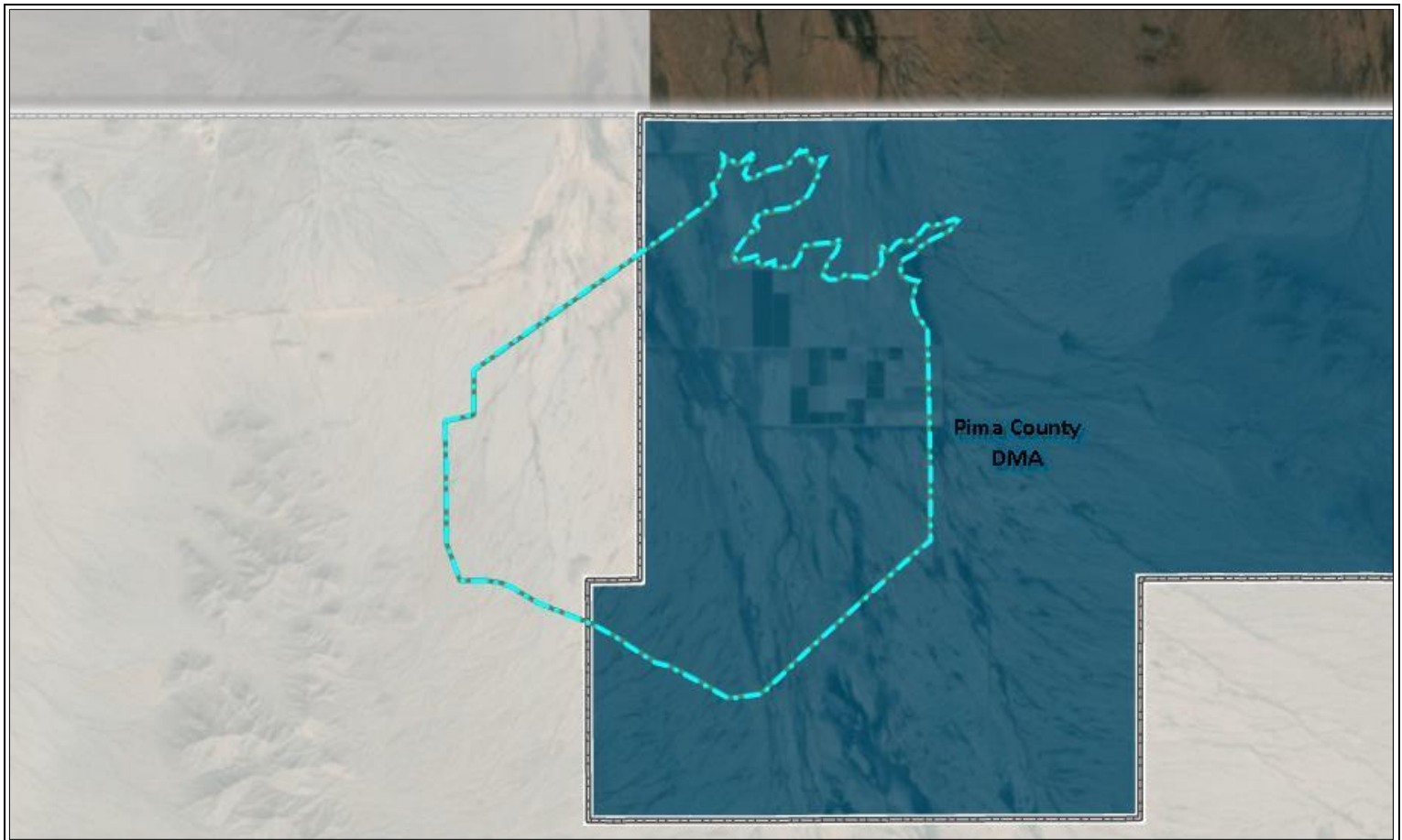


## South Marana (aka MSP) - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### South Marana (aka MSP) and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
South Marana (aka MSP)	No	No Longer Planned
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
West of i-10/Tangerine; T11S, R11E, NW quarter Sec 36	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Pending Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
1.82 MGD	Not Available	Not Available
<b>Watershed</b>		
Lower Santa Cruz		
<b>General Description</b>		
Not Available		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		
<b>Amendments</b>		

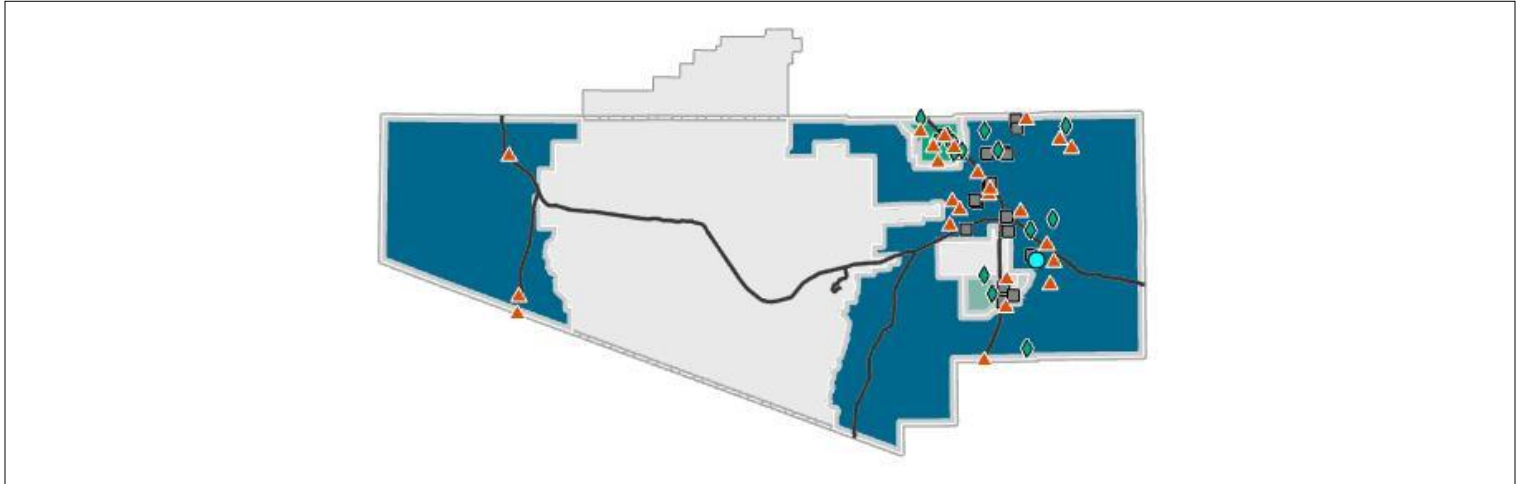
ID	Title	Author	Year	Document
8	Facility Plan Report Proposed 208 Point Source Element Amendment for MSP Companies WWTF	Greiner Engineering	1984	<a href="#">Link</a>
15	Marana Study Area 208 Consistency Report	Pima County Wastewater Management Department	1988	<a href="#">Link</a>
18	208 Consistency Report for MSP Companies WWTF	WLB Group	1992	<a href="#">Link</a>
<b>Links</b>  None				
<b>Active Notes*</b>  Proposed with Amendments {8} in 1984 and {18} in 1992 but never built. 208 Plan Amendment {8} for this facility superseded by 208 Plan Amendment {18}. 208 Amendment {15} approved in 1988 also noted that trunk sewer to regional site might be constructed instead of this facility. 208 Amendment {18} set 12/31/97 as deadline for construction, otherwise 208 Amendment {18} will “no longer be in effect” and 208 Amendment {8} would “prevail”. (208 Plan Update 2006)				
<b>Historical Notes*</b>  None				

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

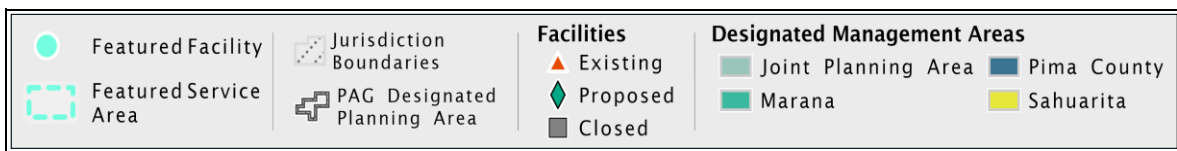
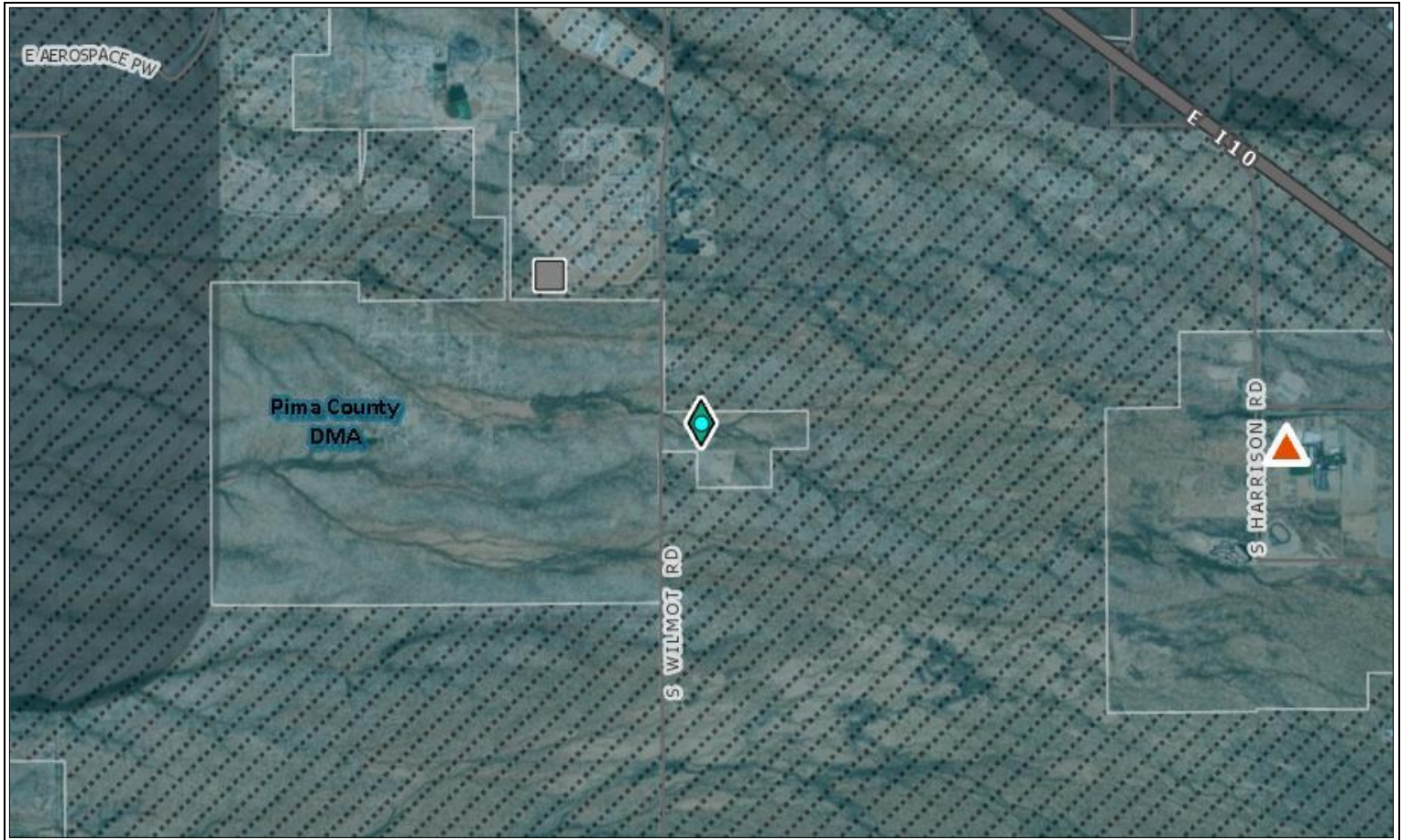
Data Last Updated: 12/11/2019

## Southlands - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Southlands and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Southlands	No	No Longer Planned
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Near Tucson, AZ - East side of S. Wilmont Rd., 1.9 miles south of S. Wilmont Rd./E. Old Vail Rd. intersection	PC- Proposed	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Pending Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Not Available		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		

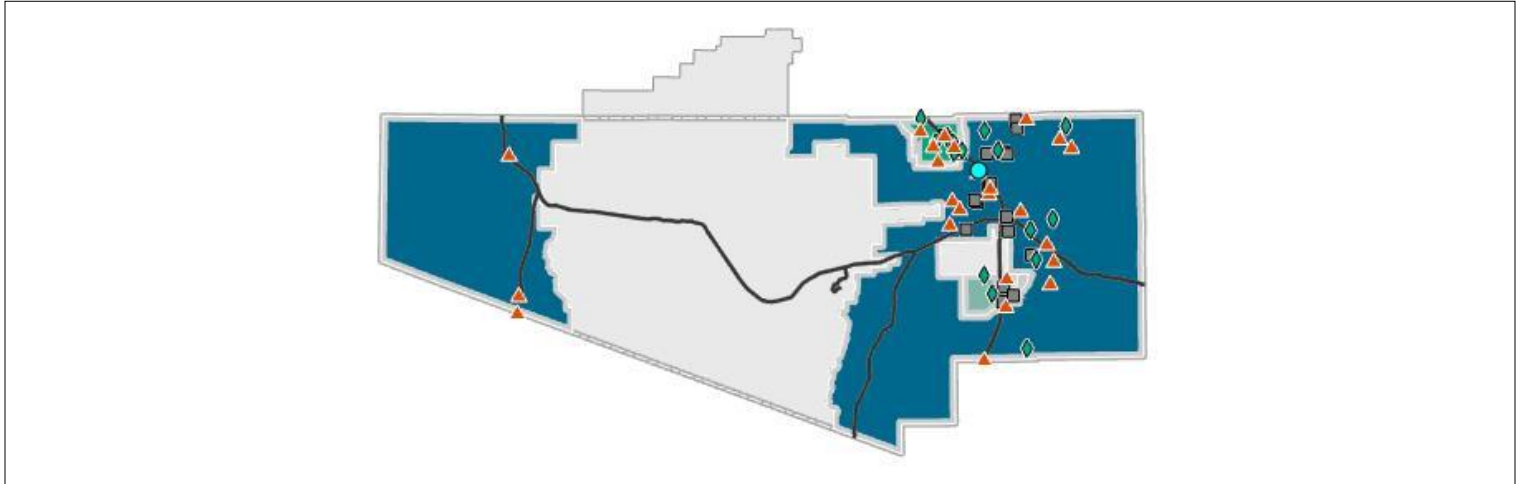


Amendments				
ID	Title	Author	Year	Document
28	Ina Road Wastewater Reclamation Facility and New Water Reclamation Campus at Roger Road (Regional Optimization Master Plan — ROMP)	Greeley & Hansen for Pima County Regional Wastewater Reclamation Department	2009	<a href="#">Link</a>
Links				
<a href="#">None</a>				
Active Notes*				
Proposed in the 2009 ROMP amendment now removed as a future facility since Pima County will be connecting to that area to a gravity sewer that is currently under design. (208 Plan Update 2020)				
Historical Notes*				
None				

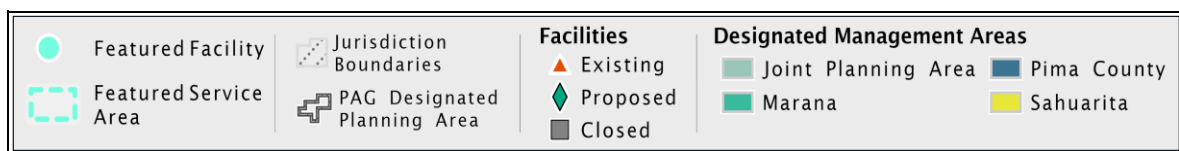
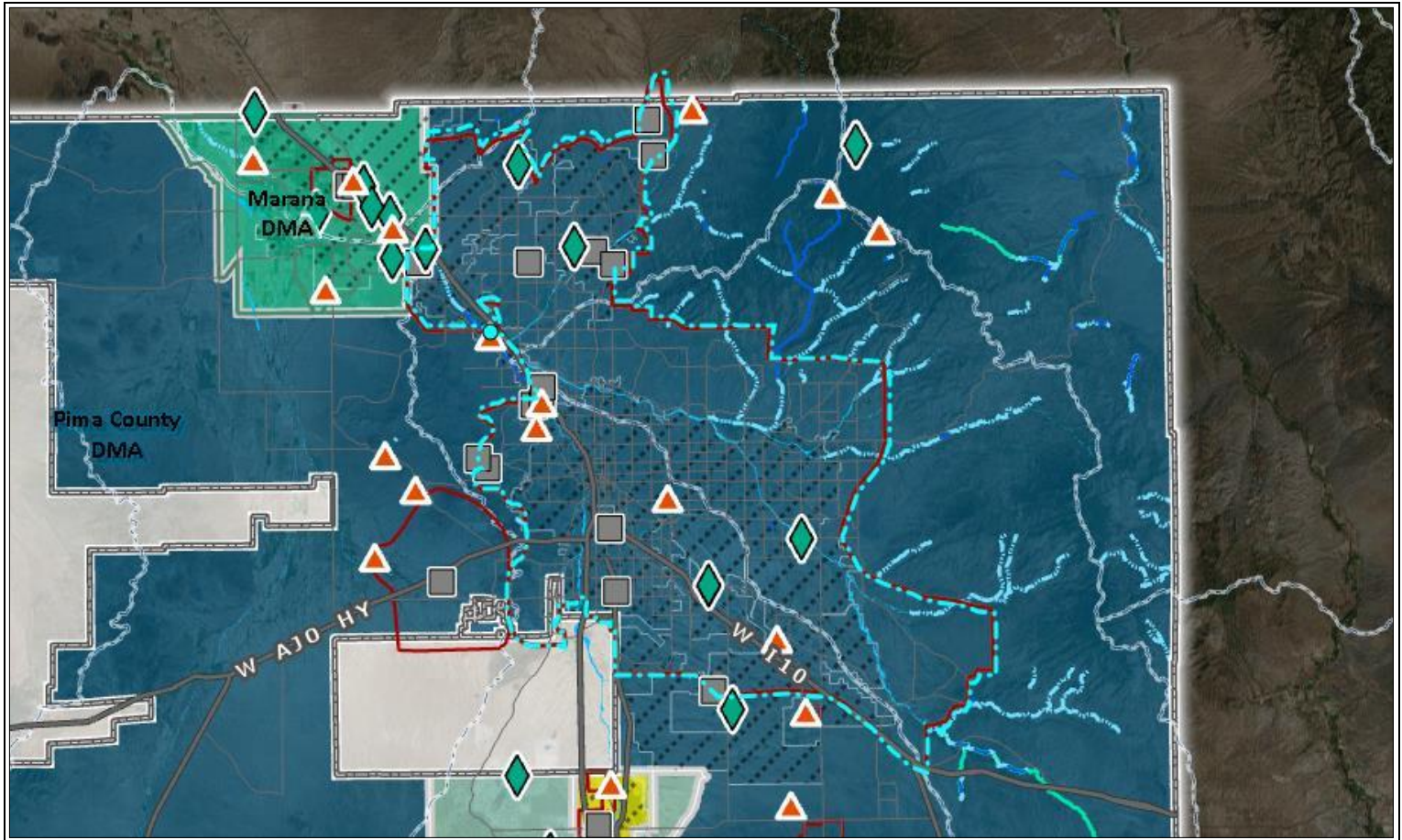
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

## Tres Rios - Within Pima County DMA

### Wastewater Reclamation Facilities in the PAG Region



### Tres Rios and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Tres Rios	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Marana, AZ - 7101 N Casa Grande Hwy, 0.2 miles SE of N. Casa Grande Hwy/W. Ina Rd. intersection	Pima County	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-100630	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
50 MGD	The Tres Rios WRF has a permitted treatment capacity of 50.0 MGD	The average monthly influent flow in 2014 was 32.4 MGD (65% capacity), and in 2015 it was measured at 30.6 MGD (61% capacity). (2016 Wastewater Facility Plan pg 79). In 2016 and 2017, the average monthly influent flows were measured at 30.7 MGD and 30.2 MGD, respectively.

### Watershed

Upper Santa Cruz

### General Description

Managed together with Agua Nueva WRF. The Tres Ríos Water Reclamation Facility (WRF), formerly named the Ina Road WRF, has a capacity of 50 million gallons a day (MGD). The facility underwent a major upgrade and expansion as part of the Regional Optimization Master Plan. The upgrade and expansion of the Tres Ríos WRF was particularly challenging because during construction, the facility had to continue to operate without interruption. Automation plays a critical role in this state-of-the-art facility.

Tres Rios operates 24-hours per day, 365 days a year. It is the centralized biosolids treatment location for all of the Pima County treatment facilities. The facility is permitted for A+ reclaimed water through Arizona Department of Environmental Quality.

The Tres Ríos WRF features:

- An increase in capacity from 37.5 MGD to 50 MGD
- The replacement of a 1970s high purity oxygen process with six trains of a modified five-stage Bardenpho process with bioreactors and clarifiers
- Upgrades to the 2006 Biological Nutrient Return Activated Sludge (BNRAS) system
- Additions to the anaerobic digestion system
- Centralization of sludge handling and treatment systems for the entire County
- Expansion of the headworks, including screening, pumping and grit removal systems
- Expansion of the primary treatment processes
- Construction of three gravity belt sludge thickeners
- Construction of two new anaerobic digesters
- Expansion of disinfection facilities
- Upgrade of three sludge dewatering units
- Construction of an operations control center
- Construction of a new warehouse
- Upgrade of the existing administration building
- Upgrade of the central maintenance center

- Construction of facility-wide odor control systems
- Construction of a facility-wide security system
- Improvements to landscaping and security fencing

### Service Area Boundaries

The Agua Nueva/Tres Rios service area encompasses approximately 333 square miles and is served by two principal water reclamation facilities, the Agua Nueva WRF and the Tres Rios WRF. The service area includes five jurisdictions: the City of Tucson, the City of South Tucson, a southeastern portion of the Town of Marana, the Town of Oro Valley and Pima County. The Agua Nueva/Tres Rios service area includes most of the metropolitan Tucson area. It extends from the Tucson Mountains on the west, to the Town of Oro Valley on the north, including an area north of the Pima/Pinal County line along State Route 77, to the Rincon Mountains on the east, and continues south beyond the City limits.

### Service Area Population

The Tres Rios WRF currently serves approximately 383,000 people based on the 2015 average monthly flow of 30.6 MGD. (2016 Wastewater Facility Plan)

### Service Area Land Uses

Based on current zoning, land uses in the Agua Nueva/Tres Rios service area consists of mostly urban residential (47%). Rural land use comprises 31% of service area, followed by industrial/commercial uses, which comprise 12% of total land use. Business and mixed land uses comprise 7%, while 3% is attributed to "other" uses. (2016 Wastewater Facility Plan pg 36)

### Treatment Method

Tres Rios's treatment is a 5-stage Bardenpho process with biological nutrient removal.

"The facility began operating in 1979 as a 25 MGD, high purity oxygen activated sludge process. Capacity at the facility increased in 2006 with the addition of a 12.5 MGD Biological Nutrient Removal Activated Sludge (BNRAS) process" (2016 Wastewater Facility Plan, pg 77). The Tres Rios WRF Capacity and Effluent Quality Upgrade Project replaced the high purity activated sludge and BNRAS processes with a 5-stage Bardenpho process. (2016 Wastewater Facility Plan, pg 78)

ADEQ requires pretreatment for wastewater treatment facilities 5 MGD or greater (Taunt 2005). The Pima County Regional Wastewater Department is the only DMA in the PAG region with facilities of "large" size (greater than 5MGD). Its pretreatment program is described in the Facility Inventory as follows (Pima County Regional Wastewater Department 2002):

The Industrial Waste Control Group (IWC) is the pre-treatment arm of the Treatment Division. IWC has jurisdiction over commercial sewer users in the incorporated and unincorporated areas within Pima County boundaries. Because it has jurisdiction throughout the county, IWC is able to achieve consistency in permitting, monitoring, and enforcing discharge requirements. The Field Services Unit of IWC monitors all Significant Industrial Users of the system twice a year. Significant Industrial Users are those businesses that have discharges that significantly impact the sanitary sewage conveyance system or treatment facilities. Strict procedures are adhered to in gathering samples.

### Discharge Method and Location

"As of mid-2016, the facility is permitted for the production of Class A+ reclaimed water. Effluent discharged to the Santa Cruz River flows into the Lower Santa Cruz Managed Recharge Project which extends along the river channel from Cortaro Road to Trico Road." (2016 Wastewater Facility Plan, pg 78)

### Future Conditions

The modernized Tres Rios WRF complies with stringent regulatory requirements on effluent nutrient reduction. With a permitted capacity of 50 MGD, the facility can meet the projected population needs beyond the year 2030.

For the area where Pima County sewer service crosses into Pinal County, Pima County plans to become a DMA with Central Arizona Governments. Expansion is occurring in the Eagle Crest West PAD on the west side of SR77 (Oracle Road) north of the community of Catalina and service currently includes the existing commercial/residential development of Eagle Crest Ranch on the east side of SR77.

### Amendments

ID	Title	Author	Year	Document
11	Areawide Wastewater Management Plan Point Source Update	PAG	1985	<a href="#">Link</a>
28	Ina Road Wastewater Reclamation Facility and New Water Reclamation Campus at Roger Road (Regional Optimization Master Plan — ROMP)	Greeley & Hansen for Pima County Regional Wastewater Reclamation Department	2009	<a href="#">Link</a>

## Links

[https://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Wastewater Reclamation/ROMP/TresRios.pdf](https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Wastewater Reclamation/ROMP/TresRios.pdf)

[https://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan\\_2016.pdf](https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Wastewater%20Reclamation/Publications/FacilityPlan_2016.pdf)

## Active Notes\*

Both the Tres Rios Water Reclamation Facility and the Agua Nueva Water Reclamation Facility meet ADEQ discharge requirements for nitrogen reduction. The total two-plant capacity of 82 mgd serves the County's municipal treatment needs through the 2030 planning horizon.

Ina Road is now known as Tres Rios WRF. (<http://webcms.pima.gov/government/wastewaterreclamation/>)

## Historical Notes\*

An expansion project incorporating Best Available Demonstrated Control Technology (BADCT) was completed at the Ina Road WRF in 2014. The same year, the facility was renamed Tres Rios Water Reclamation Facility WRF (2016 Wastewater Facility Plan).

As of 2016, the Tres Rios WRF could handle an additional 85,750 people, or 31,760 single family residential (SFR) units, before reaching 75% capacity. (Once a treatment facility reaches 75% capacity, the facility owner must begin planning for expansion.) Based on the projected Pima County growth rate of between 1% and 1.6%, the Tres Rios WRF would reach 75% capacity by 2029. The facility was expected to reach full capacity when an additional 242,000 people (89,630 SFR units) were served by the system. The Tres Rios WRF would not reach full capacity until there is a population of 625,000 in its service area. The population was not expected to reach this level until after 2050. (2016 Wastewater Facility Plan)

Average daily inflow of influent is approximately 25 MGD. (PAG 208 Plan Update 2006)

Based on current zoning, land uses in the Tres Rios WRF service area consist of 85.5 percent residential, 7.2 percent specific plan, 3.4 percent commercial, 3.3 percent open space, 3 percent multiple use, 0.7 percent agriculture, 0.07 percent federal and state land, and 0.02 percent rural commercial. (208 Plan) \_\_\_\_ No Change {28}

CR-10, November 19 2010 "found consistent per the 2008 ROMP amendment "the Ina Road WRF currently has a permitted capacity of 37.5 MGD. Because the ROMP 208 amendment indications that the Ina Road facility will be expanded to treat approximate 50 MGD of wastewater and will be the centralized location for handling and treatment of biosolids, [the] expansion is consistent with the regional plan.""

CR-12: From AZDEQ List of Submitted CRs "Pima County WRF Ina Road" (May 11, 2011) but no additional information was found at this time. - 01.03.2017

CR-23: (7/02/2015) Application for a Significant Amendment to APP No. P-100630: Revise AQLS and Reclassify TRES RIOS WRF for A+ Reclaimed Water "Pima County RWRD proposes to stop weekly alert status monitoring and set up a compliance Schedule item in the APP allowing appropriate ambient monitoring to establish the AQL at POC #1 (Well SC-03r) for all nitrogen species for which AQLs are established in the permit. The proposed amendment would create a monitoring approach in the APP for recording and analyzing trends as the high levels of ammonias from the past are reduced by biodegradation process within the vadose zone and groundwater system at the site. [The Application proposes a series of steps to follow]. Pima County RWRD also proposes to reclassify the reclaimed water designation in the APP from B+ to A+. This change in reclaimed status uses an alternative approach to achieve the turbidity and disinfection objectives, as expressed in ADEQ's reclaimed water quality standard rules. RWRD proposes to conduct virus monitoring to demonstrate effectiveness during a demonstration phase and on an annual basis thereafter." Pg 7 of pdf, Objectives section of Narrative.

CR-24: (1/28/2013) Approved APP Amendment Ina Road No P-100630 approves "further completion of the Ina Road expansion from 43 mgd to 50 mgd, as per the CR in year 2010 and the 2008 ROMP amendment" pg 2 of the pdf, under Specific Conditions.



Historic description for Ina Road WRF: Ability to transfer flow between the Roger Road service area and the Ina Road WRF is critical for the management of waste water to accommodate growth. Based on current growth projections, it is anticipated that Roger Road WRF's capacity will be reached by the year 2011, or 2012. The plant interconnect pipeline, or some other method of transferring supplemental flows, to the Ina Road WRF must be placed into operation by this time. Because of the capacity limitations at the Roger Road WRF, there is an urgency in advancing the construction of the plant interconnect pipeline (Santa Cruz Interceptor Phase IV). {28 Section 8.4}

Historic description for Ina Road WRF: Additional expansion of Roger Rd WWTF, construction of a plant interconnect and expansion of the Ina Road WPCF, or both, to combined capacity of 77 MGD recommended in 208 Amendment {11} in 1985.

Historic description for Ina Road WRF: Average daily inflow of influent is approximately 25 MGD. (PAG 208 Plan Update 2006)

Historic description for Ina Road WRF: Effluent is discharged to the Santa Cruz River in accordance with an AZPDES permit and Aquifer Protection Permit. Biosolids from both Ina Road and Roger Road are centrifuged at the Ina Road facility and applied to agricultural fields under contract to a private firm. A small amount of effluent is reused at the Arthur Pack golf course (581.4 acre-feet in 2004) and for onsite irrigation (Pima County WWM, 2005a). {PAG 208 Plan Update 2006} Both the Roger Road WRF and the Ina Road WRF discharge into the Santa Cruz River. The Ina Road WRF outfall is located at latitude +32o 20' 5.607" and longitude -111o 03' 45.615". Treated effluent from these facilities discharges into the Santa Cruz River through outfalls adjacent to these locations. The Ina Road WRF discharges into the Santa Cruz River via Outfall 003 which is illustrated in Figure 2-6 and is located at +32o 20' 12" latitude and longitude -111o 04' 46". {28, Section 2.8} Effluent water will be made available to Tucson Water for their reclaimed water service system at the future WRC, Ina Road WRF and Randolph Park WRF. The plan allows for approximately 30-mgd at the WRC and approximately 20 mgd at Ina Road WRF based on allocated effluent water shares in the year 2030. The 3-mgd effluent from Randolph Park WRF is also available for reclaimed water use. Up to 7-mgd could be made available for discharge into the Santa Cruz River at the New WRC at Roger Road site. This would require that up to at least 5-mgd (existing plan) of the Ina Road WRF effluent be transferred to the Roger Road WRF site via a pumping station/force main system. The balance of the Ina Road WRF effluent beyond reuse needs provided directly from the Ina Road WRF will be discharged into the Santa Cruz River. {28 Section 8.5} The addition of the Bardenpho process achieves compliance with regulatory requirements to reduce total nitrogen concentrations to 8 mg/L or less. The Tres Rios WRF uses chlorination to disinfect. The facility is permitted for the production of Class B+ reclaimed water. Effluent discharges to the Santa Cruz River flow into the Lower Santa Cruz Managed Recharge Project which extends along the river channel from Cortaro Road to Trico Road. (2016 Wastewater Facility Plan, pg 78-79)

Historic description for Ina Road WRF: Existing regional facility. Additional digestion facilities, various modifications to improve efficiencies recommended in 208 Amendment {11} in 1985.

Historic description for Ina Road WRF: The 1985 208 Amendment {11} recommended a 201 Facility Planning effort; 1990 201 Facility Plan Update recommended phased expansion to 50 MGD.

Historic description for Ina Road WRF: The 2009 208 Amendment Ina Road Wastewater Reclamation Facility and New Water Reclamation Campus at Roger Road {28} describes wastewater treatment, and disposal with regards to both the new WRC at Roger Road and the Ina Road WRF.

Historic description for Ina Road WRF: The Ina Road Water Pollution Control Facility began operation in 1977. The facility has always been owned by Pima County. It is located on the east side of the Santa Cruz River, south of Ina Road (Figure 5-5).

Historic description for Ina Road WRF: The Ina Road Water Pollution Control Facility began operation in 1977. The facility has always been owned by Pima County. It is located on the east side of the Santa Cruz River, south of Ina Road (Figure 5-5). "In 2013, PCRWRD changed the facility's name from the Ina Road WRF to the Tres Rios WRF. This change recognized the substantial reconfiguration and expansion of the facility." (2016 Wastewater Facility Plan, pg 77)

The capacity was formerly 25 MGD, with an expansion to 37.5 MGD using a new 12.5 MGD biological nutrient removal system expected to be completed in the near future. (PAG 208 Plan Update 2006) Ability to transfer flow between the Roger Road service area and the Ina Road WRF is critical for the management of wastewater to accommodate growth. Based on current growth projections, it is anticipated that Roger Road WRF's capacity will be reached by the year 2011, or 2012. The plant interconnect pipeline, or some other method of transferring supplemental flows, to the Ina Road WRF must be placed into operation by this time. Because of the capacity limitations at the Roger Road WRF, there is an urgency in advancing the construction of the plant interconnect pipeline (Santa Cruz Interceptor Phase IV). {28 Section 8.4} The Tres Rios WRF has a permitted capacity of 50.0 MGD. (2016 Wastewater Facility Plan, pg 79)

The Ina Road Wastewater Reclamation Facility (WRF) is located north of the Roger Road WRF service area. The Ina Road WRF service area encompasses 198 square miles which serves the northeastern part of the Tucson metropolitan area, the Catalina foothills, Lower Canada del Oro watershed, southern Marana and Oro Valley. {28 Section 2.8}

The Ina Road Water Pollution Control Facility began operation in 1977. The facility has always been owned by Pima County. It is located on the east side of the Santa Cruz River, south of Ina Road (Figure 5-5). "In 2013, PCRWRD changed the facility's name from the Ina Road WRF to the Tres Rios WRF. This change recognized the substantial reconfiguration and expansion of the facility." (2016 Wastewater Facility Plan, pg 77)

The population served by the Ina Road Water Pollution Control Facility is 217,888, based on PAG 2005 population projections at the TAZ level, as assigned to tributary sewer-basins by Pima County Wastewater for their Facility Plan update. (PAG 208 Plan Update 2006) \_\_\_ No Change {28}

The Tres Rios WRF serves the Catalina foothills, the far northeast part of the Tucson metropolitan area, much of the urbanized part of the lower Canada del Oro watershed and Oro Valley, and southern Marana. The approximate, current service area is approximately 198 square miles in size. Wastewater from the Continental Ranch area is conveyed to the Tres Rios WRF via the Continental Ranch Pump Station. Wastewater from areas along the lower slopes of the Tortolita Mountains is conveyed to Tres Rios via the Tortolita Mountain Pump Station and the Camino de Oeste interceptor.

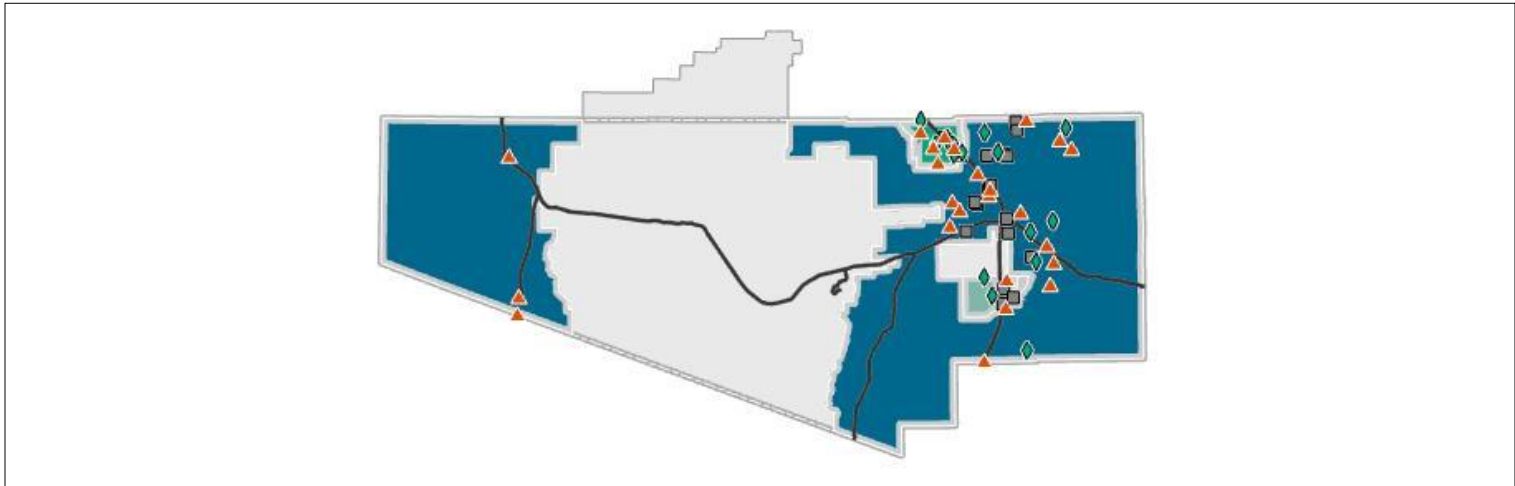
Tres Rios's treatment processes include high purity oxygen activated sludge for the 25 MGD treatment train and biological nutrient removal activated sludge for the 12.5 MGD treatment train currently under construction.

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

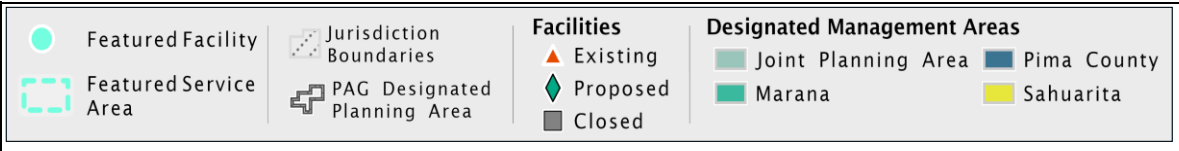
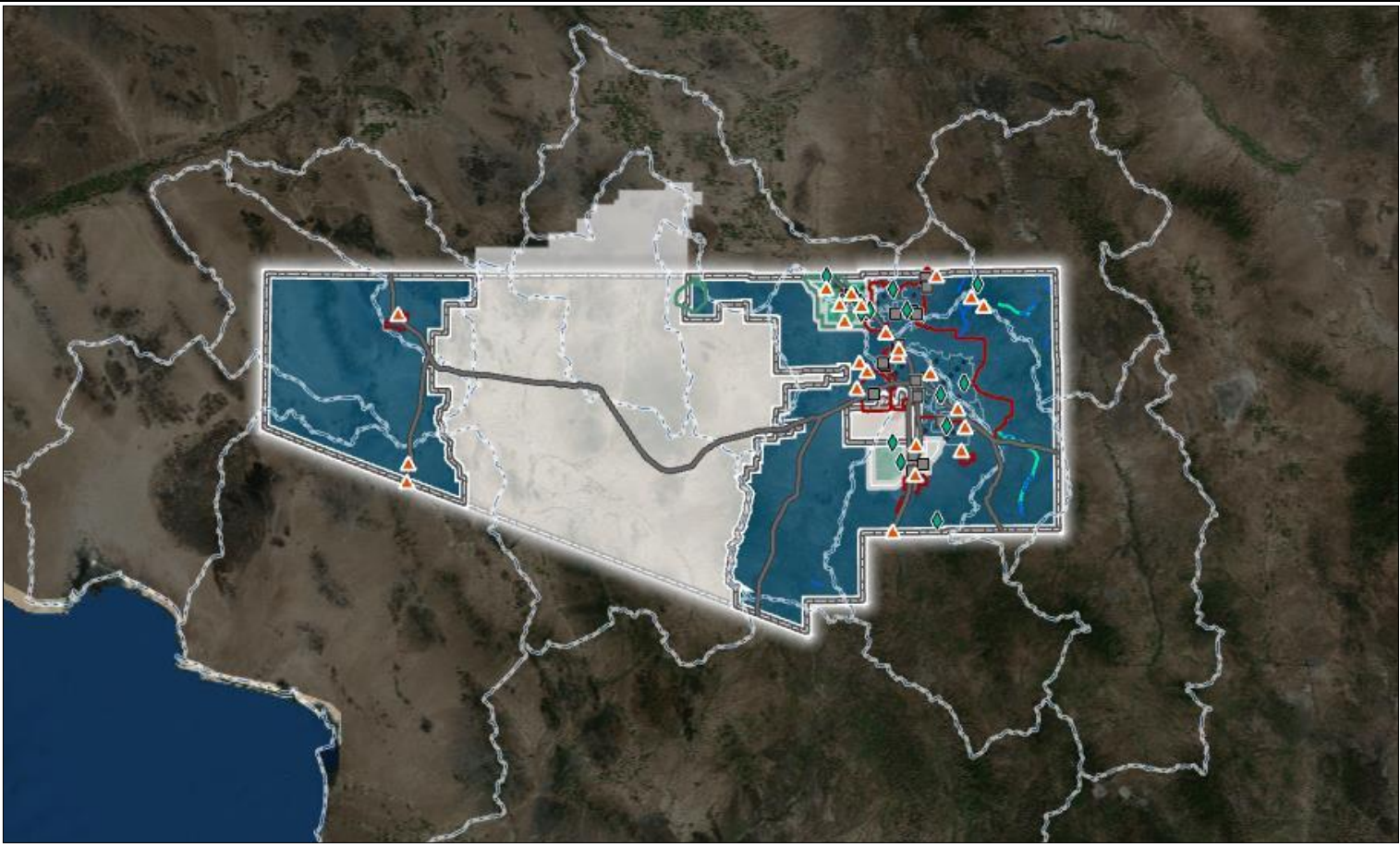
Data Last Updated: 12/11/2019

Tucson Water Reclaimed Water System - Within Pima County DMA

Wastewater Reclamation Facilities in the PAG Region



Tucson Water Reclaimed Water System and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Tucson Water Reclaimed Water System	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Tucson Metropolitan area	City of Tucson	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Built/Proposed prior to DMA Sponsorship requirement
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-100147	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
<p>The Tucson Reclaimed Water Plant, which is owned by the City of Tucson, is located next to the now-closed Roger Road Wastewater Treatment Facility, north of Sweetwater Drive between Interstate 10 and the Santa Cruz River. The facility receives effluent from the County's Agua Nueva WRF and provides additional treatment consisting of pressure filtration and chlorination. The reclamation facility supplies Tucson Water's reclaimed water system, which delivers reclaimed water to locations throughout the metropolitan Tucson area. Backwash water from the filtration plant is piped to the Sweetwater Wetlands for natural treatment by the wetlands.</p>		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		

Not Available

**Amendments**

<b>ID</b>	<b>Title</b>	<b>Author</b>	<b>Year</b>	<b>Document</b>
11	Areawide Wastewater Management Plan Point Source Update	PAG	1985	<a href="#">Link</a>
17	Guide to Areawide Water Quality Management Planning as Required Under Section 208 of the Clean Water Act	PAG	1990	<a href="#">Link</a>

**Links**

None

**Active Notes\***

CR-\_\_\_ (March 23 2018): (PAG's) finding is that the [addition of an AZPDES discharge outfall to an existing domestic facility for the Tucson Water Santa Cruz River Heritage Project] is not inconsistent with the PAG 208 Plan.

Pima County uses its highly treated reclaimed water for the irrigation of County parks, golf courses, and ball fields. Utilizing reclaimed water for irrigation is a sustainable activity that saves groundwater and Colorado River water for drinking. Reclaimed water is also used to sustain and improve aquatic and wildlife habitats, for dust control and for long-term storage in our underground aquifers.

**Historical Notes\***

Existing. System is identified in the 1985 208 Amendment {11}; PAG's April 1990 Guide to 208 Planning {17} notes memos written in conjunction with approval of Amendment {11} indicate facilities are "grandfathered" in along with Tucson Water's wastewater reuse plan. (208 Plan Update 2006)

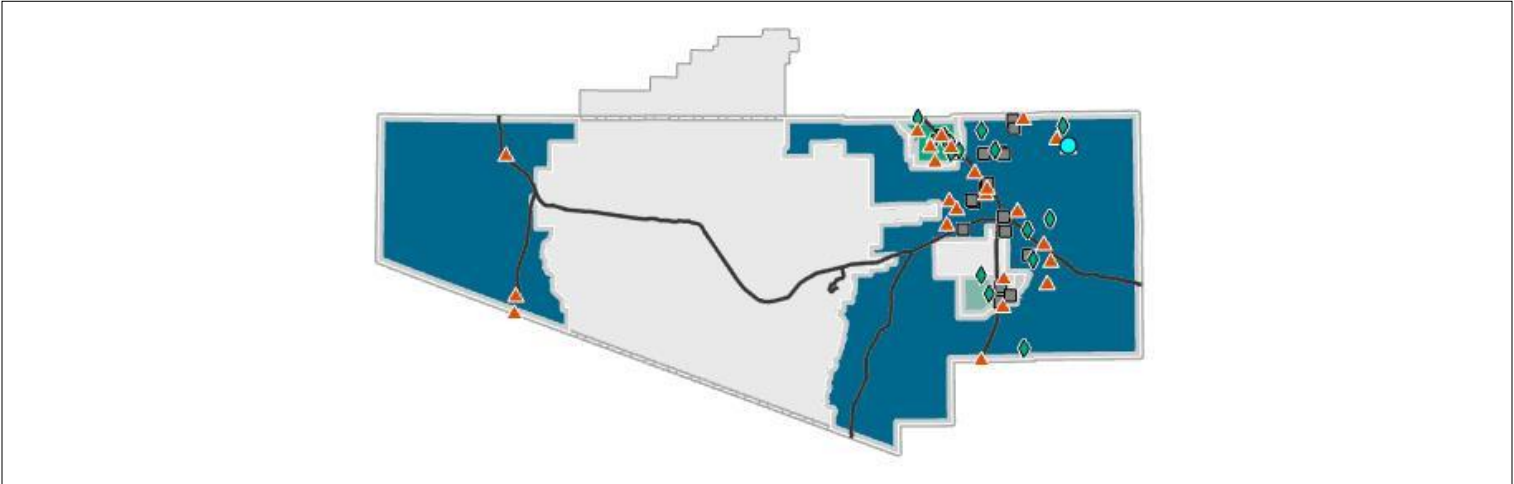
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

Data Last Updated: 12/11/2019

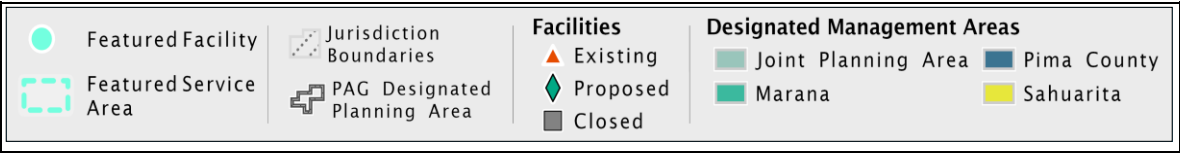
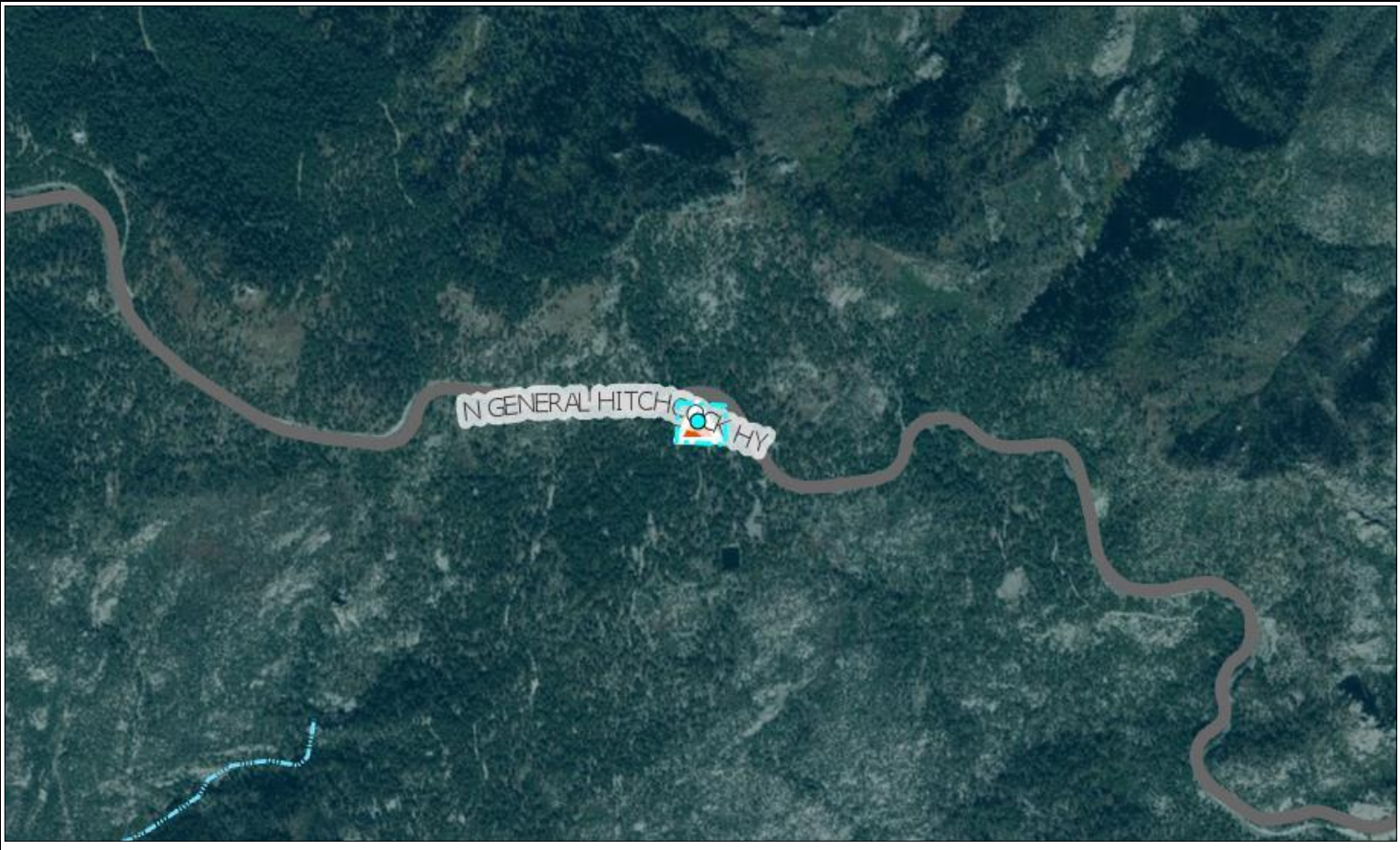


U.S. Forest Service - Palisades Ranger Station - Within Pima County DMA

Wastewater Reclamation Facilities in the PAG Region



U.S. Forest Service - Palisades Ranger Station and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
U.S. Forest Service - Palisades Ranger Station	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Coronado National Forest - Behind Palisades Visitor Center on Mt. Lemmon Hwy.	Not Available	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Built/Proposed prior to DMA Sponsorship requirement. In the Pima County DMA Boundary
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-101682	Not Available	Not Available
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.5 MGD	Not Available	Not Available
<b>Watershed</b>		
Rillito		
<b>General Description</b>		
This facility serves a ranger station in the Santa Catalina Mountains. It consists of a lined 500,000 gallon anaerobic treatment lagoon. Disposal is achieved through evaporation and seasonal reuse for irrigation when necessary to limit water level rises in the lagoon.		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		

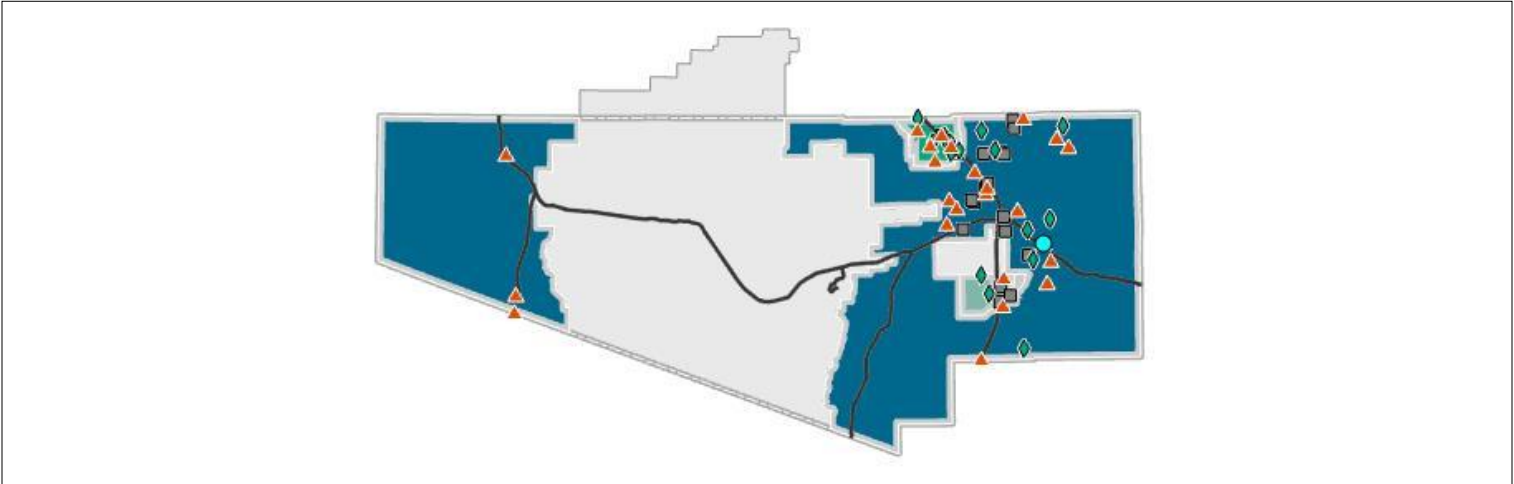
No expansions anticipated; facility only serves the ranger station. (208 Plan Update 2006)
<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
None

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

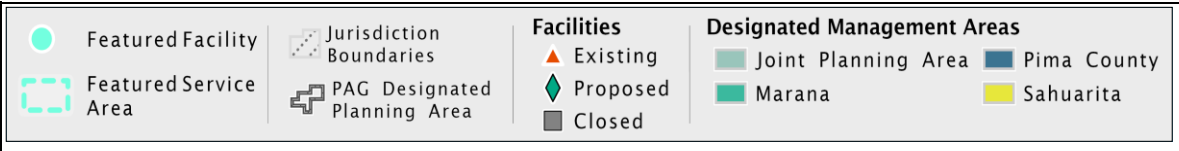
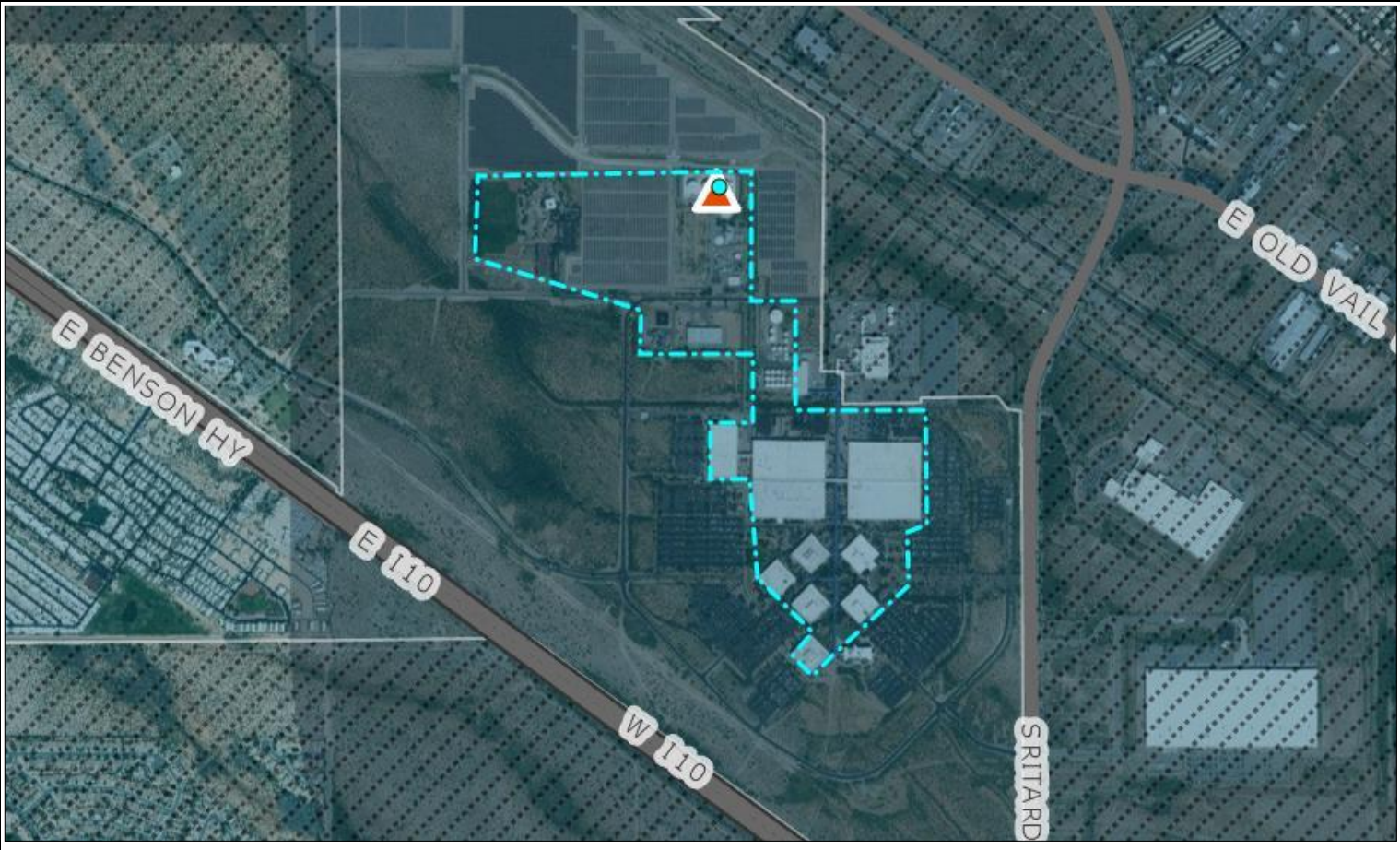


University of Arizona Science and Technology Park - Within Pima County DMA

Wastewater Reclamation Facilities in the PAG Region



University of Arizona Science and Technology Park and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
University of Arizona Science and Technology Park	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
9070 S Rita Rd #1750, Tucson, AZ 85747	University of Arizona Science and Technology Park	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Pima County	Built/Proposed prior to DMA Sponsorship requirement. Within Pima County DMA boundaries
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-101680	Unknown	Not Available
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.15 MGD	unknown	unknown
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
The University of Arizona Science and Technology Park (UA Tech Park) has an extended aeration wastewater treatment system with a capacity of 0.15 MGD serving its tenants. The UA Tech Park is considered a non-discharging facility and 100 percent of the reclaimed water is used on site for landscape irrigation, rest room flushing, and fire suppression.		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
extended aeration wastewater treatment system		
<b>Discharge Method and Location</b>		
The UA Tech Park is considered a non-discharging facility and 100 percent of the reclaimed water is used on site for landscape irrigation, rest room flushing, and fire suppression.		

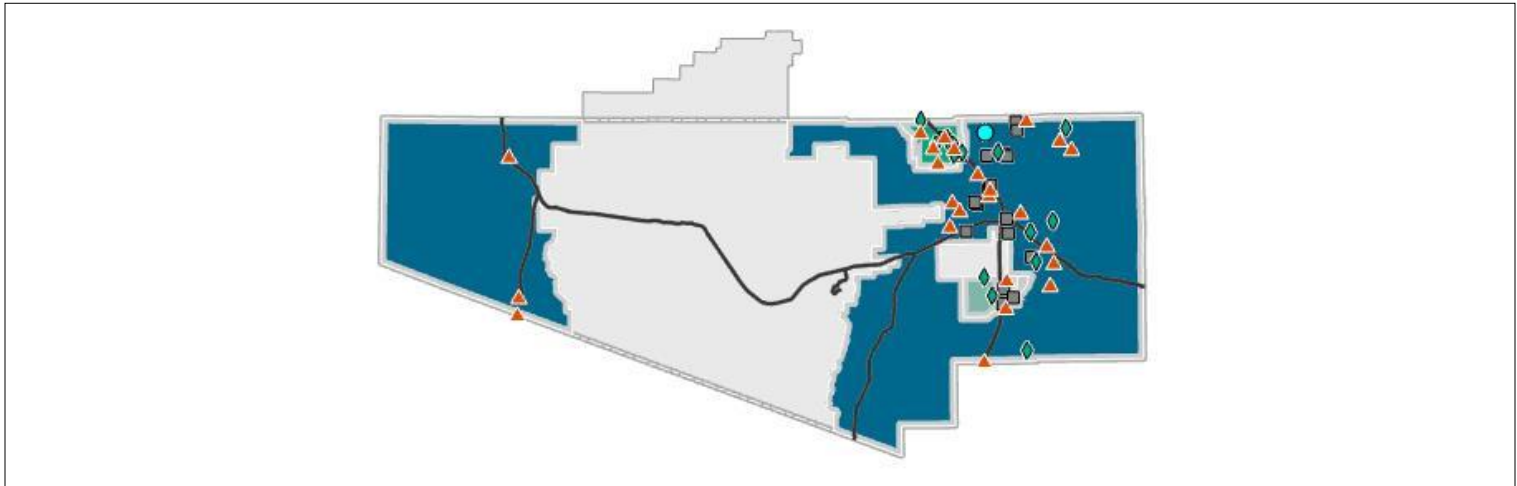


<b>Future Conditions</b>
Future Capacities for Non-Public Facilities: 0.15 MGD (208 Plan Update 2006)
<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
None

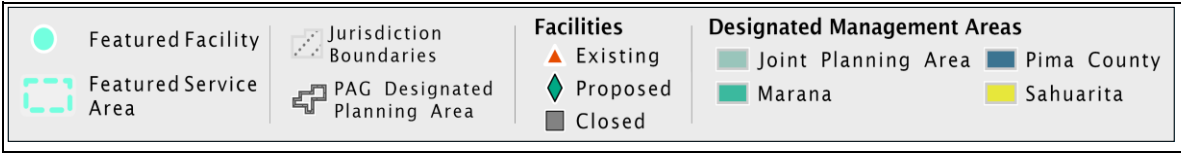
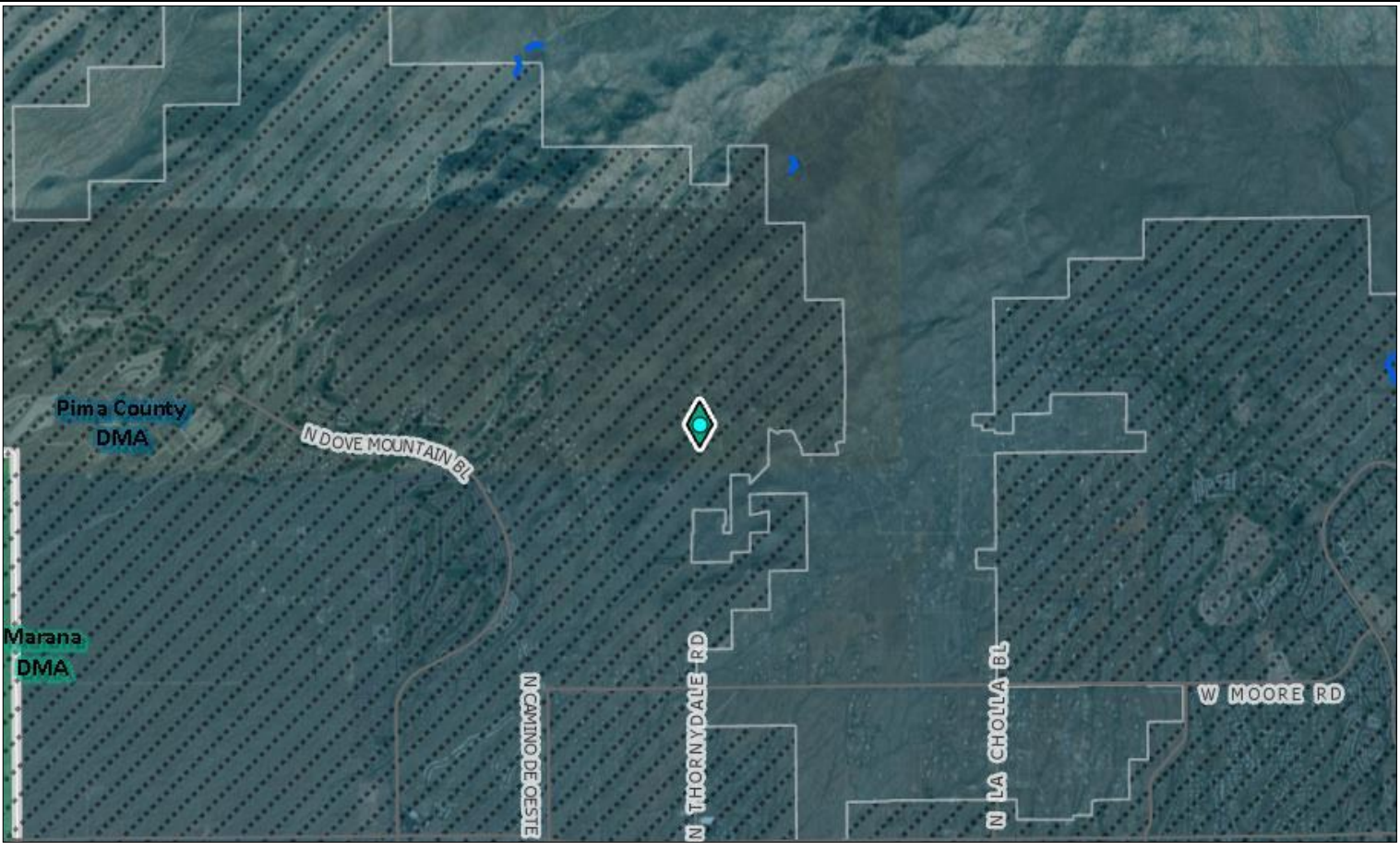
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

Wildcat Canyon at Saguaro Ranch - Within Pima County DMA

Wastewater Reclamation Facilities in the PAG Region



Wildcat Canyon at Saguaro Ranch and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Wildcat Canyon at Saguaro Ranch	No	Proposed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Marana, AZ - End of W. Conrads Rd, 0.35 miles SW of Old Rancho House Rd./W.Conrads Rd intersection	private	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Pima County	Pima County	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
A privately-owned wastewater treatment system is proposed for an area known as Wildcat Canyon at Saguaro Ranch, located in the foothills of the Tortolita Mountains. The wastewater treatment facility is proposed to serve up to 132 home sites and one restaurant. Although this area remains within Pima County's DMA, it is neither technically nor economically practical for PCRWRD to serve this site due to its remote location.		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		

Future Capacities for Non-Public Facilities: Approx. 0.016 MGD; no expansions anticipated; the facility will only serve the guest ranch. (208 Plan Update 2006)

### Amendments

None

### Links

None

### Active Notes\*

A small (0.016 MGD) privately-owned on-site package plant has been proposed to serve 28 casitas, a restaurant, amphitheater and restrooms at a guest ranch centrally located in the Saguaro Ranch subdivision in the foothills of the Tortolita Mountains. The facility will only serve the guest ranch; it will not serve any surrounding areas. Effluent disposal will be through on-site reuse and on-site subsurface leaching. Although this area remains within Pima County's Designated Management Area, it is neither technically nor economically practical for Pima County Wastewater to serve this site. (208 Plan Update 2006)

### Historical Notes\*

CR-30: (07.17.2006) ""Normally, a private WWTF would be considered inconsistent with the 208 Plan, and a 208 Plan Amendment would be required in order for the project to proceed. However, I believe that a 208 Plan Amendment would not be necessary, appropriate or beneficial in this case, for the following reasons: [see document for full page of reasons]... PAG is currently updating its 208 Plan and we can readily include this facility in the updated plan. As part of this update, we hope to develop new policies guiding decisions on projects such as this. Until such guidance is completed and approved, we will otherwise adhere to the existing policy that all private wastewater facilities will require a 208 Plan Amendment. We will waive the requirement only on very rare occasions and under unique circumstances such as this, where the requirement for a 208 Plan Amendment is not beneficial and possibly detrimental."

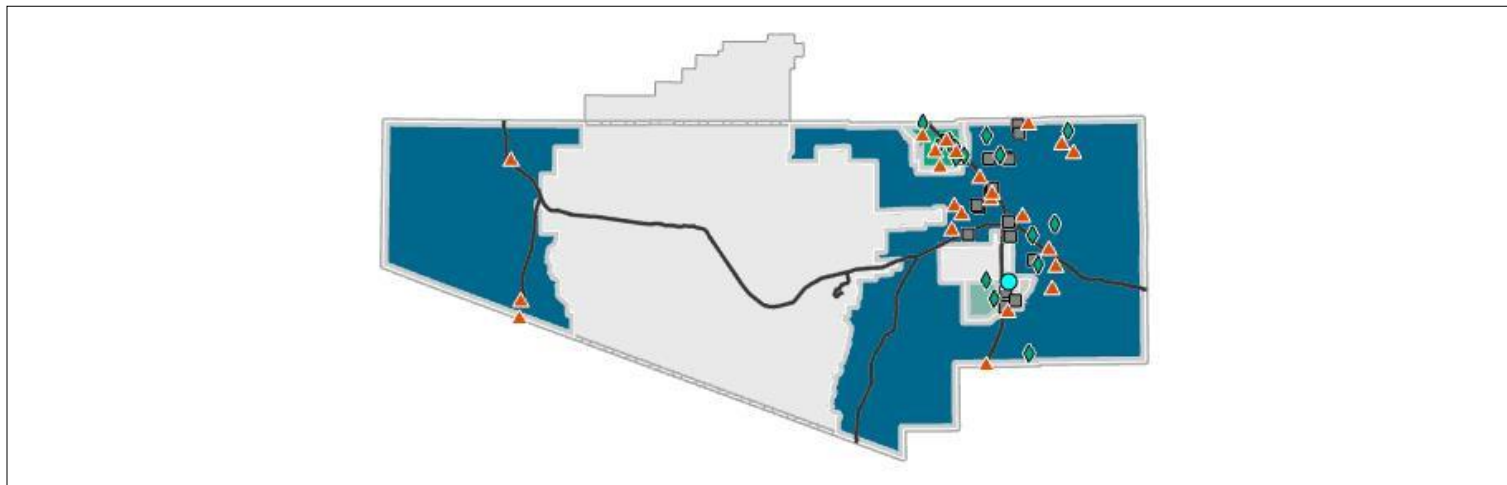
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

Data Last Updated: 12/11/2019

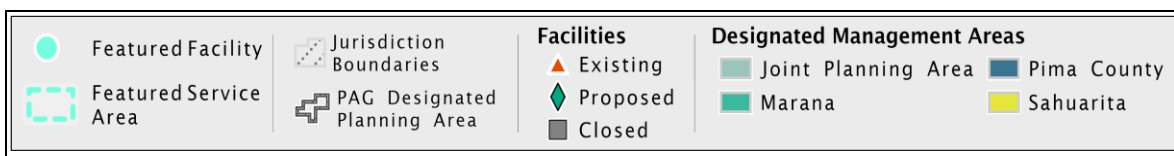
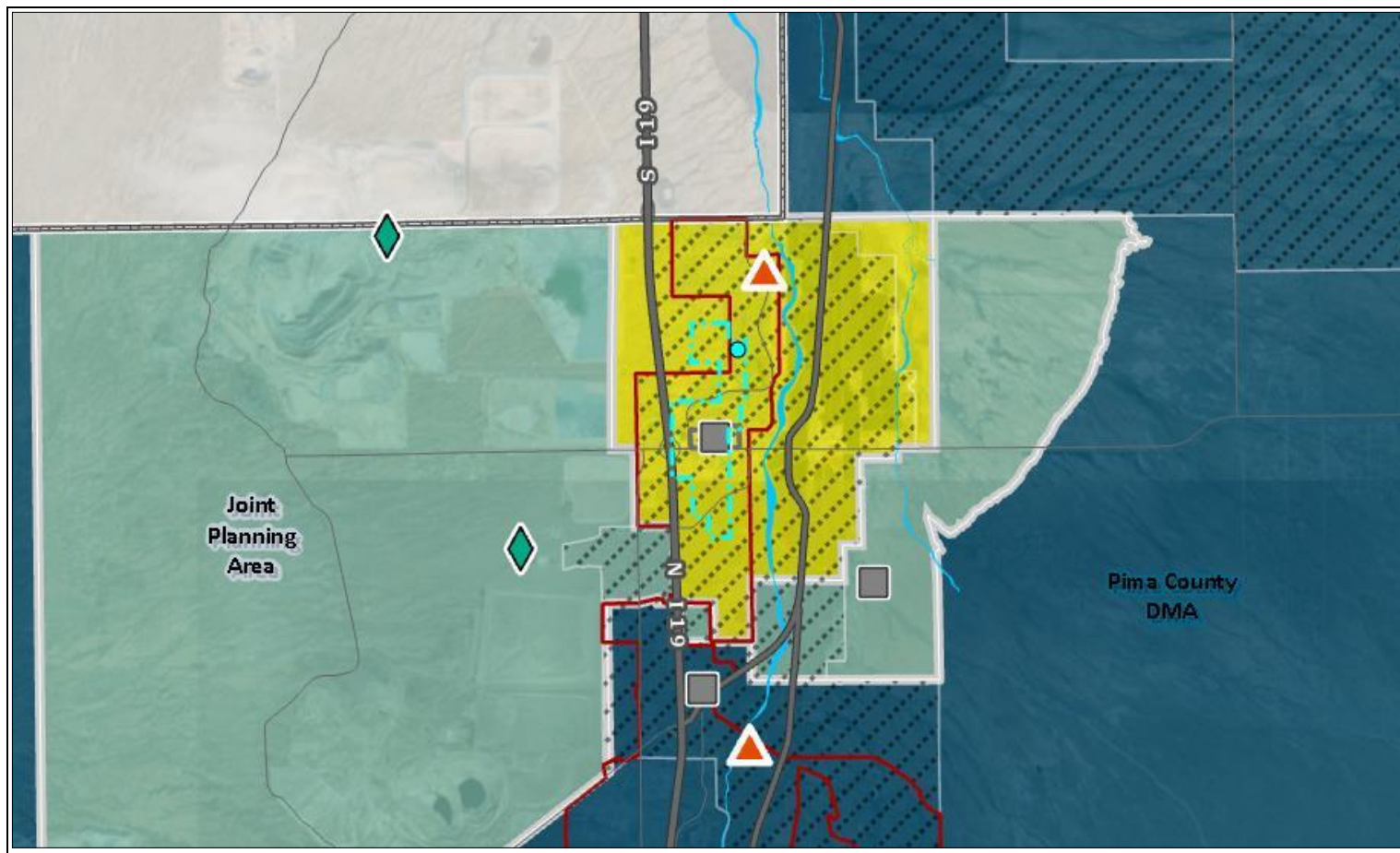
# Facilities within the Sahuarita DMA

## Sahuarita - Within Sahuarita DMA

### Wastewater Reclamation Facilities in the PAG Region



### Sahuarita and Surrounding Area





## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Sahuarita	Yes	Existing
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Sahuarita, AZ - East side of S. Rancho Sahuarita Blvd., 0.8 miles south of S. Rancho Sahuarita Blvd./E. Pima Mine Rd. intersection	Town of Sahuarita	Public
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Sahuarita	Sahuarita	Town of Sahuarita has a sewer service area smaller in size as it relates to the DMA area
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-103602	Not Available	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
3 MGD	The current physical capacity of the WRF is 1.50 MGD.	Current flows are 0.9 MGD. (correspondence with DMA contact, 12/2018)

### Watershed

Upper Santa Cruz

### General Description

The Sahuarita Water Reclamation Facility (SWRF) was constructed pursuant to a 208 Plan Amendment adopted by the PAG Regional Council in March 1999. The Sahuarita WRF is located west of the Santa Cruz River and south of Pima Mine Road. The 1999 208 Plan Amendment outlined a plan leading to a buildout capacity of 3.0 MGD (Town of Sahuarita, 2005).

The 1999 208 Plan Amendment identified the areas to be served by the SWRF and the areas that would remain under Pima County's service area.

### Service Area Boundaries

The SWRF serves the Sahuarita Sewer Service Area (SSSA) which includes Rancho Sahuarita and Rancho Resort Developments. Development beyond the SSSA is served by others. For more information, please contact the Town of Sahuarita Department of Public Works.

### Service Area Population

The SWRF has 5,770 service connections (correspondence with DMA contact, 12/2018).

### Service Area Land Uses

Land uses in the service area are predominantly residential with some open space, institutional, and commercial.

### Treatment Method

The current facility consists of an influent lift station, headworks with a coarse screen, two extended aeration basins, two secondary clarifiers, a return activated sludge/waste activated sludge (RAS/WAS) pump station, filtration system, ultraviolet disinfection system, sludge holding tank, and a belt filter press. The sludge is then hauled off to a state-approved landfill and the A+ effluent is recharged to groundwater through five (5) existing rapid infiltration basins (correspondence with DMA contact, 12/2018).

## Discharge Method and Location

The A+ effluent is discharged to rapid infiltration basins located at the SWRF.

## Future Conditions

In February 2014, ADEQ issued a significant amendment to the APP authorizing the SWRF to operate at a maximum monthly flow of 3.0 MGD upon completion of two phased improvements. The current physical treatment capacity is 1.5 MGD that is proposed to expand to 2.25 MGD in Phase 1, and to 3.0 MGD in Phase 2. Phase 1 construction to 2.25 MGD is planned to consist of an expanded influent pump station, septage acceptance plant, headworks with two coarse screens, grit removal system, three extended aeration basins, three secondary clarifiers, scum pump station, expanded RAS/WAS pump station, filtration system, UV disinfection system, sludge holding tank, and a belt filter press. Three additional Rapid Infiltration Basins (RIB) could be constructed for a total of eight RIB utilized for A+ effluent discharge as needed. Phase 2 of the Sahuarita WRF expansion to 3.0 MGD will include a further expanded influent pump station, a septage acceptance plant, a headworks with two coarse screens, a grit removal system, four extended aeration basins, four secondary clarifiers, a scum pump station, a further expanded filtration system, a UV disinfection system, two sludge holding tanks, and a belt filter press (correspondence with DMA contact, 12/2018).

## Amendments

ID	Title	Author	Year	Document
21	Criteria for Establishing New DMAs in Pima County (Regional Council policy)	PAG	1998	<a href="#">Link</a>
22	The Wastewater Management Plan for Sahuarita — An Amendment to the PAG Areawide 208 Plan	Town of Sahuarita	1999	<a href="#">Link</a>

## Links

None

## Active Notes\*

None

## Historical Notes\*

A six-phase expansion plan was outlined in the 1999 208 Plan Amendment. Construction of the first two phases was completed by January 2005, with plans for construction of the third phase to begin in 2005. (Town of Sahuarita, 2005)

CR-03 July 19 2006: PAG found discharge of effluent into Sahuarita Lake to be "Not Inconsistent" with the 208 Plan. "This reuse is not described in the 1999 Wastewater Management Plan for Sahuarita, however, the plan does state that "The Town will also consider other appropriate uses of effluent, such as the creation of wetlands, as practical." In addition, the 1980 Amendment to PAG's 208 plan states that "wastewater reuse should be used as a disposal alternative wherever possible." For this reason, PAG did not find the reuse of effluent in the lake, which will offset the need to pump groundwater, inconsistent with the 208 Plan as long as the discharge has a NPDES permit." "Because PAG's recent 208 update has not been approved by EPA, this review was based on review of PAG's 1978 Plan, our 1990 Guide to Areawide Water Quality Management Planning, and the Wastewater Management Plan for Sahuarita, approved in January 1999."

CR-17 May 4 2009: PAG found expansion of Sahuarita WWTF capacity to 3.0 MGD to be consistent with the 1999 Amendment and 208 Plan Update.

CR-26 October 4 2007: Preliminary Decision to issue an APP #103602, LTF #44486 "Upgrade flow from .49 MGD to .69 MGD, added upgradient groundwater monitoring, added monitoring of infiltration rates" -ADEQ Fact Sheet for APP 103602, Significant Amendment for Town of Sahuarita WWTP. This was not a formal CR, but PAG reviewed the draft APP and fact sheet to help determine appropriate process.

CR-27 2007: Town of Sahuarita ordinance to allow for public notice and approval of future expansion of the Sahuarita WWTF Sewer Service Area Boundaries, connection of properties located outside of the Sewer Service Area Boundaries or "construction of any other wastewater treatment facility inside of the Sewer Service Area Boundaries or within 1,000 feet of the Sewer Service Area Boundaries." The ordinance asserts that the current Sewer Service Area Boundaries are the same as those described in the 1999 Sahuarita Town Code. This was not a formal CR, but PAG reviewed the ordinance to help determine appropriate process.

CR-31 December 8 2006: PAG determined that additional recharge is "not inconsistent" with the 208 Plan. "By general policy, PAG supports reuse of effluent, as shown in Section 9.10, p. 167 (...)Section 3.5.3., p. 35, discusses treated wastewater and includes both direct use and recharge systems. Treated effluent recharge systems mentioned are the Santa Cruz Managed Recharge project, the Sweetwater Recharge Facilities, the High Plains project, the Robson Quail Creek project, and the Lower Santa Cruz Managed Recharge project. Because PAG's plan implicitly supports these projects and because preservation of our groundwater resources is a priority for our region, PAG determined that additional treated effluent recharge systems are not-inconsistent with our 208 plan."

Current flows were noted as 0.22 MGD in PAG's 208 Plan adopted in 2006.

Effluent was discharged to on-site rapid infiltration basins. (208 Plan Update 2006)

In PAG's 2006 208 Plan Update, population projections for the Sahuarita WWTF service area in 2030 range from 32,199 to 40,531; flow projections range from 2.74 MGD to 3.45 MGD. The lower projection assumed that the facility will not serve any of the joint planning areas near Sahuarita. The higher projection assumed that the facility will serve all of the joint planning areas. Town of Sahuarita staff expressed an interest in the possibility of constructing a second facility across the Santa Cruz River from the existing facility, with a plant interconnect between the two. A second facility would reduce the future flows to the existing facility.

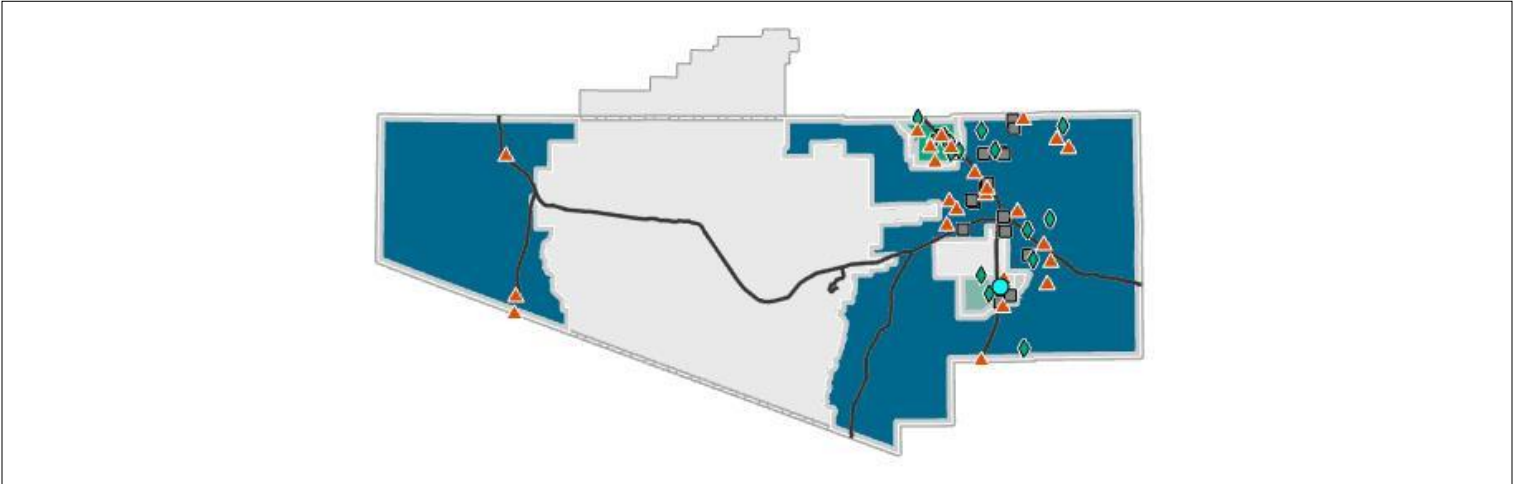
Treatment consisted of oxidation ditches using a biode-nitrification process. (208 Plan Update 2006)

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

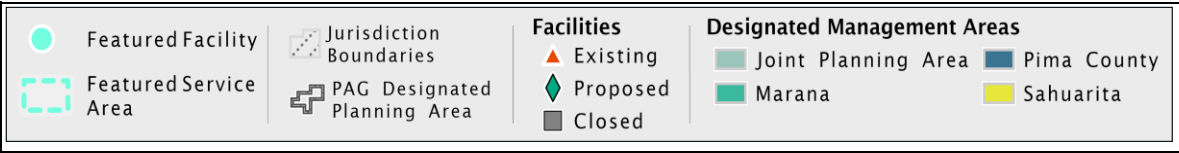
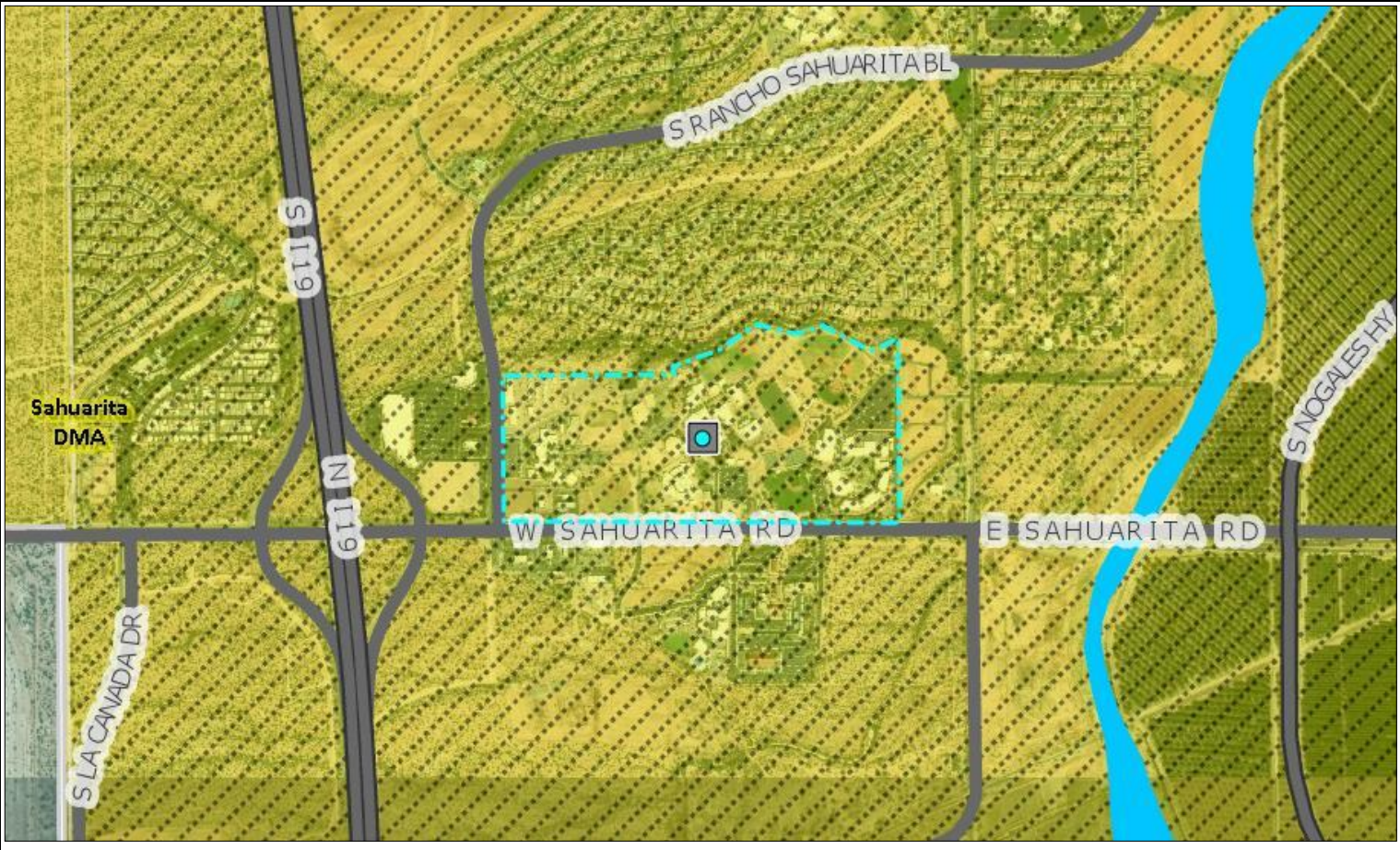
Data Last Updated: 12/11/2019

Sahuarita High School Wetlands - Within Sahuarita DMA

Wastewater Reclamation Facilities in the PAG Region



Sahuarita High School Wetlands and Surrounding Area





## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Sahuarita High School Wetlands	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
350 W. Sahuarita Road	Sahuarita Unified School District	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Sahuarita	Was in Pima County DMA when constructed. Now located within Sahuarita DMA area.
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Unknown	Unknown	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	0	0
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
The Wetland WWTF is now connected to the Sahuarita facility and the wetland is now closed.		
<b>Service Area Boundaries</b>		
Campus		
<b>Service Area Population</b>		
Students		
<b>Service Area Land Uses</b>		
School		
<b>Treatment Method</b>		
wetland		
<b>Discharge Method and Location</b>		
Discharged to wetland then connected via lift to Sahuarita wastewater treatment facility.		
<b>Future Conditions</b>		
Not Available		



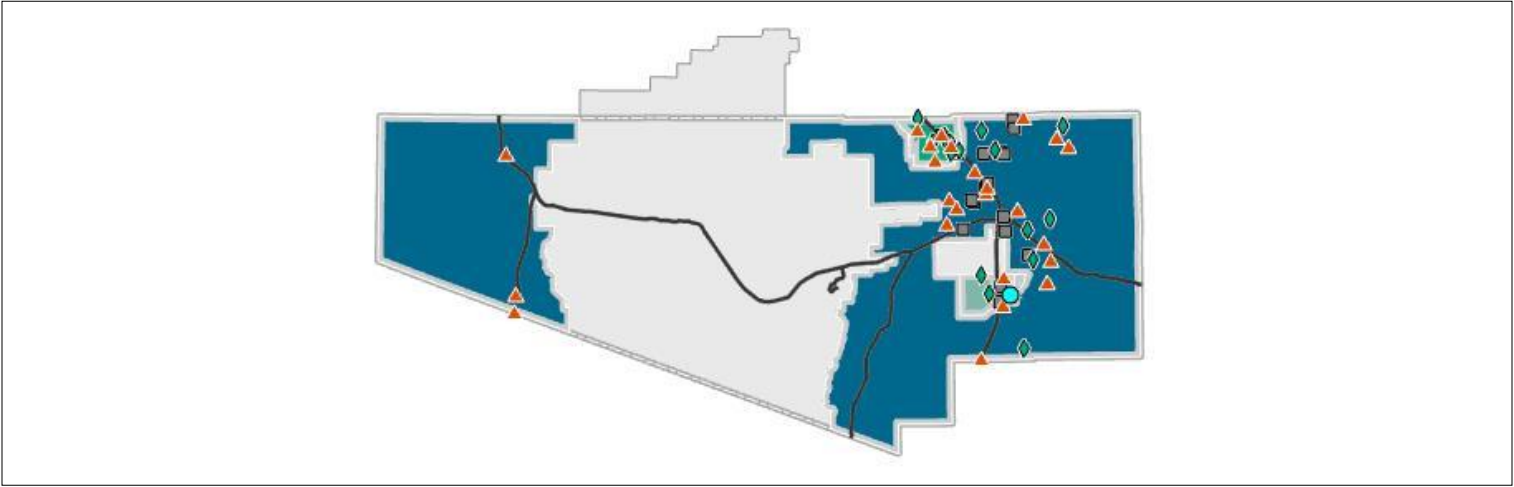
<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
<p>CR-18 July 8, 2011 "connecting the Sahuarita HS WWTS into the Sahuarita public sewer system, as stated in 208 plan" is found to be consistent. Wetland WWTF is closed.</p> <p>School that was constructed in 1998 states that the Federally (Bureau of Reclamation) funded wetlands system that prepares effluent water for fireflow and irrigation purposes.</p>
<b>Historical Notes*</b>
<p>No expansions were anticipated; facility only served the school, and it has connected to the Town of Sahuarita system. (208 Plan Update 2006)</p> <p>The Sahuarita School District's combined campus at 350 W. Sahuarita Road was served by an on-site septic system that discharges to a wetlands treatment system. The wetlands provided additional treatment to the wastewater generated on site, and they provided an environmental education opportunity for students. The wetlands only served the campus; they were not permitted to serve any off-site areas. (208 Plan Update 2006)</p>

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

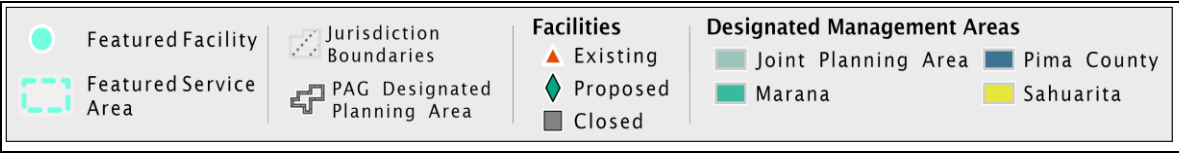
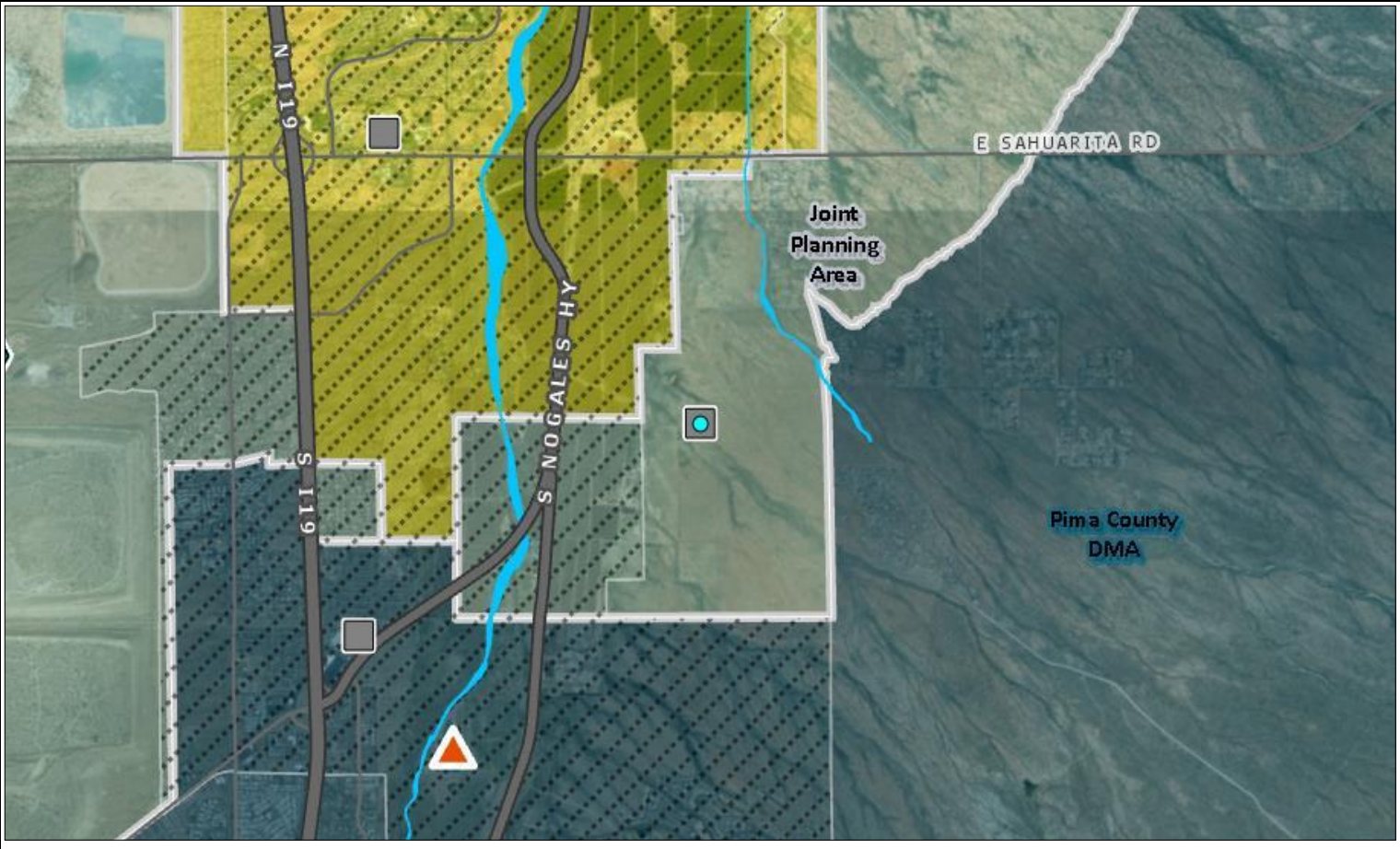
# Facilities within the Joint Planning Area

## Arizona Hog Farm Co - Within Joint Planning Area DMA

### Wastewater Reclamation Facilities in the PAG Region



### Arizona Hog Farm Co and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Arizona Hog Farm Co	No	Closed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Near Sahuarita, AZ - 0.25 miles SW of S. Santa Rita Rd./E. Dawson Rd. Intersection	Not Available	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
N/A	Joint Planning Area	Built/Proposed prior to DMA Sponsorship requirement
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Built Prior to 208 Requirement
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Identified in original 208 Plan but no longer exists.		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		

<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
None
<b>Historical Notes*</b>
0.5 acre retention pond for run-off from 2.9"/24 hr. storm (1978 PAG 208 Plan)
NPDES Number 0021334 (1978 PAG 208 Plan)

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.





## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
ASARCO	No	Proposed
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Near Sahuarita, AZ - West of I-19 in Pima County at 4201 W. Pima Mine Road (lat/long 31.999003, -111.048191)	ASARCO Grupo Mexico	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Joint Planning Area	Joint Planning Area	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
P-100508	#AZ0024597	Passed Consistency Review
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0.0087 MGD	The design treatment capacity for the proposed facility is 0.0087 MGD. (ADEQ 208 Consistency Review Form, 2016)	Not Available

### Watershed

Upper Santa Cruz

### General Description

A proposed 8,700 gallon/day (gpd) onsite package wastewater treatment plant (WWTP) for wastewater from toilets, washroom sinks and showers. No outfall is proposed. The sources of the wastewater are the administration building, change houses, North Mill labs, warehouse, weld shop, electric shop and grey water shower system. The estimated flow per employee is 35 gallons per capita per day (GPCD). This results in an average daily flow during the weekdays of 8,700 gallon/day (GPD) and on the weekend 6,600 GPD. (ADEQ 208 Consistency Review Form, 2016)

### Service Area Boundaries

The proposed WWTP will be designed to serve only the mine for treatment. (ADEQ 208 Consistency Review Form, 2016)

### Service Area Population

There is approximately 310 persons per day during the week, with about 187 persons during the weeknight and weekend shifts. (ADEQ 208 Consistency Review Form, 2016)

### Service Area Land Uses

Not Available

### Treatment Method

Proposed design consists of an activated sludge system, secondary treatment approach includes aeration, mixing, sludge recycle, clarification and UV disinfection capable of meeting B+ effluent requirement. (ADEQ 208 Consistency Review Form, 2016)

### Discharge Method and Location

PAG 208 Plan - 2020

The disposal method will be 100% recycled back into the mine process. The WWTP is being designed to be a zero AZPDES discharge facility with no discharge to surface waters. Temporary storage will be included in the design to account for upset conditions. (ADEQ 208 Consistency Review Form, 2016)

Future Conditions

There are no proposed Future treatment process or capacity changes. (ADEQ 208 Consistency Review Form, 2016)

Amendments

None

Links

None

Active Notes\*

Co-sponsored by Pima County and Town of Sahuarita.

CR#28: PAG has deemed the ASARCO proposal for the new, small Waste Water Treatment Facility to be "not inconsistent" with PAG's 208 Areawide Water Quality Management Plan.

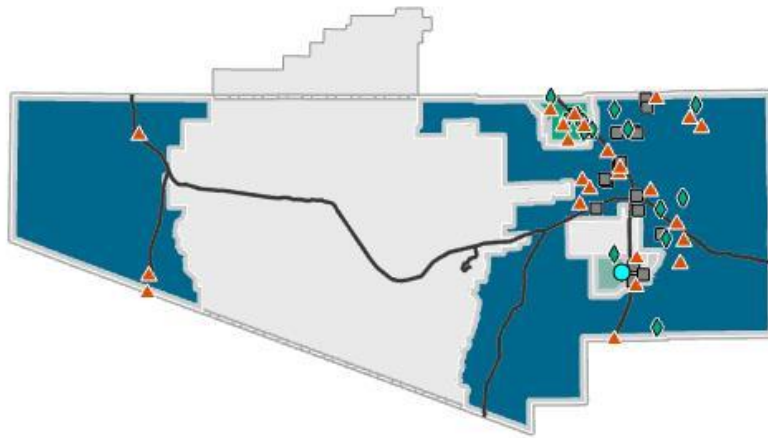
Historical Notes\*

None

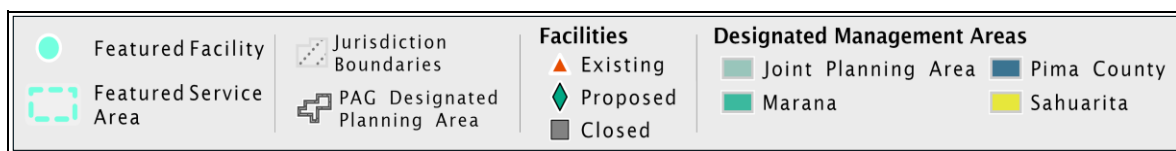
\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.

## Mission Peaks - Within Joint Planning Area DMA

### Wastewater Reclamation Facilities in the PAG Region



### Mission Peaks and Surrounding Area



## Facility Details

<b>Facility Name</b>	<b>Operational</b>	<b>Status</b>
Mission Peaks	No	No Longer Planned
<b>Location</b>	<b>Owner Name</b>	<b>Public Owned?</b>
Near Sahuarita, AZ - 0.3 miles north of W. Twin Butes Rd., 1.6 miles west of S. La Canada Dr./W. Twin Butes Rd. intersection	private	Non-Municipal
<b>DMA Sponsor</b>	<b>DMA Location</b>	<b>DMA Notes</b>
Sahuarita	Joint Planning Area	Not Available
<b>Aquifer Protection Permit Number</b>	<b>AZPDES Number</b>	<b>Consistency Status</b>
Not Available	Not Available	Not Available
<b>Permitted Capacity</b>	<b>Current Capacity</b>	<b>Current Flows</b>
0 MGD	Not Available	Not Available
<b>Watershed</b>		
Upper Santa Cruz		
<b>General Description</b>		
Not Available		
<b>Service Area Boundaries</b>		
Please see map (if available)		
<b>Service Area Population</b>		
Not Available		
<b>Service Area Land Uses</b>		
Not Available		
<b>Treatment Method</b>		
Not Available		
<b>Discharge Method and Location</b>		
Not Available		
<b>Future Conditions</b>		
Not Available		

<b>Amendments</b>
None
<b>Links</b>
None
<b>Active Notes*</b>
This development never was built, and the property was sold to the mines. It will not become a housing development.
<b>Historical Notes*</b>
CR-21 4/7/2006, no record of final decision.

\* Numbers in curly braces { } are references to PAG Amendment numbers (see Appendix B), Consistency Reviews (CRs) or other documentation.



## ***Chapter 5: Application Resources***

This chapter is a compilation of resources to aid implementation of the PAG 208 Plan. The PAG 208 Program Summary provides an overview of the Plan's purpose and goals in integrated, cross-jurisdictional watershed planning. Application packets are available which include a description of the procedures, the consistency review form, template letters, process flow charts and a simplified checklist. When ready, the applicant may initiate the application process in PAG's 208 Portal, described below.

### **Application Resources**

PAG 208 Program Summary (*will be linked when they become available*)

Application Packet for Private Facilities

Application Packet for Public Facilities

[Guidance for the PAG 208 Facilities Inventory Portal<sup>105</sup>](#)

Guidance for the PAG Consistency Review Portal

### **PAG 208 Portal**

[PAG's 208 portal<sup>106</sup>](#) is an online tool with two interfaces. The facility inventory interface of the portal allows the end-user to search through maps and datasets for past, proposed and current facilities. The Consistency Review interface of the portal guides the end-user who is seeking to expand or build a new facility through the application process.

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<sup>105</sup><https://www.pagregion.com/portals/0/documents/208PlanGuide121019.pdf>

<sup>106</sup><http://gismaps.pagnet.org/pag208plan/>