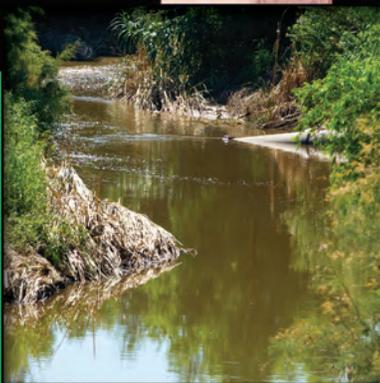
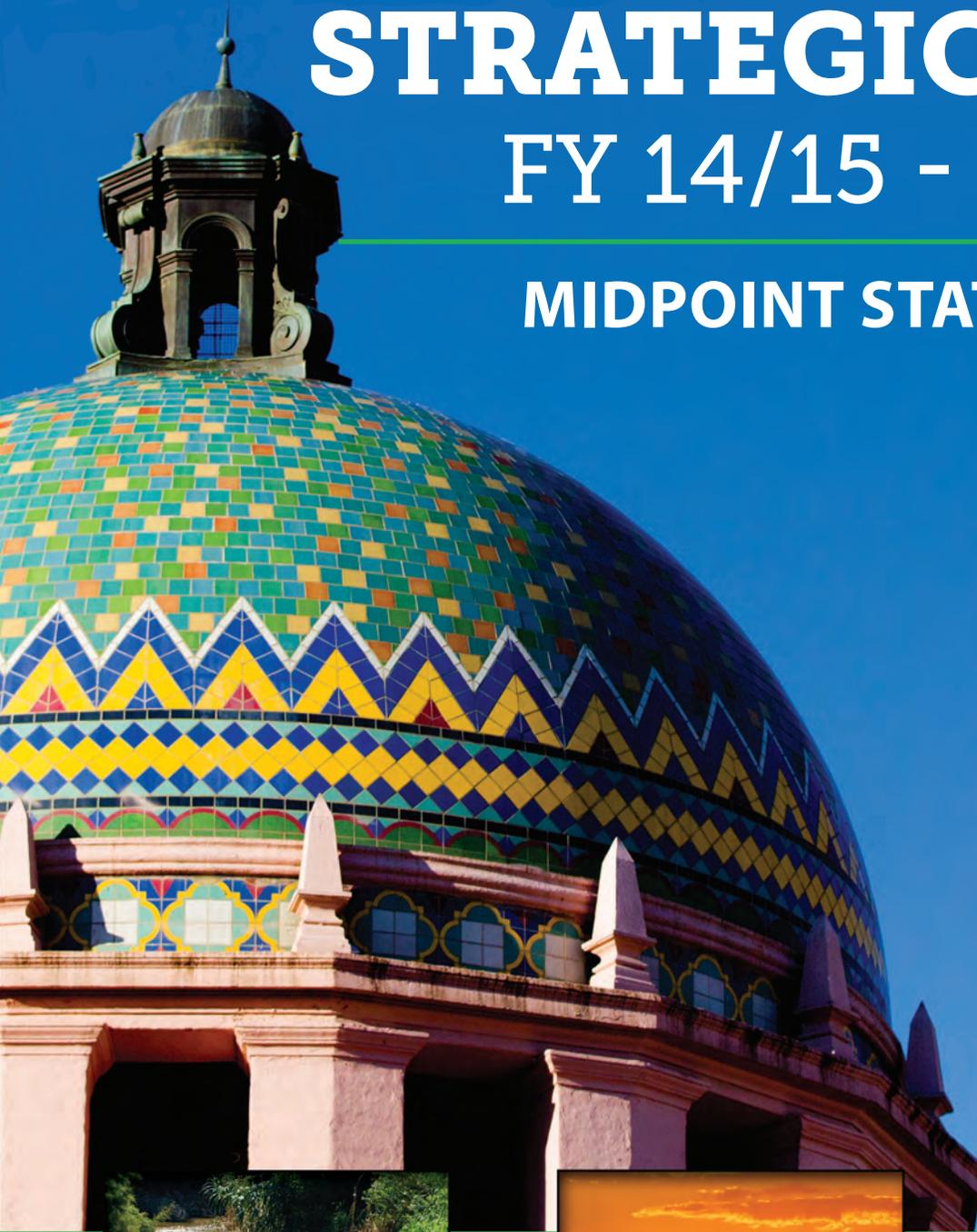


# STRATEGIC PLAN

FY 14/15 - FY 18/19

MIDPOINT STATUS UPDATE

SEPTEMBER 2017



PIMA COUNTY

WASTEWATER RECLAMATION





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Greetings:

The Mission of Pima County Regional Wastewater Reclamation Department (PCRWRD) is to protect the public health, safety, and environment by providing quality service, environmental stewardship, and renewable resources. To accomplish this mission, in 2014 PCRWRD developed a 5-Year Strategic Plan comprised of Core Business Systems that are supported by six Pillars which include the focus on initiatives that are the foundation of the RWRD Strategic Plan. The purpose of this report is to provide a **Midpoint Status Update** to the 2014 RWRD Strategic Plan.

Being at the mid-point of the PCRWRD Strategic Plan, I am proud to say that it has been demonstrated by a dedicated PCRWRD workforce in partnership with many community stakeholders that we are accomplishing the stated goals of this plan. Major projects have been completed and continuous improvement programs have been implemented throughout the organization. In concert with the accomplishment stated goals this report will communicate new goals that will strengthen and optimize PCRWRD operations. For example, protecting our ability to sustain critical operations during an attack on systems or during a natural disaster is a prerequisite in protecting the public's health, the environment, and our employees. Therefore, programing which enhances PCRWRD's emergency response activities and reduce vulnerabilities for our facilities will be incorporated into PCRWRD planning efforts.

In summary, the PCRWRD Strategic Plan is designed to build on a historical reputation for service excellence and construct a vision for the future of the PCRWRD organization. It is definite that this plan demonstrates that PCRWRD is a leader in the treatment of wastewater and is giving utility to our region's natural resources. This **Midpoint Status Update** will provide confirmation that we are on a path to success in providing optimum service delivery to our constituents.

Sincerely,



Jackson Jenkins  
*Director, PCRWRD*



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## ABBREVIATIONS & ACRONYMS

ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
BNROD	Biological Nutrient Removal Oxidation Ditch
CCC	Centralized Calling Center
CI	Continuous Improvement
CIP	Capital Improvement Program
CMID	Cortaro-Marana Irrigation District
CMOM	Capacity, Management, Operation, and Maintenance
COOP	Continuity of Operations Plan
DLU	Development Liaison Unit
EPA	Environmental Protection Agency
FEAP	Facilities Emergency Action Plan
FY	Fiscal Year
GIS	Geographic Information System
GSF	Groundwater Savings Facility
IGA	Intergovernmental Agreement
JHA	Job Hazard Analysis
JOC	Job Order Contract
KPI	Key Performance Indicator
MGD	Million Gallons per Day
P&E	Planning & Engineering Division
PCC	Pima County Code
PCITD	Pima County Information Technology Department
PCNRPR	Pima County Natural Resources, Parks and Recreation
PCRFCDD	Pima County Regional Flood Control District
PCRM	Pima County Risk Management
PCRWRD	Pima County Regional Wastewater Reclamation Department
ROMP	Regional Optimization Master Plan
SMP	Security Master Plan
SRF	Sub-Regional Facilities
SCADA	Supervisory Control and Data Acquisition
SHARP	Southeast Houghton Area Recharge Project
SWWC	Southwest Water Campus
THM	Trihalomethanes
TTC	Temporary Traffic Control
USFP	Underground Storage Facility Permit
UA	University of Arizona
WAS	Waste Activated Sludge
WETT	Whole Effluent Toxicity Testing
WRF	Water Reclamation Facility



# CHAPTER 1

## MAJOR PILLAR PROJECTS AND PROGRAMS



## 1.1 EMPLOYEE PILLAR

The goal for the Employee Pillar is, “to develop a collaborative, team-oriented workforce that is fully trained, fairly compensated, empowered, and accountable with clearly defined career paths for a changing work environment.”

To support this goal, Pima County Regional Wastewater Reclamation Department (PCRWRD) leads Pima County in establishing a wide variety of development and training programs to meet the needs of its diverse staff.

### Training

Current PCRWRD training programs include: Computer Education, Continuing Education, Leadership and Employee Critical Communications, and Safety Education..

- To focus resources on a group level within the Department, 44 Working Groups have been established. Two Working Groups have been successfully deployed using this approach.
- Project Management is a vital skill for the delivery of our multi-million dollar Capital Improvement Program (CIP) and for general project delivery. Three Project Management Courses were completed in Fiscal Year (FY) 2015-16. Three courses were completed for FY 2016-17.
- An Administrative Services Program was proposed and will not be pursued at this time.
- One Incident Command System Tabletop was conducted during FY 2015-16, and one scheduled for FY 2016-17 was postponed.

- Pima County deployed a new version of PC Compliance, WebConnect, in October 2016 to track employee development and training.
- Employee Critical Communications training has been delivered to 29% of staff and is ongoing.
- The Business Writing Program (2-4 courses) was attended by 102 staff during 2016.

### Leadership Development

The Leadership Development Program has graduated 15 cohorts, each with 54 hours of prominent leadership skills that include academic and experiential training. Six more cohorts are scheduled through FY 2017-18.

The next phase of training for the PCRWRD executive team and senior management began in November 2016 and includes: Constructive Dialog, Business Coaching, and Team Building.

In place of the Change Management Program proposed in the Plan, a Talent Management Program has been developed to reinforce the commitment and to ensure supervisors and managers have the capabilities and capacity to meet the business goals and objectives of PCRWRD and Pima County. The Program includes topic such as: Constructive Dialogue, Business Coaching, Formal Shadowing Program, Effective Recruiting, Assessing, Interviewing, and Learning How to Advance Your Career.

## Evaluation and Assessment

An assessment of basic skills for all new Operations and Maintenance and Utility Maintenance Workers was complete in November 2016, followed by a computer skills assessment for all current PCRWRD employees in December 2017.

## Employee Communications

The Director's Pillar Talks with Department staff continue to be held on a biannual basis in addition to smaller focus groups to allow discussion on specific employee related topics.

The Quarterly Management Meetings continue to be held with senior staff members to provide continuity of Department level operations, discuss business opportunities, and improve overall communication. Often community stakeholders and Pima County senior staff attend and provide the group with feedback or updates on Pima County projects.

The Annual Strategic Planning Retreat is utilized for more than planning. It has evolved into a forum which includes leadership development and enhances internal and external communication.

## Strategic Planning

The update of the five-year PCRWRD Strategic Plan will now be issued at the midpoint of the planning period, rather than annually. The Director's review of Key Performance Indicators (KPI) continues on a monthly basis.

## Continuous Improvement Program

The Continuous Improvement (CI) Program has expanded to include the Industrial Wastewater Control Section, the Security Program, and the PCRWRD Buyers processes. The formal expansion to the Treatment Business System has not been pursued since a majority of the Water Reclamation Facilities (WRF) are electronically documented, controlled, and monitored through the use of an IntelTrac.

The focus of the CI Program is to establish and document processes to create structure and definition to our business processes. This allows for data driven decision making though consistency in data capture. Another important aspect of the CI Program is the feedback loop, internal and external, that increases communication and optimizes the value of our products and in some cases, marketability.





## 1.2 COMPLIANCE PILLAR

The goal for the Compliance Pillar is, “to ensure continuous compliance with regulatory requirements and participate in the dialogue of emerging regulatory issues.”

The Southwest Water Campus (SWWC) Laboratory is key to achieving this goal and finished construction of a WETT Laboratory in 2016 for use in testing effluent for permit compliance. The chemists have been hired and the WETT Laboratory certification process with Arizona Department of Health Services should be completed by the end of 2017.

### Biological Nutrient Removal

The pilot project to test the use of trihalomethanes (THM) formation prevention at the Tres Ríos WRF was completed in 2014, and presentations were given at the 2014 and 2015 AZWater conferences. The PCRWRD staff collaborated with Wilson Engineers on THM abatement at the City of Phoenix’s 23rd Street treatment facility. The innovative design utilizes side stream waste centrate to effectively eliminate THM formation via the formation of chloramine. The pilot project showed that the process is effective at reducing THM concentrations.

In 2016, PCRWRD’s SWWC joined the Leaders Innovation Forum for Technology Test Bed Network with a focus on advancing technologies. The piloting capabilities available through PCRWRD and the SWWC achieves a piloting capability of a Level-4 facility; the highest in the network.

### Disinfection Enhancements

Despite producing high-quality denitrified water, the Corona de Tucson WRF does not have an engineered disinfection system. Instead, it has relied on soil aquifer treatment. This method requires elaborate monitoring and may result in false exceedances as well as being prone to interferences caused by inclement weather. For these reasons, the PCRWRD has received approval from

Arizona Department of Environmental Quality (ADEQ) to install a more traditional disinfection process. ADEQ has approved the addition of a chlorine disinfection unit to the 1.0 million gallons per day (mgd) Biological Nutrient removal Oxidation Ditch (BNROD) plant at the site consisting of a chlorine contact basin, a chemical feed system, effluent flow meter, and a hydro pneumatic tank. This upgrade will allow PCRWRD to remove vadose zone monitoring for the BNROD plant.

### Trihalomethane Formation Prevention at Tres Ríos WRF

Based on the successful pilot demonstrations in 2014, a full scale THM abatement project has been designed and constructed using residual centrate ammonia, a byproduct of the treatment process, and was completed early 2017. Not only will this effectively manage THM formation, it will also reduce chlorination and dechlorination chemical usage at the Tres Ríos WRF.

### Water Quality Research

The Lower Santa Cruz River in northwest Tucson and Marana flows year-round and provides the principal wetland habitat in Pima County. River flows are sustained by the release of effluent, highly-treated wastewater, from the Agua Nueva and Tres Rios WRFs. In December 2013, Pima County completed the largest public works project in Southern Arizona by investing over \$600 million to upgrade the treatment process. Improved treatment affords the opportunity to enhance the aquatic environment along the river, reduce odors, and increase re-use of reclaimed water.

To better understand the impacts of improved water quality on infiltration rates and other environmental

changes in the wetland/riparian areas of the Santa Cruz River, PCRWRD is partnering with Pima County Regional Flood Control District, Pima County Office of Sustainability and Conservation, and Pima County Natural Resources, Parks and Recreation Department and the Sonoran Institute in the Living River Project. This project has been funded through a grant from the Environmental Protection Agency that ended in September 2016. Living River reports were developed to use environmental indicators to annually gauge conditions of this valuable ecosystem and track the impact of our community investment. Reports have been produced for the 2013, 2014, 2015, and 2016 water years.

All Living River reports can be found on the Sonoran Institute website at [www.sonoraninstitute.org](http://www.sonoraninstitute.org). The following changes in water quality and wetland conditions are described in the Living River reports:

- **Ammonia no longer limiting life:** Ammonia, which can be toxic to aquatic organisms, was appreciably reduced to low levels.
- **Oxygen availability not a stressor:** Dissolved oxygen, essential for aquatic life, remained at steady levels or increased. Biochemical oxygen demand (an indirect measure of pollutants that use up oxygen in the water) declined to nearly non-detectable levels, indicating that there is more oxygen available for organisms to thrive.
- **Water clarity much improved:** Sediments and other particles carried in the water decreased, resulting in clear river water on normal non-flooding days. Percent fines (small particulates) that settle out of the water onto the riverbed decreased at all sites in 2016, suggesting improved conditions for aquatic life on the riverbed.
- **More diverse life:** Five species of fish and increased diversity of aquatic invertebrates (which include insects, crustaceans, and worms) are being seen in the river. Notably, there have been increases in pollution sensitive species, such as mayflies.
- **Wetland plants reduced in drying sections:** Overall the release of effluent supports wetland plants and trees. In the sections that are drying due to increased infiltration, there is a decrease in willows and a shift towards upland plants.
- **Reduced flow extent:** The length of the flowing river has decreased, likely the result of a combination of factors including increased water infiltration from reduced nutrient levels and scouring floods. In the

2016 water year, there were 109 days when the river flow did not leave the study area and flow downstream.

- **Very little odor escaped the reclamation facility boundary:** Odor levels far below levels required by facility permits and anecdotal observations of odor as hardly noticeable near the facility boundaries.

### Other Notable Observations

- **Increased infiltration & groundwater recharge:** The amount of water that recharged local aquifers more than doubled between 2013 and 2015. There was a similarly high volume of recharge in 2016. This change is likely from increased rates of infiltration resulting in part from improved water quality and scouring floods that help reduce the “clogging layer” which used to be extensive in the riverbed. The effect of increase recharge seems to be a sustained one.
- **Many kids are seeing a flowing river for the first time:** The Living River of Words youth art and science program provided the first contact with a flowing stream for numerous Tucson school kids. The Lower Santa Cruz River provided meaningful inspiration for youth art and poetry projects.

Despite the end of EPA funding, RWRD and RFCD have produced a fourth annual report for the 2016 water year and are proceeding to produce a fifth annual Living River report for the 2017 water year. The Sonoran Institute is compiling data for the next report that will be released in summer 2018. For more information visit [www.sonoraninstitute.org](http://www.sonoraninstitute.org).

### Recharge and Groundwater Storage at Sub-Regional WRFs

As part of the Avra Valley WRF expansion to a capacity of 4 mgd, the effluent percolation basins were emptied, excavated deeper, and reconfigured to maximize future recharge infiltration. In September 2015 PCRWRD received an Underground Storage Facility Permit (USFP) from Arizona Department of Water Resources (ADWR) to enable accrual of storage credits for our recharge. The facility is known as the Black Wash Recharge Project and the permit allows recharge capacity of up to 4,480 acre-feet annually. In the last quarter of 2015, the facility recharged 484 acre-feet, and these credits add to the county’s long-term storage account at ADWR. This stored water can be recovered throughout the Tucson Active Management Area and used to offset groundwater pumping. Credits also can be sold or exchanged for property, easements, or anything else of

value. In August 2017, PCRWRD opened for bid the sale of approximately 11,778.18 acre-feet of effluent recharge credits accrued in its long-term storage account with ADWR from the Lower Santa Cruz managed recharge project, the Marana High Plains, Corona de Tucson, and Black Wash constructed recharge projects. The bidding process ended on August 31, 2017 with one unsolicited bid received. This bid will be forwarded to the Pima County Board of Supervisors for approval.

The Green Valley WRF currently operates a BNROD process and an older aerated lagoon system. A+ reclaimed water from the Green Valley WRF is delivered to third party operating recharge basins off-site. This delivery generated over 1,600 acre-feet of recharge credits in 2015. PCRWRD is proceeding with improvements to the Green Valley WRF that will facilitate on-site recharge. PCRWRD conducted hydrologic investigations of its percolation basins to determine their current capacity. This information will be provided to ADWR as part of our USFP application for the current site. In order to enhance on-site recharge, PCRWRD has developed designs to pipe A+ reclaimed water from the BNROD to two basins for recharge. With this modification, PCRWRD is seeking a permit for recharge credit for lagoon system discharge to older basins, as well as for a portion of the BNROD discharge on-site. Longer-term, PCRWRD plans to expand recharge by building additional basins on property east of the current plant site.

### Southeast Houghton Area Recharge Project (SHARP) Constructed

In 2011, Pima County and the City of Tucson entered into an Intergovernmental Agreement (IGA) to work towards a joint constructed recharge project known as the SHARP located on Houghton Road south of

Irvington. The facility has been designed and has been permitted for recharge of 4,000 acre-feet per year with an Aquifer Protection Permit issued by ADEQ and an USFP issued by ADWR. Pima County has re-evaluated its participation in this project and has determined that the project would not be cost effective due to our limited amount of metropolitan effluent and the expense of wheeling it to the site. Tucson Water will likely continue to build and operate the project on their own.

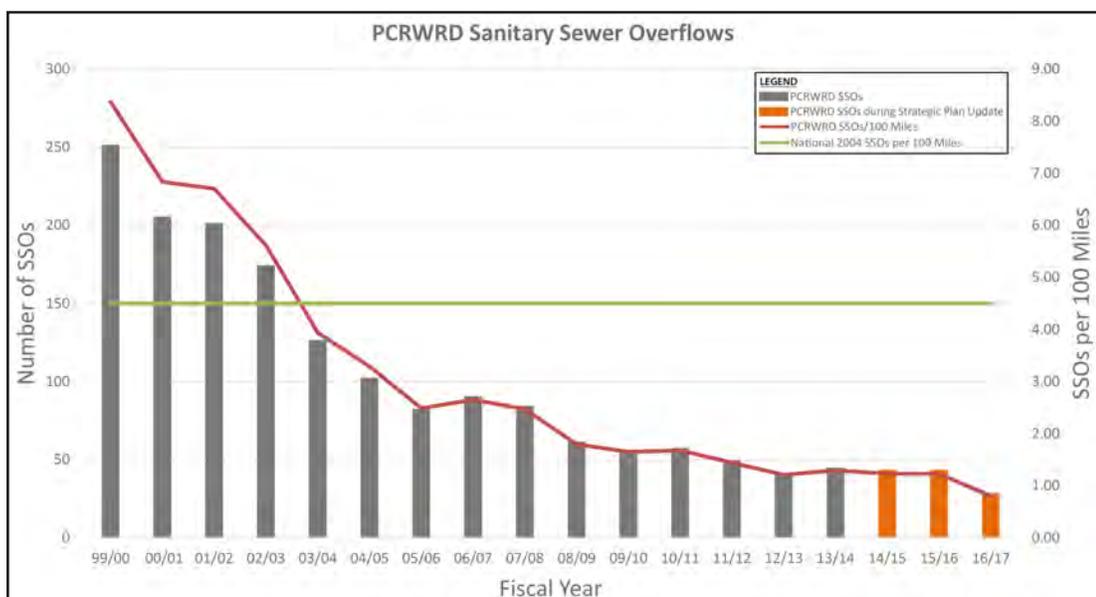
### Evaluation of Conditions at Mt. Lemmon WRF

The PCRWRD completed a paper feasibility study in 2015 to investigate options for the Mt. Lemmon service area. The options presented are vault and hauling operations, the installation of private septic/holding tanks, repair of the existing WRF with short-term hauling, and replacement of the existing WRF. Aspects of cost, regulatory requirements, public perception, risks of operations, and health and safety concerns were evaluated. At this time, a condition assessment during low season is currently being planned and will provide a determination of the feasibility of its continued operation.

### Sanitary Sewer Overflow

Currently at 0.8 Sanitary Sewer Overflows (SSOs) per 100 miles of sewer pipe [Figure 1], PCRWRD's achievement in the reduction of SSOs low since 1999 is well below the national average of 4.5 SSOs per 100 miles of sewer as documented in the a 2004 EPA Report to Congress. Since the inception of the Strategic Plan SSOs have significantly decreased. This level of excellence can be attributed to the miles of sewer that are annually rodded, flushed, and viewed with video cameras preventing blockages and enabling the prioritization of any sewer defects that may cause future failures.

Figure 1.





## 1.3 SAFETY & SECURITY PILLAR

The goal for the Safety Pillar is, “to prevent accidents and injuries among employees, on-site contractors, and visitors through the provision of safe facilities and equipment, standardized safety training, accountability, and safety performance measurement.” PCRWRD’s emphasis and dedication to safety continues to be unwavering.

### Safety Committee

The PCRWRD has Safety Committees at the Division level that meet regularly to perform safety reviews and analyze leading and lagging indicators. Based on these indicators, preventative and corrective actions are recommended and implemented.

### Safety Plan

The PCRWRD’s Safety Plan is a living document that was formalized in October 2016 and is located on the Department’s internal SharePoint site.

### Specialized Trainings

Supervisors have received Hazard Recognition and Job Hazard Analysis (JHA) training for their work areas and assignments. In addition, specialized safety coordinators are assigned to serve as the subject matter experts in the work areas for supervisors. Depending on the nature of the hazard in the work areas, the specialized safety coordinators receive specific specialized training.

### SAFETY MISSION

#### Safety Always:

*PCRWRD is committed to maintaining a safety program that actively involves all employees in identifying, preventing, and correcting workplace safety issues to eliminate all preventable accidents and meet our goal of zero injuries.*

### Safety Culture Promotion

PCRWRD is committed to maintaining a safety program that actively involves all employees in identifying, preventing, and correcting workplace safety issues to eliminate all preventable accidents and meet our goal of zero injuries. Since 2014, OSHA recordable injuries have been reduced by over 46 percent\* and PCRWRD continues to lead the County in Gap Scores [Figure 2].

### Standardized Safety Inspection Reporting

The Treatment Division developed a process map for documenting and tracking Pima County Risk Management (PCRM) inspections at facilities. It is anticipated that this process will be implemented in all Divisions. This process requires all Divisions to assign representatives to accompany PCRM on an inspection. The RWRD Safety Manager will also accompany PCRM on as many inspections as possible. The goal is for citations to be addressed within 30 days, per PCRM’s internal procedure.

\*The 46% comes from reducing the monthly average recordable injuries from 1.33 in 2014 to .71 in 2017 (to date).

The Treatment Division has internal inspections for their supervisors, leads, and field staff set up through IntelTrac and ELogger. Internally, periodic reports are not yet shared on inspection data. In each Division the Safety Coordinator will regularly perform field safety related inspections.

Conveyance Division supervisors conduct regular field inspections with periodic reports and data captured in Hansen work orders.

### Job Hazard Analyses

During FY 2015-16, the Treatment Division developed and documented 477 JHA's. The documents are uploaded to a shared network location on the internal Safety SharePoint site. Training has been completed for the JHAs and will be reviewed annually and updated as needed.



Figure 2.



## 1.3.1 SECURITY & EMERGENCY PLANNING

PCRWRD is steadfast in our commitment to the continuous improvement of our culture of security and emergency response preparedness.

### The Risk and Vulnerability Mitigation Program

PCRWRD recently completed an initial Vulnerability Assessment with the Department of Homeland Security and mitigation improvements will be incorporated. Integral to our security and emergency preparedness culture, enhancements and assessments are part of our continuum optimization cycle of improvements and reevaluation.

**2017 Education and Training for PCRWRD Personnel on Risk Mitigation** – The training curriculum has been incorporated since the inception of the Strategic Plan and includes: Annual Training RWRD Continuity of Operations Plan (COOP); Facilities Emergency Action

Plan (FEAP) Training: Risk Management Training for Building and Safety Site Coordinators; Annual Training Risk Management general facility emergency response and PCRWRD for site specific response. And, Annual Training on Spill Plans.

**On-boarding and Initial Training of Employees** – Training for on-boarding and initial compliance continues to be implemented for the following: National Incident Management - Incident Command classes, DSX – Security Access System, Everbridge Mass Notification System – training and test deployment with pertinent field personnel, and Ocularis – PCRWRD's Facility Monitoring System for pertinent PCRWRD personnel.

**PCRWRD Compliance and Regulatory Affairs Office (CRAO) Laboratory** – In July of 2017, PCRWRD CRAO completed an EPA Analytical Preparedness Full-Scale Incident Command and Water Lab Alliance based table top. The participants included EPA Water Security Division, Multi-State Laboratory response partners, PCRWRD laboratory and IWC staff, PCRWRD executive leadership; City of Tucson Water laboratory and executive ICS command staff, Town of Marana, City of Tucson Emergency Management, Pima County Health Department, and Pima County Office of Emergency Management.

**Management of Private Security Guards** – PCRWRD is operational 24 hours a day, 7 days a week. It is necessary to have observable security personnel present at work sites as a deterrence, and to observe and report suspicious activity. The management of these private security guards falls within the purview of the PCRWRD Security Program and is an important component of our mitigation program. To optimize this program, we will be reviewing their current assignments to enhance security for our facilities and infrastructure.

## **The Emergency Response Program**

**Update of FEAP** – The FEAP is a living document; posted and updated on new Safety and Emergency Planning SharePoint. The FEAP now includes new areas of rescue assistance locations for multi-level buildings.

**Liaison with other Emergency Response Organizations** – When emergencies go beyond our response capabilities or resources are needed by other jurisdictions, the Security Office is responsible for the liaison during these emergencies and will take a leadership role with other emergency responders.

**Exercise and Training of Action Plans** – Emergency response plans must be exercised regularly to make them effective for an actual emergency. In collaboration with the Staff Development and Training Section, the Security Office is responsible for the exercise of emergency plans to ensure that PCRWRD is prepared to handle all emergencies. (*See the Employee Pillar for Training*)

## **The Security Asset Management Program**

**Management and Maintenance of Security Related Assets** – Resiliency is the cornerstone of any security program. To provide resiliency against threats to the continuity of operations, PCRWRD employs the use of procedures and security related assets. The Security

Office is the clearinghouse for all management and maintenance security assets issues. The operational effectiveness of PCRWRD security assets is the responsibility of the Security Office. These procedures will be updated annually to ensure the security of our facilities.

**Management of DSX Card Access and Ocularis Security Camera Systems** – Securing the access to PCRWRD facilities is managed through the DSX Card Access System and the monitoring of entry in facilities is accomplished by the Ocularis Security Camera System. These two important security systems are managed by the Security Office. These procedures and processes will be updated annually to ensure the security of our facilities.

**Training and Education on the Use of Security Related Assets** – The effectiveness of security assets and systems requires standardized training and education. The Security Office, in coordination with Staff Development and Training is responsible for the training on the use of security related equipment and computer databases on an as needed basis.

## **The Security Administration Program**

**Administration of the DSX Security Database and Ocularis Security Camera System** – The databases for access security are sensitive and require protocols that ensure the confidentiality of the operation of both systems. The PCRWRD Security Program Manager is the process owner for both systems and is responsible for their administration.

**Custodian of Processes and Procedures of Security Programs** – The PCRWRD Security Program Manager is the custodian for the development, updating, and implementation of business mapping processes and procedures for security programs. The efficiency of PCRWRD security systems requires continuous oversight of processes and procedures because of the ever changing threats to water and wastewater conveyance utilities.

**Implementation and Administration of the Everbridge Mass Notification Systems** – The response to any emergency or security threat requires immediate notification systems protocol. Use of current communication technology is the notification platform utilized by Pima County Emergency Management and PCRWRD. The PCRWRD Security Program Manager is the Administrator for the Everbridge Mass Notification System for PCRWRD.



## 1.4 CUSTOMER PILLAR

The goal of the Customer Pillar is, “to enhance customer and stakeholder trust, confidence, and service through timely, accessible, and accurate information; while striving for a better understanding of stakeholder and customer needs; while improving processes.”

### Centralized Calling Center (CCC)

The CCC serves as ambassadors and gatekeepers to the public and other Pima County Departments that call into PCRWRD. They also update crucial databases and spreadsheets, dispatch calls, and perform some field crew tasks. Most importantly, the CCC team is a vital lifeline and integral part of the safety connection for our field crews at PCRWRD Temporary Traffic Control (TTC) setups and in our Confined Space Entry program. On a regular basis, they are the tether to our field crews for identifying their whereabouts and to determine how long they intend to be at a TTC setup. CCC staff also call for a safety “welfare check” if crews fail to check in. All of these CCC Dispatch efforts are geared toward a timely emergency response, should the need ever arise to call for 911 emergency responder assistance.

### Community Relations Office (CRO)

The CRO recognizes the importance of community engagement as it relates to the needs and education of the public by increasing public understanding of the value of wastewater infrastructure as a utility service. We are committed to improve communications with customers, strengthen relationships with partners and stakeholders, and promote PCRWRD’s vision, mission and core values.

The CRO in its effort to improve visibility and transparency has allowed the CRO to recognize and market PCRWRD’s key performance accomplishments through an established Facebook presence to enhance visibility and connect on building personal connections over the long term with the community. CRO is currently exploring other communication tools and other social networking options like Twitter and Nextdoor.

The CRO will continue to organize and participate in the 15-20 public outreach events throughout the year. In an effort to prepare communities and keeping aligned with Pima County’s sustainability commitment, the CRO realized the importance of educating future generations through public youth outreach on renewable resources through the wastewater process. The CRO is currently working on a youth curriculum on the wastewater process as it relates to the water cycle and ensuring it is compliant with state education standards.

The CRO has completed an overall audit of the existing materials and reviewed best practices from other Wastewater agency’s successful campaigns. This will help with crafting messages that resonant and best tools and tactics for reaching targeted audiences. The insights from the research and audit will be shaped into a communications and outreach plan that will include a message matrix, highlighting

the most effective and compelling messages for each target audience, appropriate tools, and methods for disseminating those messages. Using the key messages, we will renew print collateral through words and images, and ensure all materials (print and electronic) are in line with PCRWRD's strategic goals for communication and outreach, particularly its renewable resources through the wastewater process.

The CRO continues to connect and relay PCRWRD's campaigns with customers through monthly bill inserts, Wastewater News, an enhanced

Internet website with up-to-date and hands-on information for customers. The CRO continues to write and edit news releases and manage friendly contacts with businesses and government officials on behalf of PCRWRD. We embrace public service as a personal commitment and to benefit the public we serve.

### **Standardized Training**

During 2015, a curriculum for Customer Service Training was developed and offered to staff. This program is currently under revision.





## 1.5 FINANCIAL PILLAR

The goal of the Financial Pillar is, “to maintain financial responsibility by ensuring allocated funding sources are adequate to meet expenses and available funds and resources are managed efficiently.”

### Rate Structure Study

Over the last year the Department’s actual sewer user fee revenue fell short of projected revenue by \$11.7 million. This phenomenon is attributed to the sewer user’s general conservation of water through low flow appliances such as washing machines, dish washers, and low flow fixtures. This is a national trend and is expected to continue. The Rate Structure Study was completed in August of 2017. The ultimate goal of the Rate Structure Study was to provide revenue stability to the utility while encouraging rate stability and cost of service based allocations. The recommendations are being reviewed for consideration.

### Annual Financial Plan Project

In the fall of 2016, the PCRWRD embarked on a Rate Structure Study with Raftelis Financial Consultants Inc. to conduct a detailed review of the current fixed and variable costs associated with wastewater services. The Rate Structure Study will include:

- A revenue requirement analysis by comparing the revenues to the expenses of the utility to determine the overall rate adjustment required.
- A cost of service analysis to allocate the revenue requirements based on how costs are incurred.
- A rate design analysis presenting various options.

- A benchmark exercise to compare and contrast PCRWRD’s existing and proposed rate designs with the billing methodologies of other similar public agency wastewater service providers.

### Budget Management Program

Dedicated financial staff are allocated for each division and perform monthly reviews to ensure PCRWRD spend what is necessary and the budget is not exceeded.

### Continuous Improvement of the Budget Planning and Capital Improvement Programs

Monthly KPI meetings are held with the Director, Deputy Directors, and key staff to monitor monthly Department level expenditures for operations and maintenance budgets, CIP, and revenue base.



## 1.6 SUSTAINABILITY PILLAR

The goal of the Sustainability Pillar is, “to minimize chemical and energy consumption in operations, maximize use of renewable water and energy, and resource recovery to benefit the environment and the community.”

### Water Innovation

The Water Campus has expanded its footprint through a public-private partnership with the UA, other agencies, and research institutions to be a hub for water quality innovation and a source of regional economic development. They have been dubbed Pima County’s Southwest Water Campus (SWWC). In November 2016, the SWWC and PCRWRD partnered with Tucson Water, Town of Marana, UA, Carollo Engineers, CH2M, Clean Water Services, and Water Reuse entered and won the Water Innovation Challenge sponsored by The New Arizona Prize. The challenge SWWC proposed was to get the community talking about direct potable reuse by having craft brewers make beer from locally treated high-quality effluent. In all, the SWWC team received \$302,500 to carry out the project entitled AZ Pure Water Brew Challenge.

In the statewide campaign, the team and volunteers traveled throughout Arizona to educate the public about water issues, water reuse and technologies currently available to purify recycled wastewater producing safe, high-quality drinking water. An advanced mobile purification truck was designed and built and can demonstrate and is proof how wastewater can be purified and turned into safe, potable water. In an effort to dispel fears surrounding the drinking of purified water made from treated reclaimed wastewater samples of the purified water were provided to locals to prove its efficiency and taste. The project ended when 26 brewers throughout the

state produced beer with the Pure Water and competed for prizes at the Pure Brew Challenge in September 2017 at the National WaterReuse Symposium. The team continues its outreach work throughout 2017 educating Arizonans on the value of water recycling and purification and its reuse as a valuable commodity.

### Awards

In August 2016, PCRWRD was one of 61 public and private utilities who received an award for the Water Resources Utility of the Future Today. These utilities were recognized for successfully implementing new and creative programs to address local environmental and community priorities and were presented with a flag and special certificate.

### Energy Management/ Optimization Program

PCRWRD is a member of the Department of Energy’s “Better Plants” program. Each member of the Better Plants program has committed to decreasing its Energy Intensity by 25% within 10 years. During the first year, PCRWRD showed an 8% reduction in its Energy Intensity metric; largely attributable to closing the Randolph Park WRF. PCRWRD also had an energy audit performed for its larger Sub-Regional Facilities (SRF) and many of the recommendations have already been implemented.

### Strategic Plan for Effluent Utilization

The end product of the treatment process (high-quality reclaimed water) is now considered the region’s primary, growing renewable water resource. When put

to beneficial use in landscaping, aquifer augmentation, and environmental enhancement, reclaimed water can help offset this region's reliance on limited, non-renewable groundwater resources. PCRWRD is committed to advancing Pima County's vision and adopted policies for a sustainable water future through maximizing beneficial use of its reclaimed water resource. PCRWRD has made several key advances with regard to fostering increased utilization of reclaimed water in our region:

- PCRWRD recently sought and received approval from ADEQ to permit its Tres Ríos WRF as both an A+ and B+ source of reclaimed water. This change facilitates use of reclaimed water from the plant for irrigation needs at the Mike Jacobs Sports Park complex. It also allows use of the reclaimed water in the distribution system of Cortaro-Marana Irrigation District (CMID) for crop irrigation as discussed below. Other options for use of A+ reclaimed water from Tres Ríos are now possible and will be identified in the near future.
- Metropolitan Domestic Water Improvement District, CMID, and the U.S. Bureau of Reclamation are collaborating with PCRWRD to develop and implement a pilot Groundwater Savings Facility (GSF) to deliver effluent for irrigation use in return for groundwater recharge credit. The project will re-establish a pipeline at Tres Ríos WRF connecting to the existing CMID water delivery system. It would have a delivery volume of approximately 2,000 acre-feet annually; a more permanent second phase following the pilot could deliver up to 7,000 acre-feet annually. CMID owns over sixty miles of pipeline and canals which deliver irrigated water to some 12,000 acres of farmland in the Marana area. The proposed project would deliver effluent treated to Class A+ reclaimed water standards through CMID infrastructure to a permitted GSF in CMID's service area. In order to encourage use of renewable water supplies, the ADWR permits Groundwater Savings Facilities - the direct delivery of effluent or Central Arizona Project CAP water to crops on an existing farm instead of pumping groundwater. Effluent delivered to a GSF receives 100% credit for the entity providing water instead of the 50% credit earned in a managed recharged project. Pursuant to A.R.S. §45-812.01(B)(5), Pima County is precluded

from using its effluent in this GSF because we provided effluent to CMID in the past. Should ADWR change its restriction on our participation in the future, Pima County could elect to store a portion of its metropolitan effluent in the GSF. In such a case, the IGA allows Pima County to opt into the GSF by contributing a proportional share of the project's capital expenditures. Improved water quality from Agua Nueva WRF and Tres Ríos WRF is changing the effluent-dependent Santa Cruz River into a setting where healthier aquatic habitat is possible, as long as wet conditions can persist. Increased infiltration in the riverbed is a byproduct of improved water quality because nutrients no longer promote algal growth in the channel bottom and because suspended solids have been reduced significantly. Higher infiltration means that flow extent downstream is declining, as recharge of the aquifer improves. Annual recharge volume reported by the two Santa Cruz River managed recharge projects has more than doubled. Another contributing factor for diminished flow extent on the Santa Cruz River is the diversion of effluent off-channel for basin recharge. Higher quality effluent has greatly benefited aquifer recharge in our region.

### **Culture Change: The PCRWRD "Green Team"**

The "Green Team" is open to all staff, is accepting new members, and meets quarterly. Team members and PCRWRD staff have supported the Director's "No Styrofoam" ban, and the only Styrofoam products still in circulation were purchased prior to the ban's inception. A "Sustainability Corner" article is published monthly in the Pipeline newsletter and provides educational materials on a wide variety of sustainability topics. The "Pen Brigade" supports the Director's recycling directive, thus keeping old and non-functioning writing utensils out of the waste stream. Furthermore, the Green Team has been working with the Pima County Waste Reduction S-Team and has completed and submitted a proposal to County Administration pertaining to waste reduction, boosting recycling efforts, and cost effectiveness as they pertain to County Operations. The Green Team provides on-boarding presentations pertaining to sustainability and introduces the Green Team to new PCRWRD staff. The "Lights Out" Campaign is in full force, and has raised awareness about the importance of energy conservation.



# CHAPTER 2

## MAJOR DIVISION PROJECTS AND PROGRAMS





## 2.1 PLANNING & ENGINEERING

The Plan's goal for Planning & Engineering (P&E) is, "to provide planning and engineering solutions to help ensure safe, efficient, and sustainable water reclamation infrastructure for our customers."

P&E has made significant progress in reaching the objectives of the Plan. There were many accomplishments within P&E and the incorporation of the CI Program model will generate many more to come. P&E's focus is on providing exceptional customer service for all external and internal customers; which requires a balance between quality, speed, and efficiency. Serving the development community is the highest priority along with several other critical work products that provide high value to the Department.

### Regional Planning

The PCRWRD's 2016 Wastewater Facility Plan, a long-range master planning document was completed last fiscal year and can be found on the Internet at: [www.pima.gov/wastewaterreclamation](http://www.pima.gov/wastewaterreclamation) under the Reports tab.

This effort took several years to complete and serves not only as a vision for the future, but also as a historic marker for the status of PCRWRD today. The last update was completed in 2006. The planning team is actively involved in the increase of economic development inquiries and will support each inquiry for sewer service to the highest degree possible.

### New Development Planning

The recent focus in Pima County is economic development, and PCRWRD plays a major role in bringing sewer service to the southeast service area.

Through our planning efforts, a new interceptor alignment was developed in 2016 and an extension of sewer service from Old Nogales Highway to Wilmot is being planned. This infrastructure, when completed, will provide ample sewer service to new growth along the Aerospace and Defense Corridor, as well as provide opportunities for extended rail and utility service.

### Land and Permit Management Project/ Development Processes

The implementation of new Land & Permit Management software (Accela®) for the Development Liaison Unit (DLU) of PCRWRD enhanced customer service by streamlining the development review process and shortening review turnaround times in order to meet stakeholder expectations. Accela efforts have continued to improve the quality of review services provided by staff. Effective September 1, 2017, the functions of the DLU were transferred to the Pima County Development Services Department (DSD). DSD will perform most all work functions under the guidance and adopted standards of PCRWRD. DSD has currently been performing these functions over the last 2 years for projects in Unincorporated Pima County. DSD will now also perform these functions in Incorporated Pima County (City of Tucson, Oro Valley and portions of Marana and Sahuarita). PCRWRD DLU's remaining functions will include continuation of New Development Planning, management of the Capacity Allocation model, and oversight of DSD's Capacity Allocation approvals.

## **Development Capacity Tracking**

The Wastewater Capacity Program was updated in 2016 with more refined hydraulic model data from the latest calibration and continues to serve as the backbone of our capacity management program. The program utilizes flow data from the Hydraulic model and adds on requested capacity allocations to determine the probably impact to the sewerage system.

## **Hydraulic Modeling**

The hydraulic model's fourth dry calibration was completed in 2016 with high correlation results. The modeling team is finalizing several wet calibration efforts that provide information on where capacity may be limited and what impact stormwater inflow has on the system. The team is currently acquiring flow data and developing calibrated models for Avra Valley, Corona de Tucson and Green Valley by 2019.

## **System Flow Metering**

The Flow Metering program continues to provide valuable data to internal projects as well as to external development and construction projects. Two important continuous improvement efforts in the next fiscal year will be to evaluate meter data collection methods and data management processes to increase efficiency while maintaining the high quality of data produced by the team. In conjunction with the hydraulic model, studying the impacts of stormwater inflow in test areas such as the Kino neighborhood and others will continue to be a priority.

## **Design Standards**

The Design Standards, Construction Specifications, and Formatting Standards documents were updated and released in February 2016 after a multi-year, collaborative effort from staff and outside stakeholders. In the spirit of continuous improvement, it is expected that there will be annual updates and improvements made as these "living documents" are used by the development community. An update is working through the review and adoption process and should be finalized in early 2018.

## **Inspection of Construction**

The Field Engineering Section provides construction inspection services for private development and PCRWRD's CIP projects. This year, the Inspection team developed construction specifications for Cured-In-Place Pipe and formally launched the Product Selection Committee to evaluate new products. The inspection services were also expanded to Treatment Division projects, thereby providing a broader range of services to PCRWRD. Next fiscal year will see a continued focus on process improvement and increased use of electronic documentation.

## **Records Management**

In 2015, P&E launched an electronic document management process for several internal record types and continues to lead in the support and enhancement of that system.

## **Geographic Information System (GIS) Mapping and Drafting Support**

Through an integrated process between engineer and CAD drafters, the division completed several in-house sewer design projects. The two GIS layers for managing survey and easement data was developed by the GIS team, and another multi-year project to better organize that data were launched. The current sewer GIS database is being analyzed and some new, more efficient solutions are being evaluated. The next few years may bring significant changes in how GIS data is managed.

## **Ordinance Revisions and Updates**

In 2015, PCRWRD completed a re-drafting of the Sanitary Sewer User Fee ordinance, Pima County Code (PCC) Chapter 13.24. Over the next year, with P&E involvement, a project to re-draft the Sanitary Sewer Construction, Connection and Fee ordinance, PCC Chapters 13.12, 13.16, and 13.20 began. This effort requires a high level of involvement by many P&E staff whose work efforts are guided by the ordinance. This efforts will be finalized in 2018.

## **Continuous Improvement Program**

The CI Program continues to grow with staff and senior management engaged and supportive in keeping it strong. A formal Bi-Annual Process Review program has replaced milestones for process map updates, red cloud resolution and process improvement plans. The new review format will be used to monitor and review of the 18 process maps in the division and updated or expand as necessary. Due to the implementation of Accela, previous process control and boundary issues have been resolved.

## **Key Performance Indicators**

The majority of KPIs are within the Accela database. At this time PCITD is in the process of assisting with creating reports so average review times for all DLU processes (that are now performed by DSD), which includes the Preliminary Sewer Layout, Type III Capacity, and Sewer Improvement Plan, can be monitored. At this time there are six KPIs that are reviewed during monthly Managers' Meetings. Moving into the next fiscal year, the CI Program will continue to conduct bi-annual reviews and streamline the Planning and Engineering System.



## 2.2 CONVEYANCE

The Plan's goal for the Conveyance Division is, "to provide quality service, pollution prevention, and public health and safety protection for current and future generations of Pima county residents and to enhance the sustainability of our community and our associated lifestyle through operations and maintenance of the Conveyance System."

This goal is being accomplished through continuous maintenance of our sewer collections system. Maintenance ensures a continued reduction of sanitary sewer overflows, odor issues, and effective pump stations. All maintenance activities continue to be tracked and monitored via Infor Public Sector and Supervisory Control and Data Acquisition (SCADA) Programs.

### Closed Circuit Television Assessment

The Department has completed the initial system-wide inspection and assessment program. Completion of the first round of inspections fulfills compliance requirements of the ADEQ Capacity, Management, Operation, and Maintenance (CMOM) Permit requirements. Additionally, the first round assessment provides a baseline for rehabilitation and maintenance comparison for the second 10-year inspection cycle, which is now underway.

### Continuous Improvement Program

Over the past two years, comprehensive process improvement methods implemented to date, and now embedded in the CIP subsystem, have been routinely reviewed and enhanced where and when needed. Key activities have included conducting

annual reviews of all processes; maintaining up-to-date process maps that define work flows and requirements; training staff on the use of the process maps to ensure consistency; identifying and resolving opportunities for improvement; and monitoring performance metrics for the timeliness, quality, and cost effectiveness of all processes. As of July 2016, the blue stake process was transferred to P&E.

### Conveyance CIP: Rehabilitation Program

- The rehabilitation of the North Rillito Interceptor was completed in early 2017.
- The 3.9 mile rehabilitation of the South Rillito West Central Interceptor was completed in FY 2014-15. The project received the American Public Works Association, Arizona Chapter "Best Environmental Project" in its category and was recognized as a Top 20 for the 2016 Common Grounds Awards.
- The Continental Ranch Regional Pump Station rehabilitation project has been designed and construction started in July 2017.
- Smaller rehabilitation projects managed with Job Order Contracts (JOC) totaling

almost \$18 million were completed during the FY 2014-15, \$19.5M for FY 2015-16 and \$15.9M for FY 2016-17.

### Conveyance CIP: Augmentation Program

- The Southeast Interceptor augmentation is under construction with an estimated completion in mid-2018.
- The Old Nogales Interceptor augmentation / Aerospace Corridor project, which will support economic development within Pima County, completed the construction of phase 3, out of sequence, taking advantage of the Drexel Elementary school summer recess. Phase 1 has completed the design phase and will start construction in early 2018. Phase 2 is in the design phase with construction to follow in FY 2019-20.
- The Speedway / University of Arizona (UA) augmentation project is currently in the alignment study phase. Design and Construction will follow in FY 2018-19.
- The Twin Peaks – Blue Bonnet augmentation will enter the design phase

in late 2017 with construction to follow.

- The Wastewater Pumping Systems Rehabilitation Program is scheduled to complete the last 2 site rehabilitations. Prioritization and assessments will start the Pump Station maintenance and repair cycle in order identify any repairs needed and to keep our facilities operating at an efficient energy consumption level.
- Two of the four pump stations scheduled to be taken off-line and replaced with gravity sewers are complete. This generates a costs saving in labor, electricity, and chemicals to control odors.

### Sewer Maintenance Program

The Sewer Maintenance Program continues to meet their goal of servicing over 2,300 miles of sewer pipe per year. To ensure the ability to meet this goal, three replacement rodder trucks and one combo truck were ordered and will be outfitted by Pima County's Fleet Services.





## 2.3 TREATMENT

The Plan's goal for the Treatment Division is, "to provide clean and safe water for beneficial use in the reclaimed water cycle, generate Biosolids products that can be beneficially utilized, and beneficially used as renewable gas product, while protecting the public's health, safety, and the environment, while also meeting all regulatory requirements mandated by state and federal agencies."

To meet this goal a new Process Control group monitors the daily operations of the treatment plant. This team will address any issues that arise in the treatment system and will make suggestions to the operational staff for process improvements and efficiencies. They will also perform quality control checks for compliance to the daily rounds and lab sampling. The team utilizes data coming in from IntelTrac and a treatment modeling system.

### **Biogas Sale and Utilization Project**

Contract documents for the design and construction of the biogas cleaning facility are expected to be complete by December of 2017. Construction of the facility should be complete by the end of FY 2017-18. Southwest Gas is onboard for receiving the gas onto their system and PCRWRD is currently evaluating options for the final gas off taking agreement(s).

### **Biosolids Management Program**

The Biosolids Management Program during the period FY 2014-15 to FY 2018-19 is focused on design improvements, resource optimization and risk minimization. The design improvements include enabling conveyance of higher percent solids content

Cake Biosolids; the expanding of the thickened Biosolids transfer facility and designing for reliable pumping; and the installation of two additional Strain Presses to protect the centrifuges by screening fiber, rags and abrasives. The resource optimization goals include the optimization of polymer utilization in the thickening and in dewatering of the sludge, the minimization of the utilization of ferric chloride; the sequestration of struvite in the digested sludge; and the management of nutrients in the Centrate pumped as a sidestream from the centrifuge to the primary clarification process.

The risk minimization for the Biosolids Program concerns the pursuit of viable options to meet more stringent regulatory requirements; the acquisition and permitting with Arizona Department of Environmental Quality of farmland for land application of Biosolids; and the evaluation of alternative methods to manage the solids harvested from PCRWRD Sub-regional WRFs. Currently, PCRWRD hauls an annual volume of 11 (eleven) million gallons of sludge from the Sub-regional WRFs to the wastewater Collection System; this volume of over the road transported sludge amounts to an annual 2000 (two thousand) tanker

truck loads, making daily round-trips between the Sub-regional WRFs and the discharge points. These trucked solids introduce activated sludge in the wastewater collection system contributing to odor emission potential.

The fore stated focus of the Biosolids Management Program is a continuation of preceding improvements to the Program which included:

- Two anaerobic digesters were added at Tres Ríos WRF, as part of the Regional Optimization Master Plan (ROMP)
- The digesters are 1.8 million gallons each, raising the digestion capacity to a total of 8.92 million gallons of sludge.
- A Gravity Belt Thickener Complex was added to thicken the waste activated sludge (WAS) from Tres Ríos WRF and the solids pumped from Agua Nueva WRF.
- The three Dissolved Air Flotation thickeners were converted to gravity thickeners, used for thickening the primary sludge along with thickener number 3, the remaining original gravity thickener.
- The dewatering and conveyance equipment of the digested sludge was upgraded.
- Three new Westfalia Centrifuges replaced the old Alfa Laval centrifuges.
- A Cake Biosolids loadout package system consisting of three hoppers with automated loading bins was built.
- A Strain Press was designed and installed to protect the centrifuges by screening fiber, rags, and abrasives from the digested sludge.
- An inline polymer injection ring was added to the Cake Biosolids conveyance piping to protect the pumps and to minimize maintenance downtime.
- A three-stage Centrifuge Facility Odor Control System consisting of ammonia scrubber, modular biofilters, exhaust fans and Carbon adsorbers was built to collect and treat foul air from the dewatering and the loading operations of the Cake and the thickened Biosolids.

The 2012 PCRWRD System-Wide Biosolids and Biogas Utilization Master Plan (Master Plan) recommended that PCRWRD adopt a plan to convert

to a Class A process in the event a future production of Class A Biosolids is mandated. In 2013, Pima County partnered with the UA and a private vendor and secured a Green Valley WRF site-specific Class “A” Processes to Further Reduce Pathogens certification by U.S. EPA’s Pathogen Equivalency Committee. The vendor operated the process as a pilot at Green Valley WRF in 2015, supervised by the UA. The limited tonnage of solids harvested at Green Valley WRF did not afford profitability for the vendor to persist, and the use of a chemical in the process is not favored by PCRWRD. PCRWRD continues to evaluate technology options to produce Class “A” Biosolids.

The Master Plan also recommended PCRWRD pursue land acquisition to be used as land application sites for Class “B” product. PCRWRD, in cooperation with Pima County Natural Resources, Parks and Recreation and Pima County Office for Sustainability and Conservancy, conducted an extensive evaluation for the utilization of Class “B” biosolids at Pima County Conservancy managed land. The evaluation investigated lands amenable to biosolids land application to reclaim and/or native grass growing and seed harvesting. PCRWRD registered with ADEQ for land application of a 296-acre parcel it owns, northwest from Trico Road and Hardin West Road, to recycle Biosolids. Pima County Cultural Resources released 69 acres of the parcel for farming and PCRWRD continues to pursue opportunities to acquire farmland in the size of one to several land sections. Pima County remains interested in securing land parcels from State and private land.

### **CIP or Smaller Projects/Equipment and Machinery Purchases**

The CIP for Treatment is currently on track to spend \$35M over the next five years on projects at the Tres Ríos WRF and the Sub-Regional Facilities enhance existing processes and assure compliance with regulatory requirements.

### **Dynamic Wastewater Treatment Modeling Program**

PCRWRD is continually improving the Tres Ríos GPS-X model and is always looking to get more users trained. The model is used for troubleshooting, data verification, and “what-if” scenarios in team-based exercises. Current improvement efforts are related to automating data transfer directly from the plant SCADA system into the model in order to streamline

the simulation process.

### **Electronic Rounds Using IntelTrac**

Electronic rounds have been fully implemented at Tres Ríos WRF and are currently being rolled-out at the Sub-Regional WRFs.

### **Job Hazard Analyses**

*(see the Safety & Security Pillar)*

### **Managing Work Orders Using Maximo**

With the stabilization of Maximo 7.6, training for the EZMaxMobile started in October 2016 and tablets are currently being deployed. Wi-Fi routers are being installed to increase plant coverage and will limit the need for syncing the tablets.

The SCADA/Maximo interface may not be pursued. PCRWRD is currently using a one-way data transfer from SCADA to Maximo. Bar coding for assets is 90% complete at Tres Ríos and is currently being deployed at the Sub-Regional WRFs.

### **Inventory Control, Purchasing and Asset Management Projects**

This project will be deployed once the EZMaxMobile is functional for work orders. Currently, the staff is holding asset criticality meetings on a bimonthly basis to optimize inventory in the warehouse.

## **Research and Technologies**

*(see the Sustainability Pillar)*

### **Supervisory Control and Data Acquisition**

Significant upgrades have been completed at the Tres Ríos, Corona de Tucson, and Green Valley WRFs. Additionally, the Conveyance SCADA system, including critical radio telemetry to all the remote lift stations, has been fully upgraded to industry standards. New construction has also been completed at the Agua Nueva WRF. The remaining items on the SCADA Master Plan, which were part of ROMP and Avra Valley WRF, still remains to be upgraded as well as design and implementation of the SCADA Emergency Operations Center.

### **Side Stream Treatment Project**

PCRWRD is in the process of evaluating emerging technologies to simultaneously treat its side stream ammonia load and to prevent unwanted struvite buildup..





# APPENDICES

## CORE BUSINESS MILESTONES



# PLANNING & ENGINEERING

PROJECT/PROGRAM	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
<b>SYSTEM GROWTH PLANNING</b> <ul style="list-style-type: none"> <li>• Regional Growth Planning</li> <li>• New Development Planning</li> <li>• Development Capacity Tracking</li> <li>• Hydraulic Modeling</li> <li>• System Flow Metering</li> </ul>	Master Plan Update Completed	Hydraulic Model Calibration Completed			
	SE Interceptor Study Completed				
<b>SYSTEM GROWTH PLANNING</b> <ul style="list-style-type: none"> <li>• Fee Ordinance Update Project</li> <li>• Land and Permit Management (LPM) Project</li> </ul>	Fee Study Completed (Raftelis) for Fee Ordinance Update	Public Input Process Completed for Fee Ordinance Update		Fee Ordinance Update Completed	
		LPM Conversion Completed			
<b>SEWERAGE ENGINEERING</b> <ul style="list-style-type: none"> <li>• Standards Development</li> <li>• Inspection Services</li> <li>• Engineering Services</li> </ul>	Design Manual Updated		Inspection Program Expanded to Treatment		
<b>GIS MAPS and RECORDS</b> <ul style="list-style-type: none"> <li>• Records Management</li> <li>• GIS Support</li> </ul>	Launch eDMS Phase I; Prepare for eDMS Phase II				
<b>CONTINUOUS IMPROVEMENT PROGRAM</b>	Streamline Development Capacity Tracking	95% of Process Control and Boundary Issues Resolved	Red Cloud Resolution (on-going)		
	Annual Verifications Conducted for all Processes	Annual Verifications Conducted for all Processes	Annual Verifications Conducted for all Processes	Annual Verifications Conducted for all Processes	Annual Verifications Conducted for all Processes
	Regular Monitoring of Metrics Established	New Process Improvement Plans Developed	New Process Improvement Plans Developed	New Process Improvement Plans Developed	New Process Improvement Plans Developed
	Release and Control all Core Processes and Non-Core Processes	Implementation of Land and Permit Management	Process Maps Updated	Process Maps Updated	Process Maps Updated
	Evaluate Maps Relative to Each Pillar ( <i>Safety, Compliance, Sustainability, etc.</i> ) and Update Red Clouds, Metrics, Process Improvement Plans		Streamline System		

# CONVEYANCE

PROJECT/PROGRAM	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
<b>CCTV SERVICES</b>	550 Miles Televised	550 Miles Televised	350 Miles Televised	350 Miles Televised	350 Miles Televised
<b>CONTINUOUS IMPROVEMENT PROGRAM</b>	Release and Control CIP Maps				
	Training of Other Internal Users <i>(in Other Divisions)</i> Linked to Process Maps				
	Training of External Departments Linked to Process Maps				
	Monthly Metrics Review Meetings with System and Process Owners	Monthly Metrics Review Meetings with System and Process Owners	Monthly Metrics Review Meetings with System and Process Owners	Monthly Metrics Review Meetings with System and Process Owners	Monthly Metrics Review Meetings with System and Process Owners
	Semi-Annual Process Improvement Plan Implementation Review	Semi-Annual Process Improvement Plan Implementation Review	Semi-Annual Process Improvement Plan Implementation Review	Semi-Annual Process Improvement Plan Implementation Review	Semi-Annual Process Improvement Plan Implementation Review
	Semi Annual Business Review <i>(System and Process Owners)</i>	Semi Annual Business Review <i>(System and Process Owners)</i>	Semi Annual Business Review <i>(System and Process Owners)</i>	Semi Annual Business Review <i>(System and Process Owners)</i>	Semi Annual Business Review <i>(System and Process Owners)</i>

# TREATMENT

PROJECT/PROGRAM	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
<b>BIOGAS SALE and UTILIZATION</b>	Award Contract	Start Construction	Complete Project		
<b>BIOSOLIDS MANAGEMENT</b>	Technology and Market Research Progress Report Developed		Marketing Plan Developed	Acquire and Implement Technology	Class A Production
	Complete Land Inventory Study for Biosolids Land Application		Acquire Agricultural Land (1000 acres)		
<b>CIP - SMALLER PROJECTS</b>	Sludge Screening Complete	Process Piping Improvement Complete	Possible Green Valley Expansion		
	ARC Study / Compliance	Replacement of Old Electrical Equipment			
	Lightening Protection	Process Water Improvement			
<b>CONTINUOUS IMPROVEMENT PROGRAM</b>	Participate in Process Mapping of Global Processes	Start Process Mapping of 3.04 Production System	Analyze Opportunities for Improvement	TBD	TBD
		Monitor Metrics	Release and Control Maps	TBD	TBD
		Release and Control Maps	Resolve 95% of Process Control and Boundary Red Clouds	TBD	TBD
		Annual Verifications for all Processes		TBD	TBD
<b>DYNAMIC WASTEWATER TREATMENT MODELING</b>	Model of Tres Ríos Implemented / Staff Trained Using a Simulator	Use Model to Develop Scenarios for Energy Management, Staffing, Cost Reductions, Enhanced Treatment, etc. and Implement Business Process Improvement Based on Model Results	Continue to Monitor and Continuously Improve		

# TREATMENT

PROJECT/PROGRAM	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
<b>ELECTRONIC ROUNDS USING INTELATRAC PROJECT</b>	Complete Tres Ríos & Sub-Regional Facilities <i>(Paperless)</i>	Analyze Other Mobile Devices and Wireless Opportunities <i>(e.g. use of tablets)</i>	Implement Electronic Rounds Using Intelatrac Project	Continuously Improve Based on New Technology	Complete Tres Ríos & Sub-Regional Facilities <i>(Paperless)</i>
	Track Energy Usage and Costs System Wide	Establish Benchmark and Set RWRD Energy Goals	Implement Energy Efficiency Projects and Improvements		
<b>INVENTORY CONTROL, PURCHASING AND ASSET MANAGEMENT PROJECT</b>	Develop SOPs for Inventory Control	Asset's Spare Parts Identification	JIT <i>(Just in time)</i> Inventory Implemented	On-hand Inventory Optimization	Monitor KPIs and Make Adjustments
			Consignment Inventory Implemented		
<b>JOB HAZARD ANALYSES (JHAs)</b>	Start Collecting Data	Complete Data Collection	Upload JHAs into Maximo to Attach to Work Orders		
<b>MANAGING WORK ORDERS USING MAXIMO PROJECT</b>	Deploy EZ Max Mobile	Load Job Plans for Preventative Maintenance	RCM Implementation	Job Hazard Analysis Loaded into Maximo	Monitor KPIs and Make Adjustments
		Launch SCADA / Maximo Interface			Monitor KPIs and Make Adjustments
<b>SCADA MASTER PLAN IMPLEMENTATION PROGRAM</b>	Tres Ríos / Avra Valley Implemented	Corona de Tucson and Green Valley Implemented	Mt. Lemmon Implemented		
<b>SECURITY MASTER PLAN IMPLEMENTATION PROGRAM</b>	Physical Security Completed at Green Valley WRF, Corona De Tucson WRF and Sub-Regional Facilities Administrative Offices, Conveyance Facility and Continental Ranch Regional Pump Station	Initiate and Complete Physical Security Expansion at WES Center for Agua Nueva, and Mt. Lemmon WRF	Continuous Improvement on Physical Security at all RWRD Facilities		
<b>SIDESTREAM TREATMENT PROJECT</b>	Start Procurement	Award contract		Complete Project	







**PIMA COUNTY**

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**WASTEWATER RECLAMATION**

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[www.pima.gov/wastewaterreclamation](http://www.pima.gov/wastewaterreclamation)