

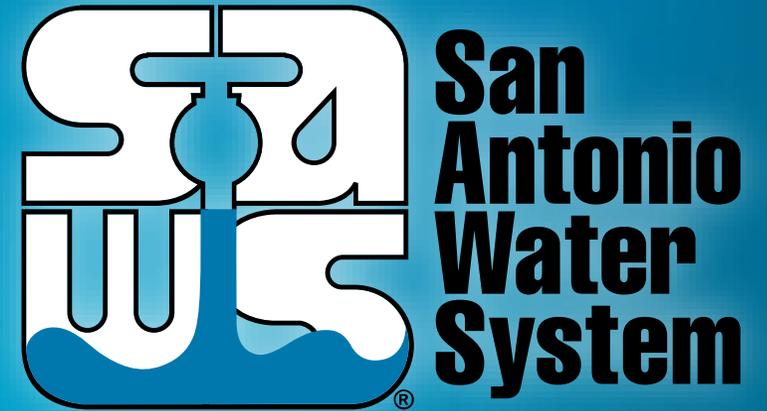
# Energy Savings at our Water Recycling Centers

Tram Bender

Treatment Operations Manager

TACWA

September 22, 2023



MAKING SAN ANTONIO  
**WATERFUL** 

# A NEW INITIATIVE

## ENERGY SAVINGS

- In 2021, SAWS hired Cascade Energy as our strategic energy management consultant
- Multiple energy conservation measures (ECMs) were established to save energy for SAWS across all core business sectors (production, treatment, and chilled water)
- This presentation will cover lessons learned and how leadership was applied at one of the treatment facilities



Energy Savings at our Water Recycling Centers

## WELCOME TO LEON CREEK WRC

- Leon Creek WRC is one of three wastewater treatment facilities that serve San Antonio, Texas
- Leon Creek was built in 1965 and was one of the largest wastewater treatment facilities in the nation in the 1960's
- Following completion of the SAWS recycled water system in the early 2000's, Leon Creek was renamed a Water Recycling Center



# LEON CREEK WRC

## ENERGY SAVINGS

### Introduction:

- Importance of energy savings at Leon Creek WRC
- Significance of management practices and teamwork in achieving energy savings goals
- Leon Creek is on track to save almost ONE million kW of electricity in 2023



# ABOUT OUR CAPACITY



Activated Sludge Facility  
with 46 MGD Annual  
Average Daily Flow (AADF)



Discharge to Comanche  
Creek, Mitchell Lake and  
Supply Recycled Water



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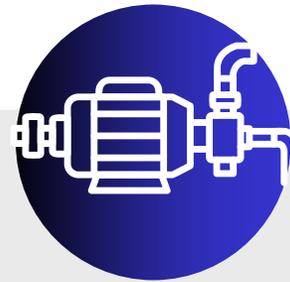
# LEON CREEK WRC

## ENERGY CONSERVATION MEASURES



### BLOWERS

Lower blower output during low demand



### PUMPS

Use 1 Return Activated Sludge (RAS) pump to pull sludge from 2 clarifiers instead of 1 pump per clarifier



### FILTERS

Optimize filter operations and maintenance, reducing backwash pumping by 80%

# BLOWERS

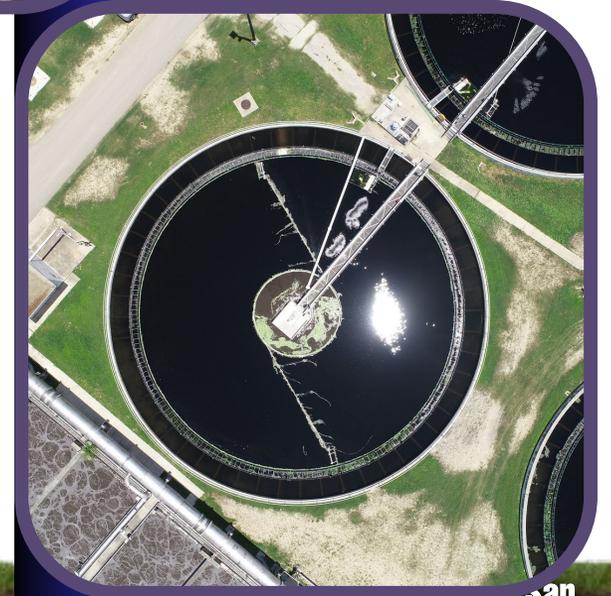
## REDUCING ENERGY BY USING LESS AIR

- 900 horsepower turbo blowers provide air for the biological process (typically run 2)
- Adjusting blower output based on influent ammonia and flows
- Control nitrate, nitrite and total phosphorus levels
- Reduce power consumption by lowering blower output
- Optimize plant performance



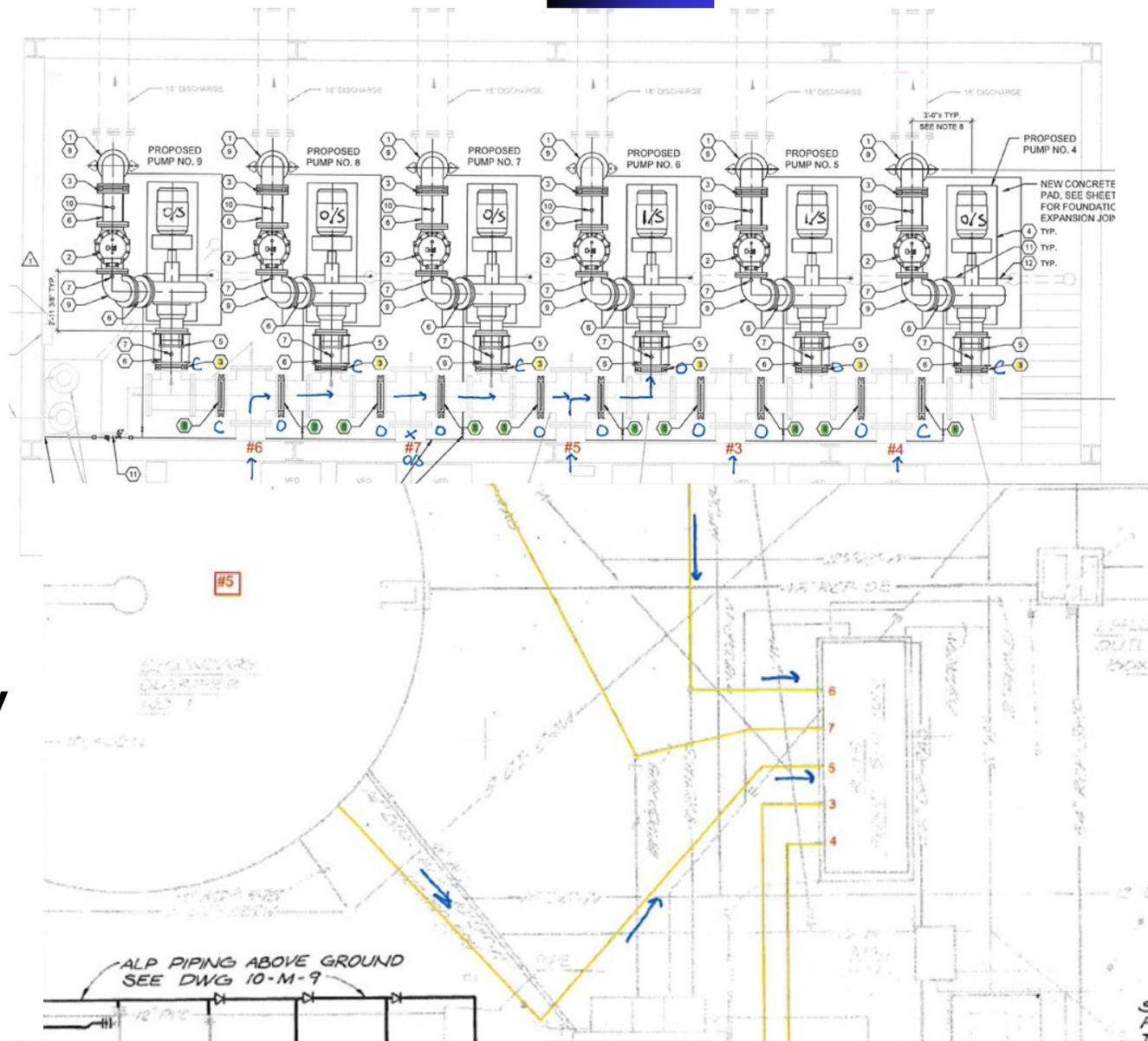
# HOW ABOUT RETURN ACTIVATED SLUDGE PUMPING

- Historically used one pump per secondary clarifier
- Running pumps inefficiently and wearing them out prematurely
- With too many pumps out of service, had to innovate



# RETURN ACTIVATED SLUDGE PUMPS

- Manipulated valves on common header to use one pump for two clarifiers
- Reduced pumping energy
- Improved pumping efficiency



# TERTIARY FILTERS

- Started routine manual cleaning of filters with pressure washer
- Calibrated pressure differential setpoints for various backwash cycle modes
- Increased duration between backwash cycles
- Less backwash cycles means less power consumption



# ABOUT OUR NUMBERS

ENERGY SAVING  
**1.097M**  
KWH

ENERGY COST  
SAVINGS  
**\$100K**

PERCENTAGE  
SAVINGS  
**11.2%**

Energy Savings at our Water Recycling Centers



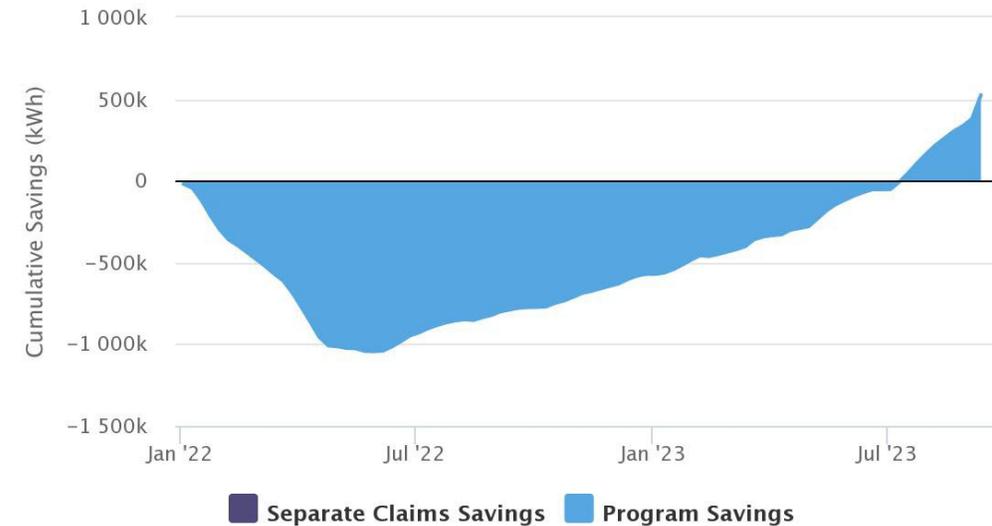
# FROM NEGATIVE TO POSITIVE

- Leon Creek WRC went from using more than 300,000 kW-hr monthly into saving almost 180,000 kW-hr per month
- Leon Creek is now at a positive energy savings slope

kWh Savings per Month



Cumulative kWh Savings



Energy savings show a positive slope

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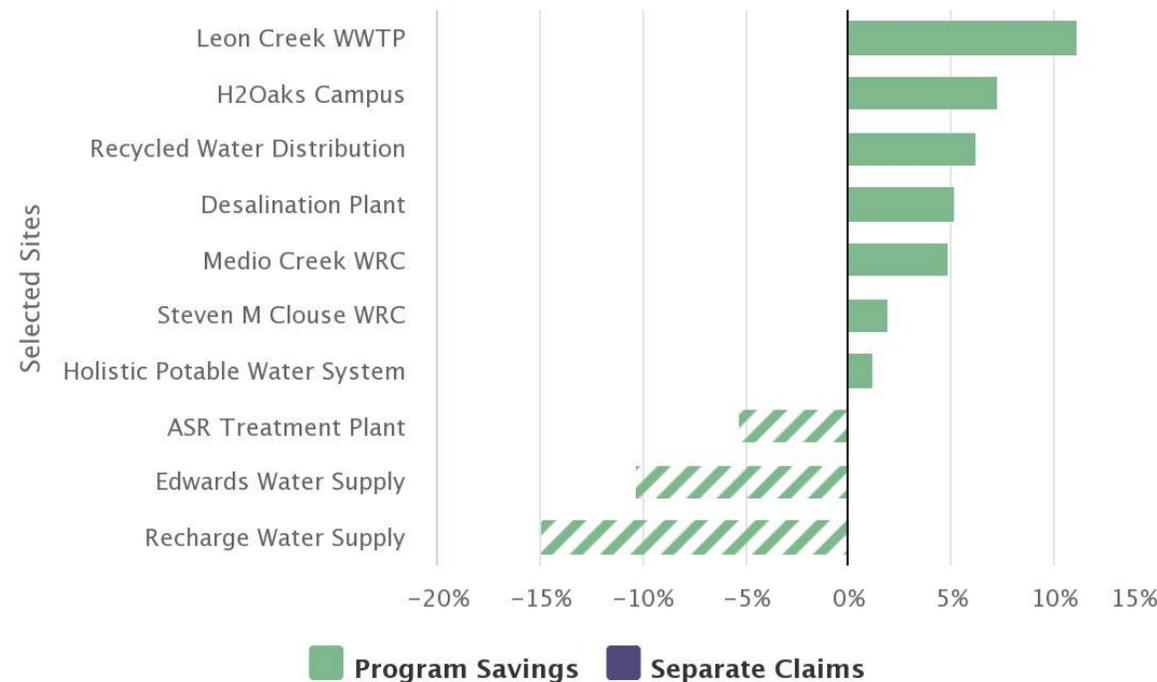
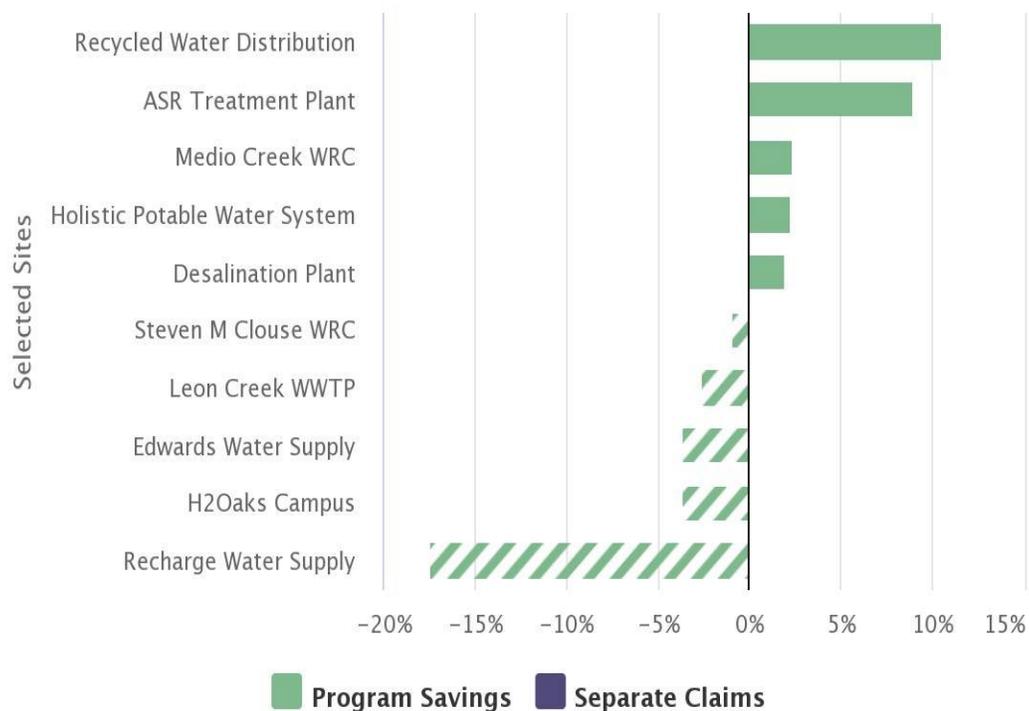
# LEON CREEK ON TOP IN ENERGY SAVINGS

## THEN

## 1. NOW

Sites Ranked by Percent kWh Savings

Sites Ranked by Percent kWh Savings



Energy Savings at our Water Recycling Centers



# THE KEY TO SUCCESS

## THE POWER OF COLLABORATION

- Multiple employees contributing ideas over the years
- Need for a unified team approach to transform ideas into action



# THE KEY TO SUCCESS HUMAN RESOURCES

01

The Role of the Manager:

- Taking the lead and ensuring accountability
- Support and empowerment of team members

02

The Manager as the Team's Backbone:

- Bringing diverse perspectives together for a common goal
- Effective communication and coordination

03

Transition from Multiple Teams to One:

- Benefits of consolidating teams for streamlined operations and efficiency
- Enhanced collaboration and cohesive energy-saving culture

04

Overcoming Challenges:

- Addressing obstacles and resistance to change
- Strategies for aligning team members and fostering a shared vision

# THANKS FOR WATCHING

Leon Creek WRC Team

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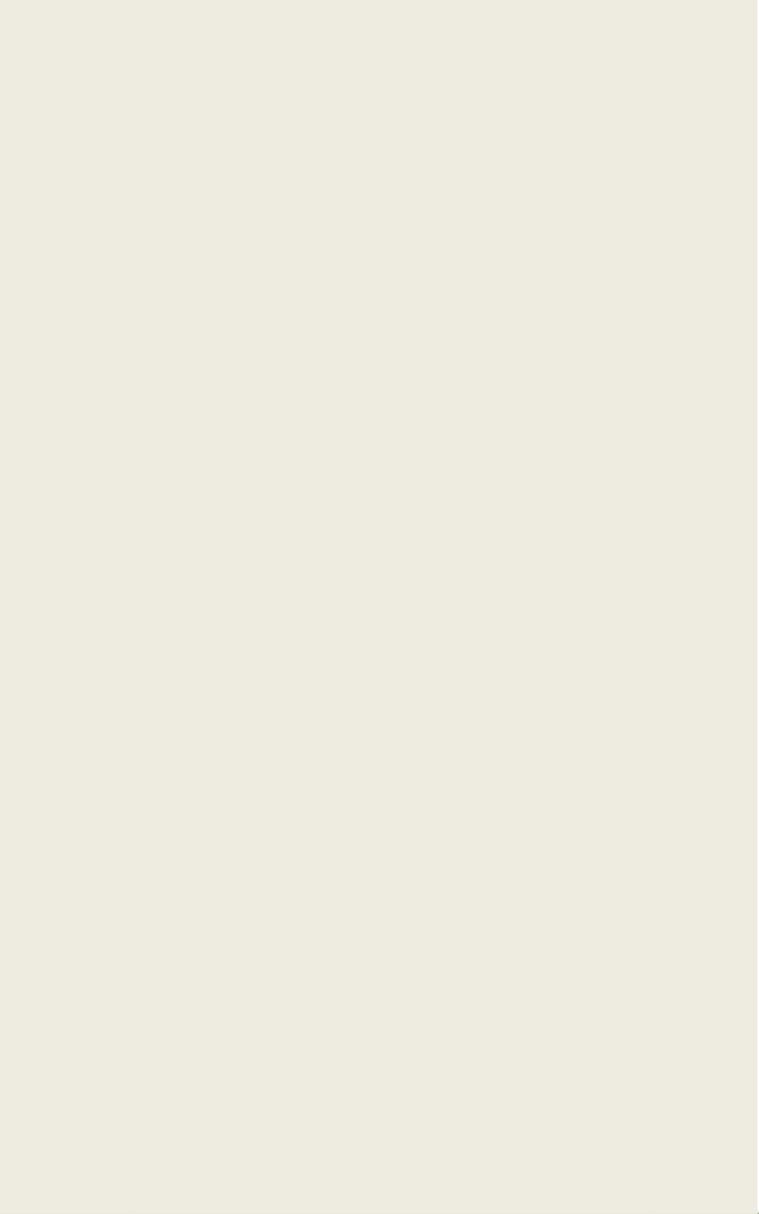
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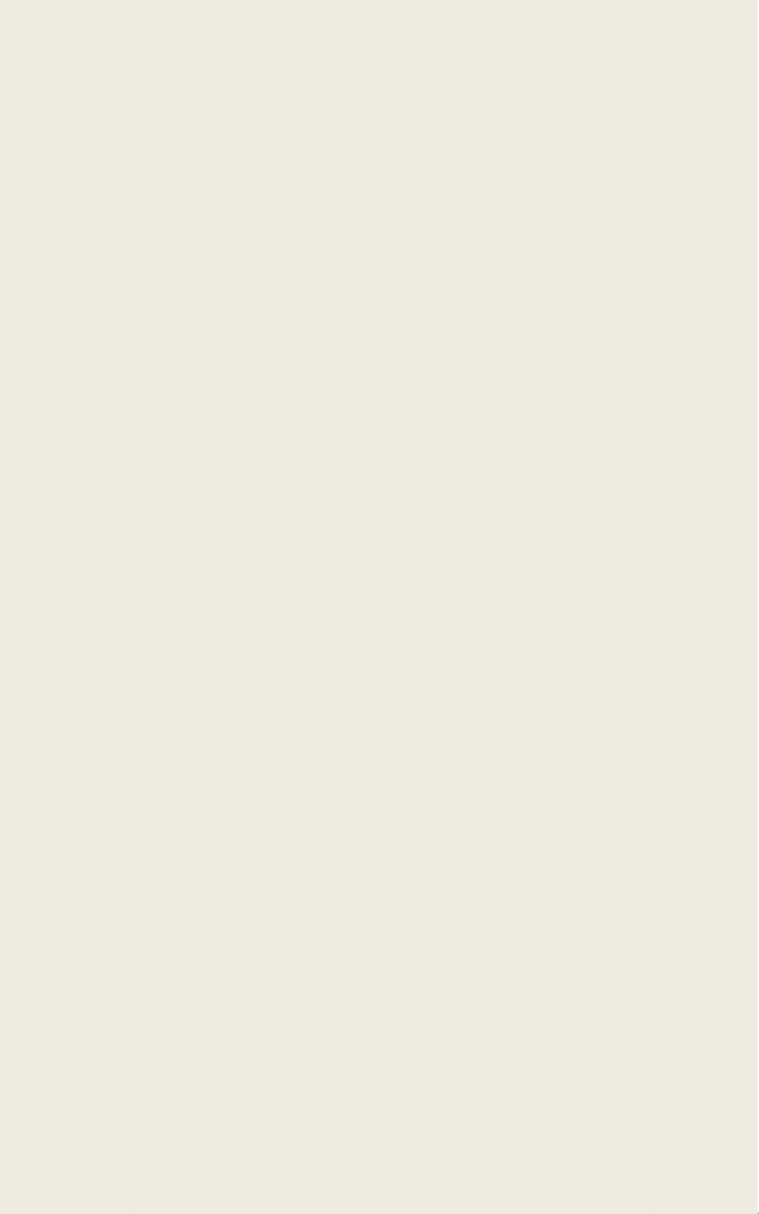
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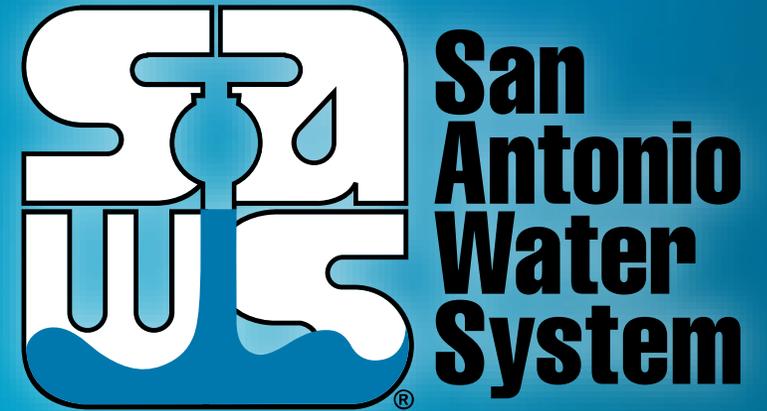
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