



## Cave Creek WRP Original Plant

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Project Name:	Cave Creek WRP Original Plant
Location:	Cave Creek Water Reclamation Plant, Phoenix AZ
Owner:	City of Phoenix Water Services Department
Project Construction Cost:	\$44M

The project included design and construction phase services for electrical and instrumentation of a plant with the following attributes:

- Influent pump Station
- Headworks & bar screens
- Primary sedimentation basins
- Aeration basins
- Secondary sedimentation basins
- RAS/WAS pump station
- Tertiary filters
- Effluent storage
- Effluent pump station
- Various chemical feed systems
- Chlorination system
- Ultraviolet disinfection systems
- Odor Control systems

Project includes the following power distribution features:

- Dual (redundant) 12,470 volts primary power distribution loops
- Main-tie-main 12,470 volts, 3000 amps main switchgear
- Two 1500 kVA generators
- Fourteen unit substations (750 to 3,500 kVA transformers)
- Main-tie-main Switchgear (12,470 volts - 1200 amps)
- Main-tie-main switchboards (480 volts - 1200, 2000, 2500, 3200, and 4000 amps)
- Main-tie-main motor control centers (4,160 volts - 1200 amps)
- Main-tie-main motor control centers (480 volts - 800 and 1200 amps)

Project includes the following major electrical features:

- Four influent pumps on VFDs (two 75HP and two 125 HP)
- Three RAS/WAS pumps on VFD (three 60HP)
- Five blowers (500HP (future 1250HP))
- Two IMLR pumps on VFD (40HP)
- Two sump pumps (44HP)
- Four 250kVA Ultraviolet disinfection systems
- Seven effluent pumps (two 200HP and five 350HP)
- Numerous pumps, mixers, fans, and misc equipment under 20HP
- Numerous automated valves and gates

Project includes the following clean power features:

- Eight Uninterruptible Power Supplies
- Two 300 amps active harmonic filters for Ultraviolet disinfection systems
- 6-pulse VFDs with harmonic filters
- 18-pulse VFDs with harmonic filters

Project includes the following major I&C features:

- Dual redundant Distributed Control System (DCS) with fiber optic
- Interface between the DCS and various vendor PLCs
- Over 100 instruments including:
  - Level, sludge blanket, pressure, temperature, flow (water and air), and vibration transmitters
  - Hazardous gas, chlorine, dissolved oxygen, pH, ORP, and turbidity analyzers
  - Flow, level, position, leak, temperature, and vibration switches
- Power monitoring system for all switchgear, switchboards, motor control centers, large pumps and blowers

