

**Palo Verde Utilities Company - Campus 2 Water Reclamation Facility (WRF)**

Aquifer Protection Permit No. P-105668

Place ID 108126, LTF No. 103584

**Significant Amendment**

**I. Introduction:**

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an Aquifer Protection Permit (APP) for the subject facility that covers the life of the facility, including operational, closure, and post-closure periods unless suspended or revoked pursuant to Arizona Administrative Code (A.A.C.) R18-9-A213. The requirements contained in this permit will allow the permittee to comply with the two key requirements of the Aquifer Protection Program: 1) meet Aquifer Water Quality Standards (AWQS) at the Point of Compliance (POC); and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). BADCT's purpose is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., the local subsurface geology), to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer or to prevent pollutants from reaching the aquifer.

**II. Permittee & Facility Location:**

Global Water Resources, Inc. owns and operates the Palo Verde Utilities Company – Campus 2 (PVUC Campus 2) Water Reclamation Facility (WRF) located at 46505 W. Peters and Nall Road, Maricopa, Pinal County, Arizona, 85139 over the groundwater of the Maricopa-Stanfield groundwater basin, within the Pinal Active Management Area (AMA). The PVUC Campus 2 WRF is located on County Parcel 51048008H. The Global Water Resources, Inc. offices are located at 21410 N 19<sup>th</sup> Street; Suite 220, Phoenix, Maricopa County, Arizona 85027.

**III. Facility Description:**

The permittee is authorized to operate the Palo Verde Utilities Company - Campus 2 Water Reclamation Facility (WRF), with a maximum average monthly flow of 50,000 gallons per day (gpd) for Commissioning Phase 1, and 100,000 gallons per day (gpd) upon completion of construction of Commissioning Phase 2. The Department has graded both permitted phases of this facility as a Grade 2 wastewater treatment plant. The facility shall have an operator in direct responsible charge who is certified for the class and grade of the facility and is available to the “onsite representative” and ensures an onsite operator visits the facility “weekly”.

Pre-Operational Phase (Initial Start-Up): During the initial start-up of the plant, the facility is allowed to vault and haul up to 25,000 gallons per day (gpd). These vault and haul facilities were built as part of the previously constructed, but never operated, Phase 1 - 1.0-mgd WWTP (permitted under LTF No. 46866). Sewage enters an influent pump station (IPS), which includes two 340 gpm (7.5 hp) submersible pumps (1-duty; 1-standby) with a 3-inch discharge diameter, that deliver the sewage to an 85,000-gallon equalization tank (EQ tank), equipped with a Gridbee AP2000 air powered mixer. From the EQ tank, two 80.2-gpm (3.0-hp) pumps lift wastewater into the approved hauling trucks, which transport sewage to Global Water’s – Palo Verde Utilities Company Campus 1 (APP No. P-105228). The IPS and EQ tank will continue to serve as the lift station and equalization for duration of this permit. The facility will monitor the influent flows at the influent lift station with a flowmeter located between the IPS and the EQ tank and by

documenting the hauled sewage with a flowmeter located after the EQ tank pumps. The facility shall monitor flows per Section 4.1, Table 6: INITIAL START-UP PLAN. Currently there is enough flow to operate the Commissioning Phase 1 WWTP, therefore as soon as Commissioning Phase 1 is operable, and Section 3.0 COMPLIANCE SCHEDULE CSI No. 2 has been received by the Department, the facility shall commence the operation of the Commissioning Phase 1 WRF. The Commissioning Phase 1 WRF shall be completed as quickly as possible, as vault and haul operations are not permitted by the Department and typically, these operations do not commence until a facility is built and ready to receive flows.

Commissioning Phase 1 WRF: The Commissioning Phase 1 WRF is permitted to receive an Average Day Monthly Maximum (ADMM) flow of 50,000 gpd. The IPS and EQ tank pump station will continue to be used for Commissioning Phase 1, with a 9,200-gallon (2.05-ft) operating range in the EQ tank and two 80.2-gpm (3.0-hp) VFD controlled pumps (1-duty; 1-standby; +1 pump base for Commissioning Phase 2 to prevent sending too much flow to the package WWTP. From the EQ tank, influent will enter a pre-engineered Cloacina MEMPAC-R MBR package wastewater treatment plant (WWTP). Influent will pass through a flowmeter (used to report total flow) prior to the on-skid 2mm perforated fine rotary brush screen with washer and compactor. Screened solids will discharge into an endless bagger unit and then into a dumpster. A gravity emergency overflow with an alarm is connected on the side of the screen, which will divert flows back to the EQ tank, should the screen become fouled or inoperable. Screened influent enters a Modified Ludzack-Ettinger (MLE) process with a 4,317 gallon pre-anoxic chamber equipped with a 1.2-hp anoxic mixer (with a redundant shelf-spare mixer), a 7,910 gallon aeration chamber equipped with a level sensor and 22 fine-bubble disc diffusers, supplied continuous air via a 381-scfm (15-hp) aeration blower. Two 350-gpm (5.0-hp) VFD controlled forward activated sludge (FAS) pumps transfer mixed liquors from the aeration chamber to the membrane filtration chamber with two membrane cassettes (1-duty; 1-standby), each equipped with sixteen membranes with a separate blower utilized for jet aeration and air scour membrane cleaning. The FAS pumps operate on the mode of the associated membrane chamber based on the permeate flow. The remaining flow from the FAS pumps overflows from the membrane chamber, where it is returned by gravity to the anoxic chamber. Two 50-gpm (3-hp) permeate pumps (1-duty; 1-standby) convey effluent to an attached clearwell for periodic back-pulsing and maintenance cleaning procedures, that are fully automated, and the excess effluent discharges from the clearwell by gravity. The effluent flows by gravity through a Norweco XT-4000-S tablet chlorinator disinfection system, prior to discharging into 100 ft of 24-inch diameter piping used for full pipe plug-flow chlorination. From the chlorine contact pipe, effluent flows through a Norweco 2000 model tablet de-chlorinator, and then the package WWTP ends and effluent is sampled prior to being sent to one of the two 0.4 mgd recharge basins.

A 7-gpm (1.0-hp) waste activated sludge (WAS) pump, pumps WAS through a flowmeter to an 11,000-gallon polyethylene sludge holding tank (SHT) with a sloped bottom, equipped with a GridBee AP500 mixer with it's own compressor that supplies 4.5 scfm air flow for aeration. The SHT will have an overflow port that will gravity feed to an existing SBR tank, built for the 2008 permitted WWTP, for emergency storage. Sludge is hauled to Global Water's – Palo Verde Utilities Company Campus 1 (APP No. P-105228) for processing. Two existing SBR tanks are

available for emergency bypass with a total storage capacity of approximately 1 mgd, for emergency operation and maintenance in lieu of treatment redundancy.

Commissioning Phase 2 WRF: The Commissioning Phase 2 WRF is permitted to receive an Average Day Monthly Maximum (ADMM) flow of 100,000 gpd. Commissioning Phase 2 will commence operations when flows at the facility reaches the permitted alert limit of 90 percent of the Commissioning Phase 1 design flow, or 45,000 gpd. The IPS and EQ tank pump station will continue to be used for Commissioning Phase 2, with a 16,700-gallon (5.24-ft) operating range in the EQ tank and three 80.2-gpm (3.0-hp) VFD controlled pumps (2-duty; 1-standby) to prevent sending too much flow to the package WWTPs. In Commissioning Phase 2, the facility will add an additional pre-engineered Cloacina MEMPAC-R MBR package wastewater treatment plant (WWTP), flowmeter (the sum of the flowmeters from both package WWTPs will be used to report total flow), chlorinator, 100-ft of 24-inch piping used for full pipe plug-flow chlorination, and de-chlorinator to operate in parallel to the Commissioning Phase 1 package plant. The effluent from the second package plant will then join the effluent from the first package plant prior to the discharge monitoring sampling point, and will discharge to one of the two 0.4 mgd recharge basins. The SHT, SHT overflow tank, two existing SBR overflow tanks, and all other facilities before and after the package plants, not described above, will remain the same. Sludge will continue to be hauled to Global Water's – Palo Verde Utilities Company Campus 1 (APP No. P-105228) for processing.

Commissioning Phase 1 will provide 350 ft setback distances. For Commissioning Phase 2, odor control for the headworks and influent pump station are accomplished using single stage bio-trickling filtration system consisting of biologically active synthetic media with an automated water and nutrient injection spray system, recirculation system, and a layer of activated carbon to prevent untreated odors from exiting the unit. A 1,000-kW diesel generator will provide emergency back-up power for both phases.

All industrial hookups and other non-residential hookups to the treatment system shall be authorized according to the applicable federal, state or local regulations.

#### **IV. Amendment Description:**

In 2008, Global Water Resources, Inc. was issued an Aquifer Protection Permit No. P-105668 (LTF No. 46866) for a permit that included four phases (Phase I - 1 mgd, Phase II - 3 mgd, Phase III - 6 mgd, and Phase IV - 9 mgd) with a planned future fifth phase of 13 mgd, and an initial start-up plan that allowed the permittee to vault and haul up to 50,000 gallons per day of influent.

The PVUC Campus 2 WRF 2 was constructed as a Sequencing Batch Reactor (SBR) treatment facility, but was never commissioned as the 2008 financial crisis in the economy affected the housing development in the area obviating the need for wastewater treatment. Now the area has renewed interest and new housing developments are under construction. In June 2023, GWR's consultant, NCS Engineers, requested that the Department allow vaulting and hauling operations to begin, even though the WWTP had not been recommissioned, and there were plans to change the treatment strategy to attached growth technology. The Department issued a conditional approval letter allowing vaulting and hauling up to 25,000 gpd. Currently the community is

growing fast enough that GWR is approaching their vault and haul discharge limit, and has selected to take immediate actions by permitting two commissioning phases as described above.

Following the Pre-operational Phase (vault and haul), Commissioning Phase 1 will be implemented consisting of a Membrane Bioreactor (MBR) package plant capable of treating up to 50,000 gpd. Commissioning Phase 2 will have an additional MBR package plant with a capacity of 50,000 gpd, therefore, a combined capacity of 100,000 gpd is being permitted with the two Commissioning Phases. Two (2) recharge basins will be constructed under Commissioning Phase 1 which will be capable of recharging the full amount of effluent produced during both phases.

The permit category for this amendment was determined to be an “Significant Amendment” as per A.A.C. R18-9-A211(B)(1).

#### **V. Regulatory Status**

This significant amendment application was received on August 02, 2024. There are no known regulatory actions.

#### **VI. Best Available Demonstrated Control Technology (BADCT):**

The treatment facility shall be designed, constructed, operated, and maintained to meet the treatment performance criteria for new facilities as specified in A.A.C. R18-9-B204. The facility shall meet the performance requirement for industrial pre-treatment as per A.A.C. R18-9-B204(B)(6)(b). The treatment facility shall not exceed a maximum seepage rate of 550 gallons per day per acre for all containment structures within the treatment works.

#### **VII. Compliance with Aquifer Water Quality Standards (AWQS):**

The reclaimed water classification and groundwater monitoring was removed from the commissioning phases. There will not be any reuse customers for the effluent during the commissioning phases, although membrane bioreactor (MBR) treatment is known to produce a high-quality effluent that should exceed A+ reclaimed water standards. The effluent quality is high and the discharge quantity is low, so groundwater sampling is not necessary, therefore the Point of Compliance Well was identified as a conceptual well.

Facility inspection and operational monitoring will be performed on a routine basis (see Section 4.2, Table 10, in the permit).

#### Point of Compliance (POC):

The direction of the groundwater is from the east to the west, and then to the southwest along regional groundwater flow gradients. The depth-to-groundwater at the site is approximately 83.5 feet (measured at the on-site exploratory borehole, ADWR Well ID No. 55-928186).

Groundwater monitoring is not required at the point of compliance well. POC #1 is a conceptual well, monitoring is not required except as a contingency action. The Director may require an amendment of this permit to install a monitoring well if there is cause or concern that groundwater quality may be impacted at the POC. The Director may amend this permit to designate additional

points of compliance if information on groundwater gradients or groundwater usage indicates the need.